

Building transformative capacity through the use and production of edible landscapes

*A case-study of urban agriculture projects in the context of sustainability
transformations*

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Abstract

The need to address the current socio-ecological crisis through transformative responses has increasingly been recognized and encouraged. The aim of this thesis has therefore been to explore how the collective use and production of urban edible landscapes can strengthen transformative capacities that are needed to initiate sustainable transformations. The research was conducted using a qualitative case study approach, consisting of two units: the edible city Andernach in Germany, and the housing cooperative Bertramjordet in Oslo, Norway. Two key aspects of transformative capacity have been examined. First, the development of social relations through social interaction, social networks, and sense of place attachment. Secondly, the development of various types of human-nature connections. The findings from the study suggest that the collective use and production of urban edible landscapes can strengthen both social relations and human-nature connections. However, the development of these relations is a complex process and varies according to structure and organization of such projects. The findings from the study particularly highlight the multi-scalar and relational characteristics of transformative capacity. In conclusion, both policy makers and researchers are therefore encouraged to increase their attention to the scalar dimensions of transformative capacity.

Acknowledgements

As a child of the 1990s, I have grown up with a constant reminder that humanity is facing severe socio-ecological issues. Sustainability issues and the climate crisis have been debated for as long as I can remember. The research on these topics is enormous, almost to the point where I have wondered if there is anything more to add. Yet, here I am, as so many others, writing my master thesis on this topic.

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Table of content

Chapter 1 – Introduction	1
1.1. Research aim and research question	2
1.2. Structure of thesis	3
Chapter 2 – Sustainability transformations	4
2.1. Key concepts in sustainability research	4
2.2. Transformation to sustainability	7
2.3. Building and strengthening transformative capacity	10
2.3.1. Social relations – social interaction, networks, and community ties.....	11
2.3.2. Human-nature connections.....	17
2.4. Chapter summary	22
Chapter 3 – Urban edible landscapes	22
3.1. The relevance of studying urban edible landscapes	23
3.2. Defining the case – collective use and production of urban edible landscapes.....	24
Chapter 4 – Methodology	27
4.1. Qualitative research	28
4.2. Case studies	28
4.3. The research process.....	29
4.3.1. Unit selection.....	29
4.3.2. Participant selection	31
4.3.3. Data collection.....	31
4.3.4. Limitations and reflections about the data collection.....	34
4.4. Data processing and analysis	36
4.4.1. Data transcription	36
4.4.2. Data analysis	38
4.5. Finalizing the thesis during the COVID-19 outbreak.....	40
4.6. Ethical considerations in social research	40
4.7. Evaluating qualitative research – rigour and transferability.....	41
Chapter 5 – Presentation of units	43
5.1. The edible city Andernach.....	43
5.2. Bertramjordet housing cooperative	45
5.3. Short reflections about the two units	46

Chapter 6 – Social relations in urban edible landscapes	46
6.1. Social interaction in the edible landscapes	47
6.1.1. Social interaction in Bertramjordet	47
6.1.2. Social interaction in Andernach	52
6.1.3. Frequency and access to social interaction	54
6.2. Social networks and connections.....	56
6.2.1. Social networks in Andernach.....	56
6.2.2. Social networks in Bertramjordet.....	59
6.3. Place attachment	63
6.3.1. Place attachment in Bertramjordet	63
6.3.2. Place attachment in Andernach	65
6.4. Summary and reflections	66
Chapter 7 – Human-nature connections in urban edible landscapes	68
7.1. Material reconnection – food from “farm” to fork (and back again)	68
7.2. Experiential reconnection –interaction and contact through multiple senses.....	70
7.3. Cognitive reconnection – increased knowledge and awareness	74
7.4. Emotional reconnection – appreciation, joy, and recreation	79
7.5. Philosophical reconnection – changing perspectives of the human-nature relationship	81
7.6. Summary and reflections	82
Chapter 8 – Discussion: the transformative potential of urban edible landscapes	84
8.1. Social relations as a multi-scalar concept.....	85
8.2. Linking nature connections to system leverage points.....	88
8.3. The relevance of transformative capacity in sustainability transformations	91
Chapter 9 – Conclusion	92
9.1. Answering the research questions	93
9.2. Relevance and concluding remarks	96
Reference list.....	97
Appendix	107
Appendix 1: Overview of informants	108
Appendix 2. Interview guide(s).....	109

Appendix 2a. Interview guide for Bertramjordet (in Norwegian).....	110
Appendix 2b. Interview guide for Andernach (in German)	112
Appendix 2c – Interview guide for Andernach, urban planning office (in German)	113
Appendix 3. Information sheet and consent form.....	114
Appendix 3a. German information sheet and consent form.....	115
Appendix 3b – Norwegian information sheet and consent form.....	117

List of boxes and images

Box 1: Key aspects of social cohesion	12
Figure 1: Conceptualization of social relations	12
Figure 2: Types of human-nature connections	18
Figure 3: Location of Andernach	43
Figure 4: Map of edible landscapes in central areas of Andernach.....	43
Figure 5: City Districts in Oslo	45
Figure 6: Overview of Bertramjordet	45
Figure 7: The relationship between system leverage points (ranging from shallow to deep) and various forms of human-nature connections	88
Image 1: Edible landscapes around the city wall	44
Image 2: Bed boxes in the city centre.....	44

Chapter 1 – Introduction

“Sometimes I have the feeling that people come here and expect an intergalactic zoo with strawberries growing in your mouth and so on. It does not work that way. But you can still make people think and reflect. That the world can be different from what we know” (Lutz Kosack, urban planning office, Andernach).

Urban areas and cities have increasingly been emphasized as key arenas and actors in sustainability transformations (Revi et al. 2014). In recent years one sustainability policy that has proliferated is the implementation of agricultural spaces in cities – commonly defined as urban agriculture (UA). Research has shown that UA can have positive impacts on a number of sustainability issues, e.g. by increasing social sustainability (e.g. Firth et al. 2011, Martin et al. 2016, Rogge et al. 2018), by increasing urban resilience (Colding & Barthel), by increasing biodiversity (Dang 2017), or as way to combat environmental threats such as heat islands (Georgiardi et al. 2017, Clinton et al. 2018).

In recent years, voices within the humanities and social sciences have however advocated the need for more radical responses to current sustainability issues and call for societal *transformations* (Sharpe et al. 2016, Leichencko & O’Brien 2019). Therefore, some also suggest the need to build transformative capacity – that is “the capacity of individuals and organizations to be able to both transform themselves and societies in a deliberate way” (Ziervogel et al. 2016, p. 2) to initiate societal transformations. Two key dimensions of transformative capacity are stronger *social relations* and *human-nature connections (HNCs)*. Both dimensions highlight the need to reconsider how people understand themselves in, and in relation to, the world – in short, our worldviews and belief-systems.

Although UA has been examined from sustainability perspectives, the transformational aspects of urban agriculture have rarely been considered, at least not as a transformative capacity-building process. In the introductory quote, Lutz Kosack, whom I interviewed while being on fieldwork in the small German town Andernach, describes the impacts of the “edible city” project the municipality has initiated. The quote illustrates the simple, almost trivial characteristics of urban agriculture. There is nothing fancy or otherworldly about it. At the same time, Kosack thinks that it can make people reconsider how the world should be. He suggests that urban agriculture also has transformative potential because it can make people reconsider their worldviews.

1.1. Research aim and research question

In light of calls for societal transformation and the need to develop transformative capacity, the aim of this study is to explore if, and how transformative capacity can be strengthened through what will be defined as ‘urban edible landscapes’. I wish to examine the interaction taking place both between people and between people and nature through the collective use and production of urban edible landscapes. Accordingly, the main research question is:

How can the collective use and production of urban edible landscapes strengthen transformative capacity?

Key sub-questions are as follows:

- 1. How can social relations be strengthened through the collective use and production of urban edible landscapes?*
- 2. How can human-nature connections develop through the collective use and production of urban edible landscapes?*

To answer the above research questions, I have done a qualitative case study consisting of two units. I have collected data through interview and participant observation in the “edible city” Andernach in Germany, and in the housing cooperative Bertramjordet on the south-east side of the Norwegian capital, Oslo. In both units, edible landscapes have been implemented into the city landscape. The research questions will be answered specifically in relation to Bertramjordet and Andernach. The goal is to explore and discuss in what ways the collective use and production of the urban edible landscapes has the potential to strengthen transformative capacity *in these two units*. While the findings will not be generalizable, the aim of the study is that the findings can provide a foundation for, or contribute to, further research on sustainability transformations and transformative capacity.

Furthermore, I wish to make clear that I do not attempt to examine *if* transformation has taken place in the units I study. This study primarily looks at the potential for strengthening the *capacities* that are suggested as key aspects to enable societal transformation – in this study defined as social relations and human-nature connections. The aim of this study is therefore first and foremost to examine if there is potential for building transformative capacity through the collective use and production of urban edible landscapes. However, since the overarching goal of this thesis is to contribute to the sustainable transformations field, the relevance and

significance of transformative capacity in relation to sustainability transformations will also be considered in the discussion of the thesis.

1.2. Structure of thesis

Chapter 2 is a literature review where theoretical concepts used to discuss the current socio-ecological crisis are presented. The purpose is to show how transformation and transformative capacity have emerged as key concepts within discussions concerning the socio-ecological crisis. The chapter then turns more specifically to the two key dimensions of transformative capacity used in this thesis – social relations and human-nature connections – by developing a theoretical framework which can be used for empirical examination of these two dimensions.

Chapter 3 is also a theoretical chapter. The purpose is to explore the collective use and production of urban edible landscapes as a theoretical concept. I will also highlight why the theoretical framework presented in chapter two is relevant for examining the case.

Chapter 4 provides insight into the methodological choices that have been made throughout the research process and what implications this has had for the study.

In **chapter 5**, I present the two units that have been examined in this study. Information about both Andernach and Bertramjordet will be provided to contextualize the two places. I will also describe how and where the edible landscapes have been implemented in the units and which actors are involved in their development.

Chapter 6 and 7 constitute the analysis of the thesis. Chapter 6 comprises the analysis of social relations. Key dimensions that will be explored are social interaction, social networks, and place attachment. Chapter 7 comprises the analysis of human-nature connections. Each of the chapters contain a summary and reflections about the findings.

In **Chapter 8** the findings from the analysis are discussed. I discuss the findings from each of the analysis chapters separately, before engaging in an overall discussion about transformative capacity.

Chapter 9 is the concluding chapter of the thesis. I return to the research questions and research aim and reflect on how the findings contribute to, and fit within, the context of sustainability transformations.

Chapter 2 – Sustainability transformations

In the following chapter I will present and discuss theoretical concepts that dominate debates around current socio-ecological issues. The chapter has two overarching parts. In the first part, key concepts and terminology used in sustainability debates will be presented. The main emphasis will be on how research concepts have shifted from the 1990s until today. The aim is to contextualize current calls for transformation and to explain the benefits of studying sustainability issues using a transformation perspective. Accordingly, mitigation and adaptation will be briefly presented before turning to transformation. In the second section of the chapter I will present more thoroughly the theoretical framework that will be used for the analysis of empirical material in this study. In light of increasing calls for deliberate societal transformation, transformative capacity will be presented as a key framework for analysis. I will emphasize two aspects of transformative capacity: social relations and human-nature connections. The two aspects will then be used to develop a framework for analysing empirical material.

2.1. Key concepts in sustainability research

The publication of the Brundtland report “Our common future” in 1987 was a watershed moment for sustainability and sustainable development – putting these concepts firmly on the world’s agenda. Over the course of thirty years researchers from numerous theoretical fields have therefore examined sustainability issues from a multitude of perspectives. A key sustainability issue, which has received overwhelmingly amounts of attention, is climate change. A significant part of discussions about climate change have revolved around *how* to respond to it. In the next section, I will attempt to outline how key concepts such as mitigation, adaptation and transformation have developed in the context of climate change research. Although these concepts will be presented as separate responses for the purpose of clarity, it must be noted that they in practicality often are interlinked.

In the early days of the climate change debate, mitigation was the only response that received serious attention (Schipper 2006). According to Schipper, one of the key reasons was a concern that focusing on other responses, such as adaptation, “would undermine incentives to reduce emissions” (2006, p. 84). Mitigation was considered to be a response which aimed to avoid climate change altogether, or at least as much as possible. In contrast, adaptation was

viewed as a response that had given up stopping climate change through mitigation efforts. In other words, mitigation and adaptation were largely seen as oppositional responses.

However, by the end of the 1990s it became clear that mitigation efforts alone would not be an adequate response to climate change. It was recognized that some adaptation efforts would be necessary, independent of current mitigation efforts, due to system lags and already emitted climate gases (O'Brien 2012). Moreover, it was recognized that such adaptation measures had to be addressed through policy interventions (Schipper 2006, p. 83). After adaptation was recognized as a key response to climate change, both adaptation policy and adaptation research proliferated (Berrang-Ford et al. 2011, Meerow & Mitchell 2017).

There are currently many ways to conceptualize adaptation. What is generally agreed upon is that adaptation has to do with making changes in response to climate vulnerability. For example, Leichenko and O'Brien (2019, p. 158) say that adaptation can generally be understood as "a change that is made in response to new conditions". Similar interpretations of the term can be found in for example Smit & Wandel (2006) and Pelling (2011). However, there are conflicting views within the field about what needs to change, how comprehensive such processes of change can or should be, and which conditions are considered relevant.

Conceptualizing adaptation as technical system adjustments in response to climatic exposure or hazards, is by far most common. A defining characteristic of this perspective on adaptation is according to Bassett & Vogelmann (2013) that it is *impact-led*. This means that "the sense of causality [...] runs from the physical environment to its social aspects" (Hewitt in Bassett & Vogelmann 2013, p. 47). In other words, adaptation is viewed as (usually technical) adjustments that are made to reduce vulnerability from an external threat – such as climate change. Similar arguments have been made by O'Brien et al. (2007). In line with Bassett and Vogelmann's (2013) findings, they argue that dominant perspectives conceptualize vulnerability as an "end-point" caused by biophysical impacts due to climate change.

Another key aspect of adjustment adaptation is that the actions that are emphasized rarely question or upset the socio-political order (Basset & Vogelmann 2013, p. 49). This is also highlighted by Pelling (2011). He defines such an approach to adaptation as "adaptation as resilience". Pelling argues that adaptation as resilience is "a form [of adaptation] that seeks to secure the continuation of desired systems functions into the future in the face of changing context, through enabling alteration [...]" (Pelling 2011, p. 55). The continuation of systems is also emphasized by Smit & Wandel (2006) when they say that adaptation "usually refers to

a process, action or outcome in a system in order for that system to better cope with, manage or adjust to some changing conditions, stress, hazards, risk or opportunity” (p. 282). In short, with an adjustment adaptation perspective one works within current systems and aims to adjust them to address vulnerability caused by what is conceptualized as an external threat.

Several voices within the social sciences are however critical of the adaptation as adjustment approach (e.g. Basset & Vogelman 2013, Eriksen et al. 2015, O’Brien et al. 2007). At least two major critiques are present. First, there are those who critique adjustment adaptation for its apolitical approach to adaptation processes (e.g. Eriksen et al. 2015). Their key critique is that adaptation processes raise many political questions and not simply technical, bureaucratic questions. To illustrate the difference; adaptation does not only raise questions about what technology is most efficient, but also what risk is considered liveable, what or who should be prioritized in adaptation processes and who benefits from different adaptation processes. In that sense, this critique of adjustment adaptation seeks to highlight the political nature of adaptation processes.

The other critique is that the root causes of vulnerability are not addressed through adjustment adaptation, and that this might lead to the implementation of adaptation strategies that are not efficient or might even exacerbate vulnerabilities (maladaptation). Many of these critical voices advocate *transformative adaptation* as an alternative to adjustment adaptation (Basset & Vogelman 2013, Pelling 2011). In contrast to adjustment adaptation, transformative adaptation perspectives argue that the root causes of climate vulnerability are a result of social, political, and economic systems. Instead of adjusting current systems, transformational adaptation perspectives emphasize “the overturning of established rights systems and the imposition of new regimes in order to address vulnerabilities” (Pelling 2011, p. 85). In short, they advocate socio-political system transformations.

In many ways calls for transformative adaptation illustrate that sustainability research is beginning to move on from a narrow focus on climate change to a broader socio-ecological systems perspective. By using a transformation framework, one acknowledges that we are in fact in a large-scale socio-ecological crisis. As such, climate change is but one of the symptoms of this broader socio-ecological crisis. Narrow efforts, which only address climate change (such as mitigation and adjustment adaptation) will therefore reduce symptoms of the socio-ecological crisis, but not necessarily solve it. A transformations perspective, on the other hand, acknowledges the need for large-scale system transformations in light of the broad socio-ecological crisis humanity is in. Calls for transformation have not only emerged within

the adaptation literature presented above. In the next section, I will therefore delve into the broader conceptualizations of transformation and how I will use it in this thesis.

2.2. Transformation to sustainability

As evident from the previous section, calls for transformational responses to socio-ecological issues have increased. The key message from transformation scholarship is that radical responses and changes are necessary in light of the current socio-ecological crisis. However, there is a wide variety of ways to conceptualize transformations within this literature. Key differences often evolve around *how* transformation happens, *what* needs to transform, and *which systems* are relevant. Several authors have attempted to categorize different approaches to transformation (Feola 2015, Göpel 2016, Shah et al. 2018, Leichenko & O'Brien 2019). Based on these literature reviews, I will outline some of the key research fields within the transformation literature and describe how they conceptualize transformation. It is important to note that the different approaches to transformation that will be presented are not separate silos – often they bleed into each other or complement each other. In that sense, key differences usually revolve around what aspects of transformation the different approaches wish to emphasize, while not aiming to delegitimize other approaches. To end this section, the thesis will be situated within the transformations field.

There is widespread agreement that one of the more influential fields within transformation literature is rooted in socio-technical transition and innovation studies (Feola 2015, Göpel 2016, Shah et al. 2018). Göpel argues that studies from this field are “primarily interested in understanding how technological advances change the way communities and societies organize themselves and which potentials for sustainable development emerge from that” (2016, p. 18). The socio-technical transition field typically examines how one can transform a socio-technical system, sector, or sub-system (e.g. the transportation or energy sector) to another which is more sustainable (e.g. Rohracher & Späth 2014).

A second field of transformation research which is repeatedly highlighted consists of perspectives that emphasize the need to transform socio-political and economic systems. This includes research rooted in political economy approaches (e.g. Göpel 2016). Within this field emphasis is put on how political-economic structures can or must transform in light of climate change. Transformative adaptation, discussed in section 2.2, also relates to this field of transformation research because it advocates for the need to transform socio-political structures.

Leichenko and O'Brien (2019) highlight a third approach to transformation. Although they recognize the need for technical and political transformations, as advocated by other fields of transformation research, they emphasize that there is a need for "interior" changes, too. Specifically, they argue that:

"[...] the types of transformations needed to address climate change and sustainability challenges will involve more than new gadgets and experiences. They are likely to involve more "interior" changes in worldviews, values, or paradigms that manifest as new ways of relating to others, treating nature, and organizing society" (p.179).

Their key point is that to move towards sustainability and human prosperity, the way society sees and relates to the world (and itself) needs to be addressed and transformed. They therefore argue that transformations also need to take place in what they define as the "personal sphere" of transformation.

Although they call it the personal sphere and emphasize "interior" changes, this approach must not be mistaken with approaches to climate change that emphasize individual behavioural changes. In fact, Leichenko & O'Brien point out that advocating environmental-friendly lifestyles (which would suggest the need for individual behavioural change) as a solution to climate change signals a limited view of climate change as a socio-ecological issue (2019, p.1). Rather the focus within the personal sphere of transformation is on common and shared belief-systems and worldviews.

A second important note about the personal sphere of transformation, is that it is not limited to cognitive changes. Although the emphasis is on worldviews and belief-systems, which admittedly gives associations to cognitive processes, Leichenko and O'Brien (2019, p.192) emphasize that sustainability transformations are *embodied*. In other words, transforming shared worldviews and belief-systems is not only something that happens in our thoughts, it is also something that happens through physical and corporeal actions and experiences. This opens the possibility to address the personal sphere of transformation also through examining the impact or significance of (embodied) experiences.

The need to address and transform worldviews and belief-systems in order to achieve systemic transformation has also been emphasized by others. In a frequently cited paper,

Meadows (1999, p. 3) argues that the highest¹ (and most efficient) leverage points for system transformation are (1) the power to transcend paradigms, (2) the mindset or paradigm out of which the system – its goal, structures, rules, delays, parameters – arise, and (3) the goals of the system. She also lists another nine leverage points, each of which have a decreasing effectiveness on system transformations².

Abson et al. (2017), have used Meadow's work in relation to sustainability transformations and developed the framework further. They have categorized Meadows list of twelve leverage points into four system characteristics categories. They define the three leverage points presented in the previous paragraph as "intent", then come system characteristics that have to do with "design", "feedbacks" and "parameters". Like Meadows, they argue that changing intent and design characteristics of a system has more effect than changing lower system characteristics such as feedbacks and parameters. However, they also emphasize that the leverage points are interlinked. Therefore, they say that

"it is possible that *parameter* adjustments [...] or changes in *feedbacks* [...] may challenge or even shift the mindset of actors – therefore ultimately altering the emergent *intent* of a given system of interest. An understanding of such potential interactions between deep and shallow leverage points represents a crucial gap in our current understanding of sustainability issues" (Abson et al. 2017, p. 36).

In short, Abson et al. (2017) highlight the importance of looking at all leverage points in relation to one another and acknowledge that interventions or changes at low leverage points may influence and change high leverage points. Accordingly, only focusing on changing high leverage points may not be the best strategy to achieve system transformation. However, they do emphasize the need to increase focus on high leverage points, because these rarely receive much attention.

Leichenko & O'Brien (2019) also advocate an integrative and relational perspective of transformation processes. Although they highlight the importance of the personal sphere

¹ Meadows (1999) refers to *high* or *low* leverage points in her paper. Other authors use the terms *shallow* and *deep* (e.g. Abson et al. 2017, see quote same page). I will use the terms high (also referring to deep) and low (also referring to shallow) leverage points to be consistent in this thesis.

² The nine other leverage points, listed in decreasing efficiency, are as follows: (4) the power to add, change, evolve, or self-organize system structure, (5) the rules of the system, (6) the structure of information flows, (7) the gain around driving positive feedback loops, (8) the strength of negative feedback loops, (9) the strength of delays, relative to the rate of system change, (10) the structure of material stocks and flows, (11) the sizes of buffers and other stabilizing stocks, relative to their flows, and (12) constants, parameters, numbers (such as subsidies, taxes, standards) (Meadows 1999, p. 3).

(which mostly relates to high leverage points), they also argue that the personal sphere is interlinked with practical and political spheres of transformation. The two latter usually address transformation that correlates more with lower leverage points. In sum, system transformation must be examined with a relational perspective, keeping in mind leverage points interact with and have the potential to influence each other.

Overall, one can use many entry points to study sustainable transformations. In this literature review, I have highlighted the difference between socio-technical approaches, socio-political and economic approaches and approaches that look into meaning-making and worldviews. My thesis is primarily set within the latter field, addressing transformation in meaning-making and worldviews. However, as already emphasized, that does not mean that only cognitive processes are relevant for examination. Furthermore, the thesis builds upon relational perspectives on transformation processes and system leverage points, such as presented by Abson et al. (2017) and Leichenko and O'Brien (2019). Accordingly, seemingly “inefficient” changes or transformations could have the potential to initiate more large-scale transformation or impact higher system leverage points.

2.3. Building and strengthening transformative capacity

Transformations are complex and challenging processes. A key question in discussions around transformation is therefore *how* deliberate transformations can be initiated. Abson et al. (2017, p. 30) point out that we need to “identify solution-oriented approaches to transformational change” – in short, feasible and practical approaches to initiate transformation. One solution-oriented concept that increasingly has received attention is transformative capacity. Transformative capacity can be defined as “the capacity of individuals and organisations to be able to both transform themselves and their societies in a deliberate, conscious way (Ziervogel et al. 2016, p. 2). In other words, by developing certain capacities, one can deliberately enable transformation. Importantly, such capacities can be cultivated and developed, and, in that sense, they provide a solution-oriented approach to sustainable transformations.

Two key aspects that are repeatedly highlighted as important for sustainable transformations are social relations and human-nature connections (HNCs) (Ziervogel et al. 2016, Amundsen et al. 2018, Leichenko & O'Brien 2019). Advocates of HNCs in sustainability transformations emphasize that there is a need to reconnect to nature and to re-evaluate how human-nature relations are typically defined (e.g. Alaimo 2012, Ziervogel et al. 2016, Abson et al. 2017,

Amel et al 2017, Clayton et al. 2017, Leichenko & O'Brien 2019). Calls for stronger social relations come from numerous research fields on sustainability. Some highlight the need for social network at various scales (Amundsen et al. 2018) and community ties (Ziervogel et al. 2016). Others argue that social consciousness must be developed (Schliz et al. 2010).

In this thesis, I will study transformative capacity in terms of social relations and human-nature connections because of their wide resonance within the transformation literature. I acknowledge, that there are other significant aspects of transformative capacity, too. Agency, for example, is a third capacity which is highlighted in much of the literature (O'Brien 2012, Ziervogel et al. 2016, Leichenko & O'Brien 2019), but will not receive much attention in this thesis for several reasons. First, agency is often vaguely defined and difficult to operationalize for empirical analysis. Secondly, the examination of agency would benefit from longer fieldwork than this study allowed. Moreover, the goal of this study is not to examine every aspect of transformative capacity. Finally, the limited scope of the thesis requires a somewhat narrow analytical framework. Therefore, agency will not be further discussed in this study although it is often considered a key aspect of transformative capacity. In the next section I will go into detail about social relations and human-nature connections and explain how I will use them as an analytical framework for this study.

2.3.1. Social relations – social interaction, networks, and community ties

Social relations can be developed in a variety of ways, at varying scales and be influenced by many different factors. The type of social relations which are emphasized in the transformations literature also vary quite substantially. However, one concept that captures many of the social relations that are emphasized in the transformation literature is social cohesion. Ziervogel et al. (2016) define social cohesion as “ideas of human communion at all scales: bonds, community ties, wider social networks” (p. 9). Others, such as Nicole Dempsey, also use social cohesion in sustainability research (Dempsey 2008, Dempsey 2009, Dempsey et al. 2011). In her research Dempsey uses a definition of social cohesion as “the ongoing integration of the individual behaviours in a social setting” (Dempsey 2009, p. 322). Similar understandings of social cohesion are common within the field (e.g. Forrest & Kearns 2001, Lloyd et al. 2016, Łopaciuk-Gonczaryk 2019). In many ways, Dempsey’s definition is broader than Ziervogel et al.’s (2016) and highlights the importance of shared norms and values as well as social networks and interaction. In fact, Dempsey (2009) presents several

dimensions of social cohesion – see Box 1. Similar dimensions have been highlighted by others (e.g. Forrest & Kearns 2001). The definitions of social cohesion by both Ziervogel et al. (2016) and Dempsey (2009) illustrate the wide span of social relations that can be examined using social cohesion as an overarching theoretical framework.

Key aspects of social cohesion based on Dempsey (2009, p. 322):

- Social interaction
- Social network
- Sense of community
- Participation in organized activities
- Trust and reciprocity
- Perceived safety
- Sense of place attachment

Box 1: Key aspects of social cohesion

In this study I have therefore chosen to draw primarily upon academic work on social cohesion to create a framework that can be used for the analysis of social relations. At times, insights from related theoretical concepts, such as social capital will also be included because it provides useful insights about social networks. Due to the large number of aspects one can examine when studying social cohesion, I have chosen to focus on a few selected parameters. Originally, the choice fell on social networks and social interaction, because the transformation literature suggests these are particularly important in the creation of transformative capacity (Ziervogel et al. 2016, Amundsen et al. 2018). However, after doing my fieldwork I decided to expand the study of social relations by including place attachment, too, because the analysis of the data suggested this to be a relevant parameter as well. By choosing these aspects, I do not wish to invalidate other dimensions of social cohesion. However, limiting the analysis to some aspects allows me to focus on the aspects of social cohesion about which the data I gathered has most to say. Furthermore, it lets me study these phenomena more in depth. In the next sections, I will explain and discuss these three aspects more thoroughly.

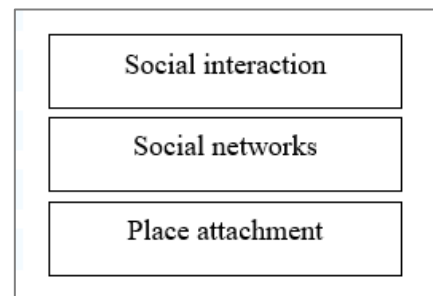


Figure 1: Conceptualization of social relations.

Social Interaction

Dempsey et al. (2011) describe social interaction as a cornerstone of social cohesion. They argue that “[w]ithout social interaction, people living in a given area can only be described as a group of individuals living separate lives, with little sense of community [...]” (Dempsey et al. 2011, p. 294). In other words, to be able to develop community, social cohesion, or a sense of “we” between people, there must be some sort of interaction taking place. The social ties that develop through social interaction are not always particularly strong. However, according

to Dempsey et al. (2011) they do not have to be either. In their view, even weak social ties are valuable to strengthen social cohesion. Research by Granovetter (1973) also illustrates why weak ties can play an important role for social cohesion. In his research, Granovetter (1973), found that weak ties often link together groups of people who otherwise were not interlinked at all. In that sense, weak ties have the capacity to bring together groups of people who otherwise would not. An example of a weak social tie would be the people you would recognize and greet in your neighbourhood, but not necessarily know much more than that (Dempsey et al. 2011).

However, others argue that some forms of interaction are better for strengthening social cohesion than others (Lloyd et al. 2016). According to Bannister and Kearns (in Lloyd et al. 2016, p. 349), social interaction and collective activity needs to be “meaningful and purposeful” for it to contribute positively to social cohesion. By this they mean that it is not enough to create public places where people randomly interact (for example by sitting in the same public park), but that such spaces for interaction and the interaction taking place must have a genuine purpose. Ziervogel et al. (2016, p. 9) emphasize a similar point when they argue that creating something or taking part in a project together is a more “palpable practice” to build social cohesion. In short, these authors argue that social interaction will not automatically have a large impact on social cohesion. However, if people come together to organize or create something the chances are higher that it will.

Although purposeful social interaction is beneficial to build strong communities, the importance of interaction through everyday practices must not be diminished. Forrest & Kearns in Lloyd et al. (2016, p.350) argue that our everyday routines are the “basic building-blocks of not only social cohesion but other key social outcomes such as inclusive communities [...]”. Furthermore, they argue that the importance of everyday practices has often been neglected in literature on sustainable transformations. The key point to take away is that when it comes to social interaction, it is important to examine everyday social interaction between people. Although some of these moments of interaction might seem small and irrelevant, everyday interaction between people could strengthen social cohesion. This point might appear somewhat different from the above point about the need for purposeful interaction. However, for this thesis, I rather regard them as complementary because everyday social interaction could also be purposeful.

Social networks and connections

The second dimension of social cohesion which I have chosen to emphasize is social networks and/or social connections. Strong social networks are argued to be a huge advantage in times of crisis and a key factor for strengthening transformative capacity (Ziervogel et al. 2016). The way I understand this dimension, is that it revolves around the networks and connections that exist between people, and between people and a range of institutions - both within a community and beyond that community.

A variety of actors are highlighted as significant participants of social networks for sustainability transformations. Ziervogel et al. (2016) highlight the importance of building networks between civil society, local businesses, and local governments (p. 14-16). Similar actors are highlighted by Amundsen et al. (2018), who also emphasize that building networks between municipalities, local businesses and civil society is fundamental for sustainable transformations. In addition to the networks between various actors, Amundsen et al. (2018) also point out the need to build networks between different parts of the municipality organization itself. In other words, there is a need for networks within important institutions and between those institutions and other actors within society.

Who participates and how participation is organized are suggested to be significant factors for the success of social networks. Firth et al. (2011, p. 565) argue that “it is important that the relationships developed in these situations are on a partnership basis”. This argument resonates well with insights from urban social sustainability and urban planning literature looking into public participation in urban planning processes. A key point is that every form of participation will not contribute to social sustainability and equity. For participation in urban planning processes to be truly inclusive, citizens and other key actors must be invited not only to take part in urban development processes, but to actively steer their direction (Kingston 2010). Similarly, Firth et al.’s (2011) point is that being part of the same network has little value unless the network is based on partnership.

Place attachment

The third and final aspect I will discuss in this section is place attachment. Developing a shared sense of place and place attachment is argued to be a key component of strong communities (Dempsey et al. 2011). Seeing place in terms of social relations does not intuitively make sense to everyone. However, geographic perspectives on place provide useful

insights into the social aspects of place and how place attachment and sense of place can be understood as social relations (Cresswell 2015).

In “Place: An introduction”, Tim Cresswell (2015) examines place as a theoretical concept. Early on, he presents a definition of place as “a meaningful location” (Cresswell 2015, p. 12). He then presents three aspects of such a meaningful location based on work by John Agnew. These are (1) location, (2) locale and (3) sense of place. The latter highlights the social dimension of place because it refers to place-making in terms of meaning-making and human attachment. Such place relations can be both personal and shared (Cresswell 2015, p. 14). In other words, sense of place often develops in relation to other people and through social relations.

A relational understanding of place is also elaborated by Doreen Massey. In an article published in 1991 (and later republished in the book *Space, Place, and Gender*), Massey argues that we need a more “global sense of place”. A key point by Massey is that places must be conceptualized in terms of social relations and that “each 'place' can be seen as a particular, unique, point of their intersection” (Massey 1991, p. 28). To Massey, place is therefore fundamentally a relational concept, made up of a wide variety of social relations. Both Massey’s relational understanding of place and Agnew’s emphasis on sense of place as a relational concept (in Cresswell 2015) therefore highlight the relevance of including place attachment in the study of social relations.

There are at least two ways of developing a sense of place attachment. First, one can develop place attachment through a sense of community. This means that the sense of place that is developed is linked to the people in a given place, and the relation one has to these (Stedman 2003). However, place attachment can also develop through the physical environment of a place. This includes both the built environment (Dempsey et al. 2011), and the physical landscape more generally, including environmental features (Stedman 2003, p. 673).

Dempsey et al. (2011) primarily emphasize developing a sense of place attachment as a positive concept. However, from a geographical perspective, sense of place and place more generally must also be considered as spaces for exclusion. Place representations are not objective and neutral. While some people might share a sense of place, others might feel excluded by the same place representation (Cresswell 2015). In other words, the same place representation or sense of place can be both inclusive (and cohesive) and exclusive – thereby leading to fragmentation. This highlights that social relations are highly geographical, even

though concepts such as social cohesion and social capital have their roots in sociology. Studying social relations with a geographical perspective therefore could further develop the understanding of social relations and how they relate to transformation processes.

Linking social relations and transformations

So far, this theory section has primarily served as a presentation of some forms of social relations and how they can be examined analytically. However, a comment on the relationship between social relations and transformation is also necessary. Why is it relevant to discuss social relations within a transformation framework?

Amundsen et al. (2018) highlight why social relations are key for transformation processes. Based on a systematic review of transformation literature they find two overarching factors that are important. These are:

“how the processes are linked to a common understanding and identity of the local community as sustainable, including a common vision and problem definition; and the extent to which the local governments are connected and engaged in networks aimed at transforming towards a low-emission society” (Amundsen et al. 2018, p. 25).

Both factors fundamentally have to do with social relations and highlight the importance of developing social relations to strengthen transformative capacity.

Others have pointed out that stronger social relations and alternative ways of interaction are important for sustainable transformations because they challenge dominant worldviews (which are considered to be problematic) (Ryan 2013, Berzonsky & Moser 2017). For example, Ryan (2013) explores how *commoning* practices and principles are transformative. She defines commoning as “the collective management and maintenance of some kind of resource” (Ryan 2013, p. 90). Key principles within commoning practices are the shared use of resources, collaboration, cooperation, and participation. An important comment by Ryan (2013) is that even practices that are not commoning per se can have transformative potential if they are built upon commoning principles. In short, commons perspectives highlight the way in which social relations can challenge dominant worldviews built on the assumption that humans are driven by self-interest and individual needs by showing how humans are capable of collective action for the common good (Ryan 2013). Berzonsky and Moser (2017) also emphasize the need to move from individualistic to community-based belief-systems. The commoning literature in many ways highlights how social relations and practices can

contribute to such shifts and therefore illustrates the importance of exploring social relations in sustainable transformations.

2.3.2. Human-nature connections

The second aspect of transformative capacity that will be part of the theoretical framework for this thesis, is human-nature connections (HNCs). Numerous authors argue that there currently is a disconnect between people and nature due to factors and processes such as urbanization, industrialization, or a western lifestyle (Amel et al. 2017, Clayton et al. 2017, Seppelt & Cumming 2016, Soga & Gaston 2016). They see this disconnect as a key part of the current socio-ecological crisis. Accordingly, there is a widespread call for reconnecting society to nature as a means of addressing sustainability issues (Turner et al. 2004, Folke et al. 2011, Andersson et al 2014, Ziervogel et al. 2016, Amel et al. 2017, Ives et al. 2018).

Nature, in this context, will be defined quite broadly. According to Uhlman et al. (2018) all kinds of plants, vegetation, agricultural production and wildlife can be defined as nature. In other words, nature experiences are not limited to particular spaces or “wild” nature, but can potentially be experienced everywhere, including urban areas (Seppelt & Cumming 2016, Amel et al. 2017). With such a broad definition of nature, urban agriculture and urban cultivation can also be considered as nature. One of the benefits of using a broad definition of nature is that it is easier to integrate nature experiences into humans’ daily lives (Clayton et al. 2017). If nature is defined in a narrow way and cannot be experienced in people’s daily life it “may leave people feeling that care for nature is neither their responsibility nor within their power” (Clayton et al. 2017, p. 649). In many ways, a broad definition of nature therefore makes it possible to relate nature to people’s everyday life. This, in turn may increase the awareness about the human-nature interaction and relation. Furthermore, a broad conceptualization of nature in itself signals that nature and society cannot (and should not) easily be separated – a matter which has been discussed extensively within the field of geography (e.g. Whatmore 2002). For these reasons, I will use a broad definition of nature in this thesis.

Although there is agreement about the need for stronger human-nature connections, the literature highlights a huge variety of HNCs (Collado et al. 2013, Restall & Conrad 2015, Ives et al. 2017, Ives et al. 2018). In the next section I will present different types of HNCs in line with a framework developed by Ives et al. (2018). Based on extensive engagement with HNC literature, Ives et al. (2018) present a framework which has five main categories: material,

experiential, cognitive, emotional and philosophical human-nature connections (figure 2). This framework is a useful tool for categorizing different human-nature connections and reflects much of the variation that exists in the literature. It therefore provides a useful theoretical framework for studying and analysing human-nature connections. The five categories will be presented separately, but they are often interlinked. I will elaborate on the relation between the different HNCs after each of them have been presented.

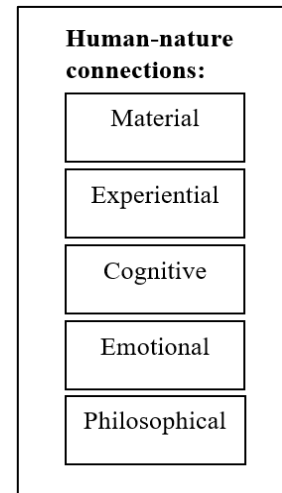


Figure 2: Types of human-nature connections based on work by Ives et al. (2018).

Material connection

To begin with, Ives et al. (2018) present the *material connection*. This HNC refers to the connection to natural resources, materials, and human consumption. It is about connecting human lifestyle and consumption to material flows and natural resources. The importance of this connection is emphasized by many authors. For example, Ziervogel et al. (2016, p. 8) argue that the connection to life-support systems has become more tenuous in an urbanized, industrial world because “[w]ater comes from a tap, our food from a supermarket, our waste gets flushed down the toilet [...]”. Similarly, Seppelt and Cumming argue that “our withdrawal from natural environments, coupled to our ability to integrate over spatial variation by sourcing food and other goods from a wide variety of markets, has allowed people to forget about the realities of ecosystem change and uncertainty” (2016, p. 1646). In other words, they both highlight the ways in which processes such as industrialization, urbanization and globalization can lead to a material disconnect between people and nature. Others, such as Folke et al. (2011, p. 732) also emphasize the importance of a material reconnection because they highlight the need to connect “human progress and economic growth [...] with the biosphere”. In short, the material connection to nature is about reconnecting our socio-economic systems and structures to the natural systems that support their existence.

Experiential connection

The second type of HNC presented in Ives et al. (2018) is the *experiential connection*. This kind of connection refers to “direct interaction with natural environments” (Ives et al. 2018, p. 1391) and usually refers to individual experiences of being in nature and of having direct contact with nature, for example through recreational activities. In general, there is a concern that people are interacting less with nature. This has been defined by some as the “extinction

of experience” – a concept put forward by Robert Pyle in the 1990s (Soga & Gaston 2016, p. 94). Many argue that the reason for the loss of nature interaction and experience is a loss of opportunity linked to the nature-poor characteristics of many urban areas where people increasingly live (Soga & Gaston 2016, Uhlman et al. 2018). Others, such as Amel et al. (2017) also link together experiences of nature and nature connectedness. The key argument in much of this literature is that there is a need for increased interaction with and experiences of nature.

There are some differences within the literature on experiential connections that are important to highlight. Ives et al. (2018) in many ways address this by emphasizing that the HNCs that develop through experiences with nature may vary substantially in quality. The quality of experiential connections can be divided between ‘contact’ with nature and ‘embodied interaction’ with nature. By contact with nature I mean that natural landscapes are part of people’s everyday life’s, e.g. by walking through an urban green area such as a park. A substantial amount of research has been done on the links between human well-being and such contact with nature (Jennings et al. 2012). However, others understand the term experiential connection to entail much more than simple contact. For example, Clayton et al. (2017, p. 646) refer to experience as “the process of getting knowledge or skills from doing, seeing or feeling things”. Subsequently they argue that it is “importantly different from mere “contact” with nature” (p. 646). In short, stronger experiential human-nature connections may be developed through direct interaction between people and nature. However, the form of interaction that takes place matters greatly and some forms of interaction might lead to stronger connections than others.

Cognitive connection

The third way to conceptualize HNCs is through *cognitive connections*. This is by Ives et al. (2018, p. 1391) described as having to do with “knowledge or awareness of the environment and attitudes/values towards nature”. There is a substantial body of research looking into cognitive connections to nature, many of whom examine the links between environmental values and attitudes and environmental behaviour (e.g. Collado et al. 2013, Steg 2016). A typical example of research on cognitive HNCs is Collado et al.’s (2013) paper examining children’s environmental attitudes and knowledge. Other examples of the cognitive reconnection to nature can be found in Martin et al. (2016), who write about ecological education and ecological knowledge in urban agriculture projects, and in Amel et al. (2017)

who explore the importance of values in relation to nature connectedness. In short, cognitive connections to nature comprise connections related to knowledge, values, and attitudes.

Emotional connection

The fourth type of human-nature connection is the *emotional connection*. Emotional nature connections have to do with “feelings of attachment to or empathy towards nature” (Ives et al. 2018, p. 1391). This type of connection is highlighted by several authors. For example, Amel et al. (2017), in addition to emphasizing cognitive connections, argue that modern society has “compromised an individual’s sense of kinship with nonhuman nature”. Sense of kinship arguably has to do with an emotional connection. Signs of emotional connections are also evident in Ziervogel et al.’s (2016) paper when they highlight the need for a “spiritual” reconnection which entails “a sense of awe, wonder, and reverence” (p.8). This example also points to an emotional connection where empathy towards nature is central. In other words, by examining if people express feelings, empathy, or attachment towards nature one can analyse if, and what kind of emotional human-nature connection people might have.

Philosophical connection

Finally, Ives et al. (2018) present a fifth type of HNC which they define as a *philosophical connection*. This they argue has to do with “perspective[s] and world view[s] on what nature is [...] and how humans ought to interact with it” (Ives et al. 2018, p. 1391). Ziervogel et al. (2016) are amongst the authors that explicitly address the need to change worldviews linked to the human-nature relation. They argue that “[a]t the core of this [nature] re-connecting is the move from a “dominion over” world view that views the earth as a resource to exploit for humanity’s exclusive benefit [...]” (Ziervogel et al. 2016, p. 8). De Witt et al. (2016) also address different worldviews and suggest that some views of nature are more beneficial than others for sustainable transformations. Others, such as Folke et al. (2011) do not explicitly write about worldview transformations but argue that there is a need to shift “from managing natural resources one by one and treating the environment as an externality to stewardship of interdependent social-ecological systems” (2011, p. 720). Here they clearly argue for changing the way society relates to, sees, and uses nature. It is important to note that not everybody agrees about what kind of philosophical human-nature connection is the “right” one to transform to. While Folke et al. (2011) advocate a perspective that puts humans as stewards of nature, others emphasize more egalitarian viewpoints of the human-nature connections (e.g. Ziervogel et al. 2016, Dryzek 2013).

Linking HNCs and transformation

The categorization of HNCs are useful because they can be used to analyse data, especially the degree to which human-nature connections can be argued to be transformative. In their paper, Ives et al. (2018) not only categorize the existing literature on human-nature connections, they also link their typology to Meadow's (1999) work on system leverage point which was presented in chapter 2.2. Ives et al. (2018) categorize the five types of HNCs on a spectrum from "outer" connections to "inner" connections and argue that this corresponds with Meadows (1999) spectrum of low to high system leverage points. Material connections are defined as an outer connection and correspond with low system leverage points. On the other side of the spectrum are philosophical connections which they argue correspond with high leverage points. Combining these two frameworks gives the opportunity to analyse how transformative a human-nature connection is. According to this line of thought, addressing low leverage points (such as material connections) might result in some changes, while addressing high system leverage points (such as philosophical connections) could lead to large-scale transformations.

Although the categorization of connections serves as a useful tool for analysis, it is important to be bear in mind that different forms of human-nature connection usually interact (Ives et al. 2018). Often, the literature addresses more than one type of human-nature connection in the same study and looks at the relationship between them. Ziervogel et al. (2016) is one example. In their paper both material, emotional and philosophical connections are emphasized. Furthermore, they see them as interlinked. Another example which also combines several of the categories is Clayton et al. (2017), where both experimental and cognitive connections are discussed. Abson et al. (2017) also emphasize the interlinkages between various forms of HNCs. They argue that

“[h]ow people perceive, value and interact with the natural world fundamentally shapes the goals and paradigms underpinning many systems of interest. Although not always immediately apparent, the functioning of a system is influenced by the degree to which humanity's reliance on the natural world is acknowledged, and the extent to which a close relationship with the natural world is identified as essential to a 'good life'”(Abson et al. 2017, p.34).

In many ways, this excerpt highlights the interrelatedness between different forms of human-nature connections. Abson et al. (2017) highlight both interaction with nature (experiential

connection), how one values nature (cognitive connections) and humanity's reliance on the natural world (material connections) as key aspects of human-nature connections.

Furthermore, they claim that all these aspects influence high system leverage points (goals and paradigms). In other words, HNCs which according to Ives et al. (2018) correlate with low system leverage points can still have significance by affecting other forms of HNCs.

Therefore, it is important to see the types of human-nature connection in relation to one another although they might be separated analytically.

2.4. Chapter summary

In this chapter, I have presented various entry points for responding to climate change and the broader socio-ecological crisis humanity is part of today. I have shown how these entry points have developed from mitigation, to adaptation, to transformation. It is in light of calls for deliberate transformation towards a thriving, yet ecologically sustainable society, that the concept of transformative capacity must be understood. In this study two key aspects of transformative capacity are discussed: (1) social relations and (2) human-nature connections. Strengthening various social relations and human-nature connections is argued to be fundamental for building transformative capacity.

A theoretical framework that can be used for the analysis of empirical material has been developed based on the two dimensions. The conceptualization of social relations is developed based on research on social cohesion, social interaction, social networks and sense of place. The conceptualization of human-nature connections is based on a framework developed by Ives et al. (2018) and contains five dimensions of HNCs: material, experiential, cognitive, emotional, and philosophical. Various forms of HNCs are argued to have varied transformative potential. However, these dimensions are interlinked and interrelated. Therefore, the transformative potential of different HNCs is ultimately not a straightforward matter.

Chapter 3 – Urban edible landscapes

The aim of this chapter is to explain why the collaborative production and use of urban edible landscapes is a relevant phenomenon to study using the transformation framework developed

in chapter 2, and how this phenomenon is defined. It is also a theoretically informed chapter. A presentation of the empirical units that make up the edible landscapes in this study will follow later, in chapter 5. The chapter is divided into two main parts. First, I will discuss why the collaborative use and production of urban edible landscapes is relevant for examining transformative capacity. This section builds upon research about urban sustainability transformations and urban agriculture. In the second part of the chapter, I will go more into depth about how I define these spaces. Three elements will be discussed in this section; (edible) landscapes, the urban, and what the collective use and production refers to in this context.

3.1. The relevance of studying urban edible landscapes

Cities have increasingly been recognized and emphasized as key spaces and actors for sustainability interventions (Revi et al. 2014). There are several reasons for this. First, a majority of people live in cities today (UN 2018). Accordingly, cities (and their residents) have been identified both as a fundamental cause of current socio-ecological problems, but also as spaces where many people will experience the consequences of socio-ecological problems and therefore seek to find solutions to these challenges (Hall & Barrett 2012, ch. 13). This recognition has made sustainability interventions in cities highly relevant both as objects of research and for policy makers. Furthermore, certain characteristics of the urban have been emphasized as root causes of our socio-ecological crisis. Here I do not refer to the amount of CO₂ emissions or the ecological footprint of cities, but rather to the fact that cities are argued to have an alienating potential both between people and between people and nature (Ziervogel et al. 2016, Amel et al. 2017). Considering that stronger social relations and human-nature connections are key for building transformative capacity, urban spaces are arguably important spaces for addressing this issue.

Cities have also been emphasized as instrumental spaces for sustainability transformations because urban sustainability transformations are suggested to work as potential catalysts for societal transformations. Nevens et al. (2013, p. 112) argue that

“while municipalities were once viewed as providers of services [...], a shift has occurred in which the municipalities act as leaders on sustainability issues; and hence the urban sphere is increasingly considered as a potentially effective leverage point for action with regard to major challenges such as climate change”.

The key point is that the urban sphere is not only perceived as important for sustainability transformations because it is the loci of socio-ecological issues, but also because there is a belief that the solutions and transformative processes that are initiated in the urban sphere can be scaled up (Amundsen et al. 2018, Bouzarovski & Haarstad 2018). In that way, urban sustainability transformation could potentially work as a catalyst for large-scale societal transformation.

The above arguments mostly address why the urban sphere/scale is interesting from a sustainable transformations' perspective. There are however also reasons for looking specifically at urban *edible landscapes*. A growing number of cities are developing edible landscapes in urban environments through targeted policy strategies. In other words, it is a current policy trend which is worth examining. Urban agriculture (UA) scholarship has proliferated in recent years and many have also examined these spaces through sustainability perspectives. When linked to sustainability research, urban agriculture has often been examined in light of social sustainability issues (Schmelzkopf 2002, Müller 2012, Thompson 2012, Rogge et al. 2018), resilience research (Colding & Barthel 2013) or a combination of social, ecological and occasionally economic dimensions (McClintock 2010, Specht et al. 2014, Martin et al. 2016)

However, as discussed earlier there are now increasingly calls for sustainability *transformations*. Some UA scholarship addresses the transformative potential of these spaces (e.g. Hawkes & Acott, 2013 and Galt et al. 2014). While the transformative potential of UA has been indicated in such research, it has rarely been examined using a framework based on transformative capacity. Much of the UA research presented earlier suggests that UA can have numerous social and environmental benefits. This indicates that UA spaces could be relevant spaces for examining transformative capacity, because social and environmental relations are key dimensions of transformative capacity. Accordingly, examining this policy trend in light of such a framework could provide new insights about the relevance and significance of urban edible landscapes.

3.2. Defining the case – collective use and production of urban edible landscapes

In the above section, I argue that the collective use and production of urban edible landscapes is a relevant case study for examining transformative capacity. Most of this justification is based on insights from research on urban agriculture. In this section I will discuss why I use

the term urban edible landscapes rather than urban agriculture to describe the phenomenon I study. Furthermore, I will go into detail about how urban edible landscapes are defined and conceptualized in this thesis. Having a clear understanding of what the collective use and production of urban edible landscapes refers to has implications for what kind of spaces are relevant for empirical examination and accordingly also influenced my unit selection. Details about the unit selection can be found in methods chapter 4.3.1. In this section, the goal is rather to present an analytical conceptualization of urban edible landscapes.

Food production and spaces for cultivation in cities are usually defined as urban agriculture. It can refer to phenomena such as community gardening, rooftop gardening, guerrilla gardening, vertical farming, and indoor farming (Firth et al. 2011, Thompson 2012, Galt et al. 2014, Specht et al. 2014). Edible landscapes, which is a key concept in this thesis, is a term rarely used in UA literature examining such phenomena. An exception is Thompson (2012), who uses the term to describe the spaces that are used for public food cultivation in the English town Todmorden. Thompson (2012) describes edible landscapes as the spaces that are used for growing foods throughout Todmorden, such as small vegetable beds and fruit trees, as well as bigger areas with vegetable beds for example on school grounds. In short, edible landscapes refer to sites of urban agriculture in a given place (e.g. a town, a city or a neighbourhood), and can consist of different forms of urban agricultural (e.g. community gardens, fruit trees, pop-up vegetable beds).

In that sense, urban edible landscapes are part of the material or physical cityscape and are agricultural spaces that can be used, seen and experienced by citizens. Conceptualizing landscapes as experienced and interactive can be disputed. For example, Cresswell (2015, p. 18) argues that “we do not live in landscapes – we look at them”. Such a conceptualization of landscape is somewhat conflicting with the one used in this thesis. In many ways, landscapes can be thought of as both experienced and observed (Malpas 2011, ch. 1), so none of the conceptualizations are necessarily wrong. In this thesis, I will however emphasize landscapes as experienced. This is useful because it highlights edible landscapes as material spaces that people can interact with and *be* in. Another benefit of conceptualizing urban agricultural spaces as landscapes is that it makes urban agriculture more explicitly a geographical phenomenon. While many geographers have done research on urban agriculture, it has rarely been theorized in this way. As a core concept within the discipline, the vast literature that theorizes landscape could therefore enrich our understanding of the processes taking place in urban agriculture.

While the above section explains the use of the term edible landscapes, the aim of this thesis is to examine *urban* edible landscapes. The urban dimension of the case conceptualization therefore deserves some concretization. In this thesis the urban is defined as spaces within administrative city boundaries. In other words, the urban is conceptualized as the area and population that lives within an administrative-political boundary defined as a city (Seto et al. 2014, p. 930). In terms of what cities are relevant to examine, I build upon Robinson's (2008) argument about the value of examining "ordinary" cities in urban research. This suggests that small cities, which have often been overlooked or considered irrelevant in urban research, are significant sites for urban theory development and empirical examination.

Admittedly, defining the urban in terms of administrative-political boundaries is a rather limited perspective of the urban. Current understandings of the urban go far beyond borders of administrative-political boundaries, some even go as far as speaking of planetary urbanization to emphasize that urban spaces can be found everywhere and are not limited to cities (Brenner & Schmid 2011). I do not wish to discredit the validity of other ways of defining the urban. In fact, I agree with Brenner & Schmid (2011) that urbanization processes can be witnessed all over the world and that urban research therefore should examine other analytical entities than cities. However, in relation to transformative capacity, and more specifically its two key dimensions – human-nature connections and social relations – limiting the study to cities as analytical units is beneficial. As I have already pointed to earlier, cities have been argued to have characteristics that have negative effects on both human-nature connections and social relations (Ziervogel et al. 2016, Amel et al. 2017). Accordingly, it makes sense to study transformative capacity within these spaces to explore whether certain practices can counteract these negative effects.

Finally, the aim of this study is not to examine urban edible landscapes generally, but more specifically *the collective use and production of them*. The structure and organization of urban edible landscapes can vary significantly. This influences which actors are involved and how they are involved at various stages of the production of urban edible landscapes. In the earlier mentioned case of Todmorden, the initiative started out as a bottom-up guerrilla gardening initiative, but later many local actors became involved, including the municipality (Thompson 2012). In Andernach, which is one of the empirical units examined in this study, the municipality was involved in, and indeed responsible for, the development of edible landscapes from the beginning. Accordingly, edible landscapes can be organized on different levels and often involve actors on multiple institutional scales.

The goal of this study is to examine some of the variety of actors that are involved in the production of urban edible landscapes. This includes actors that use, cultivate, or are somehow involved in the planning and organizational stages of urban edible landscapes. UA research already illustrates some of the variety of actors involved in the production of such landscapes. Some UA research looks into individual experiences of urban cultivation (e.g. Delind 2006, Hawkes & Acott 2013), while others look at these spaces and processes from a policy perspective at numerous scales, involving a multitude of actors and institutions (e.g. Schmelzkopf 2002, Mendes 2008). The structural variety in the production of edible landscapes, both in terms of *who* is involved and *how* they are involved in such processes suggest that examining several empirical units might better capture the processes taking place in the collective use and production of urban edible landscapes. Therefore, this study examines two different units with quite differing structure and organization. The two units will be presented more thoroughly in chapter 5.

In sum, when I refer to the “collective use and production of urban edible landscapes” in this thesis I refer to the processes and actors that are involved in developing, maintaining, using or somehow interacting with edible landscapes in cities. Edible landscapes are part of the material cityscape and can range from vegetable beds, to fruit trees and berry bushes. Actors involved can vary from those who cultivate the edible landscapes, to those who observe or otherwise interact with them, but also to those who only engage with these landscapes through planning or organizational involvement.

Chapter 4 – Methodology

The purpose of this chapter is threefold – to describe the research process, to justify the methodological choices that have been made, and to reflect on the implications those choices have had for the findings of the study. The chapter first discusses qualitative methods and the use of case-study research. Following this the research process is described thoroughly, including discussion around unit selection, participant selection, data gathering methods, and data processing using thematic analysis. A short reflection related to the impacts of the coronavirus outbreak is also included. To conclude the chapter, I reflect on the limitations of the methods used in the study, ethical considerations that have been made and the rigour of the research strategy.

4.1. Qualitative research

Developing the research design and choosing the methodological approach for a research project should always be done based on the research question and research aim (Bradshaw & Stratford 2010, p. 71). I have chosen to use a qualitative research approach. Qualitative research is well-suited when the aim of the research is to look into social structures and individual experiences (Winchester & Rofe 2010, p.5). In this study the main objective is to examine individual experiences. Looking at individual experiences is emphasized as a good strategy for examining transformative capacity by Ziervogel et al. (2016). In their paper, they suggest that transformative capacity should be measured by examining “interior validity claims” (asking how one feels) and “exterior validity claims” (what one actually does)” (Ziervogel et al. 2016, p.11). In other words, they emphasize the importance of studying individual experiences by examining individuals’ subjective feelings, perspectives, and actions.

However, social structures and individual experiences are often interlinked. By overemphasising individual experiences there is a risk of overlooking how such experiences and actions are embedded in social structures. Social structures can both enable and constrain an individual’s free will and ability to act (Winchester & Rofe 2010, p.6). The point made by Winchester and Rofe (2010) is that individual experiences are shaped by and shape social structures. Accordingly, it is worth considering them in relation to individual experiences. Therefore, I will also contextualize and discuss the individual experiences in relation to social structures.

4.2. Case studies

There are many ways of doing qualitative research. For this study, I have chosen to use a case study approach. There is wide agreement, that case studies are suitable for examining a phenomenon *in-depth* (Gerring 2007, Baxter, 2010, Ragin & Amoroso 2011, Schwandt & Gates 2017). In order to study the potential for strengthening transformative capacity through urban edible landscapes I had to examine such spaces thoroughly. I wanted to examine what activities take place, how people relate to such spaces and how they relate to other actors involved. By doing a case study, I had the opportunity to examine all these processes in-depth and this was key to collect good data.

Within case study research there is a variety of approaches one can take. I have chosen to do a case study based on the examination of two empirical units. In this context, it is important to make a clear distinction between “the phenomenon of interest” or the case, and the specific unit(s) under study (Schwandt & Gates 2017, p. 342). While some define case studies as single-unit studies (Gerring 2004, p. 342), others emphasize that one can examine several units in a qualitative case study (Baxter 2010, p.81, Ragin & Amoroso 2011, p. 51). The key, when using several units, is to define *what these multiple units are a case of*. In this research project the units are a case of the collective use and production of urban edible landscapes.

Using multiple units in a case study has some benefits. Ragin and Amoroso (2011, p.117) argue that “examining multiple instances of the same thing [...] makes it possible to deepen and enrich a representation [...]”. In other words, they argue that studying several units can strengthen the understanding of the phenomenon under study. As discussed in chapter 3, urban edible landscapes are structured and organized in a variety of ways and often include actors and networks on various scales. By examining two units that represent some of this variety (see chapter 5 for a more detailed description of the units), I had the opportunity to get a richer understanding of urban edible landscapes as a phenomenon. The goal has therefore been to study these units *through* each other to get a more in-depth understanding of urban edible landscapes as a phenomenon.

4.3. The research process

4.3.1. Unit selection

An important aspect of case study research is the process of finding and selecting units to examine. This is often referred to as case selection in the literature (e.g. George & Bennett 2005, p. 83). However, based on my earlier argument that case and unit have to be separated, I consider what is commonly defined as case selection to be unit selection. Choosing Bertramjordet and Andernach as the two units of study was both theoretically and practically informed.

Theoretically, the units had to reflect the conceptualization of the case presented in chapter 3. In short, the units needed to contain edible landscapes and the edible landscapes had to be in cities. Furthermore, since social relations were such an important part of the analytical framework, I looked for units that had community or collaborative aspects to them. In other words, there had to be some interaction or collaboration taking place in the use and/or production of the edible landscapes. Finally, the collective use and production of urban edible

landscapes involves actors on different scales. To get a rich understanding of the processes taking place in the production of urban edible landscapes, I therefore considered it beneficial to examine units that had some difference in structure and organization. The projects in Bertramjordet and Andernach represent some of this variety because they are organized on rather different scales. While Bertramjordet is primarily a local neighbourhood initiative (financially supported by the municipality), the initiative in Andernach is a municipal initiative with involvement from a range of local actors (see chapter 5 for more details). Therefore, choosing these two units was useful because it provided rich and complementary data about the processes taking place in urban edible landscapes.

In addition to the theoretically informed criteria, some practicalities also influenced which units I chose to examine. I decided to limit the selection to units in Norway or Germany, because I am a native speaker in Norwegian and German and know these cultures well. As I was planning to use interviews as my main method for data collection, communication between participants and myself was important. Language and cultural understanding are key aspects for successful communication (Dunn 2010, p. 115). Therefore, I decided to examine units in a context that was familiar to me. I also knew from going through literature on urban agriculture, that there are many projects like this in Germany and in Norway (at least in Oslo). In other words, limiting my fieldwork to the German and Norwegian context would still provide me with a multitude of possible units to look at.

I did some preliminary research on several projects in Germany and Oslo to examine if they could be suitable for the study. This included Losæter and Bertramjordet in Oslo, as well as Prinzessingärten, Rosa Rose and Andernach in Germany. Some of them did not quite fit within the case conceptualization and some were hard to get in contact with. In the end, I went on preliminary field trips to Bertramjordet, Andernach and Rosa Rose in Berlin. However, after the preliminary field trip, I decided to leave Rosa Rose out of the study as it proved difficult to recruit interviewees there. Furthermore, it became clear to me that studying three units in-depth would not be possible due to the limited scope of the thesis. Finally, I considered the two projects in Andernach and Bertramjordet to be relevant and complementary units to study. Accordingly, “only” having two units would still provide rich and relevant data for the study.

4.3.2. Participant selection

In both Andernach and Bertramjordet, I had one key informant to begin with. In Andernach, it was the head of office for urban planning, and in Bertramjordet it was the project initiator. During my preliminary field trip to Andernach, I had an interview with the head of the office for urban planning, Lutz Kosack, who was also responsible for the edible city project. During the interview, I received contact information for other people and groups that were relevant to speak with. In other words, I used the “snowball” method to recruit further informants (Johannesen et al. 2010). This means that a key informant makes suggestions about other relevant people to contact. On my second trip to Andernach I had three more interviews. One with a school caretaker who was responsible for one of the school gardens in Andernach, and one with members of a volunteer group that were part of the edible city network. Both were recruited based on suggestions by Kosack. Finally, I also spoke with three “regular” citizens of Andernach, in the sense that they did not have a specific role in the edible city project. Two of them are long-time family friends, so I knew them from before. The third one was a friend of theirs who randomly stopped by when we spoke and joined the conversation. The informants were chosen because they were connected to the project in various ways. I considered this to be valuable because it could provide a broader picture of how people related to the edible landscapes in Andernach.

In Bertramjordet, I met with the project initiator for an informal chat and received contact information for all participants in the project from him. Before I made any contact with the participants, he informed all of them that I was interested in doing research on the project. If anyone did not want to be contacted by me, they had a chance to let him know. After this, I sent an email to all participants, asking if they were interested in taking part in the study. Three people were recruited as informants through this email correspondence. In addition to these three, the project initiator also became an informant. Finally, a fifth informant was recruited after I asked directly. I had met her once while visiting Bertramjordet and considered her to be a valuable informant because she was a long-time resident and active in the project. A full list of informants, both from Andernach and Bertramjordet, with key information about data collection methods can be found in appendix 1.

4.3.3. Data collection

The main data collection method for the study was interviewing. Interviewing people gives the opportunity to ask about people’s perspectives, feelings, and experiences (Patton 2002, p. 341). These are things that cannot easily be observed and necessarily must be asked about.

Most of the interviews were semi-structured and sedentary. I had an interview guide with questions and topics I wished to discuss during those interviews (see appendix 2). The benefit of using such an approach is that one can ensure that the same topics are covered in all interviews, while there is room for spontaneous follow-up questions and flexibility in how to word questions. It also makes the interview more conversational and gives it a more natural flow (Patton 2002, p. 343).

In addition to semi-structured interviews, I had other interviews which are better categorized as informal conversations (Patton 2002, p 342). In most cases, this had to do with choosing the right style of interviewing for the right setting. For example, I met with several of the informants from Bertramjordet in the community garden either prior to or after doing semi-structured interviews. In that way, they could show me their garden patches and green houses. During those meetings, having a natural conversational style was the most appropriate data collection method. Thereby the informants could freely talk to me about what they wanted. In Andernach I also met with some of the informants in the edible landscapes and let them tell me freely about their relation to these places.

In many ways, these meetings can be described as go-along interviews (Kusenbach 2003) or *in situ* interviews (Hawkes & Acott 2013). One key benefit of such an approach is that informants are often prompted by their surroundings and thereby the data collection becomes richer (Evans & Jones 2011, p.849). One also avoids the separation of informants from the environment which is the topic of the conversation. Kusenbach (2003, p. 462) argues that the separation between interviewee and the environment that is the topic of the conversation is one of the biggest disadvantages of traditional sedentary interviews. I observed on several occasions that informants were prompted by their surroundings and believe that some of the data I gathered during these *in situ* interviews would not have been collected had I only done sedentary semi-structured interviews.

I also decided to use supplementary data collection methods in addition to the interviews. Using multiple sources is one type of triangulation and can therefore strengthen the rigour of qualitative research (Bradshaw & Stratford 2010, p. 77). In Bertramjordet, I asked the informants to write notes about their activities in the project over the course of a few months, approximately from June to August. I let the participants decide how they wanted to take these notes, based on a few suggestions from me. Most participants opted to receive an email

from me approximately every two weeks with some suggested questions. One participant received a notebook in which to write over the course of these months, before handing it in to me.

There were several benefits of combing the interviews with these notes. To begin with, it was a great way of gathering data about what the participants were doing in the project on a regular basis. While interviews are a good method to collect data about someone's perspectives and thoughts, this sort of "diary" let me collect data about practical routines without being present as a participant observer. The combination of these data collection methods was a good way of collecting data both about how people feel and how they act (exterior and interior validity claims). I also used these updates to prepare for the semi-structured interviews which were done later in the field work period. In that way the questions I asked could be more specific.

In the Andernach project I used other sources of data for triangulation because the structure and organization of the project made it unnatural to ask the informants to write notes about their activities. In Bertramjordet all informants continuously cultivated and maintained the community garden. In Andernach, however, the informants did not necessarily interact with the edible landscapes in the same way. Some were more engaged in planning and coordinating the project. It therefore made little sense to ask for continuous updates. However, since the project in Andernach has been going on for about 10 years, there is some material available about the project. Some of it is public, other things I received directly from my informants. This includes both articles and policy documents. By using these sources in addition to the interviews, I got a richer understanding of the project.

I also collected some data later in the process after I had finished my main field work. In the beginning of November 2019, the project in Bertramjordet had a summary meeting where all participants were invited. I also received an invitation to come. In this meeting I took the role as a participant observer. I mostly listened to what the project participants had to say and let them discuss the issues they wanted to – in other words, I observed. While observing I took some key notes, but I tried to not make this disruptive for the meeting. After the meeting I used the notes I had taken to write a more detailed text about what I had observed and experienced during the meeting. This is a common and useful way of collecting data while doing participant observation (Johannessen et al. 2010, p. 131-132).

During the meeting, I was also invited to share some of my experiences from the research project. In that way I moved from being an observer to becoming a more active participant in the meeting. At this point in the research process I had finished transcribing the interviews I had done earlier but had not yet begun a thorough data analysis. I therefore made sure to explain to those attending the meeting that the thoughts I shared were based on preliminary findings and my interpretation of them at the time.

There were several benefits of taking part in the meeting. To begin with, there were many people there whom I had not met yet. Listening to their thoughts about the project therefore complimented the data I had already gathered and gave me a fuller picture of how project participants had experienced their participation. Furthermore, I had the opportunity to ask some general questions during the meeting which also complimented my existing data material. Finally, being asked to present some of my preliminary findings gave me the opportunity to give something back to my informants. In that way they could get some information about how the research process had gone without having to read the whole thesis. It also enabled me to explain my findings in a non-academic setting, allowing me to use plainer language.

Even later in the research process, while doing my data analysis, I realized there were some questions I had not gotten a satisfactory answer to during one of the informal interviews I held in Andernach. I therefore decided to send some follow-up questions by email. This is what Dunn (2016, p. 178) describes as computer-mediated communication (CMC). The benefit of doing CMC interviewing in this case was cost savings – both financial, in terms of time, and carbon footprints. There are some challenges with CMC interviewing in relation to visual anonymity, paralinguistic clues, and lack of experiencing the social context which the interviewee is part of (Dunn 2016, p. 181-182). However, since I had already met this interviewee earlier, those challenges were less applicable. I therefore considered it to be unproblematic to use CMC for follow up questions in this context.

4.3.4. Limitations and reflections about the data collection

Every data collection has some limitations. Social research based on interviews and participant observation is intersubjective. Consequently, the researcher does not have full

control of the situation (Cloke et al. 2004). When interacting with other people during field work, unexpected situations might arise. Cloke et al. (2004, p. 152) highlight that “the idea of the ‘textbook’ interview can be misleading” and that rather than keeping to a strict plan, a social researcher must show some flexibility in the research process. Still, it is important to acknowledge that the way data is collected can impact the data, especially when you abandon interview recommendations. In what follows, I will discuss some of the situations that arose during field work that impacted the data collection.

One problem I had anticipated was that the informants at Bertramjordet who were supposed to write notes over the course of the summer would not do this systematically. This is a well-known concern, especially when using CMC and there are longer gaps between communication (Dunn 2016, p. 183). Since many of my informants had a busy family life and it was the holiday season, I did not expect them to prioritize spending that much time writing about their experiences and answering my emails. The original plan was to get answers every two weeks, but responses came quite rarely.

Since I had anticipated this, I made sure that my research was not dependent on receiving these responses systematically. As already mentioned, the semi-structured interviews have been the main data collection method, not these updates. Of course, the research would have benefitted from receiving these updates regularly. With relatively few responses, I did not get a clear picture of the everyday practices in the project. However, the updates were still useful as a way of getting to know my informants before the interviews, and as a tool for developing questions for the interviews. In the end, it was useful to receive these updates, although they were used differently than first planned.

Other challenges related to the data collection arose more directly during field work. One was related to the interview setting. I often let informants suggest where and when to meet. As a result, some of the interviews were held in peoples’ homes while other family members and children were present. In another instance, an interview was held in a shared office with other people present. Yet another interview turned into a group interview in a busy café. Letting the participants decide where to meet and having other people present is by no means uncommon (Cloke et al. 2004, p. 157). However, the presence of others can quite clearly have an impact on the interview setting, thereby altering “the interpersonal dynamics of the interview” (Cloke et al. 2004, p. 157).

The changing dynamics in some of the interviews impacted the data material. Sometimes the interviews were disrupted by others or by phone calls. While they were small disruptions, they stopped the flow in the interview and the informants had to gather their thoughts repeatedly to be able to get back to the topic that was discussed. When there was a lot going on, I noticed that the answers from the informants often became shorter. I therefore expect that some depth in the data got lost due to busy environments. Ideally, the interview setting would have been quiet, thereby giving the informants room to reflect clearly. However, as mentioned before, social research cannot always live up to the best-practice recommendations. I therefore considered it better to do the interviews in less than perfect surroundings than not to do them at all.

On one occasion, I ended up doing a small group interview in a busy café instead of the single person interview I had planned. This changed the dynamics of the interview profoundly. In face of this changing context, I also had to change my approach to the interview. My recorder would not be able to catch everything that was said in a busy café environment with three interviewees. I therefore had to turn to note taking instead. Extensive notetaking can have negative effects on rapport during interviews because it reduces the attention one can give to the interviewee(s) (Philo et al. 2011, p. 152). To be able to naturally follow the conversation, I therefore decided to keep the notetaking to a minimum by writing key words and a few quotes. After the interview was done, I sat down with the notes and wrote down everything I remembered from the conversation. While not planned, this method for data collection was familiar to me. Accordingly, the fact that I had familiarized myself with various data collection methods before doing fieldwork, helped me to adjust in face of unforeseen changes to the interview setting. Although this data collection method most likely provided different data than planned, it still gave me relevant data.

4.4. Data processing and analysis

4.4.1. Data transcription

To use the collected data material, it must be processed. Since I collected most of my data through verbal interviews that were recorded and informal conversations from which I had notes, it was natural to transcribe all my data. This means that I produced a *written*

reproduction of the interviews and conversations (Dunn 2016, p. 170). I could reproduce close to a verbatim record of the interviews that were recorded. On the other hand, the conversations from which I only had notes were reproduced as best as I could remember. What was common for both transcription processes, was that I did them as soon as possible after the interview. One of the benefits of transcribing your data material is that it “enable[s] you to engage with the data again” (Dunn 2016, p. 170). By continuously transcribing my data I had the opportunity to do preliminary analysis of the data as well as to reflect upon the interview situation. Thereby, I could adjust my approach to interviews continuously, rephrase questions or add some questions that I had not considered before.

Another benefit of transcribing shortly after the interviews were held, was that I could remember them much better. This was especially important when I did not have recordings. The goal was that the transcriptions should contain some direct quotes from the conversation as well as summaries of what was said. It was much easier to remember details from the conversation and give an accurate picture of the conversation that had taken place when writing the transcript straight after the interviews had taken place. Even the recorded interviews were much easier to transcribe shortly after the interviews. When the recording was unclear, I could usually remember what had been said. In other words, transcribing the interviews shortly after they were held heightened the quality of the transcripts and increased the detail and richness of them.

Some researchers send interview transcripts to their informants for vetting. While there are many benefits of doing this, especially in terms of creating an inclusive research processes, I had originally not planned to do so. However, on one occasion I decided to send the interview transcript to the informants after the interview for vetting. Participant checking gives the informants the opportunity to tell me if my interpretation of what was being said differs from theirs (Dunn 2016, p. 173). As mentioned earlier, I had to change interview format in one of the interviews in Andernach and do it without a recording. To secure the quality of the data from this interview, despite the somewhat challenging interview setting, I therefore I sent the transcript for vetting.

While I did not do the same with the other interview transcripts, the meeting at Bertramjordet in late November where I presented my preliminary findings, in many ways provided an opportunity to validate the research material and my interpretation of it. The attendees had the opportunity to respond to the findings I presented. In that way, they could clarify if there were

some differences between their and my interpretation of the experience of taking part in the project.

4.4.2. Data analysis

I chose to do a thematic analysis of the data material. Thematic analysis can be used “for identifying, analysing, and reporting patterns (themes) within data” (Braun & Clarke 2008, p.79). The key point is that it lets you look across data sets to find what Braun & Clarke (2008, p. 86) describe as “patterns of meaning”. Thematic analysis was therefore useful for my study because it was a helpful tool to identify patterns across the data sets in terms of experiences and structures that emerged in the two projects I examined. While themes are often described as emerging from the data itself, thematic analysis provides a way of deliberately developing themes from the data. Importantly, the themes do not emerge by themselves, they are developed through the interpretation of the researcher (Braun & Clarke 2008). In the following sections, I will describe how I used thematic analysis to categorize and interpret my data.

Thematic analysis can be either inductive (data-driven) or deductive (theory driven) (Braun & Clarke 2008). I have combined these two approaches, but the main part of the analysis was deductive. This means that I had a theoretical approach in mind when I started analysing the data, and that I was looking for some pre-determined themes within the data sets. These themes were based on the research question(s) and theoretical framework. In other words, I was looking through my data sets with the intention of identifying themes related to transformative capacity. The overarching themes I was looking for were human-nature connections and social relations. This part of the analysis was therefore clearly theoretically driven or *deductive*.

However, nature reconnection and social relations are two very broad themes. I therefore wanted to divide them into several sub-themes. In the second stage of the analysis, I used a combination of a deductive and an inductive approach to develop sub-themes. There were some sub-themes I had decided to look for specifically in the data material when I started the second stage of the analysis. For example, I had decided to look for patterns of social interaction and social networks. While analysing the data, I however also took notice of other aspects within the data which I thought were interesting, but not directly linked to the predetermined themes. This way of identifying themes therefore had a more inductive

character. It was through this process I identified place attachment as a key theme and decided to include it in the study of social relations.

The identification of themes within the data was done through coding and analytical memo writing, inspired by Braun & Clark's (2008) guide for doing thematic analysis³. Although I will present them systematically and as clear-cut phases, the process was flexible.

The first phase of a thematic analysis is "familiarizing yourself with your data" (Braun & Clarke 2008, p. 87). Since I transcribed all my interviews myself, I got to know my data very well through this process. While writing my transcriptions, I also wrote initial thoughts and ideas I had about the content – also called memos. Memos can be described as "a place to dump your brain" (Saldaña 2009, p. 41) or as "sites of conversation with ourselves about our data" (Clarke in Saldaña 2009, p.41). In other words, writing memos gave me the opportunity to think and reflect about the data material. Writing memos was also a useful preparation for the second step of the analysis, where I read through my transcripts a second time with the intention of generating initial codes. The thoughts I had developed through memo writing helped me identify relevant sections in the data material.

In the initial coding phase I mainly used descriptive codes and examined each data set separately. However, since I had determined that the two overarching themes in the analysis would be social relations and human-nature connections, I added those two as analytical codes as well. Until this part of the analysis, I had looked at each data set separately. However, based on the main themes, I made new files where I put together data material from separate data sets. Anything related to human-nature connections was sorted in one document and anything related to social relations was put in another file. The data material that was interesting but did not fit with any of the two predetermined themes was sorted in a third file.

After dividing my data into those three categories, I moved on to phase three of the thematic analysis which is to search for themes (Braun & Clarke 2008). Having the data for each of the main themes in separate files made this process easier. I looked for commonalities between the descriptive codes from phase two and started categorizing them into sub-themes. This step is very close to step four, which is to review themes (Braun & Clark 2008). The process of searching for and categorizing data into sub-themes was characterized by constant revision and redefinition of themes, and how they related to one another. Throughout the process I also

³ Braun & Clarke's (2008) work is within psychological research. However, their paper gives a thorough and useful guide for thematic analysis which is also relevant within human geography.

used memo writing as a tool to process my thoughts. Reflecting on the development of patterns, themes, and the relation between them is one of many ways one can use memo writing in the research process (Saldaña 2009, ch. 2).

4.5. Finalizing the thesis during the COVID-19 outbreak

The final writing stage of a master thesis is rarely discussed in a methods chapter of a master thesis. However, with the outbreak of the coronavirus and the following shut-down of Norway in mid-March 2020 the finalization of the thesis had unusual circumstances and therefore deserves brief consideration.

On the 12th of March, the University of Oslo had to close all its facilities. As a result, I lost access to the writing facilities and the library. The closing of the university therefore limited my access to literature and some personal documents that would have been useful in the finishing stages of the writing process. Although much literature is available online, I lost access to several textbooks, papers and personal notes that were in the university's facilities. In particular, preferred methods and methodology literature as well as some older classics from human geography have proven to be challenging to find digitally. This has limited some of the depth of discussions concerning landscape, place (attachment), and case study research. For example, I would have liked to discuss landscapes in relation to work by Neil Smith on the production of space and nature and read more extensively about the works by Doreen Massey on place. In relation to the methods chapter, the main issue has been that the resources which I used to write the initial draft were not available to me and it therefore made it challenging to revise some sections without being able to re-read some of the literature I had used originally. Besides these issues, however, I have been lucky enough to be able to finish writing this thesis without severe challenges.

4.6. Ethical considerations in social research

Throughout this chapter, some ethical considerations and dilemmas have already been mentioned. However, there are some more ethical considerations to discuss. This research project has involved many interviews and conversations with people. Whenever a social researcher uses research methods that involve other people, ethical considerations regarding their participation must be considered and discussed. Dowling (2010) highlights three aspects: privacy and confidentiality, informed consent, and harm. Since my research topic is neither particularly sensitive nor situated in a potentially dangerous setting, the latter is of little

relevance to my research. However, it is relevant to explain both how privacy and confidentiality and informed consent have been handled in this study.

During my field work I held numerous interviews. Generally, informant anonymity is desirable (Dowling 2010, p. 29). Therefore, I have kept all taped interviews, notes and documents that include data that can identify informants safely and restricted from anyone but me. Furthermore, most of the informants have been given an alias and are presented without detailed descriptions to ensure that they cannot be identified. However, some of the informants have central positions in the projects I have examined. Their role in the project is therefore important to mention, and this will make them identifiable. Whenever I considered this to be the case, I asked my informants if they were comfortable with being identifiable. Only with consent from the informant did I include identifiable information. Appendix 1 provides information about which informants have alias and which do not.

The second ethical aspect worth considering is informed consent. It is important that informants not only agree to taking part in the study, but also are aware of what such participation entails (Dowling 2010, p. 29). In this study, all participants were given information about the study and how I would handle the data material before asking for permission to involve them. The information was provided through an information letter sent out via email. Furthermore, whenever I did interviews, I made sure to summarize the same information that they had received on email to make sure they knew what participation in the study would entail and what rights they had as participants. All the informants with whom I had agreed to do interviews with were asked to sign a consent form. The information letter and consent form can be found in appendix 3.

On some occasions I met people more spontaneously. In such cases, I explained to them what research I was doing and got a verbal consent from them to be part of the study. If they wanted to, I also offered to send the information letter to them after we had met as a way of ensuring that they knew what their rights were if they changed their minds about participation. Both the information sheet and the consent form were approved by the Norwegian Centre for Research Data (NSD).

4.7. Evaluating qualitative research – rigour and transferability

When evaluating qualitative research, two key issues must be discussed: the quality of the research project and the significance of the findings. The latter is dependent on the quality of

the study but also deserves additional consideration because the transferability of qualitative research is contested. The aim of much qualitative research is to make research findings transferable, while not claiming that they are statistically generalizable (Johannessen et al. 2010). There have therefore been widespread discussions concerning the transferability of qualitative research. In this final section of the methodology chapter, I will reflect upon the quality and transferability of this study.

Evaluating rigour is one way to ensure that the quality of a study is satisfactory. In short, it means to establish trustworthiness, both from the scientific community and the participant community (Bradshaw & Stratford 2010). Bradshaw and Stratford (2010, p.77) emphasize the importance of “incorporating *checking* procedures into [the] research process” to strengthen rigour. The point of such checking procedures is to collect, use and compare data, methods, and theory from multiple sources. By using several forms of interviews (sedentary and go-along), by collecting data from multiple sources, and by vetting some of the data, such checking procedures have been incorporated in this study. This also strengthens the study’s validity by making sure that the data reflects the phenomenon under study (Johannessen et al. 2010).

Another important aspect of rigour is transferability. In qualitative research transferability is ensured first and foremost by a detailed description of how research has been conducted and in what ways the research design has impacted the findings of the study (Bradshaw & Stratford 2010, p. 78). This methodology chapter is an attempt to give a detailed description of how data has been collected and analysed and in what ways the social nature of the research process has influenced the findings. It is important to acknowledge that the social context always will influence the findings. Moreover, my position as a researcher and my interpretation of the data material will also influence the findings. Complete objectivity is therefore neither possible (nor desirable) in qualitative research. However, describing the various stages of the research process and explaining why and how I have made decisions about the research design and data analysis, gives others the opportunity to assess the validity, reliability and transferability of the findings in this study.

Chapter 5 – Presentation of units

This aim of the following chapter is to introduce the two units that have been examined in this study. I will present Andernach and Bertramjordet separately and describe how and where the edible landscapes have been incorporated in the two places. After that, some of the key differences, especially related to the scale of the two units, will be discussed. The goal is to explain and justify why I have chosen to examine units that operate on quite different scales.

5.1. The edible city Andernach

Andernach is a rather small town in Germany with around 24 000 inhabitants in the town itself, and another 7000 in the municipality’s surroundings (Stadt Andernach 2018). It is situated in the federal state Rheinland-Pfalz on the riverbanks of the Rhine some 20 km north of the city of Koblenz and 45 km south of Bonn (see figure 3). The town has a historical city centre



Figure 3: Location of Andernach (Free Country Maps undated).

with a dense built environment.

In 2010 the municipality launched a concept they called “edible city Andernach”. The key idea was to incorporate edible landscapes into the city’s landscape. Therefore, the city started using public green spaces to cultivate food. It is mainly the area around the old city towers and city walls that has been converted into edible landscapes. The area around the old city wall contains numerous large vegetable beds. In the city centre edible landscapes have also been incorporated using bed boxes. There is also a mobile trailer used as a bed



Figure 4. Map of edible landscapes in central areas of Andernach. Edible landscapes are marked with dark red circles (Stadt Andernach, 2016)

box. Figure 4 provides an overview of edible landscapes in the central areas of Andernach. In addition to these central spaces, edible landscapes have also been developed in several other areas. There is a permaculture farm on the outskirts of town which is part of the project. Furthermore, all primary schools have a school garden as part of the project, and one of them also has an edible school road.



Image 2: Edible landscapes around the city wall (photo credit Kristin Hansen).



Image 1: Bed boxes in the city centre (photo credit Kristin Hansen)

The project was initiated by the municipality and has been administered by them since then. In practice this means that it is the office for city planning in Andernach that has the main responsibility for developing the project and maintaining the edible landscapes in the city. However, the planning office cooperates with several other actors both within and outside the municipal office. The organization Perspektive gGmbH and its workers are working “on the ground” in both the city centre and at the permaculture farm to maintain the edible landscapes. In addition, there are several volunteers involved in the maintenance and development of the permaculture farm. Finally, the municipality also cooperates with personnel from the primary schools to develop the school gardens in the city’s primary schools.

Although the municipality administrates the project, the edible landscapes are mostly available for everyone to use. There is some variation between the different edible landscapes in terms of how the spaces can be used. In the city centre, everyone can use the edible

landscapes as they wish. This means that people are welcome to harvest the food that is cultivated whenever they want to. There are no regulations other than encouragements to wait with harvesting until the food is ripe. The permaculture farm is also open and available to everyone, but harvesting is not allowed there. The school gardens are however usually closed off to the public because they are on school grounds.

5.2. Bertramjordet housing cooperative

Bertramjordet is a neighbourhood and a housing cooperative (borettslag) in the Holmlia area in Oslo. It belongs to the city district Søndre Nordstrand, south in Oslo (see figure 5). The area has a suburban characteristic but fits within the definition of an urban area used in this thesis, because it is located within the administrative-political boundaries of Oslo. The neighbourhood consists of a combination of terrace houses (marked in green on the map) and apartment buildings (marked in red on the map) (see figure 6). The apartments and houses vary in size from 2 to 4 rooms and are therefore suitable for a variety of households. The informants I talked to from Bertramjordet confirmed that there was such a variety in household structure.

Located at the outskirts of Oslo, the area borders to a forest on the south. In other words, there is rather much green space in the area. The terrace houses have small private gardens, while the apartment buildings do not have any private garden areas in the same sense. The area is known to be culturally diverse with inhabitants from a wide variety of ethnic backgrounds (Høydahl 2015).

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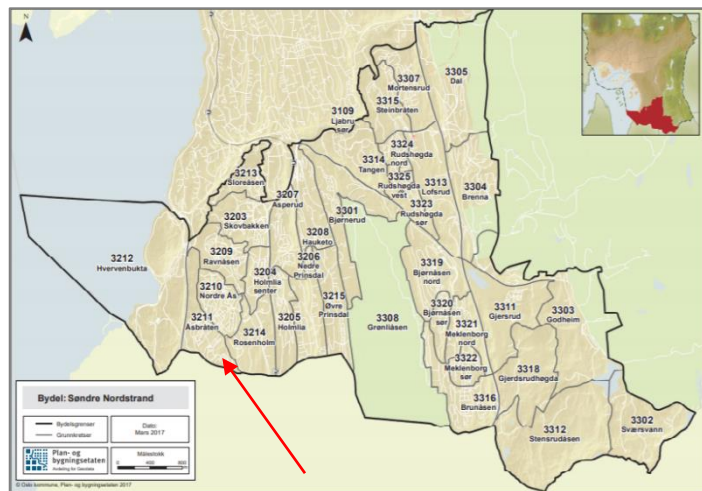


Figure 5. City Districts in Oslo (Oslo kommune 2017)



Figure 6. Overview of Bertramjordet (Bertramjordet borettslag undated)

In 2018, the housing cooperative applied for funds from the municipality that were meant to be used for urban agricultural projects. Their application was successful and as a result the neighbourhood was granted 180 000 NOK to be used on agricultural projects in the neighbourhood. The main element of the project plan was to build a community garden in the neighbourhood. The community garden consists of several mini greenhouses and vegetable plots. The greenhouses and plots were divided individually based on interest. In other words, people were individually responsible for maintaining their greenhouses and/or vegetable plots. While the responsibility is individual, the area is still communal and open to everyone. 22 households were involved in the community garden when I did my fieldwork during 2019. Some had both a greenhouse and a vegetable plot, while others chose only to have one of the two. In addition to the community garden, new fruit trees and berry bushes have been planted throughout the neighbourhood. These are open access and can be harvested by anyone who passes through the neighbourhood.

5.3. Short reflections about the two units

The presentation of Bertramjordet and Andernach highlights some important scalar differences between the edible landscapes in the two units. Whereas the edible landscapes in Andernach are coordinated by the municipality at the city level, the edible landscapes in Bertramjordet are organized by the housing cooperative at the neighbourhood level. It might seem problematic to examine units which operate at different levels for the study of a phenomenon. However, as already emphasized in chapter 3.2, edible landscapes can be organized and coordinated at different scales. Therefore, it is useful to study two units that represent some of the variety that exists in the organization of edible landscapes to get a better understanding of the phenomenon holistically. In that sense, the differences between the two units strengthens the study, as already mentioned in chapter 4.2.

Chapter 6 – Social relations in urban edible landscapes

Chapter six marks the beginning of the analysis of the thesis. In the first chapter of the analysis I will present how the collective use and production of urban edible landscapes can impact social relations. The findings are based on empirical material gathered during

fieldwork. The chapter is divided thematically and findings from both the project in Bertramjordet and in Andernach will be described in each of the subchapters. The following themes will be discussed: social interaction (ch. 6.1), social networks and connections (ch. 6.2), place attachment (ch.6.3). Finally, there will be an overall summary and reflection about the findings concerning social relations in chapter 6.4.

6.1. Social interaction in the edible landscapes

As discussed in the theory chapter, social interaction is often highlighted as a key aspect of social cohesion and community cohesion (Forrest & Kearns 2001, Dempsey et al. 2011, Lloyd et al. 2016, Rogge et al. 2018). In this part of the analysis I will describe and discuss how the collective use and production of edible landscapes influences social interaction. A key aspect of the discussion will revolve around the type of social relations that develop through the interaction taking place in the edible landscapes. As discussed in the theory chapter, different forms of social interaction often result in different forms of social relations. The findings from Bertramjordet and Andernach will be presented separately, before discussing some of the limitations to social interaction in both projects.

6.1.1. Social interaction in Bertramjordet

In Bertramjordet, the community garden area served as a setting for social interaction. Several of the informants described how the garden area had turned into a social meeting place in the neighbourhood.

“when I walk around the area, I meet people and have a short chat with them” (Nils).

“It is a space you go by quite naturally, for example if you need to go to the garage or somewhere else. So, often people pass by. Even people who are not part of the project have stopped by and had a chat. So, I have experienced that even people who are not part of the neighbourhood stop because they are curious to figure out what this is.

Like, a field full of vegetables – wow. And then we tell them about what we do”

(Ingrid)

These examples illustrate how the community garden works as a social meeting place for people. Several of the other informants from Bertramjordet highlighted that they had similar experiences. The key point is that the garden area itself creates a space or a setting in the neighbourhood where it is natural for people to pass by, to stop and to interact with other people. Before this project was developed, there were not many other spaces that opened this

opportunity in the neighbourhood. In short, by incorporating edible landscapes to the built environment in the neighbourhood, the residents got a new space for social interaction. This suggests that the built environment influences social interaction and that incorporating urban edible landscapes can create arenas for social interaction. These findings are supported by related studies on community gardens which find that such spaces positively influence social interaction (Firth et al. 2011, Rogge et al. 2018).

For the active participants of the community garden in Bertramjordet, the social interaction goes beyond random one-off conversations. The informants described different forms of interaction taking place between active participants. Since the community garden has a specific purpose – cultivation – it created a common conversation topic between participants, e.g. the plants, the cultivation process, and the sharing of experiences. This was highlighted by several of the informants in Bertramjordet:

“When people meet outside by the green houses or in the garden you easily make contact with and chat with others. Or share experiences and frustrations” (Berit).

“if you are there [in the community garden], and someone else comes, you always have a chat with them. [...]. You ask like – ‘oh, what have you planted over there’ – or – ‘wow, that one has turned out really nice’” (Ingrid).

In both examples, the informants highlight that the community garden has turned out to be a great way to start conversations and that they share experiences with one another. In that sense, edible landscapes, such as community gardens, provide a space for purposeful social interaction.

The second way in which active participants interact in the community garden is through collective use of resources and collaboration. In some ways, the project in Bertramjordet is rather individualized because everyone has their own plot and/or greenhouse. Nonetheless, there are still community aspects to the project. To begin with, they share some garden tools, such as a water hose. While this seems like a small detail, Ingrid highlighted how the simple act of sharing tools led to social interaction:

“If you are in the garden and someone else comes by, you have a chat with them. Usually you need the same water hose, right. So, you stand and wait for a while or ask: “do you need the water hose?”. And in most cases, people are social and chat with you for a while at least”.

This highlights how the use of shared resources in many ways forces people to interact. If you need the same tools, you will quite automatically start talking to others using them. Even if the plots you are cultivating are individualized, the fact that these plots are situated beside one another and that people need some of the same tools to look after their plots therefore leads to social interaction between people.

The collective use of resources and collaboration in Bertramjordet also went beyond using the same water hose. Although everyone had their own patch of land or greenhouse, many shared some of the food or plants with one another. In the beginning of the growing season people shared their seedlings with one another. Also, when it was time to harvest the vegetables, people shared food with each other. Almost all the informants mention that they were offered some of the produce from other people's plots, or that they offered some of their own harvest to other participants.

Finally, there was a rather strong sense of comradeship between the participants in terms of looking after each other's plots. The willingness to help each other look after the community garden was described as a positive experience by several of the informants:

“When we went on holidays, a neighbour of ours watered our plants. We watered for them – they were gone for five weeks, and we were gone for three weeks. So, we took turns watering each other's greenhouses” (Ingrid).

“It has been positive to experience that people don't hesitate to step in and water a little extra and things like that” (Henrik).

“It has worked well with vacations and things like that. When someone has been away, others have been able to look after it and taken responsibility for watering” (Berit).

While the above examples illustrate how regular practices in the project lead to social interaction between project participants, one other event was mentioned many times by the informants from Bertramjordet as a positive social experience. Early in the project, during spring, they all got together to build the green houses and divide the plots between each other. This day was emphasized as a positive experience by several of the participants:

“I got help from a guy who lives in the same apartment building as I. So, he, quite on his own initiative, offered to help me get going and put together the glass walls [for the green house]. [...]. I really appreciated that. I thought it was a very nice start to the project. That I was attended to and included in that way” (Berit).

Others, such as Henrik also emphasized the positive experience with the communal work on the day they all got together to start the project.

“I experienced the day when we built the green houses as very positive. There was a lot of team spirit and teamwork and people helped each other to build the green houses”.

These examples illustrate that even within projects with individualized plots and green houses, there is social interaction between people. They share resources and tools, they share seedlings and vegetables, and they share responsibility and chores. Importantly, they all experience this collective as positive. How people perceive the interaction taking place is an important aspect of measuring social interaction (Rogge et al. 2018). The findings indicate that people experienced the social interaction taking place in the project as positive and meaningful.

Although the edible landscapes have clearly led to social interaction, the social ties that developed varied. Some said that they did not develop many strong social ties. For example, Henrik, one of the participants in Bertramjordet, stated the following when asked if he had gotten to know new people through participating in the project:

“I have seen some new faces, but I wouldn’t say that I have gotten to know so many new people very well”.

Other participants, such as Silje, also stated that she and her family had not gotten to know many new neighbours very well:

“We have not really seen many of the others. Those we have seen, we have talked to. But there has not been a community in the sense that we might have imagined in the beginning”.

In other words, the degree of community feeling has varied between project participants. Furthermore, the interaction that took place did not necessarily lead to strong social ties between people. It must be mentioned that Silje and her family only had a green house, they did not have a garden plot. This could have impacted how much time they spent in the community garden and thereby influenced the likelihood of meeting others.

However, some of the other informants highlighted that being part of the project had raised their awareness of their fellow neighbours and that they had gotten to know quite a few people through the project. Ingrid, for example, said that:

“I have gotten to know neighbours that I didn’t know lived in Bertramjordet at all. [...] I have not had any natural places to meet them, other than on the streets. And in that case, they could be from anywhere”.

Similarly, Berit said the following about her relationship with a neighbour prior to taking part in the project:

“[...] I had never talked to him. Or rather, I had barely been aware that he lived in the same apartment building as I”.

Neither Berit nor Ingrid proclaimed that there are strong social ties between them and the neighbours now. Nonetheless, their statements illustrate how the social interaction taking place in the edible landscapes strengthened their awareness of who they live next to. At least on the neighbourhood scale it has been argued that such weak social ties (e.g. recognizing someone by sight), are equally important for social cohesion as strong social ties (Forrest & Kearns 2001, Dempsey et al. 2011). Therefore, it is not essentially problematic that the social interaction taking place did not lead to strong social ties.

Furthermore, there was one aspect that separated much of the social interaction that took place in Bertramjordet from random social interaction in public spaces (which is usually characterized as weak social interaction). In public spaces, such as parks, research by Peters et al. (2010) shows that social interaction is often a one-off interaction. They describe it this way: “most social interactions are cursory, for example, people have a short chat or just say hello. [...]. There are more weak and one-off interactions than strong and more structural interactions” (Peters et al. 2010, p.99). The difference between such social interaction and the social interaction taking place in Bertramjordet, is that people had *continuous* contact in Bertramjordet. Ingrid highlighted the benefits of continuous contact when describing how the project had affected the neighbourhood:

“It is a new activity. There are not so many communal activities that extend over a longer period of time in a neighbourhood. There are a few yearly voluntary/communal workdays [dugnader]. But there is no continuity in that. And there are no other things in the neighbourhood that have a regular frequency in a way, even though this does not have that either. But it is still a thing that goes on, that keeps on going”.

Here, Ingrid clearly highlights that the community garden serves as a place for continuous contact between people. Although there is not a regular frequency to the interaction, there is a

continuity to it. Having such activities in the neighbourhood seems to be valuable, because they can create stronger social ties between people than one-off exchanges.

6.1.2. Social interaction in Andernach

In Andernach, there were also signs of social interaction taking place in the edible landscapes. Since the project is organized on the city level, there are numerous types of edible landscapes throughout town and the interaction that takes place in them varies somewhat. Therefore, I will describe these areas separately and reflect on some of the differences.

In the town garden (Stadtgarten), in Andernach's city centre, an extensive area is used for the cultivation of foods. In a written note that was given to me during field work, Lutz Kosack⁴ described how the edible landscapes in the city centre led to social interaction:

“Around the area things were discussed, recipes were exchanged – the edible landscapes developed into social meetings spots between people with varied age and culture. The project turned out to be particularly communicative” (Kosack, undated, p.4).

The city intentionally chose to turn spaces that used to have poor public value into edible landscapes (Kosack undated, p.3). These spaces had previously been associated with fear and lack of maintenance (Angsträume). The perception of public spaces is by Dempsey et al. (2011) argued to be an important factor to create feelings of safety in public spaces. This again is a precondition for participation in social activities and social interaction. Turning these spaces into edible landscapes, could therefore increase the chances of social interaction taking place.

While the statement by Kosack suggests that the edible landscapes around the town garden function as a social meeting place, I still got the impression that the social interaction taking place is quite random between people who happen to be in the town garden. In other words, the form of interaction taking place is quite similar to one-off exchanges described in Peters et al.'s (2010) as weak social interaction. While acknowledging that these one-off exchanges usually do not foster strong social ties, their research does implicate that urban green spaces are particularly inclusive spaces and invite a wide variety of people to use them. It is therefore

⁴ In Germany, it is common to address a person using their last name (unless you know them well). Therefore, I will refer to Lutz Kosack as 'Kosack' from here on forward. The same will apply to some of the other German informants. However, a few of the German informants preferred to use their first name and therefore will be referred to using first names. While this might create an unintentional sense of hierarchy between informants referred to by their first name and those that are referred to by their last name, this was the only natural way to present the informants.

not unlikely that the weak social ties that develop through this random interaction are between people who would otherwise not interact. Albeit weak, developing links between people who otherwise would not interact, is important to strengthen social cohesion (Granovetter 1973).

While the social interaction taking place in the town garden is quite random, there are also some activities in the edible landscapes that are more continuous, thereby leading to purpose-driven social interaction. As explained in chapter 5.1, there are some volunteers involved in the maintenance of the permaculture farm on the outskirts of Andernach. The guys from Naturfreunde, which I met, are among those volunteers. They told me that they usually meet on a weekly basis to do some work on the permaculture farm together⁵. In that sense, the social interaction between the group members is continuous and meaningful. They are creating something together and, in that way, the social interaction taking place between them while being on the permaculture farm can be argued to be socially cohesive (Ziervogel et al. 2016). It must be mentioned that the continuous contact was already established before they were integrated into the edible city project. Naturfreunde existed before the edible city project was initiated. However, the example still illustrates in what ways the collective use and production of edible landscapes can create opportunities for continuous and purposeful social interaction between people.

Finally, there is also an “edible school road” in Andernach which creates spaces for social interaction. The edible school road is an extension of one of the school gardens in Andernach and belongs to the school I visited during field work. It was initiated because there was a lack of edible landscapes on the school road. Matthias Busenkell, the school caretaker and responsible for the school garden, told me that the children and the neighbours have started cooperating about taking care of the vegetable patches on the school road:

“there is multi-generation home next to us, and they are already saying: ‘send the kids over, then we will go water the plants with them’”.

In that way people from the neighbourhood have been incorporated into the edible city project due to the edible school road. Neighbours have volunteered to help the children maintain the edible landscapes. This suggests that edible landscapes can create spaces for social interaction between children and adults. Such intergenerational exchange and interaction positively affect social relations (Buffel et al. 2014).

⁵ The interview with Naturfreunde was the one that turned into a note-based group interview without a recording. Therefore, the analysis lacks quotes from the interview and has more of a narrative style. However, as mentioned in the methodology chapter, the transcript was sent to the interviews for vetting.

6.1.3. Frequency and access to social interaction

So far, I have predominantly described how social interaction can take place in the urban edible landscapes and how this might strengthen social relations. However, some reflections about the limitations of the social interaction taking place are also necessary. There are certain aspects in both Bertramjordet and Andernach which limit both the frequency of social interactions and who has access to it.

In Bertramjordet the lack of communal work hours and organized social activities in the community garden limit the frequency of social interaction taking place. Although the informants said that they had gotten to know other people, a few also commented that they relatively seldom meet other people. The limited amount of social interaction in the project might be problematic in terms of strengthening social relations. The fact that the communal working day was highlighted as a particularly positive experience by two informants also suggests the benefits of having more organized social activities to strengthen social relations. Frequency and perceived importance of social exchange has also been emphasized by other research on community gardening (Rogge et al. 2018).

However, Rogge et al. (2018, p. 4) suggest that the organization of a community garden “needs to be adjusted to the particular members and their needs”. While increasing the organized activities and collective use of resources in community projects might seem beneficial for social interaction, this indicates that it will vary from project to project what kind of structure fits the participants well. Although some of the informants mentioned that they had not experienced overwhelming amounts of social interaction in the project, they did not necessarily want there to be more social interaction either. For example, Silje commented that a strong community (with more structured and organized social activities) might be too much for her and her family:

“I am not sure if I would be interested to be part of a very strong community.

Because, you see, we have small children and you don’t always have time for such things. Or the energy to be part of such a group”.

While the other participants I spoke to did not specifically emphasize that they did not want a stronger or structured community, the overall perception of the structure and organization of the project was positive. In other words, participants I spoke to in Bertramjordet were mostly happy with how things were organized. The structure of the project created a flexibility in

community participation, which people took more or less part in depending on their needs and wishes.

In short, the participants experienced the social interaction taking place as positive, even though the frequency of social interaction and the amounts of collective use was somewhat limited. Since the *perception* of the social interaction taking place is another key aspect of evaluating its value (Rogge et al. 2018), it might be better to have a structure that suits the participants well than to change the organization of the project in order to increase frequency of social interaction.

In Andernach, a similar argument can be made. Meaningful social interaction is limited to rather few active participants. For most citizens social interactions related to the edible landscapes are one-off (random) exchanges in the town garden in the city centre. Meaningful social interaction, where social activities and exchanges have a clear purpose, were mostly limited to active volunteers, like the volunteers in Naturfreunde or the people involved in the school gardens and edible school roads. In other words, one could question the cohesiveness of the project because relatively few inhabitants take part in meaningful social exchanges. As discussed earlier this could limit the overall effects on social cohesion (Lloyd et al 2016).

However, Rogge et al.'s (2018) point about adjusting the structure and organization of a project to participant is relevant here, too. When asking the municipality why they have chosen a more top-down approach in the project, which to a certain degree limits meaningful and purposeful social interaction between citizens, Kosack described it as a consequence of socio-political expectations from citizens:

“Citizens often have the expectation that the city [administration] *gives*. Not that one gives the city something, but that the city gives you something. That is a socio-political attitude”.

Later in the interview, he elaborated on a similar point:

“Citizen involvement is a thing we work a lot with, but where we at the same time experience how difficult it can be to motivate citizens to do something for the city – to do something for *their* city. With many people you have the feeling – ‘I pay my taxes, and for that the trash gets picked up, the streets are cleaned, and I can pick up my passport. That is what I pay my taxes for. And the green space, I also pay my taxes for that – I should not have to help take care of that’” (Kosack).

In short, Kosack describes what the citizens expect to be offered from the municipality. As most inhabitants expect the city's green spaces as a service from the municipality, the structure of the project in Andernach is in many ways adjusted to the citizens' expectations. They have created a project where people are offered edible landscapes to harvest from in the city centre because that is what suits people's needs. The collective use of resources and frequency of social interaction is therefore mostly limited to the harvesting stage of edible landscapes. Although that limits the amount of, and influences what kind of social interaction takes place, it is still adjusted to people's wishes. Therefore, the social interaction that takes place is perceived as an overall positive experience by the inhabitants. This is an equally important part of creating effective social interaction as the frequency and the depth of the social interaction taking place (Rogge et al. 2018).

6.2. Social networks and connections

In the previous subchapter I predominantly examined how the collective use and production of urban edible landscapes can create social interaction. In many ways, one could say that some social networks emerged between participants through the interaction taking place in the edible landscapes. Therefore, it might seem excessive to have another subchapter about social networks and connections. However, there are some things that have not received proper attention. In this sub-chapter, the aim is to present and discuss all the networks and ties that have emerged as a result of producing the edible landscapes, but not necessarily *in* the edible landscapes themselves. Networks between a variety of actors at various scales are argued to be an important factor for societal transformation (Amundsen et al. 2018). Accordingly, building or strengthening them is a significant part of developing transformative capacity. As in previous parts of the analysis, I will describe the two units separately, this time beginning with Andernach.

6.2.1. Social networks in Andernach

The array of actors and networks that are linked to the edible city project in Andernach is quite extensive. The networks go across various actors within the municipality, but also between the municipality and multiple local actors. The project is also part of several international urban networks and research projects. However, I have limited the analysis of social networks linked to edible landscapes in Andernach to local actors and networks because these were available to me during field work. Furthermore, the literature used to develop the theoretical framework in chapter 2 best applies to the local scale.

Within the municipality of Andernach various departments are involved in the project. The city planning office has the main responsibility. However, the planning office also cooperates with numerous of the other offices in the municipality, including the office for education (Schulamt), the office for order and regulations (Ordnungsamt), the youth office (Jugendamt) and the main office (Hauptamt). Kosack, who is the head of the planning office described the benefit of cooperating across the municipality:

“That is the nice thing about working in the municipality – you can always pull in the people you need from different departments”.

In addition to the network of actors within the city office who cooperate, there are many connections between the municipality and other local actors. First you have the cooperation with the primary schools. While the schools are in many ways part of the municipality structure, there are also connections between the municipality and non-municipal actors. This includes for example volunteer groups, such as Naturfreunde. Finally, there is cooperation with the organization Perspektive gGmbH which maintains the edible landscapes in the city centre in cooperation with professional gardeners and the city office.

The actors who are part of the edible city network all described the cooperation with the municipality in positive terms. For example, Matthias Busenkell, who is responsible for the school garden in one of the primary schools in Andernach described being part of the network as beneficial. In the interview he described how being part of the network has extended the possibilities in the school garden (which already existed before the edible city project started).

“It has changed more, or much, in the sense that the city keeps more of an eye on the school gardens. And for example, fruit trees were planted and so on. Before, I basically did the school garden all by myself. And when it became part of the edible city, it became much easier because new opportunities emerged” (Busenkell).

He later went on by explaining that he always received support when needed:

“If there are some difficulties, or anything else, I can always call the office for public works and maintenance [Baubetriebshof], and there will always be someone there who helps and supports me. Not an issue at all. So, from the municipality’s side, everything is just great” (Busenkell).

In short, Busenkell emphasizes that the school garden has received more support and resources since the edible city project began, He, as the initiator of the school garden, has

become part of a bigger network of actors and cooperates closer with the municipality than before.

New partnerships have also emerged between the municipality and volunteer groups, such as Naturfreunde. It was the group itself that contacted the city with a project proposal for the edible city and since then, they have collaborated on several initiatives. The volunteers in Naturfreunde told me that through taking part in the project, the contact to the municipality increased. Furthermore, they experienced the municipality as supportive when they made project proposals linked to the edible city. If they wanted to make new project suggestions or had questions, they had someone in the municipality to turn to. In that sense, the city has created an open door for inhabitants to take part in the development of the edible city landscape. Kosack highlighted this during our interview when saying that “whenever a citizen wants to get involved, he/she is very welcome”. The interview I had with Naturfreunde supports such claims.

There are also some networks that do not involve the municipality directly. For example, there are connections between all the schools that have school gardens. Matthias Busenkell, the caretaker at the school I visited, is very committed to the school garden. He explained, how his commitment and knowledge is shared with the other involved schools:

“[...] since I do this with passion, I pay some attention to – or the others, they ask me about this and that. Or we just chat a bit [about the project]” (Busenkell).

In other words, because the municipality decided that all schools should have a school garden as part of the edible city project, Busenkell’s knowledge and enthusiasm about gardening is now shared with other people at other schools. These networks, where knowledge is shared, would not necessarily have emerged had it not been for the edible city project.

Busenkell also told me that new connections have emerged with the neighbouring nursery due to the school garden. The children from the nursery visit the school garden once a week, where they have their own garden patch. In that way the children are integrated into the project already before they start at school and the nursery and school have a basis for cooperation.

In sum, there is a wide variety of actors involved in the production of the edible landscapes in Andernach. While some of these are not directly engaged in the maintenance of the edible landscapes on the ground, they are involved in the process and take part in the overall

organisation of them. Creating and organizing something together in this way is highlighted by Ziervogel et al. (2016) as an important factor to strengthen social cohesion. Furthermore, research by Amundsen et al. (2018) shows that networks “between different parts of the municipal organization, and between the municipalities and local [...] actors” are one of two important factors for transformation at the local level, such as in cities. Therefore, the fact that the networks in Andernach include various parts of the municipal office, local schools, volunteer groups and other local organizations makes them particularly beneficial to strengthen transformative capacity.

6.2.2. Social networks in Bertramjordet

In Bertramjordet, social networks have mainly emerged between the people who are active participants in the community garden. These ties have already been described quite thoroughly in chapter 6.1.1. However, there are some other actors involved in the project, too, such as the housing cooperative and the Oslo municipality, who has funded the project. Although these actors have a limited relevance in the day-to-day activities in the project, they are all connected to it and part of a network of actors who relate to the development of the edible landscapes. In the following section, I will describe and discuss how the characteristic of some of these networks influences social relations.

Since the project was initiated by the housing cooperative, only members of the housing cooperative are part of the community garden. This influences who can be part of the local network that has emerged. Some of the informants in Bertramjordet specifically commented that having a network that is bound to the housing cooperative is experienced as positive and beneficial for the cohesiveness in the neighbourhood. Nils, for example, reflected on the difference between a community garden that is not bound to a housing cooperative and the way they have it in Bertramjordet:

“I don’t think it has the same – what should I call it – neighbourhood community function [grendefunksjon]. They probably get to know one another. I do believe that. But there is one person from that neighbourhood and another person from that neighbourhood and then they don’t have any more contact. Here, you get to know the people you meet on the street every day, or quite often, and say hi to, and so on”.

Ingrid reflected on some of the same things, pointing out the advantage of having a community garden that is bound to the neighbourhood by comparing it to another community garden quite close to Bertramjordet:

“[...] the community garden by Holmlia is more communal for all of Holmlia⁶, while getting a community garden in the neighbourhood will be more cohesive, in a way, for the neighbourhood, right”.

These statements illustrate that community gardens and the networks that emerge through them can be at different levels and have different functions. This is in line with research by Firth et al. (2011) where they distinguish between “place-based” and “interest-based” communities. In Bertramjordet, the main network that has emerged is limited to the proximate neighbourhood, because all the active participants are living in the same housing cooperative. In other words, it is primarily a place-based community because the networks that have emerged are limited to a certain area. Since the community is formed based on a common interest (urban agriculture), one could argue that it is an interested-based community, too. However, a key point to make is that the participants mostly came together because it was a neighbourhood project – a place-based community – and that is also one of the benefits Nils and Ingrid highlight in the above sections. While Firth et al. (2011) do not argue one to be better than the other, they still argue that it is important to be aware of the different types of social connections and networks that might develop. The above statements illustrate that some of the informants from Bertramjordet experience the place-based community as positive.

However, several of the informants also signalled that there was a lack of connections and wider network beyond the neighbourhood. As a result, they felt an absence of inclusion into a wider strategy for urban development and that urban development is fragmented. Although the municipality funded the project, they did not experience being part of a wider network with the municipality. Henrik stated:

“This is a project that was initiated by local politicians, right, with funding and so on. And then it was approved. [...] It has been very like: “here you have the funding, do what you want”. [...] I feel like there is a lack of a framework and resources to follow up on us. Not only follow up on us and check that we do what we are supposed to with the funding we have received, but also to make us better at what we do. [...]. If they [the municipality] had had a bigger plan with a bigger framework to follow up, then the results and the feeling that you contributed and so on – it would have been more significant”.

⁶ Holmlia is a rather big area in the southern part of Oslo and comprises both Bertramjordet and many other neighbourhoods.

In his statement, Henrik highlights two important things. First, he recognizes that the municipality is an actor that has been involved in the project. However, this has not led to a stronger connection between him as a project participant and the municipality, because he experiences this relation to have stopped after funding. Firth et al. (2011) suggests that links to authorities and institutions must be on a partnership basis to have a significant effect. The above statement by Henrik arguably support such claims. Although there is clearly a link between Bertramjordet and the municipality, that link is of little value because it is not based on partnership.

The other point Henrik makes is that the experience of taking part in the project feels less valuable because it is difficult to see the bigger picture. Other project participants also experienced this lack of being part of a bigger strategy as problematic. For example, Ingrid said:

“I wish there were more long-term plans for the development of the area where one sees it more holistically. [...]. You sort of have many puzzle pieces which do not fit together properly”.

Silje also reflected on how a more holistic strategy from the municipality’s side could affect the project positively:

“Maybe then one could be more included in a way. [...]. If one knew that there is a bigger community for what your neighbourhood cooperative does, or a place where one could find more information and ... Maybe that would be positive, actually. To feel that this is something the municipality in a way... that it is a strategy, or a bigger plan”.

In other words, many of the informants highlight the lack of cross-scalar networks. While there is a network locally between the group of participants, there is a lack of other forms of networks. A balance of local and wider networks is important to develop strong communities (Firth et al. 2011). In a study about community gardens, Firth et al. (2011) suggest that three forms of social networks are necessary to develop social capital – bonding, bridging and linking. While bonding refers to local networks, for example in the neighbourhood, the other two refer to wider networks and networks between people and authorities. A key point is that all three forms of networks are necessary. The data from Bertramjordet suggests that there is not a balanced relationship between the forms of networks that have emerged, and that

especially bridging and linking networks are lacking. As such, the networks in Bertramjordet are somewhat limited.

Although some participants clearly feel like there is a connection missing between them and the municipality, others do experience being part of a bigger strategy. For example, Berit, said that she considered the project as part of a bigger strategy from the municipality's side and this made her feel included in a "green" network:

"This has in many ways become part of a sort of green wave in Oslo. [...]. [I] see it as part of a bigger picture, right. I clearly see this community garden as a part of that. I feel like I have taken part in or ended up as part of this green wave. Both locally, nationally and internationally".

Silje also experienced taking part in the project as a being part of a bigger "green" movement:

"It has to be their [Oslo municipality] objective with this project – that one gets more integrated in the green wave. And I would say we are".

In short, both Silje and Berit highlighted that they feel they are part of a bigger "green" movement. Accordingly, they, in contrast to some of the other informants, feel that the community garden is linked to a bigger strategy and green vision in Oslo's urban development.

What does this say overall about the social network and relations in the project in Bertramjordet? To begin with, social network between residents in the neighbourhood have been strengthened. Such ties are important to strengthen social relations. Ziervogel et al. (2016, p. 9) argue that "knowing and trusting ones' neighbour is as much a survival imperative as re-connecting to the Earth systems that sustain life". In other words, Ziervogel et al. (2016) highlight that social networks among neighbours are an integral part of building transformative capacity. In that sense, the social connections that have developed in Bertramjordet are significant.

However, both Ziervogel et al. (2016) and others within transformation research also emphasize the importance of wider, multi-level networks. This includes connections between municipalities and local actors (Firth et al. 2011) as well as a shared vision for urban sustainable development (Amundsen et al. 2018). Based on the experience of the participants in Bertramjordet, the feeling of being part of a network with the municipality is rather limited. Only a few of the informants emphasized that they feel like they are part of a bigger network.

Moreover, when they described this connection it was not based on a direct connection to the municipality. Rather they placed themselves and their project within a larger “green” movement in the municipality (and beyond). This connection therefore differs significantly from the one between the municipality in Andernach and local actors.

6.3. Place attachment

Place attachment is repeatedly highlighted in literature on social relations. Forrest and Kearns (2001) argue that strong attachment to a place is a key part of social cohesion. Similarly, Dempsey et al. (2011, p.296) argue that “a positive sense of attachment” is an integral part of strong, coherent communities. Research suggests that both the physical environment and community relations influence sense of place attachment (Stedman 2003, Dempsey et al. 2011). In this sub-chapter I will therefore describe how the collective use and production of urban edible landscapes can strengthen people’s sense of place attachment. The two units will be analysed separately, but the second section about place attachment in Andernach (6.3.2) also includes some comparative reflections related to the findings in Bertramjordet.

6.3.1. Place attachment in Bertramjordet

In Bertramjordet, several of the informants highlighted aspects of place identity and attachment in relation to the edible landscapes. One of them was Berit. When asking her how taking part in the project changed her relation to the neighbourhood, she said that:

“[...] it has actually changed it a lot [...]. In a way it has changed something in me – in how I relate to living in a housing cooperative on the outskirts of Oslo where it is green and lush” (Berit).

She continued by telling me that she was rarely active in the neighbourhood before, but through this project she has turned into a much more active participant in the neighbourhood. In other words, she sees the neighbourhood much more in terms of a community. A strong sense of place is often understood in terms of a sense of community, membership or belonging (Dempsey et al. 2011). Through being part of the community garden in the neighbourhood feelings of neighbourhood community and belonging developed for Berit. This suggests that the collective use and production of the edible landscapes can strengthen place attachment through an increased sense of community.

While Berit highlighted a sense of community, other participant emphasized that the edible landscapes strengthened feelings of pride and identity. Ingrid linked the feeling of neighbourhood identity and pride directly to the production of the edible landscapes:

“Seen from the outside – we know that many others think; or that Bertramjordet is talked about by people from other neighbourhoods as ‘wow, Bertramjordet, the things they do’. That gives us a common sense of identity, too. That we are forward looking. That we do things on behalf of nature. That we manage the natural resources in our neighbourhood well”.

In this statement, Ingrid links the production and use of edible landscapes to a shared identity that she thinks characterises the neighbourhood. She thinks of the neighbourhood as forward looking and concerned with nature. The edible landscapes are part of that story and create a shared sense of place and identity. This, in many ways, exemplifies what Forrest & Kearns (2001) describe as an “intertwining of personal and place identity”, which is how they describe place attachment and identity.

While a sense of place attachment is predominantly discussed in positive terms, some concerns with a strong place attachment also exist (Forrest & Kearns 2001, Dempsey et al. 2011). Forrest & Kearns (2001, p. 2128) state that “strongly cohesive neighbourhoods could be in conflict with one another and contribute to a divided and fragmented city”. It is therefore worth considering if the shared sense of place and identity linked to the community garden in Bertramjordet is exclusive. Although Forrest and Kearns (2001) emphasize potential fragmentation between neighbourhoods, I will reflect on the inclusiveness of the place-based identity *within* the neighbourhood.

Since there is limited availability in the community garden, there is not space for everyone in the neighbourhood to take part in the project. However, edible landscapes other than the community garden have been incorporated in the neighbourhood, too. Ingrid explained why she considered the project to be inclusive beyond the community garden, and how this might be linked to a shared identity:

“I can see that people who are not part of the community garden also have been thought of – those that for example took on the responsibility to buy flowers for the communal flowerpots. They also set off with the purpose of it being bumblebee friendly. That it should be good food for insects. [...]. And there has also been planted

chokeberry and elder and different things, you know. That creates a higher degree of identity, maybe”.

In this statement Ingrid highlights that the place identity characterised by forward thinking and a concern for nature is available even if one is not part of the community gardening project. Although the community garden might be the central element of the edible landscapes in the neighbourhood, other edible landscapes have been incorporated, too. Berry bushes, fruit trees and other plants that have been planted in the neighbourhood are openly available for everyone. Ingrid thinks that these edible landscapes, which do not require people to actively take part in a community project, still might contribute to an overall shared sense of place identity.

In that way, the findings indicate that the collective production and use of edible landscapes can create an inclusive sense of place attachment, at least on the neighbourhood level. Of course, this assessment is made only based on Ingrid’s point of view. It would have been valuable to speak to some of the neighbours that are not part of the community garden and see if their perspectives reflect Ingrid’s. Nonetheless, the data that is currently available, suggests that the production and use of edible landscapes can create an inclusive sense of place if the edible landscapes are incorporated throughout the neighbourhood in various forms.

6.3.2. Place attachment in Andernach

In Andernach signs of place attachment and identity linked to the edible landscapes were also evident. For example, the volunteers in Naturfreunde described the edible city project as closely tied to the identity of Andernach. They said that the edible city project is part of the city’s identity and as such the edible landscapes belong to the material landscape of the town.

Some of the other citizens I spoke with also highlighted that the project created a sense of pride and identity. For example, Katja stated that “it is part of the identity of the urban landscape”. In the statement Katja highlights that the edible landscapes, by being part of the city’s built environment, have created a sense of place identity. This sense of place attachment is somewhat different from the one developed in Bertramjordet. The project participants in Bertramjordet predominantly highlighted the sense of community that had developed through the collective use and production of the edible landscapes and that they develop a shared place attachment from that. In Andernach, the shared sense of place and identity appears to be more linked to the physical environment itself. Albeit different, both the physical environment and

a sense of community in a place can be important for place attachment (Dempsey et al. 2011, p. 296).

A sense of *pride* connected to the edible landscapes is however something that unites both units. Similarly to the participants in Bertramjordet, several of the informants in Andernach also emphasized that they are proud of the edible landscapes and to live in a place that incorporates nature concerns into urban development. Katja, who is a regular citizen living in Andernach told me in our conversation that “we are always really proud of it and like to show it to people who come to visit us”. Kosack, from the urban planning office also mentioned that the municipality had noticed that inhabitants seem to take pride in living in an edible city.

“There have been quite a few people that I have heard of, who are really proud of their city. That they come from Andernach, right. *The edible city*. Which is innovative, creative or whatever you like” (Kosack).

These statements highlight that not only are the edible landscapes thought of as part of the city’s identity, they are a part of the city’s identity which people are proud of. As such, this could strengthen the sense of place attachment to the city.

The form of place attachment Kosack describes, also suggests that there is a common vision and identity based on sustainability in Andernach. The importance of such a common vision and identity has already been mentioned in chapter 6.2 when discussing the importance of social networks (Amundsen et al. 2018). The findings in this sub-chapter suggest that sense of place attachment could also be important to develop a vision and common identity based on sustainability.

6.4. Summary and reflections

The above analysis suggests that the collective production and use of urban edible landscapes has the potential to strengthen social relations in several ways. The findings in chapter 6.1. illustrate how edible landscapes function as social meeting places. This in turn leads to various forms of social interaction between people. This is an important finding because social interaction is a key aspect of strengthening social relations in a community (Dempsey et al. 2011). However, the analysis also shows that there are some limitations to the social interaction taking place. In Andernach, for example, few of the city’s inhabitants take active part in the maintenance and production of the edible landscapes. As a result, people rarely take part in purposeful activities in the edible landscapes. Meaningful interaction has been

argued to be key to develop social cohesion (Lloyd et al 2016, Ziervogel et al. 2016). In other words, the lack thereof (at least for most people in the city) to a certain degree limits the strength of the social relations that have developed in Andernach, at least through social interaction *in* the edible landscapes.

The analysis in chapter 6.2 suggests that various social networks are strengthened or developed through the use and production of urban edible landscapes. However, there are some differences between the two units. In Andernach, multi-level networks within the municipality and between the municipality and local actors have developed. On the other hand, in Bertramjordet there is largely a lack of social networks at multiple levels and between multiple types of actors. For the most part, the social networks that have developed there are limited to residents in the housing cooperative. While such networks are important for strengthening social relations, research suggests that there is also a need for developing social networks beyond the scale of the neighbourhood (Firth et al. 2011), and particularly in order to strengthen transformative capacity (Amundsen et al. 2018).

Finally, the analysis in chapter 6.3 indicates that the collective use and production of urban edible landscapes can contribute to developing a sense of place attachment through multiple processes. First, by creating a sense of community linked to the production and maintenance of the edible landscapes. This sense of place attachment developed mainly for those who took active part in the maintenance of the edible landscapes, e.g. the participants of the community garden in Bertramjordet. Secondly, the edible landscapes might create a shared sense of place attachment that is linked to the physical appearance of the edible landscapes, because people consider them to be an integral part of the built environment of the city. This sense of place was mainly present in descriptions from informants in Andernach. Finally, the production and use of urban edible landscapes can create a sense of pride linked to the accomplishment of producing the edible landscapes. Both participants in Bertramjordet and in Andernach highlighted this sense of pride and linked it to a sense of place attachment.

In sum, the findings suggest that the collective use and production of urban edible landscapes can strengthen social relations through social interaction, the development of social networks and a sense of place attachment. At the same time, some aspects in both Andernach and Bertramjordet limit the strength of the social relations that have developed. This suggests that the social relations that develop can to a certain degree build transformative capacity, but that there are some limitations to the strength of some of the social relations. A key finding is that the limitations between the two units differ. This suggests that the structure or organization of

the edible landscapes, e.g. the scale at which they are initiated or managed influences the type of social relations that develop (or do not). This again impacts the potential for building and strengthening transformative capacity. I will reflect more on the scalar aspects of social relations and transformative capacity in the discussion (ch. 8.1).

Chapter 7 – Human-nature connections in urban edible landscapes

The second aspect of transformative capacity I examine in this study is human-nature connections. A vast amount of transformation literature emphasizes the need to reconnect people and nature to initiate a transformation to a sustainable, thriving society. There are many ways of connecting with nature. Therefore, the analysis is divided into five sections, based on the five categories of human-nature connections presented in the theory chapter.

7.1. Material reconnection – food from “farm” to fork (and back again)

Several informants in both units described how the edible landscapes raised awareness about the processes that are necessary to produce food. Since the point of material HNCs is to create a more direct link between people and natural resource consumption and extraction, this aspect of the edible landscapes is relevant to discuss in relation to material HNCs.

Susanne, a resident in Andernach, emphasized that the edible landscapes create stronger relations to food production processes. She said that she thinks the presence of the edible landscapes in Andernach can strengthen human-nature connections because one gets a better understanding of where and how food is produced – “it does not simply come from the shelf in the supermarket” she said. In many ways, Susanne highlights that by seeing and experiencing how food is grown in the city one gets a much better understanding of how food is produced. For many urban citizens such a connection to food production is missing. Therefore, by having edible landscapes, a more direct connection between food consumption and food production is developed.

Another informant who highlighted the material reconnection taking place through the edible landscapes, was Matthias Busenkell who runs the school garden which I visited in Andernach.

He explained how the children at the school experience how food is produced. Often, they harvest some of the food that is cultivated, process it, and eat it. Busenkell gave an example:

“We also process the fruits ourselves. Then the children see how we get them from the school garden, down to the kitchen and then afterwards we make a decent pumpkin soup from it”.

In that way the children experience how consumption of food is connected to natural processes. A direct connection between food production and food consumption is developed. Busenkell also told me that they make their own compost. Recycling food waste through composting can also strengthen HNCs (McClintock 2010, p. 195). In short, both through harvesting the food and through recycling food waste, the children might strengthen their material connection to nature.

Some of the informants in Bertramjordet also emphasized that cultivating food made them more aware of food production. For example, Henrik described a newfound appreciation for the food available in stores:

“Personally, I would say that I suddenly appreciate the food you get in the store more. You can’t just throw around some seeds to get good vegetables. It takes more than that. You get better insight of and understanding for it”.

The way I understand Henrik, the act of cultivating makes you much more aware of the complex natural processes that are necessary to produce good food. As a result, his awareness of how the food on our tables is part of the natural circle has increased.

Another informant in Bertramjordet who emphasized that he had become more aware of the links between food production and food consumption was Nils. Even though he has been a professional gardener and generally described his connection to nature as strong, it seemed like a more direct connection to food production developed through using and producing the edible landscapes:

“I have been a gardener and produced earlier in life, and I have not been so preoccupied with the process after that. Making juice, pickling, and cooking – it has not been a great interest of mine. But then, something happens, I guess. That I see from our little garden patch that this plant can be harvested all the time, that plant requires that and this one that.”

The way I understand Nils is that through having his own garden patch and harvesting the produce himself, he has become more aware of what plants or vegetables are suitable or work well in the garden. In that way the material connection to nature has been strengthened because the link between the food on his table and what work goes into producing it is strengthened.

Seppelt & Cumming (2016, p. 1646) argue that today, “large segments of the human population have been freed from the constraints of local food production”. They see this as problematic because it “allows people to forget about the realities of ecosystem change and uncertainty” (p.1646). The examples above indicate that there is an opportunity to strengthen material connections to nature through the use and production of edible landscapes because the “realities” of ecosystems are more directly experienced. This applies both to informants who actively cultivate and those that only use or harvest from open source edible landscapes.

However, it needs to be acknowledged that the direct consumption of natural resources (and as such the relation to resource extraction) is limited in the edible landscapes, because they only address food consumption. Many other natural resources do not receive any attention in the edible landscapes. In other words, the material connection to nature which might be strengthened through the use and production of the edible landscapes alone is not enough to build a strong material connection to nature. Still, one might consider the use and production of edible landscapes as *one* way of strengthening material connections to nature.

7.2. Experiential reconnection – interaction and contact through multiple senses

Experiential connections with nature are connections that developed through direct interaction with nature. This might seem confusingly similar to material human-nature connections discussed in the previous section. Although both in many ways address experiences with nature, the key difference is between the *connection* that is analysed. When examining material connections, the main concern is to analyse the links between society and natural resource extraction used for production. With experiential connections the main purpose is to study if and how people experience nature through interacting with it, often through leisure activities. I will therefore describe and discuss in what ways urban edible landscapes lead to direct interaction with nature. Furthermore, I will discuss what kind of interaction with nature takes place, because as Ives et al. (2018, p.1391) point out, the “quality of the [experiential] connections may vary substantially”.

I asked all informants how they use the edible landscapes. Most of them told me that they go to the edible landscapes regularly. The people who cultivate in the community garden in Bertramjordet are in contact with nature every time they look after their vegetable patch or green house. Some go almost every day; others go a few times a week. Even the people in the neighbourhood who are not actively part of the community garden, are in contact with nature when they walk the streets with fruit trees and berry bushes as well as when they stop by the community garden and have a look. Since the area is open, one can easily walk through the vegetable beds, unlike more closed forms of community gardens.

In Andernach people are also in contact with nature when they come across edible landscapes in the city centre or go to the permaculture farm. Throughout the city there are bed boxes with edible plants and by the old city walls there is a large area devoted to cultivation of edible plants as well as an area with animals. Several of the informants confirmed that the edible spaces lead to new and increased contact with nature for the inhabitants in the city. For example, Kosack, whose office is right beside some of the edible landscapes in the city centre, said that “you always see people by the beds who smell the plants a bit or take a look at the animals [...]”.

The impression that people interact with nature in the edible landscapes is strengthened by the fact that some of the regular citizens whom I talked to in Andernach also told me that they go by the edible landscapes regularly. For example, Katja and Thomas told me that they go to the edible landscapes in both the city centre and to the permaculture farm regularly. Furthermore, they had observed that many other people do the same. In similarity with Kosack, they had also seen many people stop by the edible trailer in front of the town hall to look at and read about the plants that are grown there. Therefore, the edible landscapes appear to function as spaces for nature interaction.

The school gardens in Andernach also increase nature interaction. Matthias Busenkell, the caretaker at the school I visited, told me that the school children often are in the garden during breaks and after school with their activity group and help maintain the school garden:

“The children help me with all the green space outside. Cut the hedges and shrubs, pick up leaves and so on. Everything that has to do with nature, the children help me”

Nature interaction during childhood is emphasized as particularly important to build strong human-nature connections (Collado et al. 2013, Ives et al. 2017). Having schools where

children directly interact with nature therefore appears to be a particularly relevant strategy to improve HNCs over time.

Busenkell also told me that both the children and other citizens experienced nature interaction through edible school roads:

“we realized, on the school road, there is nothing there right. So, we built 10-12 beds [...] that the children have to look after. This has already reached the population, because the children don’t do it regularly or might forget it. And so, the residents go there and look after the beds, water them.”

Through the edible school roads, the children’s encounter with nature in edible landscapes is therefore not limited to school hours. Furthermore, as Busenkell points out, other residents in Andernach have also started interacting with nature through looking after the beds.

All the above examples illustrate in what ways people get an increased opportunity to interact with nature because of edible landscapes. Having daily opportunities to interact with nature in easily available spaces is argued to be a key component to increase contact and closeness to nature (Soga & Gaston 2016, p. 99). Accordingly, by giving people increased opportunities to experience nature, both in terms of opportunity and accessibility, the edible landscapes can strengthen human-nature connections.

Not everyone I spoke to used the edible landscapes regularly. For example, when I asked the volunteers from Naturfreunde if, and how, the edible landscapes have influenced their interaction with and relation to nature they told me that it had not impacted them much. However, they explained that this was mainly because they already had many nature experiences. One of them, Matthias, put it this way: “since most of us grow fruit trees and vegetables in our own gardens, we are in direct contact with nature and familiar with botany”. The way I interpret Matthias, is that the edible landscapes managed by the municipality in Andernach have not had a huge impact on their nature connectedness. This, however, is not because interaction with nature does not strengthen an experiential connection, but rather because they already had a quite strong experiential connection to nature. As a result, the edible landscapes that had been incorporated through the edible city project did not make a big difference to them.

It is also important to acknowledge that most people would have some contact with nature also without the edible landscapes. Some green spaces were already part of the physical

environment prior to the implementation of the edible landscapes in both units studied. However, some of the findings indicate that the contact people got with nature through using and producing the edible landscapes was different and affected them more than regular contact with nature (e.g. walking through a park). It is therefore relevant to discuss more thoroughly *what kind of* interaction with nature might take place in edible landscapes.

Some of the informants highlighted that the interaction with nature experienced through the edible landscapes went beyond regular contact with nature. For example, in Andernach one of the goals of the project is that people can experience biodiversity, that it can be “touched, smelled, felt and tasted” (Kosack undated, p. 5, my translation). In other words, contact with nature in the edible landscapes includes smelling, feeling and tasting nature, not only seeing it. In our interview, Kosack explained why this was important to the municipality:

“When you hold a tomato in your hand and say – wow, that is a taste I do not know – then there is a relation between you and the tomato. And that impacts you more than if I give you an information pamphlet or tell you something about a regulation plan”.

Kosack highlights that edible landscapes give people the opportunity to interact with nature through a multitude of senses. Some of the informants in Bertramjordet also emphasized how the community garden let them interact with and connect with nature using multiple senses. For example, Berit said this when asked about her nature connection:

“I have absolutely gotten a closer connection to nature. Quite practically *by putting my hands in the soil*”.

In this statement Berit, highlights that the practical interaction with nature through cultivating – the direct and embodied contact – has strengthened her nature connection.

These examples highlight that using and producing edible landscapes expands nature interaction from seeing or observing to also smelling, tasting, and feeling nature. Related UA research supports these findings. Several studies have found that food cultivation provides people with embodied nature experiences and that this can strengthen people’s connection to nature (Delind 2006, McClintock 2010, Hawkes & Acott 2013). For example, research by Hawkes & Acott (2013, p.1119) highlights that edible landscapes, such as community gardens, provide “the potential for doing and acting within the landscapes, rather than observing it from afar”. While walking through a park or a forest increases nature contact, embodied contact through cultivation and harvesting plants appears to have a bigger impact

on people's nature connection. In that way, a connection to nature is "constituted through lived engagements with the world" (Hawkes & Acott 2013, p. 1119).

In sum the analysis of experiential HNCs shows that the urban edible landscapes increased nature interaction for most of the informants. Furthermore, such interaction usually included multiple senses and therefore led to embodied experiences of nature. While Ives et al. (2018) acknowledge that the quality of experiential nature connections may vary, they do not explicitly discuss what kind of contact leads to higher or lower quality experiential nature connections. The findings from this study and other UA research indicates that *embodied* nature interactions might lead to particularly strong experiential connections.

7.3. Cognitive reconnection – increased knowledge and awareness

A cognitive connection to nature is often defined in terms of knowledge about nature, creating a new awareness of nature, the attitude one has towards nature or how one values nature (Ives et al. 2018). In other words, it is a rather wide category and there are many aspects one could potentially examine. In this analysis I will focus primarily on how edible landscapes can strengthen awareness and increase knowledge about nature.

In Bertramjordet many of the participants had little knowledge about growing plants and food before taking part in the project. This is something they highlighted themselves. For example, when talking about cultivating, Ingrid stated:

"I mean, it has taught me a lot. I really knew nothing about this".

She later gave a specific example of her level of knowledge:

"Someone had bought a bag of seed potatoes and asked – do you want some seed potatoes? Yes, thank you very much, I answered, because they were sold out at Plantasjen⁷. [...]. I barely knew – luckily there were instructions about it on the bag – how deep they should be planted. And then some plants grew out. And then I thought, what now? When do I know when to harvest the potato? It was on that level" (Ingrid).

However, as the first statement also illustrates, many expressed that they learned a lot throughout the project. For example, Silje, talked about what she had learned several times during our interview:

⁷ Plantasjen is a Norwegian garden centre.

“We have learned a lot. I have learned that some plants need a lot of space and some plants do not fit well in a green house, while others do. Like tomatoes, right. So that they get shelter and warmth”.

“The most important experience – do not grow pumpkins in a mini greenhouse”.

Other informants from Bertramjordet highlighted the same aspects as Silje. For example, Berit also expressed that she learned a lot about the growing process:

“That is one of the most important experiences I have gotten from taking part in this – that I have learned a lot about cultivation and how I should water and take care of it and get it to grow properly”.

The interviews with participants from Bertramjordet suggest that these learning processes are usually the result of two factors. Some knowledge developed through specific advice given by other participants in the project. Other knowledge was developed more through experimenting and experiencing – a learning-by-doing process, so to say. The interview with Berit illustrates this dynamic learning process:

“Someone explained to me that the way I watered was a bit too cautious and gentle. That I had to water more thoroughly. That it [the allotment] should be watered over the course of several hours, so that the water could go all the way down to the roots. Then I saw that it suddenly started growing. Or there was a clear difference” (Berit).

Later in the interview she stated:

“I planted 6-8 almond potatoes in the green house. And they grew really well in the green house, but then Nils mentioned [...] that they were not suitable to cultivate in a green house. Because they can become quite big and need some space. And then I was advised, or it was suggested, that I simply plant these potato plants outside in the allotment. [...]. But I learned that they did not grow well there. They just withered. They fell together. So, Nils said that it probably would have been best if I had planted them outside in the allotment from the beginning. Then maybe it would have gone better” (Berit).

Both excerpts illustrate how knowledge about plants and cultivation developed through the combination of advice by others and a process of trying and failing.

Similarly, the interview with Ingrid also illustrates how knowledge has developed both through both experimenting and receiving advice from others. The first statement illustrates the learning-by-doing process:

“[...] I have planted all sorts of things and seen that some things work, and others do not at all. So next year I have a better basis for maybe choosing more of some things and less of other things” (Ingrid).

However, on another occasion, when she spoke about growing potatoes, Ingrid explicitly said that she received tips from others:

“[...] someone said that I had to hill the potatoes. I was like, okay, I have heard of that. I have no idea what it is, what should I do? Well, you need to shuffle soil around the base of the plant. I always did that with my grandmother, the woman in the allotment beside mine said – we hilled potatoes during summer [...]. I didn't know quite what I was doing but shuffled some soil on the plants. When the plants withers, then you can harvest the potatoes. Aha, okay, good”.

Looking at these statements holistically, it becomes clear that Ingrid developed knowledge about nature in similar ways as Berit. It is a combination of experimenting and receiving advice from other participants that has given her new knowledge about nature. Accordingly, it is not only the cultivation process itself that contributes to more knowledge, but the process of doing this together with others. This suggests that the community aspect is central to the learning process. By sharing experiences and knowledge, the participants expanded their knowledge about nature. In other words, this indicates that the *collective* use and production of the edible landscapes is central for strengthening cognitive human-nature connections.

In addition to learning and developing knowledge about nature through the process of cultivation, some of the informants also highlighted how the edible landscapes raised their general *awareness* of nature and the environment. Silje talked about how she started reflecting more about what is good for nature:

“I have thought a bit about the issue with fertilization and what is good for nature in a way, what pays off. Or what is smart to fertilize with for example”.

When asking what the most important experience of taking part in the project, Silje also emphasized that she had gotten a more conscious awareness of how natural processes work:

“The most important experience [...]. To see [...] the interaction taking place in nature – sun, rain, earth. That circle. To experience it and the importance of it”.

These two excerpts illustrate the ways in which Silje’s awareness of nature was strengthened. Through cultivating, she became more aware of how nature is affected by how humans treat it. Furthermore, she emphasizes that she has gotten more *aware* of the interaction between natural elements and their interplay – in short, an awareness of how natural processes work.

Ingrid also reflected on how taking part in the project has increased her general awareness of nature:

“It does something with the way you think. Because now I have started thinking that bokashi probably would be smart. Because I could use it there, in my greenhouse”.

Later she continued with saying this:

“[...] you get a bit more concerned with things being organic. That you do not want to throw a lot of strong stuff on the allotment. Although it might keep some lice away. It is a consideration. You become more aware of it”.

Both examples illustrate that the process of producing and maintaining edible landscapes, such as in a community garden, have the potential to raise awareness about nature. Having the allotment and the green house integrates considerations about nature more into people’s daily life and thereby raise awareness about nature.

So far, I have only discussed in what ways cultivating practices related to the edible landscapes can strengthen people’s cognitive connection to nature. However, the data from the units suggests that edible landscapes can strengthen this connection even if one does not actively cultivate. There are examples of this both in Bertramjordet and in Andernach.

As described earlier, the edible landscapes in Bertramjordet consist of more elements than the community garden. Throughout the neighbourhood, berry bushes and fruit trees have been planted for everyone to enjoy. While talking about these, Ingrid pointed out that their presence also increased her knowledge and awareness about natural processes. When the trees and bushes first were planted, she could not understand why the housing cooperative’s board had decided to plant rowans (rogn), but later she learned why they had decided to do it:

“So, then I understood that if we wanted apple trees and cherry trees and things like that, we needed something else to offer the crow or else it would eat from all the trees.

And it will always prefer rowanberries over apple. [...]. Then you learn a bit more about the processes in a way”.

This example illustrates how Ingrid developed new knowledge about nature through observing the edible landscapes in her neighbourhood and receiving information about why these particular plants were chosen. This indicates that one can increase knowledge about and awareness of nature even when one does not actively cultivate edible landscapes. Simply by having contact with the edible landscapes, a stronger cognitive connection can potentially develop.

In Andernach, similar processes were at work, wherein contact with edible landscapes provided an opportunity to increase knowledge and awareness of nature. To begin with, the municipality has implemented what they call a ‘traffic light’ system for the plants. In short, the edible plants in the city centre have red and green signs which signal whether a plant is ready to be harvested or not. Before the signs were put up, there were some issues with people harvesting some of the foods too early. By putting up the signs beside the plants people learned when a plant was ripe and ready to be harvested. In that way people could link the experience of the plant – how it looked, felt, smelt, tasted etc.- with the information that it was either ready to be harvested or not. As a result, people could get better knowledge of the plants they saw and a raised awareness about the growing cycle of plants.

Another aspect that could influence people’s knowledge about nature is that there are many information signs both in the edible landscapes in town and on the permaculture farm which inform people about the plants that are there. For example, there is a herb encyclopaedia at the permaculture farm providing information about all the herbs on the farm. These can provide people with new knowledge about plants. In that way the information is coupled with the direct experience of the plants.

Unlike in Bertramjordet, the knowledge about nature that develops is therefore not linked to active maintenance or cultivation of plants. However, Seppelt & Cumming (2016, p.1646) argue that *information* about biodiversity is one of the key solutions to reduce what they define as the “distance to nature”. In that sense, developing new knowledge about nature and biodiversity through information signs, could also be an efficient way to develop HNCs.

Several of the informants in Andernach also emphasized that the edible landscapes raised a general awareness about nature. In one of the documents provided to me by Kosack, he stated

that the edible landscapes provide people with the opportunity to experience the seasons of a year more directly:

“With the newly developed green spaces in the city, the changing seasons are experienced more consciously, as with the process of sowing, growing, and harvesting. Such forms of awareness often lack in cities” (Kosack, undated, p. 3).

Kosack’s statement was supported by citizens living in Andernach. For example, Katja, told me that the edible landscapes gave her more perspective. She said that having edible landscapes as green space in the city made her reflect more than the flowers or parks that used to be in many of the areas that are now used for cultivating food. In other words, the findings suggest that people get a more conscious connection to nature through the edible landscapes. The edible landscapes therefore raise more awareness than other forms of green space do.

In sum, the analysis suggests that the collective use and production of edible landscapes can contribute to strengthening cognitive HNCs mainly through three processes. First, by developing knowledge about nature through the process of cultivation, either through learning-by-doing or through knowledge exchanges with other participants. Secondly, by developing knowledge about nature through contact with nature. This refers to those participants who do not cultivate, but otherwise interact with the edible landscapes and learn through that. Finally, the cognitive connection can be strengthened by raising the awareness of nature through experiencing environmental processes, both through cultivation and other forms of interaction with edible landscapes. While the first point is limited to participants who actively cultivate in edible landscapes, the two other aspects are also relevant for those who do not. This suggests that both active and more inactive participants can strengthen their cognitive connection to nature through the collective use and production of edible landscapes.

7.4. Emotional reconnection – appreciation, joy, and recreation

There are many studies looking into human-nature connections based on emotions. Having an emotional connection to nature is argued to be a key component of a strong human-nature connection (Lumber et al. 2017). For the analysis of emotional nature connections, I looked for descriptions of feelings related to the interaction with nature that is taking place in the edible landscapes. Feelings of affection or joy are by Lumber et al. (2017) defined as characteristics of an emotional connection to nature. Others, such as Collado et al. (2013) and

Ives et al. (2018) also suggest that feelings of attachment, empathy or a bond towards nature are signs of an emotional connection to nature.

The informants described different forms of emotional connectedness to nature. Some of the participants in Bertramjordet addressed the recreational aspects of being in the edible landscapes:

“When you are out there, when you water and things like that, then it’s kind meditative in a way” (Henrik).

“I think it has been [...], been recreational is what I think it has been. And to me that has been the most important part of it” (Ingrid).

Both Henrik and Ingrid described the experience of interacting with nature in the edible landscapes with specific feelings. Being in nature was associated with feelings of peace and recreation. In that sense, a positive emotional bond between them and nature developed. They both emphasized that these feelings developed through being and interacting with nature in the community garden. In other words, they specifically linked their emotional bond to nature to the use and production of edible landscapes.

Berit is another informant from Bertramjordet who described an emotional connection to nature. For her, it manifested mostly through an increased appreciation of nature.

“I appreciate living in such a green area more. To be able to use it, use it more actively. Indirectly through something as simple as growing some seeds. It sounds pretty banal” (Berit).

She also told me how others experienced cultivating foods in edible landscapes – at least the way they explained it to her.

“They think it is a very pleasant, almost a magical experience. To suddenly have that close connection to nature, with the soil and the cultivation. And at the same time, when they tell me about it, it’s a bit comical and embarrassing in a way. That they could get so fascinated by it. Because it is so new – a different experience” (Berit).

Berit highlighted how producing and maintaining edible landscapes led to new and somewhat surprising feelings towards nature. This corresponds with what Lumber et al. (2017) describe as an emotional connection to nature. They define it as “an affective or sensation that occurs

as a result of engaging with nature” (Lumber et al 2017, p. 19). It seems accurate to describe having a “magical experience” in relation to cultivating food as such a sensation.

In sum, only some informants described the connection to nature they experienced through the use and production of edible landscapes in terms of emotions. This section of the analysis is therefore quite limited, especially in relation to Andernach because none of the informants there described emotional HNCs. Some of the same concerns apply to next section on philosophical HNCs, too. Therefore, rather than reflecting on possible reasons for the limited data material on emotional HNCs here, a more holistic discussion of the issue will follow in the chapter summary (chapter 7.6.).

7.5. Philosophical reconnection – changing perspectives of the human-nature relationship

The final category of human-nature connections presented by Ives et al. (2018) is the philosophical connection. This category looks into how people view the human-nature relation. Within sustainability discussions, there are calls for a more integrated and/or egalitarian perspective of the human-nature relation (e.g. Alaimo 2012). Few of the informants discussed their human-nature relation in these terms. However, one exception was Silje, one of the informants from Bertramjordet. While talking about her relation to nature, she expressed that she had developed a new perspective on what counts as good and bad weather.

“When you live in such a green environment it is nice to take part in, I mean integrate oneself, what should I say, with the surroundings. [...]. If not, the green [the environment/nature] feels more like an inconvenience, really. And the weather, rain and stuff like that, is kind of inconvenient. But we have been happy about it. Okay, it’s going to rain – yes, that will be great for our plants” (Silje).

In this statement, Silje in many ways describes a new relationship toward nature – one where the needs of nature are egalitarian to her own. Norwegians generally equate good weather with sunny weather and bad weather with rain. Silje, however, describes a shift in her understanding of good and bad weather due to a concern and awareness of what is good for nature. This indicates a shift in how she sees herself or human needs in relation to nature and that her philosophical connection to nature is based on a more egalitarian worldview.

In many ways this illustrates in what ways edible landscapes can potentially change people's worldviews. It is unlikely that Silje would have defined rain as "good", had it not been for her active engagement with edible landscapes. As a result of cultivating in the community garden, she defines what is good for nature as good for her. In that sense she sees herself as integrated and not separated from nature. Dominant worldviews which separate humanity from nature have been called into question and suggested to be one of the underlying reasons for current socio-ecological issues (Alaimo 2012). If engaging with edible landscapes can contribute to a more integrated perspective of the human-nature relation, this suggests that the use and production of edible landscapes might influence philosophical HNCs.

The only other informant who touched upon philosophical HNCs was Lutz Kosack from the planning office in Andernach. When discussing what impact the edible landscapes could have, he said:

“[...] you can make people reflect. That the world could be different from how we know it”.

In this statement, Kosack, suggests that edible landscapes can shift how people think about and relate to the world. In that sense, Kosack believes that edible landscapes can contribute to changing philosophical HNCs. However, Kosack, discussed this issue rather hypothetically and did not explicitly say that he had observed such worldview changes in citizens. Moreover, none of the other informants from Andernach directly addressed philosophical HNCs when describing their relation to nature. Sure, some of the residents expressed that they had experienced an increased awareness of nature, but such a connection is rather linked to a cognitive HNCs, at least in Ives et al.'s (2018) categorization. Due to the limited data material, it is therefore difficult to conclude about the potential for developing new philosophical connections to nature through the use and production of edible landscapes.

7.6. Summary and reflections

By using a framework developed by Ives et al. (2018) I have examined what types of human-nature connections the interviewees in Andernach and Bertramjordet describe in relation to their interaction with edible landscapes. The findings suggest that the collective use and production of edible landscapes can impact HNCs. However, not all the types of HNCs are experienced or emphasized equally by the informants. Experiential and cognitive connections

are prominent both in Andernach and Bertramjordet. Material connections were also emphasized by several of the informants in both units.

Emotional and philosophical connections, on the other hand were less emphasized. Especially in Andernach there was a lack of such connections described by the informants. The apparent lack of emotional and philosophical connections deserves some consideration, not least because Ives et al. (2018) argue them to be most important from a transformation perspective. It is of course a possibility that such connections did not develop. However, there are also several aspects related to the data collection that might have impacted the data material.

First, the questions for the interview guide were made before a detailed theoretical framework for the thesis was developed. I knew I wanted to ask about nature connections, but I had not incorporated the categories developed by Ives et al. (2018) into the framework. Accordingly, the questions that I asked the informants about HNCs were quite general and not framed to provide information about these categories specifically. As a result, many described the *experiences* they had in the edible landscapes and what they had learned. This explains the richness of data on experiential and cognitive connections.

Another factor that might have affected the imbalance in data material is that emotional and philosophical connections are quite personal topics and possibly more challenging to discuss. Describing what you do or learn in edible landscapes seems easier to discuss than how you feel or connect with nature on a deeper philosophical level. Had I known that I wanted to analyse these topics specifically, I could have developed an interview guide where I took this into account, and “prepped” the interviewees for more challenging discussion topics. However, since this was not the case, the atmosphere in the interview might have limited the interviewees inclination to open about quite personal thoughts. This might have resulted in the overweight in data on material, experiential and cognitive connections.

Finally, in the case of Andernach, the type of people that I interviewed also might explain why there is barely any data on emotional and philosophical connections. Some of the interviewees, such as Lutz Kosack and Matthias Busenkell, were in many ways talking on behalf of others. In other words, they were not describing their personal HNCs. When speaking on behalf of others, is easier to describe what others do or learn than how they necessarily feel. The first can more easily be observed, whereas the other presupposes that they have discussed the topic with others and have knowledge about their personal feelings.

In short, it is likely that the data collection methods have impacted the data material on HNCs and limited the descriptions of some of the types of HNCs which are a central part of the theoretical framework. It is therefore difficult to conclude whether the apparent lack of some of these HNCs in relation to the edible landscapes is a result of methodological limitations or because only very few of the interviewees developed those HNCs.

The somewhat inconclusive results related to emotional and philosophical HNCs could raise questionable doubt about the strength of the transformative capacity that is developed through the edible landscapes. As discussed in the theory, Ives et al. (2018) argue those two HNCs to be higher and more efficient system leverage points. However, others such as Abson et al. (2017) emphasize the relational aspects of the HNCs. From such a perspective the inconclusive result about emotional and philosophical connections could be argued to be less problematic – at least in terms of discussing the transformative capacity of the HNCs developed through edible landscapes. I will return to this matter when discussing the transformative potential of HNCs in chapter 8.2.

Chapter 8 – Discussion: the transformative potential of urban edible landscapes

The findings in the analysis suggest that the collective use and production of urban edible landscapes can strengthen both social relations and human-nature connections. Social relations can be strengthened through increased and purposeful interaction between people who use and produce the edible landscapes. Furthermore, through collaboration and cooperation among a multitude of actors, social networks developed. Finally, developing a sense of place attachment directly linked to the edible landscapes can also strengthen social relations. At the same time, the analysis also suggests that the structure and organization of the projects influences what type of, and to what degree, social relations are strengthened. In other words, the collective use and production of edible landscapes results in the development of different kinds/types of social relations.

The analysis also suggests that stronger human-nature connections develop while using and producing urban edible landscapes. In particular, the experiential connection appears to grow strong through the embodied experiences and use of senses while interacting with the edible

landscapes. As a result of, and in relation to these experiential connections, other human-nature connections develop, too. Especially, the cognitive connection appears to be closely interlinked with the experience of nature, but emotional, material, and philosophical connections also appear to be strengthened for some of the informants.

The findings from the analysis provide new insights about the dynamics taking place in the use and production of urban edible landscapes. This has several implications, both for policy makers who might want to use urban edible landscapes to strengthen transformative capacity and for future research on urban agriculture and transformative capacity. This chapter is therefore dedicated to a discussion of the findings summarized above. It will be a three-fold discussion. First, I will discuss social relations as a scalar concept to get a better understanding of how the organization of urban edible landscapes affect the development of social relations. Then I will discuss the relation between human-nature connections and system leverage points. Finally, I will also discuss transformative capacity as a concept and reflect on the relevance it has for sustainable transformations.

8.1. Social relations as a multi-scalar concept

Findings from the analysis suggest that the scale at which social relations developed in the two units varied. In Bertramjordet social relations were mostly strengthened locally within the housing cooperative. In Andernach, on the other hand, social relations developed on a city-level with widespread social networks between a multitude of actor at various scales. These findings suggest that social relations develop within and between different scales and therefore would benefit from being examined more thoroughly through a scalar perspective.

To begin with, *how* various actors interact within and between scales influences what kind of social networks develop. There were links between a multitude of actors at various scales in both Andernach and Bertramjordet. However, only informants from Andernach highlighted that social networks between themselves and a multitude of actors, including the municipality, at various scales had developed. In contrast, several of the informants from Bertramjordet highlighted that the municipality had more or less withdrawn from the project after funding was given. In other words, the link between Bertramjordet and the municipality was not developed on the basis of partnership. Rather it was a one-way street where the municipality offered funding and after giving this, there was limited contact. As a result, most of the participants did not develop any connections to the municipality.

Developing social networks, which include institutions and authorities, has been emphasized on several occasions as a key aspect of transformative capacity (Ziervogel et al. 2016, Amundsen et al. 2018). The findings from this study suggest that there needs to be continuous contact and partnership between relevant actors to develop strong social networks. This highlights that the way in which social networks are organized influences their significance. This is in line with research by Firth et al. (2011), who highlights that multi-actor and multi-scalar networks need to be developed on the basis of *partnership* in order to strengthen social relations.

Another important point is that the limited networks and connections to the municipality also left several of the participants in Bertramjordet feeling like their project was not part of a holistic strategy for urban sustainable development. This is problematic because it suggests that there is a lack of a common sustainability vision. Research by Amundsen et al. (2018) suggest that having a common understanding or vision for urban sustainable development is a key aspect of local sustainable transformations. It is likely that limited networks and connections to the municipality contributed to fragmented sustainability visions. From a transformation perspective, building social networks that are based on partnership could therefore also be important because they could help foster a shared sustainability vision.

A third implication to be drawn from the analysis on social relations, is that meaningful and purposeful interaction is easier to achieve on the local, neighbourhood scale where there is continuous contact between active participants who collectively use and produce edible landscapes. As mentioned before, such interaction is key for strengthening social relations. While some of the informants from Andernach, such as Naturfreunde, did take part in meaningful activities together, the number of residents in Andernach who took part in purposeful activity in the edible landscapes was rather limited. In Bertramjordet, where the setting for the edible landscapes was local and neighbourhood based, such interaction was more likely to take place. In terms of building spaces for meaningful social interaction between people, these findings therefore suggest that the use and production of edible landscapes is most efficient on the local, neighbourhood scale.

It therefore follows that housing cooperatives could be a relevant and important actor and scale for sustainability transformations. At present, the role of housing cooperatives in sustainability transformations has not been explored much. Whereas civil society, local businesses and local government institutions are highlighted as relevant actors for sustainability transformations at the local/urban level (e.g. in Ziervogel et al. 2016 and

Amundsen et al. 2018), housing cooperatives are not mentioned. Of course, it must be acknowledged that housing cooperatives are not relevant in all discussions because they do not exist everywhere. However, even in countries where housing cooperatives are widespread (such as Norway and Britain), their role in sustainability transformations are so far not considered much.

Nonetheless, there are some signs that sustainability issues are gradually being incorporated into research on housing cooperatives. For example, some research has examined the housing cooperatives role in sustainable urban regeneration and housing renovations (Hauge et al. 2013, Aamodt 2015, Pérez & Perdomo 2017). Others, such as Schröder and Walk (2013), have discussed the role of housing cooperatives in local climate governance. A commonality between these studies is that they address how housing cooperatives can contribute to climate change mitigation and adaptation. The findings from this study suggest that housing cooperatives are a relevant arena or space for strengthening social relations through the collective use and production of urban edible landscapes. Accordingly, it is worth examining housing cooperatives more thoroughly, both as a spatial category and as an actor or agent in sustainable *transformations*.

The findings from this study highlight that social relations in urban edible landscapes include a variety of actors and can develop along and between different scales. Currently much of the literature that examines social relations in urban agriculture tends to highlight the potential for developing stronger relations between people who cultivate, for example in local community gardening projects (Firth et al. 2011, Hawkes & Acott 2013, Rogge et al. 2018). When social relations in UA are discussed on different scales, e.g. in relation to urban policy, edible landscapes are often portrayed as spaces of contestation and conflict (e.g. Schmelzkopf 2002, Colasanti 2012). The findings from Andernach, however, highlight that the production of urban edible landscapes can also *strengthen* social relations between multiple scales, moving beyond the community of active gardeners. At the same time, the findings from Bertramjordet, where no strong multi-scalar networks emerged illustrate that this is not a given.

In sum this section therefore highlights that both UA literature and transformation literature could benefit from a more explicit engagement with the scalar aspects of social relations. Particularly theory developments within human geography which highlight scale as a relational rather than a hierarchical concept could prove to be useful. With such a perspective one is less concerned with making clear distinctions between different levels and more

concerned with how various actors and institutions interact within, and between, different scales (Jordhus-Lier & Stokke 2017, p. 54).

8.2. Linking nature connections to system leverage points

The analysis suggested that human-nature connections develop through the use and production of edible landscapes. However, I have not discussed explicitly how various nature-connections might be transformative or translate to transformative capacity. While much literature is general in their recommendation about nature reconnections, Ives et al. (2018) link various forms of nature connectedness to system leverage points. They argue that some nature-connections have more transformative potential than others. Figure 7 illustrates how Ives et al. (2018) describe the relationship between human-nature connections and leverage points.

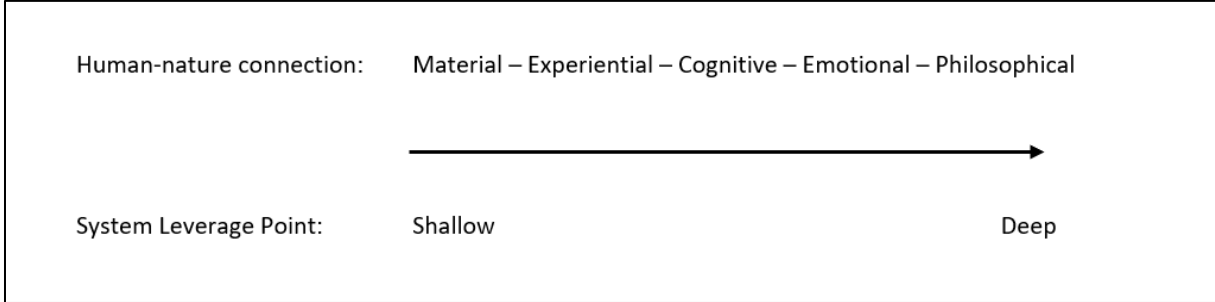


Figure 7. The relationship between system leverage points (ranging from shallow to deep) and various forms of human-nature connections. Based on Ives et al. (2018), p. 1393.

The analysis showed that the majority of informants emphasized that their material, experiential and cognitive connections to nature had been strengthened. Only a few highlighted aspects of emotional and philosophical reconnections. Based on Ives et al.’s (2018) categorization the transformative potential of urban edible landscapes could therefore not be defined as high, because there were few signs of high-leverage nature connections.

However, there is room for questioning the assumption that human-nature connections are linked to leverage points in such a linear matter. In many ways, Ives et al. (2018, p. 1391) acknowledge this themselves when stating that the various forms of human-nature connections often are interlinked. In that sense, nature connections that have low leverage for system change (such as experiential connections), have the potential to influence others forms of nature connections. If experiential connections can lead to other reconnections that have higher potential to transform a system, the experiential connection might be an important part of achieving system transformation.

The data in this study suggests that interaction between various forms of nature connections is prominent. Especially experiential connections seem to influence other forms of nature connections. In almost all examples discussed in the analysis, the informants linked their connection to nature to contact or experiences with nature that took place in edible landscapes. Since the interview questions about human-nature connections were asked in the context of people's experiences with edible landscapes this makes sense. Still, it illustrates that experiential connections have potential to impact material, cognitive, emotional and philosophical connections. The fact that bodily experiences are highlighted by the informants implicates the importance of experiential connections. For example, none of the informants described a nature reconnection through increased knowledge alone (cognitive nature-connection). When talking about their nature connection, they mostly fell back on practical experiences with, and in, nature. This then led to knowledge, awareness, or emotional bonds, but it was directly linked to the experience or contact with nature.

The argument that an experiential connection to nature is key for overall stronger human-nature connections (although it is low on the system leverage scale) is strengthened by the fact that numerous authors discuss emotional and cognitive reconnections directly linked to experiences with nature (Collado et al. 2013, Seppelt & Cumming 2016, Soga & Gaston 2016, Lumber 2017). Although they emphasize the importance of both emotional and cognitive connections, they all find that experiencing nature is a determining factor for such nature connections to develop. Hawkes & Acott (2013, p. 1119) argue that this way of gaining knowledge and skills has important consequences for the kind of nature connection that develops: "rather than dispassionate and disembodied, "knowing is a process, an action" (Degen et al. 2003, p.14), constituted through lived engagements with the world". The findings in this study further strengthen the idea that experiences and contact with nature are key to develop other forms of nature connections.

Not only does an experiential connection to nature seem to be essential for developing other forms of nature connections, some of the data suggests that HNCs at higher leverage points only have significance when coupled with nature experiences. One example that illustrates this well, is when Henrik explained what stuck with him the most from the project in Bertramjordet. He described himself as knowledgeable about nature and environmentally aware. However, the direct contact with nature through cultivating in the edible landscapes had a profound effect on him:

“I think the biggest impact of the project in relation to nature has been to realize how complicated it actually is. [...]. I mean, I have studied biology and know how plants grow. However, seeing how complicated it is with different species and getting it to grow together – it has been a bit of an aha-moment actually”.

The statement by Henrik in some ways suggests that an experiential connection can have a more profound effect on people than Ives et al.’s (2018) categorization would suggest. As a biologist, Henrik’s knowledge about nature – his cognitive connection – is already well developed. To him, seeing and experiencing how nature works in practice therefore had a bigger impact. This suggests that the experiential connection is at least as, if not more, significant than cognitive connections to nature.

The importance of experiential connections has been emphasized on several other accounts. Delind (2006) highlights the importance of linking cognitive connections to embodied experiences: She argues that “[...] knowledge that is not used, and information that is not felt, are indistinguishable from ignorance [...]” (Delind 2006, p. 134-135). Collado et al.’s (2013) study, looking into children’s summer camps (nature camps), also finds that experiences with nature are key to develop HNCs, more so than cognitive connections. While some of the camps had environmental education programs and others did not, the level of nature connectedness was the same in both camps. This suggests that experiences and contact with nature have the most profound effect on nature connectedness, not the amount of knowledge one has about nature.

These findings pose a reasonable challenge to the linear and hierarchical relation between different forms of nature connections and system leverage points suggested by Ives et al. (2018). This is not to say that strong philosophical and emotional connections to nature are insignificant for system transformation. However, the findings suggest that it would be problematic to focus exclusively on high-leverage HNCs, because low leverage HNCs (such as experiential connections) can be key to even develop higher leverage HNCs.

Furthermore, the way one acts does not necessarily correspond with one’s philosophical beliefs. This claim is supported by social practice theory, and illustrated by the widespread presence of what is referred to as the “value-action” gap – “the problem that people who espouse green values do not always act in accordance with them” (Shove 2010, p. 1276). In line with this thought, one might value nature and humans equally (strong philosophical connection), but act in a way that puts human needs above nature. In that sense, a strong

philosophical nature-connection might not lead to sustainable transformations. In other words, *experiencing* nature can be more important than having a strong philosophical connection to nature.

In conclusion, the theoretical understanding of human-nature connections as a hierarchical concept appears somewhat limited. The findings from this study highlight that the transformative potential of different HNCs is complex and cannot be explained through hierarchical connections to system leverage points. Two important points can be drawn from this. First, that a relational understanding could provide a richer and more accurate understanding of the dynamic processes between different forms of human-nature connections. Secondly, the findings imply that embodied experiences matter greatly. Examining and understanding practices and embodied experiences has increasingly been emphasized in geographic research. With what is sometimes referred to as the ‘material turn’ or ‘new materialism’, analytical focus has shifted from discourse (which has been of huge importance within geographic research) to practice (Whatmore 2006, p. 603). This research position is deeply concerned with “the connections between the geo (earth) and the bio (life)” through sensory and bodily experiences (Whatmore 2006, p. 601). In that sense, the transformation of human-nature relations is as much an embodied as a cognitive process. This strengthens the idea that embodied experiences are key to sustainability transformation, also in the personal sphere.

8.3. The relevance of transformative capacity in sustainability transformations

Finally, the value of transformative capacity in relation to sustainable transformations should also be discussed. The goal with this section is not to argue if or if not, transformation has taken place in the units I have studied through building social relations and HNCs. Such considerations go beyond the aim of this study. However, the significance of transformative capacity in light of current calls for deliberate transformation is relevant to reflect upon because the goal of this thesis is to provide new insights to the sustainable transformations field. Therefore, it is relevant to discuss how transformative capacity could contribute to actual transformation taking place.

As discussed in chapter 2, transformations are usually defined as large-scale, radical changes. Admittedly, stronger social relations and human-nature connections do not seem *radically* new or different, because they already exist in some forms. Moreover, the initiatives

examined in this study exist quite well alongside current socio-political and economic systems. In that sense, the relevance of transformative capacity (as conceptualized in this study) for sustainability transformations appears somewhat limited.

However, Sharpe et al. (2016, p. 7) argue that: “change always originates in the present”. This means that there will always be some elements from the present in the future. In transformation processes some elements are kept and developed, while others are discharged. As Sharpe et al. (2016, p. 7) put it, we need to identify “pockets of the future in the present”. Similar points have been made by Wright (2012) who argues that creating “real-life utopias” within current systems can contribute to large-scale transformation. Initiatives where stronger social relations and human-nature connections are developed can be considered such real-life utopias, because they challenge common conceptions about the relations between people and people and nature.

Transformative capacity also has relevance for deliberate transformations because such transformation processes are not random. Moore et al. (2014, p. 3) argue that transformation “typically is the result of a confluence of transformational pressures [...]”. This means that there needs to be pressure in the present for transformation to happen. Transformative capacity can be an element that creates such pressure. Moore et al.’s (2014) argument also implicates that such systemic pressures influences the direction of societal transformations. Transformative capacity, defined as stronger social relations and human-nature connections can create transformational pressures that provide people with an image of a good future. Creating alternatives that are *desirable* is a key aspect of sustainability transformations (Wright 2012). Often the future with climate change is conceptualized in terms of apocalypse (Swyngedouw 2010) – a rather undesirable narrative in other words. Transformative capacity, as conceptualized here, however provides an alternative with positive connotations. In that sense these capacities can contribute to an increased desirability of sustainability transformations.

Chapter 9 – Conclusion

In this study I have examined and discussed the potential for strengthening transformative capacity through the collective use and production of urban edible landscapes. In a time where the ability to act is more pressing than ever such capacities could prove an important step to

initiate sustainable transformations. Social relations and human-nature connections have been defined as two key aspects of transformative capacity. By collecting empirical data from two different units, through interviews and participant observation, I have conducted a case study. The data material was analysed thematically, based on the two aspects of transformative capacity I wished to explore.

In this concluding chapter, I will go back to the research questions and summaries how the findings from the study help answer them. Then I will reflect on the significance of these findings: how they may contribute to the field of study, give suggestions for future research, and the limitations of the findings. In the introduction I presented one overall research question and two sub-questions. I will begin by going through the sub-questions before moving on to the overall research question.

9.1. Answering the research questions

The first sub-question for this thesis was the following:

How can social relations be strengthened through the collective use and production of urban edible landscapes?

The goal with this question was to explore if, and what kind of, social relations were strengthened through the collective use and production of urban edible landscapes and which actors took part in it. The three parameters I used for the analysis were social interaction, social networks, and place attachment. The analysis showed that the collective use and production of urban edible landscapes can strengthen social relations through several processes. First, the edible landscapes can function as social meeting places and therefore invite social interaction. Secondly, social relations can be strengthened through the social networks that emerge both between users of the edible landscapes (e.g. active cultivators in Bertramjordet) and between actors who coordinate the edible landscapes (e.g. the municipality and local actors in Andernach). Finally, the analysis also showed that many of the informants developed a sense of place attachment linked to the edible landscapes, thereby strengthening their relation to the place and/or the people involved in the projects.

At the same time, the findings also suggest that the degree and type of social relations that develop can vary. Specifically, the social relations that developed in the two units had some scalar differences. Bertramjordet showed signs of local community ties, but a lack of multi-scalar ties to municipal institutions. Andernach, on the other hand, showed signs of multi-

actor and multi-scalar ties between the municipality and local actors, but had less meaningful interaction *in* the edible landscapes. This suggests that how the edible landscapes are structured and organized – e.g. which actors are involved at what stages of the use and production of them - influences what kind of social relations are strengthened. In other words, the collective use and production of urban edible landscape does not in itself ensure strong social relations, but it can be used as a tool to develop them if the multi-scalar characteristics of social relations are taken into consideration and relevant actors are incorporated into social networks for sustainability transformations.

The second research question for the thesis was as follows:

How can human-nature connections develop through the collective use and production of urban edible landscapes?

The aim of asking this question was to explore if, and what kind of, human-nature connections develop through the collective use and production of urban edible landscapes. I used a categorization of human-nature connections presented by Ives et al. (2018) to analyse the data.

The findings from my study suggest that the collective use and production of urban edible landscapes has the potential to strengthen *experiential* human-nature connections significantly, because the edible landscapes create opportunities for embodied engagement and interaction with nature. The findings also suggest that *through*, or *with*, the experiential connection other forms of human-nature connections develop, too. The links between the experiential and the cognitive connection appear to be particularly strong. Through the interaction with the edible landscapes people are given the opportunity to develop knowledge about nature through “lived engagements with the world” (Hawkes & Acott (2013, p. 1119). While the links between the cognitive and the experiential connections are most apparent, there are also signs of material, emotional and philosophical connections taking place linked to the experiential reconnection.

In conclusion, the findings highlight the relational aspects of various human-nature connections. While Ives et al. (2018) categorized the five different forms of HNCs hierarchically, the findings from my study suggest that the relationship and relative strength of the different connections is much more complex. Therefore, the study of HNCs could benefit from using a relational, rather than a hierarchical understanding of the relationship between HNCs and system leverage points.

The two sub-questions form the basis for the third and overall research question of the study:

How can the collective use and production of urban edible landscapes strengthen transformative capacity?

While previous research on a variety of urban agricultural projects suggests that urban edible landscapes can contribute to sustainable development (Specht et al. 2014) such phenomenon have rarely been examined through a transformation perspective. Some exceptions exist (e.g. Galt et al. 2014), but such research is rarely linked specifically to transformative capacity. Through this study I therefore wished to bridge some of the knowledge that already existed on urban agriculture with perspectives from transformation literature that emphasize transformative capacity.

The findings from this study suggest that the collective use and production of urban edible landscapes has the potential to strengthen transformative capacity through the development of stronger social relations and human-nature connections. Yet, as the findings from the two sub-questions indicate, there are some limitation in terms of the breadth and depth of these capacities. Therefore, this study has also discussed some of the factors that either strengthen or limit the capacities that develop through the use and production of edible landscapes. Key aspects that have been highlighted are the importance of *partnership* based social networks and *meaningful* social interaction to strengthen social relations. Furthermore, the study suggests that the *embodied* experience of nature is key to develop strong HNCs, and that experiential HNCs can have a more important role in transforming human-nature relations than the framework by Ives et al. (2018) might have suggested.

In sum, the development of social relations and human-nature connections are complex processes and do not automatically lead to strong transformative capacity. Findings from the two units that have been studied suggest that recognizing social relations and human-nature connections as multi-scalar concepts, and applying a relational understanding of scale, is key to develop our theoretical understanding of transformative capacity. With such a perspective, one also recognizes that structure and organization can have a significant effect on the transformative potential of the collective use and production of urban edible landscapes. Both which types of social relations develop, and access to embodied experiences with nature depend on how projects are organized and accordingly influence the development of transformative capacity. This is important knowledge for potential policy makers who might plan to use edible landscapes as a tool for developing transformative capacity.

9.2. Relevance and concluding remarks

The findings from this study are based on qualitative case-study research. This makes them context specific and therefore not easily generalizable to other contexts. However, generalizability has not been a goal in this study. Moreover, lack of generalizability does not mean that the findings are irrelevant beyond the context of this study. If used as a foundation for future research the findings from Bertramjordet and Andernach can be a contribution in the development of a more generalized understanding of transformative capacity and its role in sustainability transformations.

In particular, the discussion of the findings from Andernach and Bertramjordet suggests that there is room for refinement and further development of current theoretical conceptualization of social relations and human-nature connections. To be generalizable, the suggestions would need to be examined in a broader context than provided in this study. Still they point to key aspects of both social relations and human-nature connections that, as of yet, could benefit from further elaboration and increased knowledge development. Furthermore, the study illustrates in what ways linking research on UA and transformative capacity could initiate fruitful discussions, especially in regard to the relevance of UA in sustainability transformations.

Humanity is in the middle of a socio-ecological crisis. Frequently the future with climate change and socio-ecological destruction is portrayed bleakly (Swyngedouw 2010). The aim of this thesis has been to highlight the possibilities that exist and help imagine an alternative, less destructive future. By examining a real-life phenomenon, one which is practically feasible, I wished to emphasize the possibilities that already exist in the present. Hopefully, this can make the idea of sustainability transformations more tangible and less of an abstract concept to both policy makers and people more generally. By providing people with positive imaginaries of a future society, as well as highlighting concrete capacities that can help us get there, I hope that this thesis contributes to discussions on socio-ecological transformation with an increased sense of agency and the possibility for desirable sustainable transformations.

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Appendix

Appendix 1: Overview of informants

Some of the informants wished to be anonymous. They have been provided with an alias. I have indicated which names are an alias with *.

Informant	Description	Data collection
Silje*	Participant in Bertramjordet. Family with young children.	Recorded, sedentary interview. Email notes.
Henrik*	Participant in Bertramjordet. Family with children.	Sedentary, recorded interview. Informal situational interview. Email notes.
Maria*	Participant in Bertramjordet. Family with children. Only partially part of interview while I interviewed Henrik.	Part of Henrik's recorded interview.
Berit*	Participant in Bertramjordet. Retired.	Informal, situational conversation. Sedentary, recorded interview. Diary notes.
Ingrid*	Participant in Bertramjordet. Family with children.	Informal situational conversation. Sedentary, recorded interview.
Nils	Participant and organizer in Bertramjordet. Retired.	Situational conversation. Sedentary, recorded interview. Written data material.
Lutz Kosack	Manger of the city planning office Andernach	Sedentary, recorded interview. Written data material.
Naturfreunde	3 men from the volunteer group. Retired.	Informal group interview. Both walking/situational and sedentary.
Matthias Busenkell	Caretaker at Grundschule St. Peter Andernach. Responsible for school garden.	Sedentary, recorded interview. Situational conversation.
Katja*	Resident in Andernach	Informal group interview. Notes.
Thomas*	Resident in Andernach	Informal group interview. Notes.
Susanne*	Resident in Andernach	Informal group interview. Notes.

Appendix 2. Interview guide(s).

Since the interviews were held in different languages and with quite different actors, I had several interview guides. Appendix 2 contains the interview guide used for interviews in Bertramjordet and two different interview guides used in Andernach.

Appendix 2a. Interview guide for Bertramjordet (in Norwegian)

- Når ble du med i prosjektet?
- Hvordan ble du med? Hvordan ble du kjent med prosjektet? Hvordan føltes prosessen med å starte (lav/høy terskel)?
- Kan du fortelle meg om hva du pleier å gjøre her? Hvor ofte er du her? Hva er det du pleier å gjøre etc?
- Hvem er det som bruker dette området? Får dere besøk? Av hvem i så fall?

- Har du tidligere drevet med (urban) dyrkning?
- Har du alltid vært interessert i dyrking?
- Har du tidligere vært med i andre former for fellesskapsprosjekter?

- Hvorfor ble du med i prosjektet?
- Hva liker du med å være del av prosjektet?
- Hva motiverer deg til å være med på prosjektet?
- Hva har du lært ved å være med i prosjektet?
- På hvilken måte har deltakelsen i prosjektet påvirket hverdagen din?
- Hva betyr prosjektet for deg?

- Hvordan er relasjonen din til de andre i prosjektet?
- Hvordan pleier dere å jobbe sammen?
- Har det vært noen konflikter? Hvordan har dere løst disse?
- På hvilke måter har din relasjon til nabolaget forandret seg etter deltakelse i prosjektet?

- Har du gjort deg noen tanker om relasjonen din til naturen? Kan du si noe om hvordan relasjon du har til naturen? Hva betyr den for deg?
- På hvilken måte har dette prosjektet påvirket din relasjon til naturen?

- I hvor stor grad føler du at du har påvirkningskraft på byutviklingen i Oslo?
- På hvilke måter har deltakelsen i dyrkingsprosjektet endret din oppfattelse av egen påvirkningskraft?

- Hvordan ser du på din rolle som innbygger i Oslo?
- Hvilke forventninger har du til byen, kommunen?
- Forholdet mellom byen og innbyggerne

Appendix 2b. Interview guide for Andernach (in German)

- Seit wann sind sie im Projekt dabei?
- Wie haben sie das Projekt kennengelernt? Wie war der Prozess, um mitzumachen (leicht/schwierig?)
- Können sie mir erzählen was sie im Projekt tun?

- Hatten sie schon Erfahrung mit urbaner Landwirtschaft, Gemüse anbauen usw?
- Haben sie sich schon früher für gärtnern, Gemüseanbau usw. interessiert?
- Waren sie schonmal vorher Teil von einem community Projekt (dieser Art)?

- Warum haben sie sich dem Projekt angeschlossen?
- Was gefällt ihnen am besten an dem Projekt?
- Was motiviert sie Teilzunehmen?
- Was haben sie durch die Teilnahme bis jetzt Neues gelernt oder erfahren?
- Inwiefern hat die Teilnahme ihren Alltag beeinflusst?
- Was bedeutet das Projekt für sie?

- Was bedeutet die community für sie?
- Wie ist ihr Verhältnis zu den anderen Teilnehmern?
- Wie arbeiten sie zusammen?
- Wie ist die struktur des Projektes?
- Gab es Konflikte? Wie würden sie gelöst?

- Welches verhältnis haben sie zur Natur?
- Wie hat die Teilnahme ihr Verhältnis zur Natur beeinflusst?

- Wie sehen sie ihre Rolle als Bürger?
- Was erwarten sie von den Behörden/von der Stadt?
- Wie hat dieses Projekt ihr Bürger-Behörden Verhältnis oder ihre Erwartungen beeinflusst?

Appendix 2c – Interview guide for Andernach, urban planning office (in German)

Teil 1 - Hintergrundinformationen Informant(in)

- Wie lange haben Sie mit der Essbaren Stadt gearbeitet?
- Welche Rolle haben Sie in dieser Arbeit?
- Arbeiten sonst noch andere in der Stadt mit dem Projekt?

Teil 2 - Aktivitäten in de Essbaren Stadt

- Was genau wird in der Arbeit mit der Essbaren Stadt gemacht?

Teil 3 - Struktur/Organisierung

- Ihre Rolle als Stadt
 - Was machen sie selbst, was machen andere?
 - Warum top-down?
 - Wie sind die Bürger mit eingenommen?

Teil 4 - Auswirkung und Einfluss

- Was haben Sie bis jetzt erreicht?
- Was haben Sie durch das Projekt gelernt?
 - z.B. über Lokale Ökosysteme, Naturnähe, Stadtplanung
- Inwiefern hat dieses Projekt die Stadt (als Behörde) beeinflusst?
- Wie hat das Projekt die Stadt (als Gemeinschaft) beeinflusst?
 - Bürger-Stadt Verhältnis
 - Bürger/Bürger Verhältnis
 - Identität
- Recherchen werden erwähnt - welche art Recherchen sind gemacht worden?
- Wie sehen/verstehen Sie Ihre Rolle als Stadt in der Umstellung zu einer Nachhaltigen Gesellschaft?

Teil 5 – Ziele

- Welche Ziele haben Sie mit dem Projekt? Kurz- und langfristige?

Appendix 3. Information sheet and consent form.

Informationsblatt zu der Teilnahme im Masterprojekt *“Umstellungskapazität für eine nachhaltige Gesellschaft durch urbane Landwirtschaft”*

Verantwortliche

Die Universität Oslo ist für das Projekt verantwortlich.

Was umfasst eine Teilnahme?

Eine Teilnahme umfasst, dass Sie bei Interviews teilnehmen. Die Interviews werden mit Ihrer Zustimmung aufgenommen. Die Aufnahmen werden nur für mich zugänglich sein und von mir transkribiert werden. In den Interviews werde ich Sie zu den Aktivitäten in dem Projekt, der Struktur vom Projekt, sowie den Auswirkungen und dem Einfluss des Projekts Fragen stellen.

Die Teilnahme ist Freiwillig

Die Teilnahme im Projekt ist freiwillig. Sie können jederzeit bescheid geben, falls sie nicht am Projekt teilnehmen wollen. Alle Information von Ihnen wird dann anonym gemacht.

Datenschutz - wie wir die Daten nutzen und speichern

Ihre Daten werden nur für dieses Masterprojekt genutzt werden. Alle Daten werden anonym gemacht, soweit es nicht für die Publikation wichtig ist, dass persönliche Daten (sowie Name oder Arbeitsplatz und-position) bekannt gemacht werden. Alle Daten werden von mir persönlich gespeichert.

Ihre Rechte

Wenn Sie in den Daten Identifizierbar sind, haben Sie das Recht:

- Information zu den persönlichen Daten die registriert sind zu bekommen
- Persönliche Daten zu korrigieren
- Persönliche Daten zu löschen
- Eine Kopi Ihrer persönlichen Daten zu erhalten

- Eine Beschwerde an die Norwegische Datenschutzbehörde wegen Nutzung ihrer persönlichen Daten zu beantragen

Mit freundlichen Grüßen,

.....

Zustimmung

Ich habe die Information zu dem Masterprojekt “Umstellungskapazität für eine nachhaltige Gesellschaft durch urbane Landwirtschaft” bekommen und verstanden. Ich bin damit einverstanden, dass:

- ich bei Interviews teilnehme
- das Interview aufgenommen wird
- informationen von diesem Interview publiziert werden
- mein Name bekannt gemacht werden kann in dieser Publikation, falls es für die Publikation wichtig ist.

Ich bin damit einverstanden, dass diese Daten bis ende des Projekts Juni 2020 genutzt werden.

.....

Signatur, Datum

Vil du delta i forskningsprosjektet

” Påvirkningen av urbane dyrkingsprosjekt på omstillingskapasitet”?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke på hvilken måte urbane dyrkingsprosjekter kan bidra til bærekraftig omstilling i byer. I dette skrivet gir jeg deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Både innen byplanlegging og innenfor academia er det stort fokus på at dagens samfunn trenger en bærekraftig omstilling. I masterstudiet mitt ønsker jeg å se på hvordan urbane dyrkingsprosjekter kan bidra til å skape en slik bærekraftig omstilling i byer. For å klare denne omstillingen må man styrke spesielle kapasiteter og egenskaper hos både enkeltpersoner og viktige institusjoner. Urban dyrking blir ofte trukket frem som et godt initiativ for bærekraftig omstilling i byer. Derfor vil jeg gjennom dette studiet undersøke i hvor stor grad urban dyrking faktisk styrker kapasiteten til omstilling. Jeg vil vektlegge tre hovedtema i undersøkelsen:

1. hvilket forhold og kunnskap individer og institusjoner har til naturen og lokale økosystemer;
2. på hvilken måte individer og institusjoner ser på seg selv som aktører i samfunnet og deres rolle i omstillingen til et bærekraftig samfunn;
3. hvilke sosiale relasjoner og nettverk som skapes gjennom urbane dyrkingsprosjekter.

Hvem er ansvarlig for forskningsprosjektet?

Universitetet i Oslo er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Jeg har valgt å undersøke tre prosjekter fordi jeg på denne måten kan vise frem variasjoner innenfor urbane dyrkingsprosjekter, samtidig som det er mulig for meg å få god kjennskap til alle tre prosjektene. Prosjektet du er del av er valgt ut fordi det har en unik struktur og bakgrunn som skiller det fra de to andre prosjektene.

For å få kunnskap om hvordan urbane dyrkingsprosjekter kan styrke omstillingskapasiteten er det avgjørende for meg å kunne delta i og observere slike prosjekter. Disse observasjonene gjør det mulig for meg å få et inntrykk av aktivitetene i prosjektet, relasjonene mellom deg og andre involverte, samt tanker du har rundt prosjektet.

Jeg kommer også til å gjennomføre lengre intervjuer med aktuelle personer for å få større kunnskap om prosjektets bakgrunn og for å kunne diskutere mer dyptgående tanker om hvordan deltakelsen i prosjektet har påvirket deg. Slike intervjuer vil gjøres med 3-5 personer i hvert prosjekt.

Hva innebærer det for deg å delta?

Hvis du velger å delta i prosjektet, innebærer det i første omgang at du tillater meg å delta i og observere hva du og resten av gruppen gjør sammen i prosjektet. Jeg vil skrive notater basert på de erfaringene jeg gjør. Notatene vil kunne inneholde direkte sitater eller gjengivelser av samtaler enten mellom deg og andre deltakere eller mellom deg og meg. Notatene vil kunne inneholde personopplysninger som navn og kjønn. Kun jeg vil ha tilgang til disse notatene. Dersom innhold fra observasjonene brukes i masteroppgaven vil de anonymiseres, men prosjektets navn vil være kjent. For eksempel "en av deltakerne i prosjektet på Holmlia sa...".

Videre ønsker jeg å finne noen som kan tenke seg å skrive en slags dagbok om hva de gjør i prosjektet i løpet av sommeren. På slutten av sommeren ønsker jeg å gjennomføre lengre samtaler og intervjuer med de som har skrevet dagbok i løpet av sommeren. Disse intervjuene vil jeg ta lydopptak av. Transkribering av lydopptakene vil gjøres av meg og ingen andre vil derfor høre disse.

I disse lengre intervjuene vil det være spørsmål om din rolle i prosjektet og hvordan deltakelsen har påvirket deg. Jeg kommer til å stille spørsmål knyttet til din relasjon til naturen/økosystemer, til hvordan du ser på din rolle i omstillingen til et bærekraftig samfunn, samt spørsmål angående sosiale nettverk og relasjoner som har oppstått i forbindelse med prosjektet. Gjengivelse av innhold fra intervjuene vil anonymiseres, men det vil komme frem hvilket prosjekt du er knyttet til.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Du kan også velge helt fritt om du kun vil delta i deler av forskningsprosjektet. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Jeg vil bare bruke opplysningene om deg til formålene jeg har fortalt om i dette skrivet. Jeg behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- Notater og lydopptak fra datainnsamlingen vil i utgangspunktet kun være tilgjengelig for meg. Ved spesielle behov vil jeg gi tilgang til innsyn av dataene til min hovedveileder Bjørnar Sæther ved Universitet i Oslo.
- Når dataen transkriberes, vil jeg erstatte navnet ditt med en kode som lagres på en egen navneliste som er adskilt fra øvrige data. Dataene vil lagres på min personlige PC.
- Det vil generelt ikke være spesifikke persondata som navn og alder i publikasjonen. Utsagn eller betraktninger du kommer med vil være knyttet til prosjektet du er involvert i. Det er derfor en mulighet for at andre involverte i dyrkingsprosjektet vil kunne gjenkjenne deg i publikasjonen, men det vil ikke være mulig for allmennheten.
- Dersom du har en sentral rolle som er relevant å presisere vil dette kunne være opplyst om i publikasjonen. Dette øker sannsynligheten for gjenkjenning betraktelig. Slike opplysninger vil kun bli med i publikasjon dersom du gir eksplisitt samtykke til dette.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes i juni 2020. Personopplysninger og opptak vil slettes ved prosjektslutt.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg,
- å få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitet i Oslo har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitet i Oslo ved Kristin Hansen enten via epost kristin.hansen0411@gmail.com eller telefon +47 46774292 eller Bjørnar Sæther via epost bjornar.sather@sosgeo.uio.no.
- Vårt personvernombud: Maren Magnus Voll
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig

Eventuelt student

(Forsker/veileder)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet "Påvirkningen av urbane dyrkingsprosjekter på omstillingskapasitet", og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i deltakende observasjon og korte uformelle samtaler
- å skrive "dagbok" i løpet av sommeren og at denne brukes til forskningsprosjektet
- å delta i intervjuer med lydopptak
- at opplysninger om meg publiseres slik at jeg kan gjenkjennes dersom det er sentralt for publikasjonen

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. juni 2020.

(Signert av prosjektdeltaker, dato)