Transition Management, Action Research and Actor Roles:

Understanding local sustainability transitions

Julia M. Wittmayer

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The main chapters of this thesis are preceded by two kinds of pictures: on the one hand pictures of places in Rotterdam-Carnisse (The Netherlands) in 2012 (pp. 15, 55, 145, 195, 249), and on the other images of how these places could look like in 2030 (pp. 41, 95, 169, 221, 267). The latter illustrated five of the six pathways of the vision Blossoming Carnisse, which was a result of a transition management process in Rotterdam-Carnisse. This vision also included a pathway towards a Bleeding Carnisse (p. 121). The pictures have been taken and altered by Elvira Gronovius, Rotterdam.

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Transition Management, Action Research and Actor Roles:
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Acknowledgements

This piece of work has accompanied me during the last 5 years of my life – it had become a Julia-defining project if one considers the following quote by Ortner (1995: 187[1]):

> *"The importance of subjects (whether individual actors or social entities) lies not so much in who they are and how they are put together as in the projects that they construct and enact. For it is in the formulation and enactment of those projects that they both become and transform who they are, and that they sustain or transform their social and cultural universe."*

I did not undertake this project alone: many people supported and accompanied me along the way. They inspired me with ideas, motivated me to sit down and write, provided me with feedback, facilitated my writing in countless ways or just stimulated me to take a break and focus on something completely different.

A good point to start with expressing my gratitude is the thriving activist-academic environment at DRIFT. Would it not be for this niche in academia, this project would not have been started. My special thanks go to Derk Loorbach, my promotor and director of DRIFT, for making this niche possible, for your faith in my work and for challenging and facilitating me in becoming 'bolder'. Special thanks also go to Flor Avelino who has become my co-promotor along the way, as well as a very dear friend. It is the small things that make life worth living and a thesis worth finishing; your belief in my abilities to "do what seems impossible" was one that kept me going during the last tough year. Thanks for your inspirational being. Then there is of course Frank van Steenbergen, my partner in crime in Carnisse: we have spent four marvellous years discovering the beauty of the South of Rotterdam. I will never forget our reflections about life in Carnisse and the big questions of our time in Grand Café Champs Elysees – thanks a lot for these. I am very grateful to be able to share and discuss questions of work and life with Niki Frantzeskaki, my big thanks come along with the promise that 'it is playtime again' now this 'project' is finished. Other (former and current) DRIFTers have also inspired the ideas in this book – thanks to Chris Roorda, Katharina Hölscher, Shivant Jhagroe, Roel van Raak, Carolien Hoogland and Jan Rotmans. Thanks also to all other DRIFTers for making it such a special place: Marleen Lodder, Marijke de Pous, Mees Schouwenaar, Marieke Verhagen, Rick Bosman, Matthew Bach, PJ Beers, Giorgia Silvestri, Antonia Proka, Sophie Buchel, Charlie Spork and Steffen Maschmeyer. Special big thanks go to Maryce Koedood for being such a caring colleague and for facilitating the life of all DRIFTers so tremendously – this also goes for Helmi Hansma, Sandra van Heeren-de Winter and Shifra Azimullah.

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[1] Ortner, S.B. (1995) 'Resistance and the Problem of Ethnographic Refusal', Comparative Studies in Society and History, 37 (1): 173-193

commenting the different chapters and for emphasizing how we can make a change in the world.

I would also like to thank everybody I met, talked to and engaged with during our work in Carnisse. It was a tremendous learning experience to be able to work with Marlies Gerritsma, Mirjam Murre, Tamara Blokland, Heleen Oorschot and Jan on the re-opening of what is now the "Huis van Carnisse". The same goes for the work with the group of Bloeiend Carnisse on developing a new narrative about how life in Carnisse can be – thanks go to Aad Barendregt, Bep van Beek, Tamara Blokland, Piet Boekhoud, Frank Boerboom, Bruno Boucher, Michiel Brink, Christian Asche, Mohamed Dahmani, Magda Gambier, Marlies Gerritsma, Malgorzata Jewasinska, Ron Koldenhof, Rik Kraaij, Adrie Notenboom, Meriem Oublal, Stephen Overduin, Hans Padmos, Brenda Reimerink, and Ad van Rijthoven. Without you and many others sharing their thoughts, dreams and fears, this thesis would not have been possible.

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On a personal note, I would like to thank my close friends for listening to all my PhD-stories throughout the years, for just taking me to the beach or relativizing my ambitions – thanks for being in my life: Katrin, Sylvia, Pia, Stijn and Thomas. All of this work would not have been possible without the strong backbone of my family: very special thanks to my dad and mum for encouraging my siblings and me to live our very different dreams while staying firmly rooted. Thanks to Tine and Andi with Pauline, Jaro, Kuno and Ilva as well as to Johannes and Eva with Bruno and Elise for making sure, I do not evaporate into academic chitchat but stay in touch with yet another reality.

Importantly, I thank Han, who in his very own way made sure I kept going: Thanks for facilitating me the whole way and especially for your relentless patience when I needed to finish 'just this one sentence' before dinner and I really needed to read 'only this article' before enjoying a weekend. Thank you for making me laugh, believing in and sharing your life with me. Finally and without doubt, the one person who accelerated the writing and finalisation of this project was our wonderful little Lela who joined us this year. She again transforms who I am and puts life into yet another different perspective – I am looking forward to what there is to come.

SUMMARY

Societies worldwide face numerous fundamental sustainability challenges in the form of social and ecological crises. These include increasing ecological pressures – climate change, resource depletion or unsustainable consumption and production patterns – but also social crises and pressures, such as the meltdown of the financial and economic system after 2008, the dismantling of welfare states, an ageing population, poverty and mass migration. No straightforward solutions exist for these kind of problems, as they are complex, uncertain, difficult to manage, and unstructured. These problems are of a global nature, but it is in urban neighbourhoods, communities, towns, cities and regions – that we most noticeably interact with them and where new insights with regard to how these can be dealt with emerge. This thesis zooms in on how such complex and large scale societal challenges impact the local scale, what kind of responses are triggered and how communities at the local scale can be empowered through engaged research to find their own solutions. To do so, this thesis zooms in on one specific locality in the Netherlands faced with such persistent social, economic and ecological challenges: a neighbourhood in the South of Rotterdam, Carnisse.

Due to the economic crisis of 2008 and associated government budget-cuts, not only the Dutch government but also other traditional investors in Dutch neighbourhoods such as housing cooporations were in financial difficulties and had less money to spend. This had repercussions for their neighbourhood policies. While earlier, they had injected money for physical interventions in socio-economically deprived neighbourhoods, slowly they put emphasis on a more active role for inhabitants and citizens. The latter is linked to discourses referred to as 'active citizenship' or 'participation society' and is part of a broader welfare state reform agenda: motivated by the changing face of the welfare state, every citizen needed to take his/her personal responsibility as well as social responsibility for the common good. The role of local government is increasingly understood to move from controlling and containing to facilitating and supporting and the role of inhabitant is framed from receiving services and bearing rights to becoming more active in their immediate living environment and being subject to duties. Thus, changing roles and interactions are high on the public agenda and have direct repercussions for the life and work in cities, towns and neighbourhoods all over the Netherlands.

This thesis investigates how broader developments, societal trends, dynamics and discourses become apparent through and interact with lived local realities in the neighbourhood of Carnisse. How do national policies, such as decentralisations 'land' on local scale? What is 'the economic crisis' and what does it come to mean? Carnisse is just one local site where global and national problems, issues and trends become apparent, interact with lived local realities and 'come to mean'. In this thesis it is taken as an exemplary site for the quest of cities and local communities worldwide to address issues they are facing and to explore possible future directions. From a transition research point of view, rather than being isolated issues, the problems in Carnisse are interlinked and can best be understood to be of a persistent nature. Scholars have been advocating a

'transition to sustainability' as necessary to address these kind of problems. Based on these readings, colleagues and I have worked with inhabitants and professionals in Carnisse to analyse, understand and address the challenges that the neighbourhood is facing using transition management as an action-oriented research method.

This thesis is thus about the local scale of urban neighbourhoods, towns and cities and its interaction with global problems and sustainability questions. At this scale, we most notably interact with these problems and thereby question current role understandings, actor relations and activities that come with them. One of these role understandings is that of the researcher: what are suitable approaches and methods for studying and supporting sustainability transitions at that local scale. Set in the context of a Dutch neighbourhood and the issues it is facing as well as based on transition thinking and inspired by action-oriented research, this thesis has three overarching aims:

- to contribute to sustainability transition research by clarifying the concept of actor roles in local sustainability transitions
- to contextualise transition management as a governance approach for the local context
- to contribute to the development of action-oriented and transformative research approaches in sustainability transition research.

This has led to the following main research question: **How can we increase our understanding of sustainability transitions and their governance at the local scale, the changing role of actors therein, and in particular, the role of research and researchers?**

This thesis answers this question through a number of contributions:

Theoretical contribution: This thesis advances an understanding of transitions with a focus on the changing interactions among actors. These are considered as indicative of changes in the social fabric of a system, its power relations and shared values, norms and beliefs. It focuses not on socio-technical transitions build around technological innovation, but on a conceptualisation of transition thinking in communities at the local scale. This directs our attention to personal and social relations as an analytical focus and therewith to 'social' transitions build around social innovations. It does so by introducing the concept of actor roles as an analytical device to transition research.

Empirical contribution: This thesis describes and outlines an understanding of transition management as a governance approach for sustainability transitions at a local scale, and especifically for understanding and addressing socio-economic transition dynamics on the local scale. It does so by contrasting transition management with other approaches to governing sustainability, historically embedding it, systematizing its different usages and analysing and reflecting on its promises and challenges on the local scale.

Methodological contribution: This thesis explicates and further develops an action-oriented research approach for sustainability transition research. More specific, it is exploring transition management as an action-oriented research methodology. It

reconsiders the applied research practice to make it more productive not only for the analysis and understanding of sustainability transitions but also for supporting these. Action-oriented approaches are both useful and challenging. They are useful in creating spaces for reflexivity, interaction and learning and in generating scientific, social and reflexive knowledge as well as actual action and thus supporting sustainability transitions whilst studying them. These approaches are challenging in the actual operationalization in messy, contested and diverse contexts, which put high demands on researcher's identity and integrity.

Besides these contributions, the work leading up to this thesis also had ***social impacts in that it influenced everyday life in Carnisse***. Consequences and impacts are notoriously hard to pinpoint in such action-oriented research. Together with my colleagues at DRIFT, I provided a temporary impulse to a neighbourhood at very turbulent times. This impulse consisted of different activities: the collaborative formulation of a positive narrative about the neighbourhood based on its strength rather than retelling the policy reality of a deprived neighbourhood; the creation of an empowered network open for reflection, learning and experimentation; as well as the practical support for new initiatives that emerged. However, our work also fell short in transforming actual policy structures, cultures and practices in Rotterdam and produced valuable insights into the persistency of problems and the complexity of achieving more radical change at the local scale. So rather than a structural impact, our work primarily achieved process results in terms of a build-up of capacities, shared discourses, networks, stimulating entrepreneurship and enabling new initiatives. In this thesis, I argue for the potential of such 'small and soft' approaches that develop the capacities for self-organisation and reduce dependence, especially if these are connected to bigger, political and critical questions of our time. This is where researchers and universities can play a decisive role.

This thesis is based upon four journal articles and a book chapter and framed by an overall introduction, methodology and conclusion. It also includes two Intermezzos, which provide more detail regarding the empirical setting in the neighbourhood Carnisse. Intermezzo A introduces the neighbourhood and 10 years of policy activity there. Intermezzo B provides selected insights on all research questions based on the rich empirical data that was gathered throughout the four years of action-oriented research.

The first chapter introduces the overall research question and contextualises it (in the work done) in Carnisse. It also introduces the theoretical, empirical and methodological setting of this thesis respectively. It provides a succinct overview of transition research as the theoretical home of this thesis and argues that it misses a suitable vocabulary to analyse and discuss changes in social roles and their relations as part of a transition in the social fabric of our societies. Empirically, this thesis focuses on the local scale of neighbourhoods, towns and cities and argues that there has been advancement made in transition research and transition governance with regard to this scale. However, while transition management has been applied on this scale, to date, a systematic overview of the practical and analytical insights as well as a historical embeddedness is missing. In relation to the methodological setting, this thesis positions itself as aiming to contribute to the development of action-oriented and transformative research approaches in sustainability transition research which are underdeveloped to date and miss a

systematic understanding of the activities, corresponding roles of as well as the accompanying challenges for researchers.

The second chapter elaborates the research approach and methodology used in this thesis. It draws together insights from research approaches in the interpretive, transdisciplinary and action research tradition to build a research perspective for transition research that is more conducive to action-oriented research. I outline a view of science and society as overlapping and influencing one another rather than constituting separate spheres and argue that the foremost activity of action-oriented research is the creation and maintenance of explicit spaces for interaction, where developments can be questioned, ideas discussed, futures envisioned, solutions piloted and ideas experimented with. In this chapter, I outline the relation between action and knowledge, propose a number of quality criteria for such research and discuss issues of normativity and subjectivity. More practically, this chapter also outlines the research projects that I have been engaged in, the institutional context at DRIFT as well as the action-oriented research process in Carnisse.

The third chapter is an article titled *Roles in Transition: Insights from role theory for understanding sustainability transitions*, which contributes to the aim of the thesis of clarifying the concept of actor roles in sustainability transitions. Focusing on the multi-actor nature of transitions, the article proposes that fundamental changes in the roles of actors and in their relations with others are a vital element of any transition. Illustrated by empirical work in Carnisse and based on a review of roles theories in social interaction research, this article develops a 'roles-in-transition perspective'. This perspective proposes to understand roles as an interplay between stability and change, relates roles to changes in social systems and considers political and power aspects. The operationalisation of the role concept for transition research allows analysing (changing) roles and (changing) relation between actor roles in role constellations as indicative of changes in the social fabric, its power relations and shared values, norms and beliefs. It also allows considering the use of roles as a transition governance intervention.

Chapter 4 is a book chapter titled *Governing Transitions in Cities: Fostering Alternative Ideas, Practices, and Social Relations through Transition Management*, which contributes to the aim of the thesis to contextualise transition management as a governance approach for the local context. This book chapter provides a systematic overview of the applications of transition management on the local scale, analysing and reflecting associated promises and challenges. It zooms in on the different elements of transition management (i.e., principles, framework, instruments, and process methodologies) and their heuristic and operational use in the urban context. It also formulates a number of local, specifically urban, context characteristics, which are important for the application of transition management in that context. These are geographical, personal and institutional proximity as well as interactions and interdependencies between different scales and domains.

Chapter 5 is an article titled *Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management*, which contributes to the aim of the thesis to contextualise transition management as a governance approach for the local context. This article

historically embeds transition management in relation to Local Agenda 21 processes and compares the two approaches along six dimensions, namely history, aim, kind of change, governance understanding, process methodologies, and actors. This comparison led to a number of insights for governing sustainability (transitions) locally. Firstly, rather than striving for a one-fits-all solution, diversity in governing approaches for sustainability transitions needs to be cherished. Secondly, a more integrated perspective of sustainability took hold on the local scale and sustainability needs to be practiced through activities, projects and experimentation to gain meaning locally. Thirdly, small concrete steps (such as the activities, projects and experiments) need to be connected to ideas of radical change (rather than optimization) to ensure that they address the roots of the problems rather than combatting symptoms. Fourthly, governing sustainability on the local scale needs to find creative ways for engagement, which can deal with the tension between the need for radical change and the need to connect to incumbent players and dominant discourses. A final insight relates to the need to open spaces for learning, change and experimentation for different kinds of actors aimed at social innovation and the creation of new social practices, relations and ideas.

Chapter 6 is an article titled *Making sense of sustainability transitions locally: how action research contributes to addressing societal challenges*, which contributes to the aim of the thesis to develop action-oriented and transformative research approaches in sustainability transition research further. Based on two empirical examples of action-oriented transition management research, this article argues that action-oriented research is about finding ways to work together on the sustainability of a community and create meanings and realities through means of spaces of interaction. The latter allow alternative ideas (e.g., knowledge, future visions), practices (e.g., practical experiments, transformative action) and social relations (e.g., new actors) to emerge which can further a sustainability transition. Such research aims at changing the local situation and leads to an in-depth, rather than a one-off, understanding of the local context dynamics and characteristics.

Chapter 7 is an article titled *Action, research and participation: roles of researchers in sustainability transitions*, which contributes to the aim of the thesis to develop action-oriented and transformative research approaches in sustainability transition research further. Based on action research and transdisciplinary research literature as well as on empirical work in Carnisse, this article develops a systematic understanding of the activities, corresponding roles and accompanying challenges for researchers in action-oriented (i.e. process-oriented) research approaches. It specifies a number of ideal-type roles for researchers when dealing with key issues in creating and maintaining space for societal learning, namely change agent, knowledge broker, reflective scientist, self-reflexive scientist and process facilitator. The article also discusses implications for the self-reflexivity of researchers, in terms of role conflicts and potentials, and for the changing role of the researcher and of science in general.

The concluding chapter answers the research questions, highlights the theoretical, empirical and methodological contributions to the emerging sustainability transitions field, sustainability science and governance theories and outlines a future research agenda.

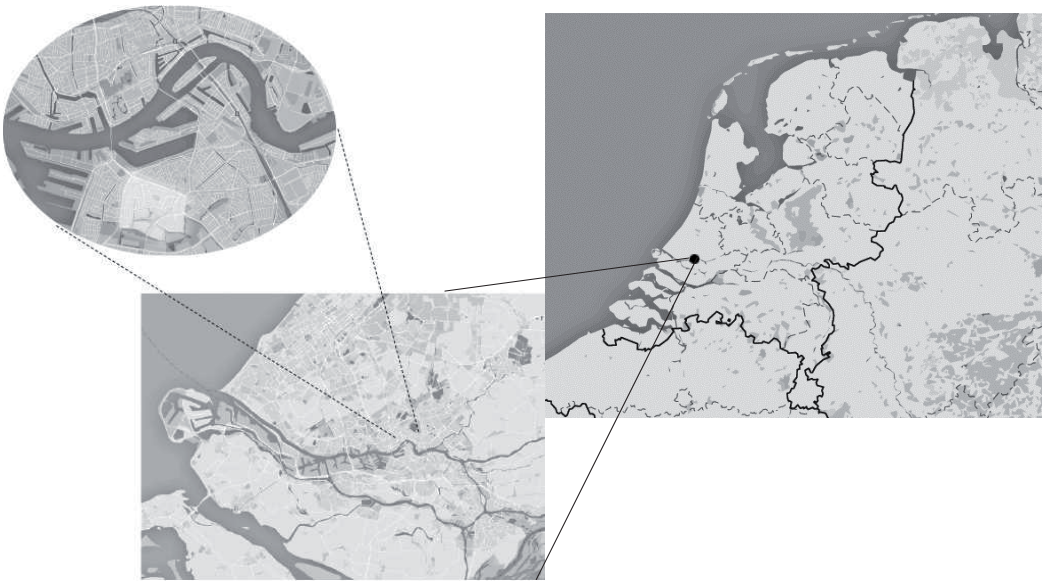
"The heart of good work is a puzzle and an idea"

Abbott 2004

1. Introduction

The city of Rotterdam is divided by the river Meuse and its southern areas are known across the Netherlands for having problems related to social equality, employment, education, cultural differences, security and housing. The neighbourhood Carnisse in that part of Rotterdam is no exception: with a low quality and one-sided housing stock, low bonding with the neighbourhood, poverty, ongoing migration flows, as well as nuisance by fellow inhabitants and vandalism (see *Intermezzo A.1 for an introduction to Carnisse*). Throughout the years, Carnisse has witnessed local and national government involvement through numerous projects, programmes and policy plans – such as the 'Pact of South'[2] or the 'National Programme Rotterdam-South'[3] (*see Intermezzo A.2 for more information on this policy involvement in Carnisse*). These programmes target mainly issues of housing, security, schooling and work (City of Rotterdam et al. 2009, 2011, Programmabureau NPRZ 2014).

Figure 1.1: Map of the location of Carnisse in Rotterdam (Courtesy: Sarah Rach)

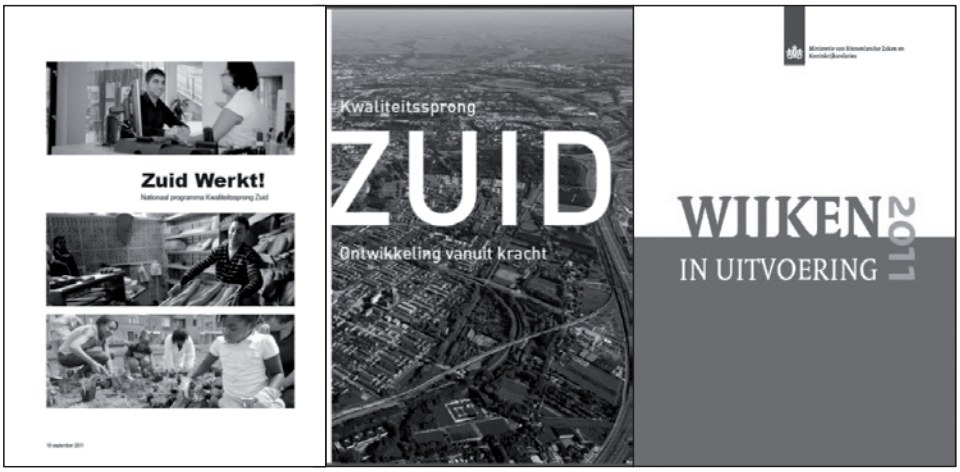


[2] Dutch original: *Pact Op Zuid*

[3] Dutch original: *Nationaal Programma Rotterdam Zuid*

The policy bustle in terms of programmes, projects and plans remained high during the last years – leading to high implementation pressures with numerous projects, which were neither easy to follow nor to govern and seem not to share a common vision. The latter diagnosis is the result of evaluations of the policy programmes, which also showed that the problems seemed to stay the same, while the overtly bureaucratic programmes and projects do show neither a clear red thread nor offer a direction or continuity (Loorbach et al. 2009, Visitatiecommisse Wijkenaanpak 2011a). Despite of all this attention, policy actors did not seem to get a grip on the problems in Carnisse. On a national level, this phenomenon has been referred to as 'project carrousel' (Giltay Veth 2009).

Figure 1.2: Carnisse-related policy documents



Due to the economic crisis of 2008 and associated government budget cuts, not only the Dutch government but also other traditional investors in Dutch neighbourhoods such as housing cooperatives ran into financial difficulties and had less money to spend. This had repercussions for their neighbourhood policies. While earlier, they had injected money for physical interventions in socio-economically deprived neighbourhoods such as Carnisse (Kennisbank Platform 31 2011), slowly the emphasis came to lie on inhabitants and citizens. They were expected to start playing an active role in addressing and solving problems in their living environment (Visitatiecommissie Wijkenaanpak 2011a, 2011b). This reorientation together with budget cuts also meant that in Carnisse new projects were starting while more established actors saw their budgets shrinking, leading to feelings of suspicion and distrust amongst inhabitants and professionals, fed by the uncertainty about the future and the disappointment in approaches that have not resulted in much progress. There is not much left of the activism of the 80's during the times of civic protest against 'City Renewal' plans, and only those organisations are thriving currently, which are not dependent on structural subsidy from the government,

such as a local garden (Van Swietenhof[4]) or the local history association (Stichting Historisch Charlois[5]).

Next to a project carrousel, we also might talk of a 'professional's carrousel' in Carnisse (Van Steenbergen and Wittmayer 2012). The local policy and welfare structures built in the 80's, such as the district municipality, the inhabitants' organisation and other public facilities such as community centres or the institution of welfare work, are increasingly under pressure. Not only the institutions or their tasks, also their employees change and follow each other up rapidly. In 2014, the district municipality was replaced by elected district committees supported by a small number of area-wide responsible policy makers and officers. The committees were meant to be 'the voice of the people' and to stimulate the participation of inhabitants "*from an a-political role*" (Programmabureau NPRZ 2015: 17[6]). The inhabitants' organisation has seen its subsidies shrink by half and all community centres in Carnisse were closed end of 2011 when the district municipality did not provide for them in a tender for welfare work. The welfare organisation serving the neighbourhood for two decades lost the tender and was replaced by an organisation working along a new paradigm of welfare work referred to as 'welfare new style'[7]: from helping 'clients' and 'fixing' problems towards a more coaching role encouraging people to take matters into own hands.

This new welfare paradigm mirrors a wider discourse that focuses on the 'active' role of inhabitants and citizens and which is closely related to the introduction of the national Social Support Act of 2007. This Act has three major themes: 1) enhancement of social participation of vulnerable groups, 2) call on citizens to voluntarily provide informal care to these groups and 3) devolution of tasks and social support from central to local government (Verhoeven and Tonkens 2013). It thus introduced a more general focus on changing responsibilities between central and local government as well as between government and citizens. The economic crisis and associated budget cuts intensified this discourse, which became part of a welfare state reform agenda: motivated by the changing face of the welfare state, every citizen needed to take his/her personal responsibility as well as social responsibility for the common good. This discourse is broadly referred to as 'active citizenship' (Marinetto 2003, Newman and Tonkens 2011) or 'participation society' (Putters 2014, Tonkens 2014), the latter as coined by King Willem Alexander in his yearly King's speech of 2013. The role of local government is increasingly understood to move from controlling and containing to facilitating and supporting and the role of resident is framed from receiving services and bearing rights to becoming more active in their immediate living environment and being subject to duties. Thus, changing roles and interactions are high on the public agenda.

In their emphasis on the necessity for more active citizens and the devolution of power to the local level, both discourses can be closely linked to the 'Big Society' discourse in the UK (Kisby 2010, Ransome 2011). These new ideas about a changing social fabric are

[4] See here: http://bo-carnisse.org/informatie/van-swietenhof/ (accessed December 11th, 2015)
[5] See here: http://www.historisch-charlois.nl/ (accessed December 11th, 2015)
[6] Dutch original: "*vanuit een a-politieke rol*"
[7] Dutch original: *welzijn nieuwe stijl*

reflected in the national and local activities on neighbourhood level. Illustrative is the following quote from a report on the current neighbourhood approach of the Ministry of Internal Affairs: "*We search for different relationships between governments, institutions and citizens. Attempts to give concrete shape to these, often still in rudimentary form occur precisely in these neighbourhoods*" (Visitatiecommissie Wijkenaanpak, 2011a: 7[8]). The Ministry of the Interior and Kingdom Relations describes its revised role in the so called 40-Neighbourhood-Programme, targeting the 40 'weakest neighbourhoods in the Netherlands', one of which is Old-South which includes Carnisse, as follows: "*from active financial commitment linked with targets to a more facilitative role, acting on request in relation to what others do*" (Ministerie BZK 2014: 2[9]).

These broader developments, societal trends, dynamics and discourses have consequences on the local scale. Rather than being straightforward, these consequences emerge through the interaction of these broader developments with the specific local contexts in neighbourhoods across the country, amongst which Carnisse. As outlined, in Carnisse, they manifest amongst others through the act of 'tendering' welfare work and the new welfare approach by the 'winning' organisation, but also through the changing role for the district level government or established actors such as the inhabitants' organisation or through the changed discourse vis-à-vis the role of citizens. The national and global developments thus have direct consequences for the way of working at local scale in Carnisse. *In this thesis, I take Carnisse as an exemplary site for the quest of cities and local communities worldwide to address issues they are facing and to explore possible future directions. I also introduce Carnisse as a suitable setting to explore broader theoretical and empirical gaps and questions raised in transition research.*

From a transition research point of view, rather than being isolated issues, the problems in Carnisse are interlinked and can best be understood to be of a wicked and persistent nature. Distinctive about these kind of problems is that they are embedded in societal structures, are valued differently and involve a multitude of actors (Rotmans 2005, Grin et al. 2010, Schuitmaker 2012). There are rarely straightforward solutions and every attempt to solve, will transform these problems, and carries unforeseen side effects. Scholars have been advocating a 'transition to sustainability' as a necessary change of our society to address these kind of problems (O'Riordan and Voisey 1998, O'Riordan et al. 2001, Rotmans et al. 2001). Since around 2000, transition research is evolving as a field of research which posits 'sustainability transitions', i.e. long-term processes of change towards more sustainable societies (Grin et al. 2010, Markard et al. 2012, Van den Bergh et al. 2011) as a "*response to a number of persistent problems confronting contemporary modern societies*" (Grin et al. 2010: 1). Transition management has developed within this field as a governance approach that uses the concept of societal transitions to actively explore, guide and accelerate such desired sustainability transitions with networks of

[8] Dutch original: "*We zijn in Nederland op zoek naar andere verhoudingen tussen overheden, instituties en burgers, en pogingen om daar concreet vorm aan te geven krijgen – vaak nog in embryonale vorm - juist in deze wijken gestalte.*"

[9] Dutch original: "*van actieve inzet met geld gekoppeld aan doelstellingen naar een meer ondersteunende rol, op verzoek acterend in verhouding tot wat anderen doen*"

change agents. Transition research thus provides an analytical basis for understanding complex and persistent societal challenges and a basis for engagement and action.

An analysis from a transitions perspective shows that the present is reigning in Carnisse – there are problems, which are considered to be in need to be solved 'now'. Actors, such as the district municipality or the welfare organisation, isolate and work on specific problems and optimize the current situation to reach their own, often SMARTly[10] formulated short-term targets along which they will be evaluated. Instead, as also pointed out by several of the policy programme evaluations (Loorbach et al. 2009, Visitatiecommisse Wijkenaanpak 2011a), the neighbourhood as a whole could profit from developing a long-term vision and ambition which provides overall direction and coherence to guide short-term actions. Such a sense of direction could turn these actors from being reactive to becoming more active players focusing on societal change rather than on optimisation. Taking a transition perspective includes the embracement of uncertainty, complexity and diversity and the ignorance of the latter through a too narrow focus on indicators, short-term efficiency or piece-meal change can lead to undesired effects. The evaluation of the district municipality against the miniscule change of dozens of indicators rather than against the overall goal of improving living conditions leads to perverse stimuli rather than to a search for innovative and transformative practices. Rather than following governmental money and directions, such practices could draw from the diversity of the neighbourhood in terms of values, ethnicities, nationalities and religions. These practices need to be embedded in new structures and cultures, which take away the perverse stimuli – for example they could be based on a long term perspective and an attitude of learning by doing and doing by learning. By engaging in alternative practices, we can learn about these and about how these can bring about the desired future. Instead of engaging in governing a virtual reality of SMARTly formulated problems and goals, an attitude of learning offers the possibility to embrace the complexity of the issues in question in Carnisse.

During the last years, colleagues and I have worked in Carnisse to analyse, understand and address the challenges that the neighbourhood is facing based on such a transition perspective. For and with this work, we were relying on and further developing concepts from transition research. As part of Veerkracht Carnisse ('Resilient Carnisse'), a four year project (2011–2015) financed by the Municipality of Rotterdam in line with their investments in Rotterdam-South, I was involved in setting up a transition lab aiming at developing new ideas, practices and social relations which would make the neighbourhood more resilient. The project combined the search for ways to make neighbourhoods more resilient with innovative practices, questions of local democracy and the establishment of networks by bringing together four a-typical organisations that have all worked from their respective perspectives in other neighbourhoods in Rotterdam South. These organisations were inter-alia focusing on public (green) spaces, the education of grammar school kids, difficult home situations and sustainability transitions. Their underlying quest was to develop a method for integrated neighbourhood development to increase the resilience of Carnisse by combining their perspectives, strengths and approaches. The questions of Veerkracht Carnisse were

[10] SMART stands for: specific, measurable, achievable, realistic and timely

closely connected with those of another project, which made our engagement in Carnisse possible. InContext, an EU-FP7 funded research project (2010-2013) aimed at identifying framework conditions, which enable societal transitions towards an environmentally sound, economically successful, and culturally diverse future in communities[11].

Following the principles of transition management (Loorbach 2007, 2010, Rotmans et al. 2001), I co-organized a process involving inhabitants, policy makers, entrepreneurs and researchers to collaboratively build an understanding of the transition challenges of Carnisse as well as desired future pathways and engage in actual experimentation. Our work contextualised transition management, which is a prescriptive and descriptive governance framework for transitions (Frantzeskaki et al. 2014, Loorbach 2007, 2010) for the local urban context. We regarded Carnisse as being embedded in a societal context, where welfare state arrangements change rapidly, governments cut budgets, public service provision erodes, inequality and youth unemployment rises and planetary boundaries gain recognition (Diamond and Lodge 2013, O'Riordan 2014, Steffen et al. 2015, Vis et al. 2011). These global and national problems, issues and trends become apparent at local sites such as Carnisse. They both interact with dynamics, processes and actors at such sites and manifest themselves. *In this thesis, I explore the suitability of such local sites, i.e. cities, towns and neighbourhoods, as loci for transition management processes. In doing so, I pay tribute to the growing importance of cities worldwide.*

Through being involved in transitions-in-the-making, as an anthropologist I came to regard these as a meaning-making process of residents, policymakers, and researchers, for example with regard to how their neighbourhood or city relates to broader developments and their own roles and activities therein. If societal challenges and persistent problems are to be addressed: who will be doing so, what will they be doing, which roles are they taking and how will they interact with others. Broader developments such as those described for Carnisse, the economic crisis, social welfare reform, government budget cuts, increasing 'activation' of citizens, and increasing localization of power, all challenge current role understandings (Bakker et al. 2012, ROB 2012, WRR 2012). Specifically in the current context of a changing welfare state and shifting relations between citizens and governments, the actual experimentation and struggle with new or changed roles and relations becomes part and parcel of transitions-in-the-making. An understanding thereof is at the heart of a governance understanding of sustainability transitions in cities and neighbourhoods – especially in contexts such as Carnisse, where the novelty might not come so much from technological advancements but from social innovations, i.e. from changes in the practices and social relations of actors, which can result in changes of the broader social fabric. *In this thesis, I explore the roles and relations of actors and how these can be conceptualised, analysed, understood and supported by transition research.*

By co-organizing a temporary transition impulse in Carnisse, I made use of more action-oriented and transformational modes of research (cf. WBGU 2011, Wiek et al. 2012, 2015, Wiek and Lang 2016). It is through getting involved, rather than acting as a semi-objective bystander that I gained much deeper insights into the local dynamics, the questions and

[11] More information on the two research projects are outlined Section 2.2.2

struggles surging from 'practicing transitions'. While there is a long-standing tradition of transdisciplinary research in sustainability science (Hirsch-Hadorn et al. 2008, Lang et al. 2012, Scholz and Steiner 2015a, 2015b) and action-oriented research in different fields such as education or development (cf. Greenwood and Levin 2007, Reason and Bradbury 2008), the transition field is yet to discover its merits. *Therefore, I also explore in this thesis the use of more action-oriented and transformative research approaches in transition research for studying dynamics and addressing sustainability challenges in contexts such as Carnisse.*

To sum up, Carnisse is only one place where global issues and problems such as outlined above (e.g. financial crisis, welfare state changes) materialize and become apparent. Societies worldwide face numerous fundamental sustainability questions in the form of social and ecological crises. These include increasing ecological pressures such as climate change, resource depletion or unsustainable consumption and production patterns, but also social crisis and pressures, such as the meltdown of the financial and economic system after 2008, an ageing population, poverty and mass migration. In Western countries, the welfare state is under pressure with no viable alternative to date – this shows in financial tensions, increasing unemployment, decentralisations or discourses on the 'activation' of citizens or the 'participation society'. All issues that fall under a broader understanding of (un)sustainability, which has come to encompass not only our engagement with threats to our environment or planetary boundaries but also threats to our wellbeing and human flourishing including questions of equality and justice (cf. O'Riordan 2014). No straightforward solutions exist for these kind of global sustainability threats and problems with which we most noticeably interact in urban neighbourhoods, communities, towns, cities and regions. Those institutions and actors that should be acting as social safety net (such as welfare work, community centres or inhabitants organisation) are under pressure of national and local budget cuts. The administrative and governmental system is not organized in a way to address the problems and come up with solutions: rather as outlined above, it is part of the problem through its own structures, cultures and practices. The persistency of the problems in Carnisse and in similar areas elsewhere do ask for alternatives and it is at this local scale where we gain new insights with regard to how sustainability questions can be dealt with. This thesis takes Carnisse as a case to explore possible directions. In summary, the specific aims of this thesis are as follows:

- to contribute to sustainability transition research by clarifying the concept of actor roles in local sustainability transitions
- to contextualise transition management as a governance approach for the local context
- to contribute to the development of action-oriented and transformative research approaches in sustainability transition research.

Along these aims and in setting the scene for the five chapters, which form the core of this thesis, this introduction outlines the theoretical (Section 1.1), empirical (Section 1.2) and methodological (Section 1.3) grounds in transition, research and formulates the research gaps that I address. Based on this introduction I formulate the overall research questions

and outline how the four articles and one book chapter compiled in this thesis answer these questions (Section 1.4).

1.1 Theoretical setting: Transition Research

Transition research is a growing body of research analysing transitions as long-term radical changes of socio-technical systems and broader societal systems (Grin et al. 2010, Markard et al. 2012, van den Bergh et al. 2011). The interdisciplinary field of transition research consists of different research streams and their main concepts draw primarily on complex systems theory, social studies of technology, innovation studies, and wider governance literature (Grin et al. 2010, Markard et al. 2012, Van den Bergh et al. 2011). Transitions are conceived of as a specific kind of change, namely the radical change of a socio-technical (sub-)system in a non-linear way over a long time (25-50 years). This change can be described through different patterns and pathways (De Haan and Rotmans 2011, Geels and Schot 2007), evolves in different phases (Grin et al. 2010, Rotmans 2005), involves multiple actors (Farla et al. 2012, Geels 2011), and is characterised by co-evolution, complexity, and uncertainty (Geels and Schot 2010, Rotmans and Loorbach 2010a, 2010b).

In terms of normative direction, transitions are mainly studied in relation to sustainable development – the common denominator under which since the late 1980s desired futures have been discussed, encompassing ecological and increasingly social problems[12]. In current day discussions, sustainability and sustainable development seem to lose ground by being associated with hardship and abstinence (e.g. related to personal lifestyle choices) rather than with innovation and change (Frantzeskaki et al. 2012) or plurality of possibilities (Leach et al. 2010). Moreover, Loorbach (2014) argues that formal sustainability policies and strategies have become part of an optimization strategy of existing systems thereby sustaining unsustainable arrangements. Consequently, he calls for a replacement of the "*focus on sustainability in terms of making existing regimes less unsustainable [...] by a focus on strategies that facilitate the least disruptive and (economically and socially) costly pathways towards new dynamic equilibria*" (Loorbach 2014: 53). He refers to this as "*sustability: working towards stable dynamic equilibria through processes of transformative change*" (ibid). Rather than discarding the concept altogether, this thesis positions itself along with other sustainability science and transition scholars (Miller 2013) as working with the tension between a universalist understanding of sustainability, and the need for a continuous meaning making process: what sustainability comes to mean in a specific locality is shaped through a process of contestation, deconstruction and reconstruction. As such, sustainability is an inherently

[12] A widely-adopted understanding of sustainable development is "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED 1987). This is understood as a claim for inter- and intra-generational justice and for balancing economic development, social justice and environmental protection (cf. Hopwood et al. 2005). Linking environmental and societal development discourses, sustainable development was also defined as the "*integration of environment and development concerns*" focusing on "*the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future*" (UNCED 1992, Ch. 1).

political concept, which demands explicit public negotiation to become meaningful in a specific time and place.

One of the dominant analytical frameworks of transition research is the multi-level perspective, which provides a heuristic for understanding the nature and dynamics of multi-dimensional structural change. It distinguishes increasing levels of structuration and stability, namely niche, regime, and landscape. The main concept is the sociotechnical regime, which is a "*semi-coherent set of rules carried by different social groups*" (Geels 2002: 1260). The niche concept refers to space for radical innovations, whereas the landscape is seen as the exogenous wider context. The most commonly described dynamic is that of changes at the landscape level putting pressure on the regime and creating an opening for existing niches, which leads to structural changes in the regime – i.e. a transition. Thus, transitions are "*outcomes of alignments between developments at multiple levels*" (Geels and Schot 2007: 399). The Multi-Level Perspective has been broadened by amongst others, Rotmans and Loorbach (2010a) who point to the internal dynamics within niches as well as within regimes, and view transitions as cutting across the three levels by focusing on the co-evolution of sub-systems and on changes in structures, cultures and practices (cf. Loorbach 2007).

While transitions are described as "*multi-actor processes, which entail interactions between social groups*" (Geels and Schot 2010: 11), the Multi-Level Perspective has been criticized for the relative neglect of actors and agency (Genus and Cooles 2008, Smith et al. 2005). Moreover, while actors play a pivotal role in transitions thinking, the conceptual focus on actors is only slowly emerging (cf. Avelino and Wittmayer 2015, Brown et al. 2013, Farla et al. 2012, Fischer and Newig 2016, Wieczorek and Hekkert 2012). The main focus on actors and agency dynamics can be found in the research stream focusing on the governance of transitions. This stream concentrates on multi-actor decision making, including questions relating to governance mechanisms, power relations, underlying values, and legitimacy. Different governance approaches have been described and developed which aim to address the tension between "*the open-ended and uncertain process of sustainability transitions and the ambition for governing such a process*" (Frantzeskaki et al. 2012: 21)[13]. I refer here to governance in its broad sense, as the interactions between multiple public and private actors to pool resources and achieve collective goals (Kooiman 2003). The governance of transitions involves an attempt to orchestrate the changes taking place at different structuration levels to gear them towards sustainable development; this comes not from a 'transition manager', but from the "*distributed agency of the actors involved in structural change and innovative action*" (Grin 2010: 232). Learning is an important aspect of such purposeful attempts to foster structural change (Grin 2010, Loorbach 2010).

Transition management, as one transition governance approach, is an iterative, reflexive and complexity-based governance approach, which explicitly seeks to address persistent societal problems (Loorbach 2010, Markard et al. 2012). Belying its name, transition management is not about management, but about organizing process and content

[13] Examples include adaptive governance (Olsson et al. 2006), reflexive governance (Grin et al. 2010, Voβ et al. 2006), and transition governance (Frantzeskaki et al. 2012, Grin et al. 2010, Loorbach 2010).

through "*an interactive and selective participatory stakeholder searching process aimed at learning and experimenting*" (Grin et al. 2010: 140). Participation does not refer to the participation of societal actors in a given policy process, rather it refers to the participation of all actors in a societal learning and innovation process. Transition management aims to influence transitions through the creation of space for actors to explore and build alternatives (e.g. ideas, practices, and social relations), as well as to challenge and change the status quo through experimentation and learning (Grin et al. 2010, Loorbach 2007, 2010, Wittmayer et al. 2014; cf. O'Riordan 2009).

Learning is thus an inherent part of transition (management) processes or interventions and focuses on learning from and about new practices, structures and cultures. This thesis seeks to add the aspect of learning about changing actor interactions by introducing the concept of roles. This concept refers to shared conceptions within a particular community or system and a change in role understandings can indicate changing interactions and relations between actors within such a community or system and thus changes in the social fabric. As such, the concept allows us to tackle questions, which are at the heart of a governance understanding of sustainability transitions, namely: if societal challenges and persistent problems are to be addressed, who will be doing so, which roles will these actors take and how will they interact with others? Seeking to contribute to the emerging debate on actors and agency in transition research, I take a closer look at actors and their roles in transitions and more specifically at (changing) social roles such as policymaker or citizens. Such a perspective can build on some first work in the transition field with regard to actors (Brown et al. 2013, Farla et al. 2012, Fischer and Newig 2016, Wieczorek and Hekkert 2012). However, little attention has been paid to making a role perspective productive for transition research. Hence, to date, the field of transition research and specifically the governance part thereof, misses a suitable vocabulary to analyse and discuss changes in actor roles and role relations as part of a transition in the social fabric of our societies. With this thesis, I address this gap by bringing together the sociologist literature on roles theories and transition research.

1.2 Empirical Setting: Transitions and the local scale of cities, towns and neighbourhoods

Consistent with the main origins in science and technology studies, evolutionary economics and system thinking, transition research has a strong focus on socio-technological innovation (e.g. Geels 2002, Rotmans and Loorbach 2010b) in different socio-technical sub-systems or societal domains. Witness to this origin in socio-technical innovation is the empirical focus of transition research and transition management on functional systems such as energy, mobility, water and food (Markard et al. 2012). More often than not, the implicit geographical scale of these studies is on the national level (ibid.). The last years has seen a specific focus on geographical aspects of transitions (Coenen et al. 2012, Raven et al. 2012, Truffer and Coenen 2012). Authors pointed to the insensitivity of transition research with regard to space and place: the fact that transitions do take place at specific and particular places had been largely overlooked (Coenen et al. 2012, Hansen and Coenen 2014). While the multi-level perspective

distinguishes between different levels, these are not spatial scales and as such do not allow to understand the importance of interdependence of and interaction between different spatial scales. An example in question is the 'neighbourhood level' at which Carnisse can be situated: this has been a popular scale level for governance interventions (and has seen popularity waves throughout the years). As put by a Dutch neighbourhood inspection commission (Visitatiecommissie Wijkenaanpak 2011a: 27) "*the neighbourhood seems an attractive scale level to make plans, to devise interventions and start solutions. It is the place where policy can 'land'*". What the 'geography of transitions' perspective points at is that we should not forget the embeddedness of neighbourhoods in other spatial scales. They can be considered as nested in and constitutive of different (constructed) spatial scales and networks (Coenen et al. 2012, Coenen and Truffer 2012). Especially when it concerns fundamental changes in structures, cultures and practices, there are questions and issues, which cannot be solved on a neighbourhood level alone but need also to be addressed at other governance levels.

In parallel to the introduction of a sensitivity towards geographical aspects, transition research has also seen a move towards more localized scales such as cities, towns and urban neighbourhoods (Bulkeley et al. 2011, Frantzeskaki et al. 2014, Geels 2011, Hodson and Marvin 2010, Loorbach et al. 2016, Nevens and Roorda 2014, Nevens et al. 2013). In the 'century of urbanisation' (Harvey 2006, OECD 2015), cities are seen as critical sites for societal change in general (Routledge 2010) but also more specific for sustainability transitions (Bulkeley et al. 2011, Hodson and Marvin 2010, 2012). Cities are considered to be of growing importance, as they are housing the majority of the world population and are responsible for 70% of the energy-related carbon emissions (IEA 2008). They constitute an entity where (global) problems, such as air pollution, waste production, energy and water supply shortages, CO2-emissions as well as social inequality, injustices and food security become apparent.

However, cities also seem to offer the opportunity for decisive local action to address these issues – both in terms of policy and societal action. They are recognized by others and profile themselves as powerful actors with regard to addressing persistent problems such as climate change (Betsill and Bulkeley 2007, Bulkeley 2010, European Commission 2011). To this end, they are supported by national and supranational organisations, such as the Council of European Municipalities and Regions, ICLEI Local Governments for Sustainability, the European Sustainable Cities and Towns campaign, or the United Nations Environment Programme (ICLEI 2012). They declare their sustainability ambitions through signing declarations such as the Covenant of Mayors[14] or the Aalborg Charter and later the Aalborg Commitments[15].

Yet, while cities might get increasingly important, the focus on local authorities as actors for sustainable development dates further back. The Brundtland-report (WCED 1987) and the Agenda 21 (UCED 1992) are witness to attempts to address questions of

[14] Covenant of Mayors online (2015) Website. Online: http://www.covenantofmayors.eu/index_en.html (accessed December 8th, 2015)

[15] Sustainable Cities online (2015) Website. Online: http://www.sustainablecities.eu/the-aalborg-process0/ (accessed December 8th, 2015)

sustainability mainly at a global level, through for example setting out a voluntary action plan that was to be addressed by a "*global partnership for sustainable development*" (UNCED 1992 Ch. 1). However, especially the Agenda 21 as adopted at the United Nations Conference for Environment and Development in Rio in 1992 also gave a distinctive role to other groups than national governments to realize sustainability. It propagated broad public involvement as necessary for effective implementation of the action plan and, more broadly, for sustainable development. It considered the participation and cooperation of local authorities critical, as "*so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities*" (UNCED 1992 Ch. 28) and this was the "*level closest to the people*" (ibid.). Such Local Agenda 21 (LA21) processes were distinctively different from earlier local environmental planning, in the nature of participation they aimed for and the inclusion of issues of solidarity and justice next to environmental issues (Coenen 1998, see also Coenen 2009, Lafferty and Eckerberg 1997).

Effectively, these kinds of processes have the same aims as transition management processes: to address current sustainability challenges to further sustainability transitions (O'Riordan and Voisey 1997). As such, they are expressions of the same search for more locally owned and sustainable futures. Whenever such a relatively new approach as transition management is introduced, both practitioners and researchers question 1) whether it is suitable for being used on that scale (i.e. cities, towns and neighbourhoods) and 2) how it relates to other local sustainability approaches, particularly with established and semi-official ones such as LA21.

During the last years, the practice and conceptual basis of transition management was advanced through heuristic and prescriptive applications in the urban setting. However, what is missing to date is 1) a systematic overview of the practical and analytical insights and 2) a historical embeddedness and comparison with earlier approaches such as LA21. In this thesis, I provide both, an overview of transition management applications in cities including a reflection on the role of this spatial scale as well as an embedding and comparison with LA21 to produce insights into governing sustainability in cities, towns, and neighbourhoods.

1.3 Methodological setting: Transformative modes of science

Transitions are considered as multi-actor processes and I would like to carve out the role of the research community as being one of those actors. Research has been asked repetitively to take its societal role and responsibility to address societal problems relating to sustainability issues (Cornell et al. 2013, Flyvbjerg et al. 2012, Greenwood and Levin 2007, Hirsch Hadorn et al. 2008, WBGU 2010). However, disciplinary, positivist research only seems less apt to address issues which are as broad and unstructured and which carry such an explicit normative component as sustainability challenges. This awareness has led to the development of different kinds of research perspectives and emerging fields in the last decades all addressing pertinent societal challenges, such as Global Earth System Science (Biermann et al. 2012), resilience thinking (Folke 2006, Olsson et al. 2006, 2014), sustainability science (Kasemir et al. 2003, Kates et al. 2001,

Miller et al. 2014) and as introduced earlier, transition research (Grin et al. 2010, Markard et al. 2012, Van den Bergh et al. 2011). These fields emerged along (the revival of) alternative research approaches such as action research (Bradbury and Reason 2003, Reason and Bradbury 2008, Greenwood and Levin 2007), mode 2 research (Gibbons et al. 1994, Nowotny et al. 2001, 2003), interdisciplinary research (Huutoniemia et al. 2010), phronetic social sciences (Flyvbjerg et al. 2012), transdisciplinary research (Hirsch-Hadorn et al. 2008, Lang et al. 2012, Scholz and Steiner 2015a, 2015b) and transformative or transformational research (WBGU 2011, Wiek et al. 2012, 2015, Wiek and Lang 2016).

Within transition research, as the emerging field within which this thesis is embedded, one can distinguish between a focus on studying historical transitions and a focus on studying current transitions aiming for sustainable development. The majority of transition research focuses on describing, explaining and interpreting transition processes, dynamics and governance. What receives less attention is action-oriented transition research, which supports sustainability transitions. It is with this kind of approaches, that research done under the label of transition management, such as my engagement in Carnisse, has most overlaps. Transition management has also been referred to as a process-oriented research approach (Miller 2013). Next to studying Carnisse and gaining in-depth insights into the complexity of the problems, using an action-research based transition management methodology allowed me and my colleagues to support local actors to find ways to address these problems. In turn, the latter gave us more insights into the persistency of the problems and the long breath needed for addressing these. While some first work has been done in linking action research and transition management (Audet 2014, Audet and Guyonnaud 2013, Avelino 2011, Loorbach 2007, Loorbach et al. 2011), what is missing is a systematic understanding of transition management as an action-oriented research methodology as well as the potential of such an approach for addressing sustainability challenges and gaining scientific insights. This thesis addresses this gap through systematically linking transition management to action research and scrutinizing how and to what extent such a research approach can address societal challenges.

One of the impediments of engaging in such research approaches is that one of their promises is exactly what they are criticised for: "*even though many researchers are undoubtedly perfectly capable of separating their double roles, it is well imaginable that this double role can obscure the analysis. The involvement with a policy practice or innovation project can possibly function as an impediment for a realistic analysis of the process. It makes it hard to make 'honest' claims about the role that the researcher himself has played in the process*" (Duineveld et al. 2007: 26[16]). I argue that it is explicitly through becoming part of the locality that one is studying, through becoming one's own research instrument, in-depth insights into the complexity of the dynamics and persistency of the

[16] Dutch original: "*Hoewel veel onderzoekers deze dubbele rollen ongetwijfeld prima weten te scheiden, is het goed voor te stellen dat de dubbele pet de analyse kan vertroebelen. De betrokkenheid bij een beleidspraktijk of innovatieproject kan mogelijk als rem werken voor een realistische analyse van het proces. Het maakt het moeilijk om 'eerlijke' uitspraken te doen over de door de onderzoeker zelf gespeelde rol in het proces.*"

problems emerge and lead to a much more nuanced and reflective analysis. This point nicely illustrates one of the tensions between more descriptive-analytical and more action-oriented research approaches, namely the consequences that the latter has for the role of the researcher. As outlined by Rotmans (2005: 20) transition researcher are "*active in other arenas as well, which makes them responsible and accountable for other activities, such as their role in societal change processes*". What are 'appropriate' activities for a researcher and what not? Does s/he facilitate processes? Does s/he get involved in re-opening a community centre? Does s/he focus on interviews? There is to date no systematic understanding of the activities, corresponding roles of as well as the accompanying challenges for researchers in action-oriented research approaches. This thesis addresses this gap by developing an appropriate vocabulary to understand and navigate the tensions and potentials that come with such 'new' activities and roles.

1.4 Research questions and structure

This thesis is thus about the local scale of urban neighbourhoods, towns and cities – a scale at which global challenges are deconstructed and reconstructed, thereby becoming 'indigenized' (Appadurai 1990). It is also the scale, where we interact most notably with these challenges and thereby question current role understandings, actor relations and activities that come with them. One of these role understandings is that of the researcher: what are suitable approaches and methods for studying and supporting sustainability transitions at that local scale.

Consequently, in seeking to address the above outlined knowledge gaps, the main research question of this thesis is as follows:

How can we increase our understanding of sustainability transitions and their governance at the local scale, the changing role of actors therein and in particular, the role of research and researchers?

- How can roles of actors in sustainability transitions be conceptualised?
- What does transition management at the local scale entail and how does it relate to other local processes towards sustainability?
- What is the value of action-oriented research approaches for studying and supporting sustainability transitions in the local context?
- What are the (changing) roles of actors in transition management at the local scale?

These research questions are answered by theoretical and empirical insights presented in five consecutive chapters (Chapters 3-7) – each of which takes a different emphasis and focuses on different sub-questions. This thesis explores a theoretical conceptualisation of actor roles in transition management and sustainability transition research by drawing on social interaction research, namely roles theories (Chapter 3). It links transition management to the urban context (Chapter 4) and contextualises it historically in debates about local processes toward sustainability that peaked after the Rio Conference 1992 – the Local Agenda 21 processes (Chapter 5). Finally, the thesis

methodologically anchors transition management in action and transdisciplinary research, a strand of research that focuses on action, participation and knowledge and outlines new roles for researchers in using these approaches (Chapters 6 and 7).

The chapters consist of three published journal articles, one accepted article and one published book chapter (see Table 1.1). These are reproduced here in their published or resubmitted versions. To safeguard the overall coherence, each chapter is preceded by a short introduction in which the relevance of the chapter for this thesis as well as its contribution are clearly outlined. The overall dissertation is framed by this introduction, a chapter outlining my research orientation and the building blocks for this thesis (Chapter 2) and a concluding chapter answering the research questions and outlining future research avenues (Chapter 8). In addition, it also includes two Intermezzo's, which provide more detail regarding the empirical setting in the neighbourhood Carnisse. Intermezzo A introduces the neighbourhood and 10 years of policy activity there. Based on the empirical data, Intermezzo B provides selected conceptual and theoretical insights on the research questions developed through the action-oriented research in Carnisse.

Table 1.1: Overview of articles compiled in this thesis

CH	Authors and Title	Abstract
3	Wittmayer, Julia, Avelino, Flor, van Steenbergen, Frank and Derk Loorbach (accepted with changes) **Roles in Transition: Insights from role theory for understanding sustainability transitions; a case study**. Environmental Innovation and Societal Transition.	To date, the field of transition research lacks a suitable vocabulary to analyse the (changing) interactions and relations of actors as part of a sustainability transition. This article addresses this knowledge gap by exploring the potential of the concept of 'roles' from social interaction research. The role concept is operationalized for transition research to allow the analysis of (changing) roles and relation between actor roles in role constellations as indicative of changes in the social fabric and shared values, norms and beliefs. It also allows considering the use of roles as a transition governance intervention. This includes creating new roles, breaking down or altering existing ones and explicitly negotiating or purposefully assigning roles, as well as the flexible use of roles as resources.
4	Wittmayer, Julia and Derk Loorbach (2016) **Governing transitions in cities: Fostering alternative ideas, practices and social relations through transition management**. In Loorbach, D., Wittmayer, J.M., Shiroyama, H., Fujino, J. and S. Mizuguchi (eds.) Governance of Urban Sustainability Transitions. European and Asian Experiences. Springer, Tokyo, pp. 13-23	Sustainability transitions pose novel challenges to cities that go beyond traditional planning and urban development policies. It requires broader engagement, empowerment and breakthrough strategies, which enable, facilitate and direct social innovation processes towards adaptive and innovative urban futures. The transition approach offers a set of principles, a framework, instruments and process methodologies to analyse as well as systematically organize and facilitate such social learning and innovation processes. Over the past decade, researchers and policy entrepreneurs around the world have been experimentally applying the transition perspective in practice under the label of 'transition management'. This approach is based on bringing together frontrunners from policy, science, business and

		society to develop a shared understanding of the joint complex transition challenge, to develop collective transition visions and strategies and to start strategic experiments. In this chapter we zoom in on the different elements of transition management (i.e. principles, framework, instruments and process methodologies) and their heuristical and operational use in the urban context.
5	Wittmayer, Julia, Van Steenbergen, Frank, Rok, Ania and Chris Roorda (2016) **Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management**. Local Environment: The International Journal of Justice and Sustainability, 21(8); 939-955	Since the 1990s, the local level of governance has become increasingly important in addressing the challenge of sustainable development. In this article, we compare two approaches that seek to address sustainability locally, namely Local Agenda 21 and transition management. Discussing both approaches along six dimensions (history, aim, kind of change, governance understanding, process methodologies, and actors), we formulate general insights into the governance of sustainability in cities, towns, and neighbourhoods. This dialogue illustrates two related modes of thinking about sustainability governance. We touch upon the importance of an integrated perspective on sustainability transitions through which sustainability is made meaningful locally in collaborative processes. We suggest that the explicit orientation towards radical change is a precondition for governing sustainability in a way that addresses the root causes of societal challenges. Governing sustainability should address the tensions between aiming for radical change and working with status quo-oriented actors and governing settings. We conclude that governing sustainability should be about finding creative ways for opening spaces for participation, change, and experimentation, that is, for creating alternative ideas, practices, and social relations. These spaces for innovation encourage a reflexive stance on ways of working and one's own roles and attitudes, thereby preparing a fertile terrain for actors to engage in change from different perspectives.
6	Wittmayer, Julia, Schäpke, Niko, Van Steenbergen, Frank and Ines Omann (2014) **Making sense of sustainability transitions locally. How action research contributes to addressing societal challenges**. Critical Policy Studies 8(4): 465-485	Today's society is facing a broad array of societal challenges, such as an unstable economic system, climate change and lasting poverty. There are no straightforward solutions, rather these challenges ask for fundamental societal changes, that is, sustainability transitions. Faced with the question of how these challenges can be understood and dealt with, we argue for action research as a promising approach. Focusing on their localized manifestations, we ask whether and how action research can support understanding and addressing societal challenges and making sustainability meaningful locally. We tackle this question on the basis of two case studies in local communities based on principles of transition management. Our main finding is that societal challenges, sustainability and sustainability transitions acquire meaning through practice and interactions in the local context. Action research can offer a space in which alternative ideas (e.g., knowledge, future visions), practices (e.g., practical experiments, transformative

		action) and social relations (e.g., new actors) can emerge to further a sustainability transition.
7	Wittmayer, Julia and Niko Schäpke (2014) **Action, Research and Participation: Roles of Researchers in Sustainability Transitions.** Sustainability Science 9 (4): 483-496. Awarded Best Paper Award: Honourable Mentioning 2014	In sustainability science, the tension between more descriptive–analytical and more process-oriented approaches is receiving increasing attention. The latter entails a number of roles for researchers, which have largely been neglected in the literature. Based on the rich tradition of action research and on a specific process-oriented approach to sustainability transitions (transition management), we establish an in-depth understanding of the activities and roles of researchers. This is done by specifying ideal-type roles that researchers take when dealing with key issues in creating and maintaining space for societal learning—a core activity in process-oriented approaches. These roles are change agent, knowledge broker, reflective scientist, self-reflexive scientist and process facilitator. To better understand these ideal-type roles, we use them as a heuristic to explore a case of transition management in Rotterdam. In the analysis, we discuss the implications of this set of ideal-type roles for the self-reflexivity of researchers, role conflicts and potentials, and for the changing role of the researcher and of science in general.

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Intermezzo A: Rotterdam Carnisse – introducing the neighbourhood and 10-years of policy activity

Rotterdam is the second largest city of the Netherlands, counting almost 620.000 inhabitants and about 170 nationalities (Rotterdam COS 2011). Until recently, Rotterdam was home to the world's largest port and has heavily industrialized areas. The river Meuse, along which one finds the 'city harbour area', divides the city into a South and North part. The neighbourhood Carnisse is located centrally on the southern bank, confined by three main roads: Dorpsweg, Pleinweg and Goereesestraat. Together with seven other neighbourhoods, it forms the district Charlois. It has about 11.000 inhabitants, who have direct access to a number of facilities at the nearby Zuidplein, such as a swimming pool, theatre, concert hall and a major bus and metro station connecting it to the centre of Rotterdam as well as to the neighbouring regions. Carnisse is also situated adjacent to a major recreational area, the Zuiderpark.

This Intermezzo A introduces Carnisse focusing on social, physical and economic aspects in the light of broad historical developments (Section A.1) and 10 years of policy activity (Section A.2).

A.1 Introducing Rotterdam Carnisse

A.1.1 Demographics: Population and migration

Historically, Charlois was an agricultural area, which rapidly industrialized towards the end of the 19th century. With the extension of the harbour area[17] to the southern bank of the Meuse around the turn of the century, Charlois became part of Rotterdam (Stichting Historisch Charlois 2011). At this time, the quickly growing harbour and the adjacent factories attracted workers from the Dutch regions of Brabant, Zeeland and Groningen, who settled in the new neighbourhoods, including Carnisse, which were built around old village centres (Stichting Historisch Charlois 2015).

In a period of post-war growth driven by port-expansion, Rotterdam attracted a new wave of migrant workers first coming from Turkey, Morocco and the Cape Verdes and later from Suriname and the Antilles. Their families followed them in the period up to the 1990s. It was in 1973, that Charlois became a district municipality with eight neighbourhoods, one of it being Carnisse. The role of the harbour for providing employment started declining in the 80s, while Carnisse and the adjacent neighbourhoods remained the place where migrants start their living career in Rotterdam. The latest migrants originated from Central and Eastern Europe (Poland, Bulgaria and Romania) following the Eastern expansion of the European Union in 2004 and 2007. Such constant processes of urban migration often come with processes of exclusion, deprivation and inequality. They also lead to weak links between inhabitants

[17] Dokhaven 1881, Maashaven 1898-1905, Waalhaven 1905

and their neighbourhood, while in Carnisse there is also a core of people who stays (or returns) and talks about a "*village feeling*"[18].

Table A.1: Core statistics of Carnisse, compared to the district Charlois and Rotterdam
Sources: Rotterdam Buurtmonitor (2015) drawing on (1): Gemeentelijke Basis Administratie (GBA), Bewerking door OBI; (2): Stadsontwikkeling en Gemeentelijke Belastingen Rotterdam, Bewerking door OBI; (3): Burgerzaken Bureau Verkiezingen, Bewerking door OBI; (4): CBS Regionaal Inkomensonderzoek, Bewerkt door OBI; Werk en Inkomen Rotterdam, Bewerkt door OBI; Uitvoeringsinstituut WerknemersVerzekeringen (UWV), Bewerkt door OBI; (5): Politie Regio Rijnmond, bewerking door Onderzoek & Business Intelligence (OBI).

	Source	Year	Carnisse	Charlois	Rotterdam
Demographics					
Number of inhabitants	1	2014	10.914	64.488	618.109
Inhabitants younger than 35	1	2014	56 %	49,9 %	41,6 %
Household head autochthon	1	2014	45,3 %	45,3 %	55,2 %
Household heads from EU-countries	1	2014	15,7 %	10,2 %	7,4 %
Turnout municipal elections	3	2014 (2010)	28,6 (35,4) %		45,1 (42,7) %
Housing					
Apartments, build before 1945 *[Woningen bouwjaar voor 1945]*	2	2014	48,7 %	35,6 %	31,4 %
Apartments, build 1945 – 1959 *[Woningen bouwjaar 1945-59]*	2	2014	42,9 %	34,3 %	11,3 %
Proprietary apartments *[Percentage koopwoningen]*	2	2014	46,2 %	31,4 %	34,6 %
Rental apartments *[Percentage huurwoningen]*	2	2014 (2006)	53,6 (57,4) %	67,6 (74,9) %	64,9 (72,6) %
… from which apartments with shared entrance hall and without lift *[hiervan Portiekwoning zonder lift]*	2	2014	69,9%	37,2%	23,9%
Work and Income					
Persons on welfare payment *[Personen met uitkering]*	4	2014	597 (5,5%)	4.998 (7,8 %)	40.913 (6,6%)
Average household income for spending *[Gemiddeld besteedbaar huishoudensinkomen]*	4	2011	23.000	24.300	29.300
Offences					
Total registered offences (per 1000 inhabitants) *[Geregistreerde misdrijven total (per 1000 inwoners)]*	5	2013	1.057 (98)	7.679 (116)	64.955 (105)

In 2014, about 11.000 of Rotterdam's nearly 620.000 inhabitants are living in Carnisse. Of these, 56% are younger than 35 years, making Carnisse one of the 'youngest' neighbourhoods in Rotterdam. In Carnisse, just 45% of household heads is autochthonous (their parents have been born in the Netherlands) as compared to the overall city's 55%. About 16% of all household heads originate from European countries, mostly from Eastern European countries in line with the latest migration movements (Programmabureau NPRZ 2014). Until 2011, Carnisse experienced a migration surplus from outside the city, followed by a migration deficit (both holds for the district Charlois

[18] Interview with inhabitant, October 18th, 2011, Rotterdam. Dutch original: "*dorpsgevoel*"

and Rotterdam as a whole). This is also a matter of 'selective migration', those who climb the social ladder leave Carnisse and the surrounding neighbourhoods (Deetman and Mans 2011). Carnisse can be said to be a diverse neighbourhood, in terms of nationalities and age, but also in terms of religious perspectives and worldviews. As put by a welfare worker: "*In Carnisse everybody is in the minority*"[19].

A.1.2 Physical aspects: Housing stock and public space

Nearly 50 % of the current housing stock in Carnisse was built before the Second World War. This can be attributed to the steady growth of the harbour in that period and the fact that the southern bank of the Meuse had been spared from the demolition of Rotterdam during the Second World War. In total, an overwhelming majority (91,6%) of the current apartments are built before 1960.

Some 70% of these apartments are 2-3 bedroom apartments with a shared entrance hall and without lift. Of a great majority of those apartments (86% compared to 28% in Rotterdam), the WOZ-value (Dutch national norm for the calculation of the value of houses) ranges between 50.000 to 100.000 Euro (Rotterdam Buurtmonitor 2015). This all makes for a rather one-sided housing stock.

Interesting in this regard, is the high percentage of private apartments (46,2%) as compared to Charlois (31,4%) or Rotterdam (34,6%). It makes Carnisse something of an exception in comparison with surrounding neighbourhoods. These houses often belong to private investors aiming to increase their profit but refraining from investing in the houses. The investors often rent out apartments to too many people, which leads to trouble with neighbours in these thin-walled apartments (De Groene Amsterdammer 2010, NRC Handelsblad 2007, Trouw, 2007). Compared to adjacent neighbourhoods, there is no housing cooperative with a major stake in Carnisse: which has a direct negative consequence on investments in the neighbourhood. In dominant policy analysis, the housing stock is considered one of the underlying issues of a number of other problems in Carnisse, such as e.g. conflicts between neighbours, attraction of low-income inhabitants.

The neighbourhood has access to two parks: the Amelandseplein, a small recreational park with playgrounds for kids in the heart of the neighbourhood and the bigger Zuiderpark.

A.1.3 Economic aspects

Historically, Carnisse had a lively entrepreneurial climate mixing bigger commercial businesses (V&D, C&A and banks) and numerous small entrepreneurs. This situation changed with the completion of the Zuidplein shopping centre in 1972 at the Southern border of Carnisse. Existing stores either moved to Zuidplein or were outlived by the competition in the years to follow. As of the 80s, the employment opportunities in the harbour decreased by 2% annually (Van Steenbergen and Wittmayer 2012).

[19] Interview with a professional from welfare work, September 28th, 2011, Rotterdam. Dutch original: "*In Carnisse is iedereen in de minderheid*".

On average, households in Carnisse had 23.000 Euro to spend in 2011, one of the lowest household incomes in Rotterdam. The increase of incomes is also far below the Rotterdam average (Deetman and Mans 2011). While the number of inhabitants on welfare payments seems quite low, Carnisse has seen an increase by 40% in the years following the economic crisis in 2008 (compared to an increase of 12% in Charlois, and 29,8 % in Rotterdam).

A.1.4 Concluding remarks

The rapid developments of the physical environment after World War II as well as the ongoing migration streams are playing their role in current problems in Carnisse: a low quality and one-sided housing stock, low bonding with the neighbourhood as well as nuisance by others and vandalism (Rotterdam Wijkprofiel 2014). In all these four areas, the neighbourhood scored "*far under the average of Rotterdam*" in the neighbourhood monitor 2014. The latter consists of three indexes, the security index (experience of security, theft, violence, burglary, vandalism and nuisance), social index (experience of quality of life, capacities, participating, living environment, and bonding) and physical index (experience of housing, real estate, public space, facilities, and environment) and is a basis for municipal policy (Rotterdam Wijkprofiel 2014; see Table A.2).

Table A.2: Neighbourhood profile Carnisse, compared to the district Charlois and Rotterdam 2014 (Source: Rotterdam Wijkprofiel 2014; the scores are indexed in relation to a baseline measurement determining the average of Rotterdam at 100. For the security index Carnisse scores 'around the average' whereas for the social and physical index it is considered to score 'below the city average')

	Carnisse	**Charlois**	**Rotterdam**
Security Index	90	86	100
Social Index	82	84	100
Physical Index	82	84	100

A.2 Ten years of policy activity

Carnisse, and more broadly the South of Rotterdam, has received a great deal of attention from different policy levels, resulting in a number of programmes, visions and implementation plans for the area. Policy activity focusing on the 'renewal' of Rotterdam South can be traced back to the 'city renewal' activities in the 1970's and 80's, or the development of the 'Kop van Zuid'-area in the 90's. However, I focus here on the developments of the last ten years, starting with the initiation of the '**Pact of South'**[20] in 2006 by the Municipality of Rotterdam, three southern district municipalities and four housing cooperatives. Via a programme office, these parties collaboratively pledged to invest 1 billion Euro over 10 years in the social, economic and physical qualities of Rotterdam South including Carnisse (City of Rotterdam online 2015a).

Just a year later, in 2007, the Dutch government (Ministerie VROM) started a 10-year national programme for neighbourhood renewal, the 'Action Plan Power Neighbourhoods'[21]. This **'40-Neighbourhood-Programme**' was a follow up of the Ministry's earlier '56-neighbourhood programme' (Kennisbank Platform 31 2015). While the latter focused on physical restructuring, the new programme should show a broader more integral approach on "*housing, working, learning & growing up, integration and security; joint experimenting; partnership; strong involvement by inhabitants; broad coalitions for the neighbourhoods; and support to other neighbourhoods*" (Ministerie VROM 2009: 3[22]). Forty neighbourhoods across the Netherlands were selected for showing signs of socio-economic deprivation, a deprived housing stock and problems with quality of life and physical surroundings as perceived by the inhabitants (Ministerie VROM 2007). Several neighbourhoods in Rotterdam (mainly in Rotterdam South), including Carnisse (as part of an area referred to as 'Rotterdam Oud-Zuid'), are part of the 40-Neighbourhood-Programme. The Ministry supports them with money, strategic advice and through facilitating communication with and learning from one another (Rijksoverheid online 2015).

The foci of the 'Pact of South' and the 40-Neighbourhood-Programme overlapped and the City of Rotterdam framed the former as exemplary for the latter (City of Rotterdam et al. 2009). The City also states that the ministerial "*trajectory for the areas of the Pact of South led to a sharpening and expansion of the programmatic activities*" (City of Rotterdam et al. 2009: 3[23]). Based on their previous work, the City of Rotterdam together with housing cooperatives, inhabitants and other stakeholders drafted the neighbourhood action plan[24] 'People of Rotterdam make headway'[25] (City of Rotterdam 2007a). The plan consisted of a problem analysis, agreements on projects and related investments and was

[20] Dutch original: *Pact op Zuid*

[21] Dutch original: *Actieplan Krachtwijken*

[22] Dutch original: "*een integrale benadering op wonen, werken, leren & opgroeien, integratie en veiligheid; gezamenlijk experimenteren; partnership; sterke betrokkenheid van bewoners; brede coalities rond de wijken; en ondersteuning aan andere wijken*"

[23] Dutch original: *"[WWI-]traject voor de Pact op Zuid-gebieden heeft geleid tot een aanscherping en uitbreiding van de programmatische activiteiten*"

[24] Dutch original: *Wijkactieplan* or short: WAP

[25] Dutch original: *Rotterdammers Vooruit*

obligatory for being eligible under the national neighbourhood approach (see also Table A.3 below).

In an evaluation of the 'Pact of South' in 2009 from a transition perspective, Loorbach et al. (2009) pointed out that the numerous programme activities have given a real boost to the area. More critically, they also noted that to date there is a diversity of loose goals with no shared vision, high implementation pressure leading to numerous projects, which are not easy to follow, assess and govern, and a tendency to focus on physical aspects. Therefore, they challenged the programme office to make choices about their focus in terms of goals, governance strategy and content for the time coming.

Throughout the years, there were yearly status updates on the neighbourhood approach from the Ministry to the Parliament (Ministerie BZK 2011, 2012, 2013, 2014, Ministerie VROM 2008, 2009, 2010). In 2010/2011 the Ministry VROM asked an inspection commission to "*strengthen the implementation of the neighbourhood programme and contribute to the knowledge on effective and goal oriented solutions to increase the quality of life of the neighbourhoods, from an independent position*" (Visitatiecommisse Wijkenaanpak 2011a: 10[26]). Rather than evaluating, the goal of neighbourhood visits with a group of experts was policy learning. Their conclusion about the overall national neighbourhood programme was in line with what Loorbach et al. (2009) had found two years earlier in relation to Rotterdam: there is a surplus of projects and lots of activity but no overarching shared vision and there is no univocal governance but too much bureaucracy combined with a tendency to control and no confidence in the power of citizens. They also argued for making choices: a new prioritisation, the anchoring and continuation of successful initiatives and putting a hold on those that do not seem to have the desired impact. Their report also put much emphasis on the changing roles between citizens and governments: "*This asks for governments and institutions which dare to let go, which are servient to the resolving and steering power of people in neighbourhoods and districts"* (Visitatiecommisse Wijkenaanpak 2011a: 7[27]). Due to the numerous problems on grand scale in Rotterdam, a more in-depth advice on Rotterdam has been given by the commission Deetman and Mans on request of Minister Van der Laan (Deetman and Mans 2011 – see Table A.3).

In addition, the commission Deetman and Mans concluded that there are examples of successful initiatives, but that the situation in the last 10-15 years has not structurally or substantially improved. What the programmes had achieved at most is stabilize the neighbourhoods in Rotterdam-South (Deetman and Mans 2011, Visitatiecommissie Wijkenaanpak 2011b). On the basis of this advice, the city of Rotterdam, together with the national government and 15 other organisations (housing cooperatives, businesses, educational institutions, inhabitants' organisation, and district municipalities) elaborated a vision document for Rotterdam-South (City of Rotterdam et al. 2011). Three

[26] Dutch original: "*vanuit een onafhankelijke positie de uitvoering van de wijkenaanpak te versterken en bij te dragen aan de kennis over effectieve en doelmatige oplossingen om de leefbaarheid in de wijken te verbeteren*"

[27] Dutch original: "*Dat vraagt om overheden en instituties die durven los te laten, die dienstbaar zijn aan het oplossend en sturend vermogen dat uit mensen, uit buurten en wijken zelf komt*"

core issues mentioned were the need for system innovation anchored in the history of the city, a focus on the strength instead of the problems and a long-term, integral and focused approach with the collaboration of all partners. The document outlines their ambition that Rotterdam-South "*will excel*" (City of Rotterdam et al. 2011: 9[28]), so that it equals the average of the four biggest cities in the Netherlands (City of Rotterdam et al. 2011). For the realization of this vision, a new programme was started, the **'National Programme Rotterdam-South' (NPRZ)**[29]. In seven neighbourhoods, including Carnisse, the focus is on three main pillars: schooling, working and housing (City of Rotterdam et al. 2011, City of Rotterdam online 2015b, Programmabureau NPRZ 2014). The latter is more difficult to realize both due to limited public budgets and in some of the neighbourhoods such as Carnisse a high degree of private ownership, as such schooling and working have been the focuses of the last years (cf. Ministerie BZK 2014). In multi-year implementation plans, concrete measures per neighbourhood as well as quantitative measureable goals are set (Programmabureau NPRZ 2012, 2015). The first plan covered 2012 to 2014 and was evaluated in 2014 by the programme office (Programmabureau NPRZ 2014). The evaluation was mildly optimistic about the current state of affairs and the progress that was booked. Its recommendations were taken up for the second implementation plan, which foresees in the period from 2015-2018 (Programmabureau NPRZ 2015).

Table A.3: Overview of policy documents explicitly referring to Carnisse 2006-2016

Policy Document	Context and content of the document
2006 | Pact op Zuid [Pact of South] *The original document could not be retrieved.*	With the 'Pact op Zuid' by the Municipality of Rotterdam, three southern district municipalities and four housing cooperatives pledged to collaboratively invest 1 billion Euro over 10 years in the social, economic and physical qualities of Rotterdam South including Carnisse.
2007 | Wijkactieplan Charlois [Neighbourhood Action Plan Charlois] *Reference: City of Rotterdam (2007a) Rotterdammers vooruit! Rotterdamse Krachtwijken; Deel 2: Wijkactieplannen in ontwikkeling, samenvatting, Rotterdam: City of Rotterdam. pp. 76-81*	The Neighbourhood Action Plan is part of the overall action plan of the City of Rotterdam, which was drafted in the context of becoming part of the national 40-neighbourhood programme. The overall document outlines the ambitions, approaches and results that the City of Rotterdam envisions with regard to the work in the different neighbourhoods. For Carnisse a number of main problems are highlighted as well as a number of measures and projects that should lead to the envisioned results. *Showing the interrelation between the different documents, this document refers to both, the Neighbourhood Action Programme (see below) and the Neighbourhood Vision (see below), as being the source for the problem analysis.*
2007 | Wijkactieprogramma Oud-Zuid/Charlois [Neighbourhood Action Programme Old-South/Charlois]	This document focuses on three 'focus neighbourhoods' in the district municipality Charlois, one of which is Carnisse, that fall under the 'Pact op Zuid' programme and as such are considered for the national neighbourhood approach. It was written by the Municipality of Rotterdam, the district

[28] Dutch original: "*gaat excelleren*"
[29] Dutch original: *Nationaal Programma Rotterdam Zuid*

Reference: City of Rotterdam et al. (2009) WWI: Actieprogramma 2008-2009. Krachtwijk: Oud-Zuid/Charlois / Deelgemeente Charlois. Rotterdam: City of Rotterdam	municipality Charlois and two housing cooperatives: Com.wonen Vestia Woonstad Rotterdam. It outlines the problems in Carnisse along the topics of housing, working & entrepreneurship, learning & growing up, integration and security. It also outlines an icon project and 17 quick win projects with their responsible implementation partners, envisioned to take place in the years 2008-2009. These should realize the goals of the 'Pact of South' programme.
In 2008, the Municipality of Rotterdam and its district municipalities agreed to introduce 'area-focused' working (City of Rotterdam 2008). This meant that the Municipality would start from the challenges in a specific area and work with local stakeholders to develop and implement custom-made policies. It included the integration of all previous plans and visions for each 'area'. Each district municipality had to draw up an overall 'area plan' for their district. These plans had to be in line with the overall city vision and had to be concrete enough to be the basis for neighbourhood level visions and the integral neighbourhood action programmes.	
2007/2008[30] Integrale Wijkvisie Carnisse 2020 [Integral Neighbourhood Vision Carnisse 2020] *The original document could not be retrieved.*	For Carnisse an integral neighbourhood vision was set up, initiated by the district municipality Charlois, the Municipality of Rotterdam and two housing cooperatives: Woonstad Rotterdam and ComWonen. The vision was set up during several workshops in corporation with representatives of the inhabitant's organisation Carnisse, other organisations and municipal service departments active in Carnisse. The aim was to have one vision providing direction to organizations and municipal services active in Carnisse. It built upon an earlier vision, integrates ideas from the national neighbourhood approach and is part of the VIP-profile of Rotterdam Oud Zuid of the city vision Rotterdam 2030 (City of Rotterdam 2007b). This vision was the basis for a multi-annual implementation plan, the Integral Neighbourhood Action Programme Carnisse.
2008[31]: Integraal Wijkactieprogramma (iWAP) Carnisse [Integral Neighbourhood Action Programme Carnisse] *Reference: No author (no year) Integraal Wijkactieprogramma Carnisse. Carnisse Kanskaart. Waar capaciteiten worden benut*	The multi-annual implementation plan (2008-2010) consists of concrete measures and projects to follow up on the Integral Neighbourhood Vision Carnisse 2020. Like the vision, it is led by the district municipality Charlois, the Municipality of Rotterdam and two housing cooperatives: Woonstad Rotterdam and ComWonen in collaboration with municipal service departments and representatives of the inhabitant's organisation Carnisse. *The decision to have iWAP's across neighbourhoods in Rotterdam originated from the decision between the City of Rotterdam and the district municipalities to implement area-focused working. It is however also part of the requirements of the national neighbourhood programme (Ministerie VROM 2007).*
2011 | Visitatiecommisse Wijkenaanpak: Doorzetten en Loslaten [Inspection commission neighbourhood programme: Keep going and let go]	The inspection commission evaluated the national neighbourhood programme focusing on giving recommendations for learning from and strengthening the current approach. It concluded that there are successful initiatives, but that the situation in the last 10-15 years has not structurally or substantially improved. What it has done at most is stabilize the neighbourhoods in Rotterdam-South. This report contains a section on Rotterdam, including Carnisse, and notes that the social and physical issues are extreme in their scale and persistence, especially when compared to the other Dutch neighbourhoods.

[30] Exact date unclear
[31] Exact date unclear

	Reference: Visitatiecommisse Wijkenaanpak 2011b Doorzetten en Loslaten. Toekomst van de Wijkenaanpak. Deel 2 Rapportages Rijksoverheid en 18 Gemeenten. Den Haag.
2011 | Kwaliteitssprong Zuid [Quality Leap South]	In its analysis, this advice by two former politicians points to the fragile socio-economic structure of the neighbourhoods in Rotterdam (social and security index, low incomes, low education levels, number of jobs), the weak physical structure (very fragile housing stock, lack of value creation, physical barriers and limited mobility). It points to three main improvement paths: importance of a shared vision for the development of Rotterdam-South, realisation of sufficient perseverance in the neighbourhoods, involvement of inhabitants and entrepreneurs in the developments on neighbourhood level. It outlines the need for a long-term vision (20 years), policy commitment, pooling of resources and commitment by inhabitants to address the problems of Rotterdam-South. The authors formulate the goal of 'elevating' the situation in Rotterdam-South to even with the other big cities in the Netherlands. The advice is to focus on talent development, physical development and economy. *Reference: Deetmans and Mans (2011) 'Kwaliteitssprong Zuid Ontwikkeling vanuit Kracht' Eindadvies van team Deetman/Mans over aanpak Rotterdam-Zuid.*
2011| Zuid Werkt [South Works]	The City of Rotterdam, the national government and a number of local partners such as housing cooperatives, welfare organizations and schools commit to a shared long-term vision for Rotterdam-South and an implementation programme, the 'National Programme Rotterdam South' (NPRZ). The programme focuses on the districts Charlois, Feijenoord and IJsselmonde, and Carnisse is mentioned as one of the focus neighbourhoods with major problems. *Reference: City of Rotterdam et al. (2011) Zuid Werkt! Nationaal programma Kwaliteitssprong Zuid'. Gemeente Rotterdam.*
2012 | NPRZ Uitvoeringsplan 2012-2014 [NPRZ Implementation plan 2012-2014]	This implementation plan for the National Programme Rotterdam South outlines the focus areas (schooling, work and housing) and sets concrete measures per neighbourhood as well as quantitative measureable goals. *Reference: Programmabureau NPRZ 2012 Uitvoeringsplan 2012-2014. Rotterdam: Programmabureau NPRZ*
2014 | Voortgangsrapportage 2014 [NPRZ Progress report 2012-2014]	This progress report outlines the (mild) progress of the first two years of the National Programme of Rotterdam South on the three focus areas: schooling, work and housing. The recommendations were taken up for the second implementation plan, which foresees in the period from 2015-2018. *Reference: Programmabureau NPRZ 2014 Voortgangsrapportage 2014. Rotterdam: Programmabureau NPRZ*
2015 | NPRZ Uitvoeringsplan 2015-2018 [NPRZ Implementation plan 2012-2014]	This is the second implementation plan for the National Programme Rotterdam South and outlines the goals and measures for the period 2015-2018. *Reference: Programmabureau NPRZ 2015 Uitvoeringsplan 2015-2018. Rotterdam: Programmabureau NPRZ*

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"Designing the plane while flying it"

Herr and Anderson 2005: 69

2. Research Approach and Methodology[32]

The core of this thesis are four articles and one book chapter, with each a specific methodological account. The task of this chapter is to introduce my overall research orientation, as well as the research projects and processes on which this thesis and the different articles build. I do not pretend that the research orientation I sketch here has been guiding the thesis explicitly from the beginning; it was rather by engaging in research that I also learned about how to do it and how to position it. As such, I came to consider research orientation not as something that one arrives at and clings on to, but rather like a verb, as something dynamic that develops further as one goes along.

In the introduction, I outlined that conventional research approaches seem to be less apt to address issues, questions and challenges relating to sustainability. These are often analysed as 'wicked' or 'persistent' problems which are broad and unstructured and which carry an explicit normative component in both transition research and sustainability science. Along with others in both research streams, I suggested that for answering these questions, it is not enough to stay within disciplinary boundaries and focus on the production of scientific knowledge. Rather, for answering these questions, we also need to span disciplinary boundaries, question the primacy of scientific knowledge as compared to other kinds of knowledge and profit from the insights that can emerge from action-oriented research approaches.

The rapid development of transition research over the last decade has left little room for self-reflection with regard to chosen research approaches and methodologies. In earlier work, which links transitions research and mainly transition management to more transdisciplinary and action-oriented research, a number of cornerstones for transition research were outlined: Transition research 1) is inter- and trans-disciplinary, 2) is normative in aiming for sustainability, 3) appreciates both traditional and applied research, 4) views the researcher as being embedded in a multi-actor setting, and 5) takes uncertainty, ambiguity, non-linearity, and sustainability as starting points (Loorbach et al. 2011). The authors also argue, "*[m]ethodologically, the new research field of transitions requires new types of research that have an integrative nature, are normative in their ambitions, have a desire to contribute to societal change and are participatory*." (ibid). Similarly, Avelino (2011: 22) contends that we "*cannot afford*" to choose sides between positivist approaches and interpretative approaches to science in the face of questions concerning persistent (complex, normative) problems and transition processes. Rather, she argues for "*combin[ing] different epistemological paradigms and explor[ing] the whole spectrum of what was, what is, what seems to be, what people want and what we think that will be or ought to be.*" (ibid., cf. Loorbach 2007). Based on the discussion of these and

[32] Parts of this chapter were developed simultaneously with Wittmayer et al. (forthcoming)

other authors, I synthesize a number of cornerstones for transition research, focusing on sustainability transitions in the making (see Table 2.1). The cornerstones outlined in Table 2.1 below will be further unpacked throughout this chapter.

Table 2.1: Cornerstones of Transition Research Processes.

Cornerstones	Explanation
Oriented towards societal questions	Transition research originates from a context of complex societal questions with regard to necessary societal change, which makes an orientation towards societal questions inherent to the field.
Inter- and transdisciplinary	The orientation towards complex societal problems requires the collaboration of different disciplines (interdisciplinarity) and the collaboration of different societal actors (transdisciplinarity) (Hirsch Hadorn et al. 2008, Nowotny et al. 2003) to arrive at new orientations, understandings and possible solutions.
Interparadigmatic	Different research approaches, from descriptive-analytical to transformative research approaches as well as different research perspectives, including positivistic and interpretative ones, are considered adequate options to answer research questions and address societal problems (cf. Avelino 2011, Loorbach et al. 2011, Schram et al. 2012). Starting from a complex and uncertain reality includes the recognition that different research perspectives and approaches are necessary to address these, and that changing these might be necessary in an adaptive research process (cf. McGowan et al. 2014) using a multi-method approach.
Adaptive and abductive	With the actual research object (i.e. sustainability transitions) being a normative, complex and subjective concept, and the acknowledgement that knowledge is uncertain and provisional, there is a need for a transition research process to be adaptive and abductive. This means that transition research should be in a position to adapt to changing and shifting problem framings and research circumstances and to take these as a starting point rather than as something that needs to be controlled.
Reflexive	With sustainability transitions being normative, a reflexive research process is needed. Such a research process does not only question and challenge research objects and processes but also their societal embedding. It addresses power constellations and turns a reflexive eye towards researcher's own roles, functions, knowledges and methods.

A distinction, which I draw out from the above, and concentrate on in this thesis, is between transition research *about* transitions (focused on analysing, describing and interpreting transitions); and transition research *for* transitions (focused on supporting or enabling transitions). In doing so, I relate my reflections on research approaches in transition research to developments in sustainability science, a field which has a longer tradition with more action-oriented approaches. There, Peattie makes a similar distinction in maintaining that: "*Sustainability research seeks to contribute to the pursuit of sustainability rather than just understand it. In other words it is research for sustainability, rather than just research about sustainability"* (Peatti 2011: 23). In sustainability studies, we find next to a descriptive-analytical research approach also 'transformational', 'solution-oriented' or 'process-oriented' approaches to research (Miller 2013, Miller et al. 2014, Wiek et al. 2012, Wiek and Lang 2016). These approaches

„*must link research on problem structures with a solutions-oriented approach that seeks to understand, conceptualize and foster experiments for how socio-technical innovations for sustainability develop, diffuse and scale up*" (Miller et al. 2014: 240). Rather than there being sharp and clear differences between these approaches, these can better be seen as 'ideal-types', which in practice are not black and white, but are practiced in the grey areas in between, which is where the diversity and practicability thereof lies.

While sustainability science prepared the ground for transdisciplinary research including the necessary reflections and conceptualisations on the interface of science with society, or 'the public' (Miller 2013, Pohl et al. 2010, Scholz and Steiner 2015a), I argue that this aspect needs further attention, reflection and systematic development in transition research. This thesis cannot be more than a starting point for this larger endeavour and my aim with this thesis is to further develop and ground transition management as action-oriented research methodology. This methodology is used to generate scientific insights about the governance of urban sustainability transitions and the roles of different actors therein as well as social impact.

2.1. Research orientation of this thesis

In the context of transition research, understood as being interdisciplinary, transdisciplinary as well as interparadigmatic, there is no right or wrong epistemological or ontological positioning. Rather, I understand such a positioning as an ongoing process of balancing values, norms, competences and institutional background as well as, very importantly, the societal questions at hand (cf. Schram et al. 2012, Schwartz-Shea and Yanow 2012). Such a process of positioning can be regarded as tacit knowledge, which becomes only clear after the fact (Schwartz-Shea and Yanow 2012: 5) and is part of a reflexive practice as researcher (cf. McGowan et al. 2014).

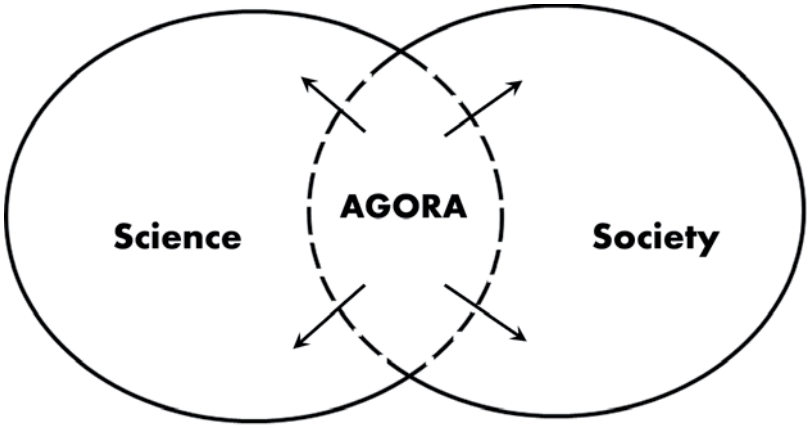
The research approach of this thesis is inspired by and builds upon a number of different streams, which share a certain ambition for addressing and solving social problems, and/or closing the 'gap' between science and society or working at the fringes of both. This includes research approaches such as action research and its roots in critical pragmatism (Greenwood and Levin 2007, Kemmis 2010, Reason and Bradbury 2008) as well as transdisciplinary research as it is practiced in sustainability science (Hirsch Hadorn et al. 2008, Lang et al. 2012, Scholz and Steiner 2015a, Wiek et al. 2015) and the related discussion on 'mode 2' research (Gibbons et al. 1994, Nowotny et al. 2001, 2003). Other inspirations are phronetic social science (Flyvbjerg 2001, Flyvbjerg et al. 2012a, Schram et al. 2012), interpretive approaches (Schwartz-Shea and Yanow 2012, Wagenaar 2011, Yanow and Schwartz-Shea 2006) as well as critical perspectives from e.g. social and cultural anthropology (Ferguson 1999, Mosse 2005, Scott 1998).

In this section, I position my research for this thesis as being witness to a transformative research approach with the research outcomes being focused on producing scientific, actionable and reflexive knowledge as well as action (see Section 2.1.1). I also outline my understanding of research as a praxis or craft (see Section 2.1.2) and pause to consider aspects of subjectivity and normativity (see Section 2.1.3)

2.1.1. Action and Knowledge

There are several perspectives on how science and society relate to and/or contribute to one another (Jasanoff 2004, Latour 1993, Nowotny et al. 2001, 2003). Rather than considering these as strictly separated spheres, I do see them as overlapping following conceptualisations of Nowotny and colleagues (Nowotny et al. 2003, see Figure 2.1). Science and society are always interacting and conditioning one another – societal preoccupations and conceptions can be traced back in ideas about good science and vice versa (see the whole field of science studies, e.g. Abbott 2001, Jasanoff 2012, Latour 1993, 2004). While many of these interactions happen implicitly, take a long time to be noticed or are seldom reflected upon, these can also be created more deliberately. Nowotny et al. (2003) refer to 'agoras' as primary modes of knowledge production, public spaces where science and society speak to and with each other. Such spaces have been referred to differently by different research traditions, such as communicative space (Wicks and Reason 2009 drawing on Habermas) or arena for dialogue (Greenwood and Levin 2007) in action research, transition arena as protected space (Loorbach 2010), in transition and sustainability research. Together with colleagues, I have dubbed them spaces for interaction or societal learning (Chapter 6, Chapter 7). In such spaces, traditional role understandings get blurred and various kinds of knowledge are considered equal, while not the same, in addressing real-world problems, generating knowledge, formulating possible solutions, and directing actions. Researchers play an important role in providing, creating and maintaining such spaces (Pohl et al. 2010, Chapter 7). During my research engagement in Carnisse, the co-creation and continuation of such a space was one of the central activities (see Section 2.2.3).

Figure 2.1. Interaction of science and society (adapted from Miller 2013; Pohl et al. 2010)



The envisaged outcome of such interaction is the production of **scientific, actionable and reflexive knowledge**. This orientation is witness to the interparadigmatic nature of

transition research, including positivistic research and interpretive or critical social research (Avelino 2011). However, in the work for this thesis, I am more influenced by interpretive or critical social research perspectives. The different knowledge outcomes are distinguished as follows:

- **Scientific** knowledge refers to abstract, universal knowledge (along Aristotele's understanding of episteme and techné) from natural and social sciences and to contextualised, localised knowledge from social sciences and the humanities. Such knowledge allows describing, analysing, understanding and/or explaining systems and processes from different perspectives – as such, it aims at temporarily suspending the uncertainty of knowledge (cf. Nowotny 2015).
- **Actionable** or usable knowledge allows actors to act in specific contexts (cf. Bartels 2012, Bartels and Wittmayer 2014, Cook and Wagenaar 2012). It enables action or intervention in specific situations and advances the academic debate: "*It is theoretically informed, yet practical understanding and activity which is grounded, negotiated, critical, democratic and contextual*" (Bartels and Wittmayer 2014: 399). Rather than 'transferred', this knowledge is "*emerging from creative interactions with others*" (Bartels 2012: 435) in spaces where science and society meet as introduced above. Similar conceptions are outlined by action research with the ambition to produce next to scientific also social knowledge (Greenwood and Levin 2007) and by Flyvbjerg and colleagues (2012a: 1), who see the role of phronetic social sciences as "*dedicated to enhancing a socially relevant form of knowledge, that is, 'phronesis' (practical wisdom on how to address and act on social problems in a particular context)*". As such, actionable knowledge relates to capacity development and empowerment and is not necessarily build in scientific knowledge in the first place; rather it is of a different kind.
- By also distinguishing **reflexive** knowledge, I want to emphasize the importance of reflexivity for this kind of research. Not only is the knowledge we are working with uncertain, partial and normative, we as researchers are also part of its co-production (see Section 2.1.3). As such, research which engages with and supports societal transitions needs to regularly reflect on and adjust its assumptions, goals and methods to remain trustworthy and accountable.

These different forms of knowledge are arrived at through thinking and through doing. The former is privileged in most accounts of scientific practice – referred to as an "*attitude of doubt*" (Yanow 2006a: 9), it is considered a central scientific attribute. However, in a more action-oriented research practice, knowledge is considered to be arrived at (also) through experience and action, based on pragmatist accounts of reality (Bradbury and Reason 2003). While an engaged science accompanies, supports and engages in social action it does so in different ways. While for more distant research approaches this might include public lectures or opinion pieces, for action-oriented research this includes a wide array of activities, such as transdisciplinary projects, transition experiments or labs (Loorbach et al. 2011, Pohl et al. 2010, Schneidewind and Singer-Brodowski 2013). Through engaging in an action-oriented research practice, social scientists answer "*the phronetic call […] to become virtuosos social actors in their chosen field of study and to* do

politics with their research" (Flyvbjerg et al. 2012b: 287, emphasis in original). As a more radical stance, the action research tradition holds as one of its core assumptions that action and knowledge are inseparable: "*We believe that valid social knowledge can only be derived from practical reasoning engaged in through action. As action researchers, we believe that action is the only sensible way to generate and test new knowledge*" (Greenwood and Levin 2007: 6). I consider both knowledge through 'thinking' and through 'acting' as valuable for addressing the sustainability questions we are facing.

The neighbourhood of Carnisse, and the project that I was involved in there, have been more than just a case study – although I refer to it as such in the different articles of this thesis. During nearly five years, it was a practical setting for this thesis, which I studied, engaged with and where I addressed the socio-economic transition dynamics on the local level. Throughout my engagement in Carnisse, all of the outcomes distinguished above have been produced. In this thesis, the outcomes are reported on in a scientific manner, as its main aim is to contribute to the body of scientific knowledge. Taking the overall action-oriented research process (see Section 2.2.3), the outcome was the co-production of 1) actionable knowledge necessary to address normative, operational and strategic questions and to ponder and assess courses of action, take decisions and act upon these, 2) scientific knowledge about roles and relations of actors in transition processes (see Chapter 3) and urban sustainability transitions governance (see Chapter 4, Chapter 5), and 3) reflexive knowledge about the role of science in sustainability transitions (Chapter 6, Chapter 7). All this was arrived at through engaging in setting up, facilitating and getting involved in a learning and experimenting process in the neighbourhood as well as thorough literature reviews.

2.1.2. Research Practice and Quality

In the ways that scientific knowledge is shared, most notably peer-reviewed articles, edited volumes and monographs, the focus is on results and outcomes of research. This focus goes at the expense of being engaged with and reporting on the process through which these come about. As put by Miles and Hubermans (1994: 262, as quoted in Schwartz-Shea 2006: 95): "*And when we read the research reports, they are most often heavy on the 'what" (the findings, the descriptions) and rather thin on the "how" (how you got to the "what"). We rarely see data displays – only the conclusions. […] Researchers are not being cryptic or obtuse. It's just that they have a slim tradition to guide their analytic moves, and few guidelines for explaining to their colleagues what they did, and how*." While methodology sections are a prerequisite (in some journals more than in others) what these often outline are textbook like research designs and research processes. As has hopefully become clear from the above, I consider 'doing research', even in non-action-oriented research, as a much more 'messy' process. With messy, I do not mean chaotic, rather I mean that it is possible to plan the research only to a certain extent especially so in a context of engagement. Through engaging in research and therefore with other human beings but also with texts, one encounters and discovers unforeseen aspects which can lead onto different research trajectories.

In this regard, a helpful conceptualisation of the research process comes from interpretive research, which refers to it as an abductive process: "*In this puzzling-out process, the researcher tacks continually, constantly, back and forth in an iterative-recursive fashion between what is puzzling and possible explanations for it, whether in other field situations [...] or in research-relevant literature. The back and forth takes place less as a series of discrete steps than it does in the same moment: in some sense, the researcher is simultaneously puzzling over empirical materials and theoretical literature*" (Schwartz-Shea and Yanow 2012: 27). A similar conceptualisation can be found in the action research literature: "*[...] science is a highly iterative and dynamic activity involving repeated action-reflection-action cycles*" (Greenwood and Levin 2007: 86). Such a conceptualisation echoes my own experiences in doing research and the conversations I have with peers about their experiences. However, in writing up one's methodology one seems to be caught in a trap: in order to be accepted for publication, the abduction and iteration needs to be streamlined and presented in a neat way, as if designed step by step beforehand. This can be discouraging and misguiding to especially beginning researchers about what 'doing research' actually entails: a process of back and forth between different kinds of data, between insights, problem framing and research question as well as adaptation on the basis of intermediate insights.

In writing up this chapter, I found myself struggling with these aspects as well – both in terms of how to present the overall research process (Section 2.2.4) as well as in terms of the description of the action-oriented research process (Section 2.2.3). For the former, I finally decided to give a rather static tabled overview (see Table 2.8), while hoping that the representation still shows some of the abductive character. The latter was guided by overall methodological guidelines, which the DRIFT team adapted and modified based on emerging insights and knowledge of the context in Carnisse. By way of example: after understanding that the inhabitants of the neighbourhood were rather weary of engaging with outsiders and in usual participatory process, we held an initial (not foreseen meeting) to allow the inhabitants to get to know us as well as for a collaborative adaptation of the envisioned process (see Section 2.2.3 for more insight into this meeting). The latter was adapted to feature a more deliberative and a more experimental process in parallel rather than consecutively. There were more of these instances. Although, I do not present all of these, I do give a rather lengthy outline of the action-oriented research process to provide the reader with an understanding of what it entailed, and to accommodate for some of its abductive character.

Abductive research processes are flexible and adaptive enough to accommodate changing problem descriptions and perceptions as well as research circumstances – while being systematic. Basically, they take complexity and uncertainty as a starting point for research as well as the fact that research processes cannot be scripted in advance, as we cannot predict the words and actions of those we interact with in these processes. Such a perspective regards research much more as a practice and situates it as a social activity in a 'real-world context' not falling short of considering also institutional constraints with regard to inputs and outputs. This also includes that researchers often take decisions on the spot – constantly engaging in "*skilful improvisation*" (Greenwood and Levin 2008: 130). These action research authors also describe science as "*a form of human action*

involving complexity, ambiguity, creativity, group dynamics, and many pragmatic concessions to the limitations posed by the time and resources available" (ibid: 85). As argued by Yanow (2006b: 70), the "*improvisational quality*" of the research process does not preclude it being carried out systematically, based on "*action repertoires*" (ibid: 71) build from experience and education of the researcher. This resonates with my training in social and cultural anthropology as part of which Malkki (2007) identifies a "*tradition of improvisation*": "*The ethnographer – specifically situated in a particular slice of space-time, and embedded in a social situation he does not control – must take on the risk and responsibility of improvisation, the creative use and perhaps remaking of the repertory*" (ibid: 180-181)[33].

This improvisation is thus not spontaneous nor random; rather it is based on what we could consider the actionable knowledge of researchers: the knowledge that guides us on how to address specific theoretical, empirical, methodological, axiological or practical issues in the face of complexity and uncertainty based on our experiences, practice and education. Therefore, I regard research as a practice and as a craft. Research becomes more emergent: for specific questions, specific methods are needed while for others a different approach might be necessary (McGowan et al. 2014). Such an understanding of research increases the focus on the role of the individual researcher along with her values, norms, competences, experiences and networks.

Guiding this role is an understanding of what is considered 'good' scientific practice. Such criteria for judging research practice do vary between different epistemic communities. While positivist-oriented research has established criteria such as internal validity, generalizability, reliability and objectivity – these fall short of judging a more interpretive research practice and orientation (Schwartz-Shea 2006, Yanow 2006b). Even within the latter, there are debates on which criteria are most suitable (Schwartz-Shea 2006). Research is a historically situated endeavour, as are criteria for judging it. However, rather than dismissing the notion of criteria for judging research practice altogether (for these cannot be universally applied), along with Schwartz-Shea (2006: 100) I consider such criteria as provisional, subject to change and productive for the "*pragmatic work of judging*" the quality of research. Judging each other's work and building upon it is one of the foremost ways to build scientific knowledge, or as put by Schwartz-Shea (2006: 91): "*the scholarly enterprise is built on the exercise of judgement*". This judgement has to be taken based on criteria. Not only in transition research, with its obvious normative orientation, every research discussion of the most appropriate or suitable criteria is itself a political discussion, it is the discussion on the grounds on which research is to be judged which is conducted both within scientific circles as well as in the interaction between science and society.

[33] Interestingly, both Yanow and Malkki relate this improvisation to the practice of an art. Yanow (2006b) makes an analogy with improvisation theatre and Malkki with playing jazz music, where she says that: "*Ethnography requires a similar commitment: to get to the point of improvising well, the ethnographer, like the jazz musician, must have devoted countless hours to practice and preparation of various kinds*" (Malkki 2007: 182).

Taking a pragmatic approach, I establish a set of criteria that can help researchers, like myself, engaged in more action-oriented approaches of transition research to navigate their research practice and to share standards based on which to converse about and exchange our research. This set of criteria is outlined in Table 2.2.

Table 2.2: Criteria for judging an action-oriented research practice

Criteria		**Explanation**
Related to research outcomes		
Scientific impact	*What is the scientific impact of the research?* *Cf. Bergmann et al. 2005, Greenwood and Levin 2007, Pohl et al. 2010, WBGU 2011*	With one of the research outcomes being scientific knowledge, there is a clear aim of action-oriented research for scientific impact. However, what counts as 'scientific knowledge' depends on the epistemic community that the researcher belongs to – above I include both abstract, universal and contextualised, localised knowledge.
Social impact	*What is the social impact of the research?* *Cf. Bergmann et al. 2005, Flyvbjerg et al. 2012a, Greenwood and Levin 2007, Loorbach et al. 2011, Scholz and Steiner 2015a*	With one of the aims of action-oriented research approaches being to support sustainability transitions, it should be judged along its social impact. This can be related to the research outcome of actionable knowledge as well as the fact that researchers are considered to engage in action to produce research outcomes. Comparable criteria are ***workability***: how good the initial problem was solved (Greenwood and Levin 2007), ***salience***: how relevant the information is for decision-making bodies and the public (Cash et al. 2002), but also ***social robustness***: how relevant, context sensitive and accessible results are (Nowotny 1999, 2000).
Trust-worthiness	*How trustworthy is the research and its results?* *Cf. Lincoln and Guba 1985, Malkki 2007, Schwartz-Shea 2006, Yanow 2006a, 2006b*	This question relates to whether or not the research can be trusted. Trustworthiness is established if the steps that a researcher takes to produce research outcomes are systematic and when conclusions are adequately supported by evidence. A comparable criteria is the one for **credibility** (Greenwood and Levin 2007, Cash et al. 2002), the creation of "*authoritative, believable, and trusted information*" (Cash et al. 2002: 2)
Related to research process		
Trans-parency	*How transparent is the researcher about the research?* *cf. Cash et al. 2002, Schwartz-Shea 2006, Schwartz Shea and Yanow 2012*	Transparency includes the documentation of the research approach, as well as research methods and procedures used. Next to outlining project ambition, resources and constraints, this also involves discussing procedural details and decisions taken. It takes account of changes and adaptations of an abductive research process. Being transparent increases the trustworthiness and also the **accountability** and **legitimacy** of the research.

Reflexivity	*How reflexive is the researcher about the research?* *cf. Avelino 2011, Bergmann et al. 2005, Bradbury and Reason 2003, Finlay 2002a, 2002b, Schwartz-Shea 2006, Stirling 2006, Wittmayer and Schäpke 2014*	A reflexive practice supports the researcher in a number of aspects: situating and positioning him/herself in the research, exploring the researcher-researched relationship and the co-constitution of research as well as offering social critique and deconstructions of established meanings. It includes introspection, a positioning of oneself as researcher in time and space as well as regarding one's background and normative orientation and a questioning of the ways in which the researcher shapes the research and vice versa. It also includes a critical reflection on the situatedness of the research, the social context and political dimensions as well as possible unintended effects. Rather than navel-gazing, such reflexivity is purposeful and leads to more general insights, interpretations and reflexive actions.

2.1.3. Subjectivity and Normativity

In relation to 'mode 2' research, Nowotny et al. (2003: 187) outline that: "*The research process can no longer be characterized as an 'objective' investigation of the natural (or social) world, or as a cool and reductionist interrogation of arbitrarily defined 'others'. Instead it has become a dialogic process, an intense (and perhaps endless) 'conversation' between research actors and research subjects* […]". I would question whether this characterization ever held. Qualitative research has for long been regarded as co-constituted (Finlay 2002a, Wagenaar 2011). In addition, subjectivity enters the research practice "*through 'lenses' [of the researcher] composed over time from various elements: education and training; lived experience, work/professional, kinaesthetic, and otherwise; familial, communal, societal background; personal psychology, temperament, and so forth*" (Yanow 2006b: 75). It is through these lenses that our perceptions of the world and therefore our observations during participant observations, when conducting interviews, studying texts or engaging in participatory activities are mediated. Inevitably, we, as researchers, are carrying our experiences, norms and values out with us into the 'field' – ideas about what we consider to be usual, normal or a correct way of doing something[34]. All of us carry along 'personal' experiences (such as those outlined in Textbox 2.1) and these have formed who we are as well as how we see the world and what we consider 'normal'. Rather than striving for objectivity or impartiality, acknowledging subjectivity and normativity as part of our being humans also allows us to keep up our curiosity. It is through reflexivity that we can "*analyse how subjective and intersubjective elements influence research*" (Finlay 2002a: 531). Such reflexivity has to deal with the "*challenge […] to use personal revelation not as an end in itself but as a springboard for interpretations and more general insight*" (Finlay 2002b: 215). One of my favourite lessons during my anthropology studies was a role play: Imagine you are an alien coming to this world and you do not know about 'good' and 'bad' nor about what is 'normal' or 'deviant': what do you see? Such a thought experiment allows to postpone what is referred to as 'going native' (immersing oneself into the society one is studying) and prolong or create

[34] Definition of 'normative' according to Merriem-Webster: based on what is considered to be the usual or correct way of doing something", online at: http://www.merriam-webster.com/dictionary/normative (accessed December 16th, 2015)

"'*estrangement' from the situation under study such that acts, objects, terms and events continue to appear unusual or different, thereby continuing to be subjects for inquiry rather than fading into to the world of taken-for-granted commonplaces*." (Yanow 2006b: 78). It can support us in keeping up an attitude of doubt, as a central attribute of scientific practice (ibid).

It was the work leading up to this thesis, which provided me with space to take up and make productive questions, which had accompanied me for longer and which came back while doing action-oriented research in Carnisse. I discovered that these are not only my questions, but these are part of the field that I came to be positioned in: sustainability transition research. I also saw colleagues dealing with the same questions about roles and possible selves in relation to personal ambitions and research environments: 'Who am I and how many and how do I do this kind of research?'. While researchers struggle on their own with the how and what of their roles and activities, these questions are put out of sight, or seem too trivial an inquiry in literature or conferences. These questions are important as who we are, our experiences as well as our education and the theoretical frameworks we use, help us in building an understanding of the world (i.e. our findings). It is based on this understanding that we (and, if we make recommendations or have developed that understanding together), possibly also others act upon. However, not only myself but also colleagues think that these are important questions which is mirrored by a number of recent more reflexive articles specifically on the roles and activities of researchers (Am 2015, Genus and Theobald 2015, Milkoreit et al. 2015, Pohl et al. 2010).

Textbox 2.1: Searching for roles as personal experience

I grew up in a family of craftsmen in a small village in Germany: university was far away. However, my parents encouraged me to learn and to explore paths they had not taken to find ways to live a good life. Through their encouragement, I continued with grammer school as the only one from my primary school class and the first one of the village in years. This also meant I did not fully belong to either one or the other group throughout my adolescence: not a villager following the paths laid out there, not from an upper middle-class family of doctors and teachers as my classmates in grammar school for whom completely other paths were self-evident. After a detour of pursuing an education for office manager following my passion for languages and far-away places, I subsequently obtained a Bachelor in Business Administration in London. While I was equipped with a university diploma by then, it was uncomparable to existing diploma's and needed explanation in a German context just around the Bologna process and European Higher Education reform. It was, however, my entry ticket to an interesting and promising 4-year career in a small and medium sized enterprise of interpreters and translators. However, with time, doubts crept in about the goal and meaning of life and I started to re-orient myself and explored many different directions. Eventually, I applied and was accepted for a Master on Social and Cultural Anthropology at the Free University in Amsterdam. While it was an explicit choice, what it would include had remained a bit of a mystery until the start. When it started, it felt like a homecoming: all I learned about rituals, habitus, liminal phases, relativity, values, development and a critical attitude made sense. In the process of learning about social organisation in societies across the world, I also came to understand a lot about myself, my own past and my search for 'fitting' roles.

More often than not however, researchers including those engaging in transdisciplinary research in sustainability science do distance themselves from what they refer to as 'actionist perspective' – a position where scientists are regarded to transgress their very role which is defined as having "*to serve all stakeholders (as long as it meets human rights and constitutional rules)*" (Scholz and Steiner 2015b: 523). Interesting in this quote is exactly the bracketed text: who decides on these rules and on whether these rights and rules are met? This is a normative call to be made. Thus, while acknowledging the uncertainty of knowledge, these transdisciplinary researchers seek to uphold the distinction between action and knowledge as well as between values and science. However, as argued by Van Asselt and colleagues (2003: 62), knowledge uncertainty is a context, which reinforces normativity "*as it provides room for different legitimate perspectives. […] Values are the core of uncertainty issues*".

Normativity, as in considerations about the normal way of doing things also enter scientific work what concerns the actual writing up of the research – which is often considered to happen after the fact. Rather as every researcher knows, writing up can be a painstaking process of choosing the right words, crafting the argument, supporting it with evidence, which are all judged by peers of a specific epistemic community. Especially when one works at the overlap of different epistemic communities, like my colleagues at DRIFT and myself, this can be a balancing act. Therefore, I consider one of the most intricate skills of good researchers to be 'framing': how to frame research findings, for which audience and to which end? Just consider my writing of this methodology chapter: As my PhD was neither carefully framed and planned as part of a specific broader research programme, nor neatly described in a PhD-proposal, I was haunted by seemingly simple questions such as "*When did I start? And start what?*" The research projects that funded part of the empirical work, the actual writing of the thesis or of the articles, developing the ideas, having discussions on the different 'puzzles', doing interviews, working at a university, which of these moments qualify as the start? Thus, in writing this chapter I framed it partly based on my education and what I had learned about what such a chapter should include, partly based on my understanding of the PhD-requirements to be satisfied and partly inductively based on the issues I had experienced in doing research. There is no innocent or a-political way to communicate research results; rather it is about crafting a convincing text with sound argumentation according to standards of a specific epistemic community. Writing up, to quote Schwartz-Shea and Yanow (2012:39) is "*a scholarly, political act of persuasion that requires careful attention to the many elements it can (or should) contain which produce a trustworthy research study*".

2.2. Building blocks for this thesis

While the first part of this chapter introduced my research perspective, this section is more hands-on and provides insights into a number of practical building blocks for this thesis. I first outline the institutional embedding at the Dutch Research Institute for Transitions (Section 2.2.1) as one of the overall context factors of my research and work. Secondly, I outline three different research projects, which form the backdrop as part of which I engaged in transdisciplinary research and did empirical work (Section 2.2.2).

Thirdly, the actual action-oriented research process in Carnisse is described (Section 2.2.3) – parts of this process are also referred to and detailed in some of the articles which are part of this thesis (see Chapter 3, 6 and 7). Finally, I give an overview of the overall five-year research process that led up to this thesis (Section 2.2.4).

2.2.1. Institutional embedding: DRIFT

More often than not, action-oriented research runs against institutional boundaries, such as training and educational requirements, funding scheme requisites, career opportunities and evaluation schemes for scholarly work. However, next to mainstream institutions, there are a number of niches, which provide an experimental ground for working with alternative research approaches. I consider my employer, the Dutch Research Institute for Transitions (DRIFT), a research institute at the Erasmus University Rotterdam in the Netherlands, to be such a niche. It was in this institutional context that I could systematically use, explore and experiment with alternative methods and researcher roles over a longer period. Some of the questions I engage with in this thesis, such as the value of action-oriented research approaches, the role of different actors as well as a focus on the local context, can be traced back to a stimulating rather than constraining working environment.

Thematically, DRIFT focuses on sustainability transitions and their governance. It hosts a number of renowned transition scholars, and is especially known for its ongoing work on the governance of transitions under the name of transition management. Also methodologically, it stands out, as it promotes, next to interdisciplinary, also transdisciplinary work on transitions and works at the blurred interface of science, policy and practice. As outlined by its current director in his inaugural speech:

> *"Transition research, as practiced at Dutch Research Institute for Transitions (DRIFT), seeks a middle ground between interdisciplinary knowledge development and experimental application in practice. We explore transitions together with practitioners and make sense of our complex world by generating new transdisciplinary knowledge. As I will explain our current societal challenges by necessity ask for more hybrid, transdisciplinary and co-creative forms of knowledge development as well as new forms of governance that will help us to move away from our current unsustainability and help to navigate emerging desired transitions." (Loorbach 2014:11)*

This quote clearly illustrates that alternative forms of knowledge production and societal engagement are encouraged rather than censored. DRIFT aims for both, scientific and societal impact through its work. While at many other faculties and departments, the focus is on h-indexes and the (societal) valorisation of research, DRIFT and with it an increasing number of other institutes are concerned with making their work productive for both science and society by developing and employing adequate scientific methods and having a positive impact on the contexts in which they works. Next to celebrating peer-reviewed publications, also high scores on Twitter indicating that public debate is spurred or the statement of the public pension found to no longer invest in fossil fuels following actions by colleagues are celebrated. Working at DRIFT also entails that next to

research activities, one also engages in consulting, facilitating and training activities as the other work fields of DRIFT. This means that at any one time, an employee is engaged in different kinds of activities and in more than one project. This is partly a choice of the aim of DRIFT for societal and scientific impact but also of the organisational form: DRIFT is a limited company under the holding of the Erasmus University and affiliated to the Faculty of Social Sciences. In this legal form, DRIFT does not receive any baseline funding, and thus needs to earn additional income from training and consultancy to co-fund its research. Rather than a liability, this can be considered an asset.

Table 2.3. Overview of major projects I have been involved with at DRIFT

Project	Funding & Duration	Activities
Knowledge Infrastructure System Innovation: Transition Monitoring	Dutch national funding | 2006-2010 (involved from 2008-2010)	Transdisciplinary research activities: Transition monitoring of innovation programmes in the agriculture (TransForum) and the mobility sector (Transumo) in the Netherlands
Transition Program in Long-Term Care	Ministry of Public Health | 2007-2010 (involved from 2009-2010)	Transdisciplinary research activities: Supporting the last steps of a transition arena process and its follow ups; and research activities: monitoring and evaluating the programme
MUSIC: Mitigation in Urban Areas: Solutions for Innovative Cities (see also Section 2.2.2)	EU Interreg IVb | 2010-2015	Transdisciplinary research activities: Coaching two participating cities in implementing transition management for CO2 mitigation in the urban context (Ludwigsburg, DE and Montreuil, FR); and research activities: Developing a methodology for transition management in the urban context
InContext: Individuals in Context (see also Section 2.2.2)	EU FP7 | 2010-2013	Work package lead and (action) researcher operationalising and applying a transition management approach for communities
Incentive regulation The Hague	City of The Hague | 2011	Consulting activity: Advising the city of The Hague in their ambition to increase the active commitment of a range of different actors within the city to become climate neutral in 2040
Veerkracht Carnisse (see also Section 2.2.2)	Pact of South | 2011-2015	Social innovation project on neighbourhood level, activities overlap with the InContext project plus reflexive monitoring activities of the implementation of the project
TRANSIT: Transformative Social Innovation Theory	EU FP7 | 2014-2017	Scientific coordinator and researcher involved in developing a theory of transformative social innovation, including theoretical, empirical and methodological work with transnational social innovation networks
From the niche to the mainstream	German Federal Environmental Agency (UBA) | 2015 – 2017	Work package lead and researcher providing an overview on the emerging transformation research field.
SIC: Social Innovation Community	EU H2020 | 2016-2018	Work package co-leader and researcher, focusing on organizing activities for social innovation actors and researchers

Working in such an environment can be highly rewarding – for me it means being confronted with various challenges, a high variety in kinds of activities and topics I can engage in, an exceptional team spirit, an atmosphere of learning from and with another as well as personal satisfaction. To illustrate the diversity of projects at DRIFT, I outline the major projects that I have been involved in during the course of my employment since

2008 in Table 2.3. Colleagues with different scientific backgrounds have been involved in completely different projects, e.g. in domains such as energy, waste or social care. This table does not list smaller projects such as organising a pressure cooker workshop for women in the building sector (2014), or for researchers from Japan and The Netherlands on the future of the welfare state (2014). It is also next to activities such as reviewing contributions for major scientific journals in the field or research proposals for EU grants. Other ongoing activities since 2010 include giving lectures and coaching professionals in postgraduate and professional training courses on sustainability transitions, transition management and social innovation or supervising Master thesis students. Next to being rewarding, the work at DRIFT is also highly demanding on one's personal and professional integrity, time management skills and work-life-balance. The latter being illustrated by my work on this PhD, where the empirical work was funded by the project work outlined under Section 2.2.2 and most of the reading and writing was done in evenings, weekends and holidays.

DRIFT provided a niche in which my research puzzles emerged and in which I could develop ideas and insights. However, working in an environment for which action-oriented research and striving for societal and scientific impact is taken as 'normal', also lets one develop a certain blindness. This thesis provided me with the possibility to place issues on the DRIFT agenda (e.g. ethics and normativity, our understanding of sustainability, or our roles in different processes) and turn my colleagues and myself into 'aliens' looking more estranged at our own working practices. This contributed to increasing the internal reflexivity of the institute in developing the understanding of an action-oriented research approach for transition research through explicating and further developing DRIFT working practices.

2.2.2. Research projects

The research activities performed in the context of three different projects fed into the development of this thesis. The first two projects (InContext and Veerkracht Carnisse) constitute two sources of funding for the action-oriented research in the neighbourhood Carnisse. There is a considerable overlap of the research activities carried out in these two projects: the adaptation and application of a transition management approach for communities on neighbourhood level. The third project (MUSIC) funded the adaptation of a transition management approach in the context of urban climate change mitigation for implementation by policymakers as well as the actual support of five cities in the implementation. All three projects resulted in a number of non-peer-reviewed publications (project deliverables, reports, popular-scientific publications) which served as a basis for writing the different chapters as well as for describing the action-oriented research in Carnisse – a full overview of the publications that I have been involved in as part of these projects is provided in Appendix A.

InContext - Individuals in Context

InContext[35] was an EU-FP7 funded research project. In the period from October 2010 to October 2013, a consortium of eight partner institutes across Europe aimed to identify framework conditions, which enable societal transitions towards an environmentally sound, economically successful, and culturally diverse future. As outlined in an InContext research brief, "*[t]he goal was to better understand how sustainable behaviour is shaped by an interplay between external factors (e.g. social norms, policies, and infrastructure) and internal conditions (e.g. values and beliefs).*" (Wittmayer et al. 2013a: 1) and "*to facilitate and learn about processes that can enhance [local communities'] transformative potential towards sustainability*" (Wittmayer and Schäpke 2014: 489). The project included the development of a theoretical framework (Schäpke and Rauschmayer 2011), the conduct of four case studies into alternative practices in energy and food consumption (Basch et al. 2012, Bauler et al. 2013, Debourdeau et al. 2012) and of three pilot projects across Europe (Wittmayer et al. 2011a, 2011b, 2012, 2013b, 2013c).

DRIFT's role in this consortium was related to its expertise in transition thinking and transition management: It led the work package which focused on adapting transition management for the context of local communities, taking account of concepts and ideas of backcasting and 'inner context' and operationalising it into a methodology to be used in three pilot projects across Europe (Wittmayer et al. 2011a). This methodology aimed at empowering individuals to develop a long-term sustainability vision for their community and to take immediate action. It was applied by three research teams in pilots across Europe: Rotterdam-Carnisse in The Netherlands, Finkenstein in Austria and Wolfhagen in Germany. At DRIFT, I took on the overall project lead and worked closely with colleagues in the actual application in Rotterdam-Carnisse. Together with a group of inhabitants, professionals and entrepreneurs of the Rotterdam neighbourhood of Carnisse, we have been working towards a more sustainable future for Carnisse in the period from October 2010 to August 2015. This included activities such as document reviews, interviewing, participant observation, organising and facilitating meetings, supporting the experimentation with citizen-organized public spaces as well as analysing, publishing and liaising with stakeholders. A more detailed overview of this action-oriented research process and our activities can be found in Section 2.2.3. We published the process and results of our research (both in Carnisse and the other two pilots) in a number of project reports and deliverables as outlined in Appendix A, preliminary results have been presented at numerous academic conferences throughout 2011 to 2015.

Neither my colleague nor I had previous experience with conducting a transition management process, doing action-oriented research or let alone coaching others in doing so. As such, this project constituted a steep learning curve for myself: It did leave me wondering at times whether what I was doing was actually research and worrying about whether and what influence it had on the lives of those we were working with. Learning about how to do such research took place not so much through engaging in

[35] More information on the InContext project can be found here: www.incontext-fp7.eu, and here: http://www.drift.eur.nl/?p=271

reading, but rather through learning from and with others[36]. Falling back on my anthropological repertoire, I kept a field diary to enhance my own reflexivity as well as engaged in constant written and oral reflection with my colleagues on the process in Carnisse. Within the InContext pilot project team, we organized regular telephone conferences to exchange and learn from one another about the application of the methodology. Within DRIFT, we organized informal learning sessions to exchange and share our knowledge and experiences with conducting transition arenas to be able to support others in doing so – this was also in relation to the third project, MUSIC, as outlined below. All these practices helped to make explicit the implicit and tacit knowledge within DRIFT on how to conduct such research.

A number of questions and reflections emerged from this research encounter in Carnisse, three of which I scrutinized and developed further in articles as part of this thesis. The research led to questioning how we can think about different roles and relations of actors in sustainability transitions (Chapter 3), including the role of researchers (Chapter 7) as well as about the extent to which action research can actually address persistent problems (Chapter 6).

Veerkracht Carnisse

Veerkracht Carnisse was a four-year project (2011 – 2015) set up as a transition lab with the aim to find new ways of making neighbourhoods more resilient (Veerkracht is the Dutch word for resilience). The project idea was developed by four partners, all of whom had been involved and worked in their respective domains and with their respective approaches in other neighbourhoods of Rotterdam South. Next to DRIFT, the three other partners were:

1) Rotterdam Vakmanstad (Skillcity) works with primary schools and their pupils in deprived neighbourhoods and aims at develop specific skills through an approach called Physical Integrity.
2) Creatief Beheer (Creative Maintenance) revitalises neglected public spaces in cooperation with the local population to stimulate self-maintenance.
3) Bureau Frontlijn (Frontline Office), a project organization of the municipality of Rotterdam, supports families with multiple problems in deprived neighbourhoods and districts via a so-called 'frontline approach' putting experiences of individuals central.

The four partners found each other in their conviction that neighbourhood development should be done in much more holistic ways than was done in policy programmes of Rotterdam. Such approaches should start from the power of individuals and communities to enhance their resilience. The process of negotiating and lobbying between this consortium and the city of Rotterdam for financial support took almost three years.

[36] This is in line with how Malkki (2007) describes the oral dimension of practicing anthropology and ethnography: "*a significant part of the learning and doing fieldwork [...] consists of imitating and quoting, riffs and licks*" (ibid: 183).

Finally, in August 2011, the consortium was accorded a yearly subsidy to be engaged in Carnisse over the period of four years. This subsidy was 'left-over' budget from the 'Pact of South' programme, which at that time was replaced by the 'National Programme Rotterdam South' – both aimed at improving the situation in the neighbourhoods in the South of Rotterdam (see Intermezzo A on the policy activity in Carnisse to learn more about these programmes). This institutional embedding created a policy niche for the Veerkracht project: while it led to some unclarity with regard to whom to report to (due to the change in programme office) and a subsequent issue in terms of finding ways to enhance project-related policy learning, it also gave the consortium quite some freedom in implementing their approaches and developing a common approach.

DRIFT assumed different roles and engaged in different activities throughout the project period. Especially in the beginning, the work of DRIFT (and my own tasks) in this project overlapped with our activities in the InContext project: organising a transition management process in Carnisse and supporting inhabitants and professionals to engage in actual experimentation. This allowed us a more in-depth action research involvement and analysis and a longer-time involvement in the neighbourhood. Later in the project, DRIFT was asked to assume the overall project lead and focused on 1) creating linkages and networks between the operational, tactical and strategic level activities of the different partners, 2) distilling principles for more holistic neighbourhood development based on the different approaches and activities of the partners and 3) monitoring activities so as to account to the financier, learn within the consortium (Van Steenbergen et al. 2013a, 2013b) and share findings more broadly (Vers Beton 2015). After the community arena had been implemented, my tasks focused on monitoring ongoing developments with regard to developing an integrated neighbourhood development approach.

MUSIC - Mitigation in Urban areas: Solutions for Innovative Cities

MUSIC was an EU-Interreg IVb funded project running from mid-2010 until mid-2015. As part of the project, five Northern European cities (Aberdeen, UK; Ghent, Belgium; Ludwigsburg, Germany; Montreuil, France; and Rotterdam, The Netherlands) and two research institutes (DRIFT, Erasmus University Rotterdam, Netherlands and CRP Henri Tudor, Luxembourg) co-operated to catalyse and mainstream carbon and energy reduction in the urban context. The project consisted of three main work streams. The first stream led by DRIFT, focused on operationalising transition management principles and frameworks into a process methodology that could be used by policymakers in the five cities to mobilize stakeholders to take action towards CO2 reduction. It worked towards "*building a network of change-agents, jointly drafting a systemic change perspective, and empowering diverse actors to employ and learn from initiatives that contribute to a sustainable future*" (Roorda and Wittmayer 2014: 8). The second stream led by CRP Henri Tudor focused on supporting scenario building and decision making through setting up a geospatial urban energy information system. The final stream covered the organization of CO2-reducing pilot projects in four of the cities.

With a team of DRIFT-colleagues, we operationalized a transition management approach for the urban context (Roorda et al. 2012) as well as supported and coached policy makers in the five cities to apply it. It was through these applications and the lessons learned from it (see evaluation report, Roorda and Wittmayer 2014) that a finalized version of these guidelines for use by policy makers was published at the end of the project (Roorda et al. 2014). Each city had a dedicated city coach of DRIFT to support it in applying transition thinking and organizing a transition management approach in their city fitting to their needs and context. The project was not a research project, but rather an implementation and collaboration project for regional development (due to it being funded by Interreg). This also meant that scientific output was not encouraged as part of this project – which did not withheld the DRIFT team from doing so, either in the free time or during additional hours funded by DRIFT (e.g. Loorbach et al. 2016, Nevens et al. 2013, Nevens and Roorda 2014, Wittmayer et al. 2016).

My tasks included the operationalisation of transition management for the urban context together with colleagues from DRIFT (Roorda et al. 2012, 2014) and the support of policy makers of the city of Ludwigsburg, Germany in getting a grip on transition thinking, translating these first transition management guidelines to their local context and in running a transition management process from 2011 until 2013. I explained transition theory and transition management to the Ludwigsburg team, taught and supported them in making a system- and actor analysis and in conducting interviews. I also attended the transition arena meetings throughout. I monitored the process that followed the transition arena in Ludwigsburg and after 2012 also the transition arena process and its follow-ups in Montreuil. In 2014, I evaluated our work stream of the MUSIC project together with a colleague (Roorda and Wittmayer 2014) and co-edited (and co-authored parts of) a dossier as well as a book about transition management processes in the urban context (Loorbach et al. 2016, Wittmayer et al. 2014b). Throughout the project period, I conducted monitoring interviews with a number of city officers and took part in half-yearly project meetings, which included a component of evaluation and reflection on the status of the different cities, the translation of transition management and its suitability for the urban context. Appendix B provides an overview of my research activities (interviews and meetings) throughout the project period.

The questions arising from this work can be traced in at least two of the articles of this thesis. Ongoing questions by the involved city officials as well as issues of translating the transition management approach, led me to work on embedding transition management in the history of sustainability approaches on the local level, by contrasting it with another dominant approach, Local Agenda 21 (Chapter 5). I also took stock of the rapid development of transition management for the urban context (Chapter 4).

2.2.3. The action-oriented research process in Carnisse[37]

From October 2010 until mid-2015, colleagues and I applied transition management through an action-research based approach in the neighbourhood Carnisse. This neighbourhood can be considered as a representative or typical case in Yin's understanding (Yin 1994) in that it shows a number of typical challenges of more challenged neighbourhoods across the Netherlands and across Europe – such as issues with social cohesion or hidden poverty. At the same time it could be considered a variant of the critical case, as introduced by Flyvbjerg (2006) to denote cases which "*have a strategic importance in relation to a general problem*" (Flyvbjerg 2006: 229). One can say that if an action-research oriented approach based on transition management would work in Carnisse, it could also work in other neighbourhoods and communities. As argued in the introduction to this thesis, Carnisse is considered as an exemplary site for the quest of cities and local communities worldwide to address issues they are facing and to explore possible future directions.

During our engagement[38], we organized a deliberative process of problem framing, visioning and pathway development and facilitated actual experimentation to support the creation of alternative more sustainable practices, ideas and relations. This process can be divided into four main phases (see Table 2.4 for an overview): we first developed the method, and then started to explore the neighbourhood before we became involved more intensely. In a last phase, we focused on monitoring activities and ad-hoc support of some of the experimentation. In the following, each of these phases is outlined in detail – I will refer to 'we' to denote that I have been working closely with colleagues and 'I' where it refers to my own actions or arguments. An overview of interviews and attended meetings is provided in Appendix C and D respectively.

Table 2.4: Action-oriented research in Carnisse

Period	Phase	Activities
10/2010 – 08/2011	Developing the method	*Writing methodological guidelines:* Integrating transition management, backcasting and 'inner context'
05/2011 – 02/2012	Orienting and exploring	*Getting to know Carnisse:* Conducting reviews of secondary literature, interviews and participant observation
02/2012 – 06/2013	Getting involved	*Organising deliberative meetings and experimentation in Carnisse:* Conducting a deliberative process (5 meetings, a public presentation and an evaluation meeting) focusing on creating a future image for Carnisse and supporting the re-opening of a community centre (6 action-oriented meetings).
07/2013 – 07/2015	Monitoring and ad-hoc support	*Monitoring the developments in Carnisse:* Conducting regular interviews and supporting on demand projects by local actors (re-opening of a community centre, organizing a collaboration with a local vocational school on an internship as neighbourhood companion, supporting a community garden).

[37] This section relies heavily on the descriptions of the action research process in a number of project deliverables for the InContext project, namely: Wittmayer et al. 2011b, 2012, 2013.

[38] For the institutional embedding in terms of project funding, see Section 2.2.2 for more information.

Research Phase 1: Developing the method (10/2010 – 08/2011)

The work started with developing methodological guidelines for the action-oriented work in three pilot areas across Europe as part of the InContext project. One of these pilot areas was Carnisse. The guidelines were developed by a core team of five researchers, supported by a broader team, with myself in the lead. The methodology used the prescriptive processes of transition management as a basis (Loorbach 2007, 2010) and aimed to: 1) adapt it to the local context of communities, as it had been mainly used in functional domains on the national context, 2) document and further operationalize such a prescriptive process so as to make it apt to be used as an action research approach, 3) integrate it with ideas, concepts and practices of backcasting, social learning and 'the inner context'. The latter integration was part of the focus of the InContext project on the interplay between external factors (e.g. social norms, policies, and infrastructure) and internal conditions (e.g. values and beliefs) in shaping sustainable behaviour (cf. Wittmayer et al. 2013a).

*Table 2.5: Phases of the community arena (Source: Wittmayer et al. 2011a: 29-30; * meeting)*

	Key activities	Key output
0. Pre-preparation	A. Case orientation	A. Initial case description for each pilot
	B. Transition team formation	B. Transition team
1. Preparation & Exploration	A. Process design	A. Community Arena process plan
	B. System analysis	B. Insightful overview of major issues/tensions to focus on
	C. Actor analysis (long-list and short-list of relevant actors) incl. interviews	C. Actor identification and categorisation + insight inner context
	D Set up Monitoring framework	D Monitoring framework
2. Problem structuring & Envisioning	A. Community arena formation	A. Frontrunner network
	B. Participatory problem structuring*	B. Individual and shared problem perceptions & change topics
	C. Selection of key priorities	C. Guiding sustainability principles
	D. Participatory vision building*	D. Individual and shared visions
3. Backcasting, Pathways & Agenda Building	A. Participatory backcasting* & definition of transition paths	A. Backcasting analysis & transition paths
	B. Formulation agenda and specific activities*	B. Transition agenda and formation of possible sub-groups
	C. Monitoring interviews	C. Learning & process feedback
4. Experimenting & Implementing	A. Dissemination of visions, pathways and agenda	A. Broader public awareness & extended involvement
	B. Coalition forming & broadening the network	B. Change agents network & experiment portfolio
	C. Conducting experiments	C. Learning & implementation
5. Monitoring & Evaluation	A. Participatory evaluation of method, content and process*	A. Adapted methodological framework, strategy and lessons learned for local and EU-level governance
	B. Monitoring interviews	B. Insight in drivers and barriers for sustainable behaviour

The resulting methodology, the community arena, foresaw to start with activities of a more deliberative nature such as engaging in discussions with regard to current

problems, future images and pathways to realize this vision. These were to be followed by activities of a more practical nature (e.g. short-term projects to (learn about how to) reach a long-term goal). Overall, the methodology distinguished between 5 phases and corresponding key activities and outputs (see Table 2.5).

One challenge in writing the guidelines was the fact that we could not build on a theoretical framework, which tied together the different concepts (transition management, backcasting and inner context) as the InContext project foresaw that the theory development was done in parallel to the pilot work. The expertise of the author team in transition management and backcasting as well as the relative closeness of both approaches meant that their integration went rather smoothly. It was the integration of aspects of the 'inner context' that was more difficult already due to the fact that it was not entirely clear which aspects should be focused on (e.g. norms, values, needs, learning). Therefore, we decided to focus on 'social learning' as a specific 'inner context' aspect which already had been linked to both transition management and backcasting and to ensure, that attention would be paid to both, individual and collective aspects in the process. Methodologically, the guidelines do include a section on 'Being an action researcher' (see Wittmayer et al. 2011a), however a more systematic linkage with action research literature was only made in 2013 in parallel to the finalization of research phase 3 of more intensive involvement in Carnisse (see Wittmayer et al. 2013a).

Research phase 2: Orienting and exploring (05/2011 – 02/2012)

After having completed the methodological guidelines, we started to explore Carnisse. The overall transition team, thus the team guiding the action-oriented research process, in practice consisted of the DRIFT team. However, on a strategic level it also included a colleague from the TU Delft (as part of the InContext team) and the partners from the Veerkracht project: Bureau Frontlijn, Creatief Beheer and Rotterdam Vakmanstad.

We used this first period to get to know the neighbourhood, its inhabitants and dynamics and engaged in a number of research activities, which resulted in a system and actor analysis:

- Document analysis: We searched for and analysed a broad pallet of secondary data such as historical data, policy reports, statistics and media coverage about Carnisse.
- Interviews: During this phase, we interviewed 41 people to understand the current situation of Carnisse, its past as well as future visions.
- Participant observation: We attended four official meetings in the neighbourhood and were present in the neighbourhood engaging in informal conversations.

The system analysis included a description of the history of Carnisse and its current policy environment. It also included an analysis of the neighbourhood in terms of its stocks and characteristic in socio-cultural, economic and ecologic terrains as well as emerging niches on the micro level (such as promising neighbourhood initiatives and activities). Especially striking was the discrepancy between the perception of the neighbourhood by the inhabitants and the policy reality outlined in policy documents.

The analysis identified major topics for Carnisse, such as 1) struggle for survival; 2) the individual and the collective; 3) diversity; 4) connectedness and 5) public space (Wittmayer et al. 2014a). Due to our ongoing involvement, we gained new insights or adapted and refined existing ones on an ongoing basis – an example in case is the list of major topics, which was subject to change throughout the process. As such, it never felt quite right to 'finalize' the system analysis – however in December 2011 we shared an unpublished report of this analysis with the project team (Wittmayer et al. 2011c) and in October 2012 we published the analysis (Van Steenbergen and Wittmayer 2012).

The actor analysis was meant to give us an understanding of the main actors in Carnisse and to point out local change agents, who play a specific role in transition management. However, the concept of 'frontrunner' as used in transition management proofed difficult to operationalize in a neighbourhood setting and left us wondering about the applicability of the concept. The actor analysis started with a listing of potential candidates for the arena as well as of people that could give us insightful input for the system analysis. Possible candidates for the participatory process as well as interviewees were identified using desk research (searches in press articles, internet, policy documents, etc.), snowballing-method, and involving local contacts in Carnisse and nearby neighbourhoods as well as our Veerkracht partners. We conducted some 41 more formal interviews and informal street talks to verify and extend our system analysis and to get to know and select potential arena candidates. Throughout this process, an operationalization of what a change agent in Carnisse is emerged and we used the following criteria to invite people for the deliberative process: having a passion for the neighbourhood, being active in the neighbourhood, feeling the urgency for change, having new ideas or thinking about creative actions.

One of the findings of the interviews was that inhabitants of Carnisse were weary of participatory processes that would not have immediate practical outcomes or interventions. However, the community arena methodology recommended to first hold a number of deliberative meetings before taking concrete action. Facing this dilemma, we invited five change agents from Carnisse for a participatory and interactive meeting in November 2011. During the meeting, we discussed a first draft of the emerging problem description and more importantly, the envisaged community arena process and how to make it more context-specific and relevant. Following this discussion, we adapted the process design to more evenly balance activities focusing on 'thinking' (i.e. discussions) and activities focusing on 'doing' (i.e. a more practical focus): deliberative participatory meetings (as suggested by the methodology in phases 2 and 3) and a more action and implementation-oriented experiment (as originally suggested in phase 4) were started simultaneously.

Research Phase 3: Getting involved (02/2012 – 06/2013)

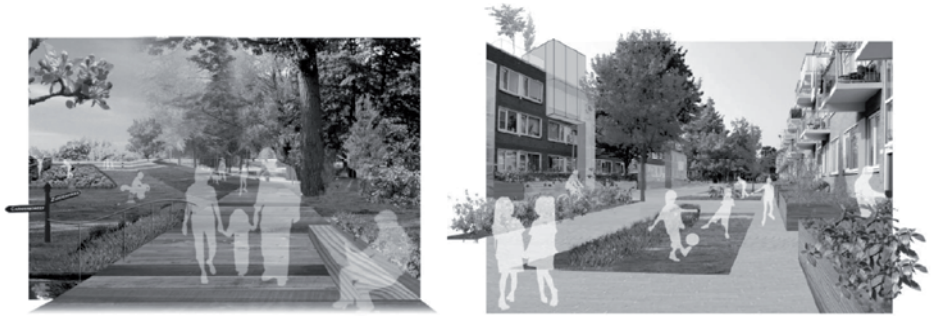
The deliberative process started in parallel with practical experimentation in February 2012. During a series of five meetings, a core of about 10-15 change agents discussed current problems, envisioned their neighbourhood in 2030 and drew up pathways towards this future. The practical experimentation focused mainly on the reopening of a

local community centre. In the following, I outline these consecutively – however in practice these two processes took place in parallel and showed quite some overlap, such as e.g. in terms of participants, the importance of the community centre and of course in us being the facilitators. During this phase, we continued interviewing (40 interviews, see Appendix C) and attending or participating in meetings in the neighbourhood (12 meetings not organized by ourselves, see Appendix D).

Deliberative process

The first deliberative meeting in February 2012 started with a presentation of the system analysis by us, which was subsequently discussed in the group. This discussion let to the identification of a number of main topics: powerful/-less policy, rich and turbulent history, government cuts, diversity, connections, and maintenance of housing. Initially, the second meeting was meant to focus on developing a shared vision. However, a number of inhabitants had heard about our work with regard to the reopening of the community centre (see description below) and had assumed that this was to be the focus of the meeting and joined. Therefore, we adapted the meeting and focused on exploring the needs of inhabitants with regard to the community centre – in the past and in the future as well as critically questioning the need for its reopening. It was only during the third meeting, that a vision for the neighbourhood in 2030 was drawn up. The vision is called 'Blossoming Carnisse' and includes the following topics: 1) …to living with each other (social cohesion); 2) …to a green sustainable oasis (ecology); 3) …to diverse housing styles (housing); 4) …to a local social economy (economy); 5) …to places for everybody (inclusiveness and social infrastructure); and 6) …to working together for blossoming (democracy and claiming rights) (see Figure 2.2 for an impression).

Figure 2.2: Impression of the images of the Blossoming Carnisse vision (Source: Community Arena Carnisse 2012)



During the fourth meeting in May 2012, the group developed pathways reasoning from the future back to the present using backcasting. After having discussed and reached an agreement on the vision, three small groups worked on exploring pathways for the six topics of the vision relating these to change elements, specific activities and key actors. This session ended with a group reflection on the next steps, where the idea of a

neighbourhood conference emerged. All initiatives, residents, entrepreneurs and professionals of the neighbourhood were to be invited to discuss and expand upon the vision and the pathways developed so far and to collaboratively come up with a neighbourhood agenda. This conference took place as part of an official inhabitant's forum in November 2012, where the transition narrative 'Blossoming Carnisse' was presented (Community Arena Carnisse 2012) and where different initiatives of the neighbourhood presented themselves in relation to that vision. This deliberative process was finalized with an evaluation meeting in February 2013 focusing on the current situation and future outlook, as well as aspects of empowerment, sustainability and pro-social behaviour. In preparation of this meeting, we had conducted seven individual monitoring interviews and we followed up on the meeting with some additional six interviews via phone and e-mail (see Appendix C for an overview).

Table 2.6: Overview of the deliberative process in Carnisse (Source: adapted from Wittmayer et al. 2012: 20-21; Wittmayer et al. 2013b: 21-22)

Date	Meeting	Participants	Goals	Results
15.11.2011 (pre-meeting)	Process design (phase 1) incl. presentation, group discussion	5 (1 female, 4 male; from 40 to 65 years)	- Test preliminary problem analysis and collect feedback, comments and input - Discuss local adaptation to process design	- Recommendations for adaptation of process to local context - Commitment from five frontrunners to the process
22.2.2012	Problem description (phase 2) incl. presentation, group discussion	10 (4 female, 6 male; from 31 to 74 years)	- Put developments concerning the community centre into the broader context of the neighbourhood - Test problem description and collect feedback, comments and input - Broaden network	- Getting to know each other - Agreement on main change topics
15.3.2012	Future vision (phase 2) incl. presentation, group discussion, brainstorm	10 invited + 8 uninvited (9 female, 9 male; from 31 to 74 years)	Initially: - Develop future vision *Due to high presence of "uninvited" people interested in the developments regarding the community centre, changed to:* - Explore individual needs and motivations in preserving the community centre	- Individual needs and motivations with regard to preserving the community centre elicited - Connection of the community centre to the main change topics established
4.4.2012	Future vision (phase 2) incl. small group work	8 (2 female, 6 male; from 31 to 74 years)	- Develop future vision - Broaden network	- Shared vision with regard to the established change topics

16.5.2012	Backcasting (phase 3) incl. group discussion, prioritisation exercise, small group work	8 (2 female, 6 male; from 31 to 74 years)	- Test and enrich vision - Develop pathways	- Shared vision - Linkage of vision and individual priorities for the neighbourhood - Pathways for each of the change topics
6.9.2012	Consolidation and Agenda setting (phase 3) incl. group discussion	8 (3 female, 5 male; from 31 to 74 years)	- Test and enrich final version of vision and pathways - Develop ideas for further broadening and connection to on-going activities - Prioritizing activities	- Vision and pathways shared - Ideas for connection to ongoing activities shared and tasks divided
22.11.2012	Broadening: Official Inhabitants Forum incl. presentation, matching session and discussion	About 100 people	- Presentation of the vision 'Blossoming Carnisse' - Matching to existing initiatives and volunteer work - Initiating new groups	- Higher attendance than other events of this kind - New contacts and networks for participants - Putting the future (rather than only immediate current concerns) on the agenda
5.2.2103	Evaluation meeting incl. group discussion	7 (4 female, 3 male; from 32 years)	- Evaluate the process, its outcomes and impact - Empowerment, pro-social behaviour, sustainability - Looking forward: what still to do	- Vision is owned by the group and referred to with pride - Vision is disseminated via already active websites, Facebook sites and blogs as well as to different groups: schools, faith groups, businesses and social work - Planning committee for a network day in Summer 2013

One of the many challenges during this process was finding the balance between organizing and letting go: this was not an action research process pure sang where researchers are approached to support an existing group to address a specific issues, but rather a process, where a temporary network was built by us as researchers. We were struggling with questions such as how much can we ask and expect, how much shall we organize and facilitate and when shall we let go even if this means that some of the developed ideas will not be taken further? Some of the other challenges and issues as discussed in more depth in project reports (Wittmayer et al. 2012, 2013b, 2013c), a dedicated action research brief (Wittmayer et al. 2013a) and two of the ensuing chapters (Chapter 6, Chapter 7, Intermezzo B) of this thesis are: the dichotomy between action and reflection activities, striking a balance between leading and offering an open space, diversity of the group, the openness with regard to when such a process can be said to be successful, the role of the researcher, the definition of frontrunners in such a local context, the definition of sustainability.

Experimentation process

The practical experimentation focused mainly on the reopening of a local community centre, which had surged as important topic from the interviews. Several residents and professionals had indicated interest and some had already undertaken first activities aimed at preventing a complete closure of the community centre. While still open in 2011, the community centre ultimately closed in January 2012 due to the bankruptcy of the welfare-organization running it. Because of its apparent importance, the mobilizing energy around it, and its symbolic meaning in relation to broader societal developments, we met with those interested to investigate possibilities for a re-opening in February 2012. This open and explorative meeting was the start of an action group for the preservation of the community centre. Throughout 2012, this group worked on a number of strategies such as drawing up a business plan, building a network (e.g. reaching more than 300 people through a petition) and lobbying different officials in the district municipality, welfare organizations and the Municipality of Rotterdam (see Table 2.7 for an overview of the main meetings and activities). A lot of work went into the clarification of property rights[39], questions about construction and maintenance and the financial situation.

Until October 2012, we were continuously and actively involved in these activities mainly in drawing up a business plan, coordinating the efforts of the group and investigating the actual financial and legal status of the property with official institutions such as the Municipality of Rotterdam, the district municipality or the notary of the bankrupt welfare organisation. With the advent of a social entrepreneur working on a similar project in a different location of Rotterdam, the group felt they could take it over themselves and after having attended two more meetings in the autumn of 2012 we assumed a reflexive role. The social entrepreneur volunteered to support the inhabitants in setting up the daily management and operation of the centre. However, after some disagreements related to ideas about how such a centre should be operated the social entrepreneur was dismissed and a foundation was set up as a legal entity to run the community centre as of January 2013. In addition, the board of the foundation incurred insurmountable disagreements leading to the non-voluntary leave of two board members and the setting up of a second foundation, which up to today is managing the community centre, taking all daily tasks through volunteer work of the board members and keeping the dialogue with the municipality. After a while, the latter had also accepted ownership of the building and was prepared to negotiate the rental sum with the foundation. This negotiation was ongoing until summer 2015.

One of the major challenges in this experimentation related work is the navigation of personal relations as well as one's influence on the local situation. We kept asking critical questions to one another concerning whom we are supporting and whom not, or whether

[39] The centre is built on ground that is owned by the Municipality of Rotterdam while the district municipality Charlois decides on the development plan of the parcel. The building itself was owned by the bankrupt welfare organisation. The result of these juridical and financial ownership structures (also referred to as the 'Rotterdam construction') is that the building did not exist in the administrative books of accountants and in the beginning none of the official bodies took responsibility of the neglected building with little financial value.

we are approachable for all parties or not and what the consequences thereof are. However, while such an engagement on the one hand meant that we needed to navigate the disagreements that surged between different persons it also meant that we gained in-depth insights and embodied experiences with regard to the struggles and hindrances that need to be tackled for change to take place.

Table 2.7: Overview experimentation community centre (Source: adapted from Wittmayer et al. 2012: 21-22)

Date	Meeting	# of participants	Goal	Results
1.2.2012	Initial meeting	4 (4 female, 0 male; from 31 to 40)	- Test hypothesis regarding the preservation of the community centre	- Setting up of a local action group for preservation of the community centre
22.2.2012	Local action group	2 (2 female; from 31 to 40)	- Employ first activities - Research into background of the community centre	- First insights into financial and institutional structures
6.3.2012	Local action group	7 (4 female, 3 male; ; from 31 to 50)	- Updating each other on developments - Signature collection - Contacts with possible 'tenants' as well as politicians	- Broadening public support and spreading the word - More insights into financial and institutional structures
28.3.2012	Local action group	10 (5 female, 5 male; from 31 to 72)	- Updating each other on developments - Discussing first version of business plan	- Broadening network, spreading the word - Exploring first difficulties due to financial and institutional structures
18.10.2012	Broadened action group	approx. 25	- Build working groups	- Four subgroups built: financial questions, management construction, inventory of practical daily tasks and of volunteers.
Nov –Dec 2012	4 Progress meetings		Discus progress; such as - set up of legal structure (foundation); - work of different working groups; - Christmas event, - renting out of rooms, - business plan and negotiations with district municipality	
22.6.2013	Official Reopening of Community Centre run by inhabitants-led foundation			
until 07/2015	Ad-hoc support and monitoring			

Research Phase 4: Monitoring and ad-hoc support (07/2013 – 07/2015)

After this period of intensive involvement, I disengaged more and more from the active work. This was due to our project funding: I had been leading the work of DRIFT as part of the InContext project, which finished in October 2013. My colleague, leading the work

of DRIFT as part of the Veerkracht project, remained a contact for ad-hoc support and questions while I assumed a monitoring role in that project for the last two years.

In this role I continued to act as sparring partner for my colleague, conducted monitoring interviews and reflective sessions in Carnisse and co-authored monitoring reports (Van Steenbergen et al. 2013a, 2013b) as well as other publications (Van Steenbergen and Wittmayer 2014, Van Steenbergen et al. 2015, Wittmayer et al. forthcoming).

The continuous but more distant involvement in this phase allowed me on the one hand to stay in touch with the developments in Carnisse and gain insights on the follow ups of the deliberative process and the different experiments (e.g. community centre, organization of a collaboration with a local vocational school on internships as neighbourhood companion, support of a local community garden which was threatened by closure). On the other hand, it allowed me to reflect on these developments from a different, less-involved, position and to theorize some of the insights.

2.2.4. Research process

As should be clear by now, the research process leading up to this thesis was of an explorative nature and is firmly based on my transdisciplinary work in three projects as well as heavily on the action-oriented research done in Carnisse. I inductively identified a number of practical 'puzzles' and gaps that have both theoretical and social relevance: the conceptualisation of the roles of actors in sustainability transitions, the contextualisation of transition management for the local context and the development of action-oriented and transformative research approaches for sustainability transition research. It is these puzzles, which I took up and connected in this thesis.

A retrospectively drawn up schematic overview of the different research activities of this thesis is provided in Table 2.8. In this table, I distinguish between different activities: theoretical and conceptual work, empirical work, analytical work and writing articles. A tabled form was chosen for the sake of a clear presentation while it does not do justice to the actual research process, which was explorative, abductive and adaptive with an overlap of different kinds of activities. Broadly speaking, the research activities started in October 2010 with the start of the InContext project and continued until the beginning of 2016, when I handed in the thesis. Until about 2012, the research activities followed the requirements of the projects in which they were embedded. It was in the same period that I had been juggling and working on ideas and proposal for a PhD research different from those that found their way in this thesis. Only when I stopped thinking about a proposal and external funding opportunities and took the PhD to be my 'hobby' for the coming years, that is when I started to take on the 'puzzles' and gaps that had emerged during these first 2 years of action-oriented research and that I found scientifically and personally most intriguing. This also meant that most of the data collection had taken place with a focus on developing an action-oriented research methodology for use in local communities, as was the focus of the InContext project rather than with a focus on any of the other questions I address here. In addition, the data was collected at a time when time and resource constraints were highest due to the intensive engagement with the community.

Table 2.8: Research Timeline

<table>
<tr><th></th><th colspan="2">As of 10/2010</th><th>2011</th><th colspan="2">2012</th><th>2013</th><th colspan="2">2014</th><th>2015</th><th>Until 02/2016</th></tr>
<tr><td>Theoretical and conceptual work</td><td colspan="3">Developing an explorative action-oriented research methodology</td><td colspan="3">Conceptualising roles of researchers
Analysing action research to address persistent problems</td><td colspan="3">Historical embedding and comparison TM & LA21
Conceptualising actor roles
Establishing an understanding of urban sustainability transitions governance</td><td></td></tr>
<tr><td>Empirical work
InContext & Veerkracht</td><td colspan="2">Action-oriented research process in Carnisse, including interviews and meetings.</td><td></td><td colspan="4"></td><td></td><td></td></tr>
<tr><td></td><td colspan="2"></td><td></td><td colspan="4">Additional empirical work (interviews, participant observation, reflexive role in experimentation)</td><td></td><td></td></tr>
<tr><td>MUSIC</td><td colspan="4">Transdisciplinary research focusing on Ludwigsburg and Montreuil, including interviews and meetings</td><td colspan="3">Add. interviews (LA21 history) and evaluation</td><td></td></tr>
<tr><td>Analytical work</td><td colspan="3">Lit. review on Carnisse and local government context
Data analysis</td><td>Data analysis</td><td>Lit. review TM historical embedding</td><td colspan="3">Lit. review on roles theory and actor roles</td><td></td></tr>
<tr><td></td><td colspan="3"></td><td colspan="2">Lit. review on action research, sustainability science, transdisciplinary research, TM</td><td colspan="3">Lit. review on TM in the urban context</td><td></td></tr>
<tr><td>Writing</td><td colspan="2"></td><td></td><td></td><td colspan="4">Writing, submitting, rewriting articles</td><td></td></tr>
<tr><td></td><td colspan="2"></td><td></td><td></td><td colspan="4">Writing introduction, methodology, Intermezzos and conclusion of the thesis</td><td></td></tr>
</table>

This was also the time, when I started focusing the research activities more and more along these specific 'puzzles' and gaps. As of then, the empirical work was more geared towards complementing data through interviews, literature reviews and observations related to one of the five questions. The research process remained abductive in the sense that the writing of the different articles required to go from data to theory and back.

2.3. Concluding remarks

This chapter outlined the research perspective and approach on which my work is based and calls for more methodological clarity and structure next to more diversity in research approaches to address the persistent sustainability problems that our societies are facing.

Research approaches are not merely either analytical-descriptive or activist-prescriptive. Rather, there is a completely grey area between these. Based on my research experience recounted here, I encourage researchers to take full account of those and to use those, which are most promising to help answer the question at hand. As such, I argue for transition research processes to orient themselves along societal questions, and to be adaptive and abductive, inter- and transdisciplinary as well as interparadigmatic and

reflexive. In this thesis, I further explored and substantiated an action-oriented research approach for sustainability transition research.

It is specifically these kinds of research processes where the aspect of research as a practice or craft comes to the fore. This involves researchers being in the need of actionable knowledge to guide them on how to address specific theoretical, empirical, methodological, axiological or practical issues in the face of complexity and uncertainty. This does not only relate to the actual research question at hand but also the institutional and broader social context within which research is practiced and which an action-oriented researcher needs to navigate. Such issues might include methodological discrimination at conferences, negotiation of a researcher identity with interviewees or issues with career development due to prioritising other kinds of outcomes to high-rank journal publications.

Such action-oriented research processes question our current understanding of science as being a neutral, objective, impartial and distant endeavour – the search for new quality criteria, legitimate outcomes and institutional space amongst others, actually questions the overall understanding of science as an institution.

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3. Roles in Transition: Insights from role theory for understanding sustainability transitions

Authors

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Abstract

To date, the field of transition research lacks a suitable vocabulary to analyse the (changing) interactions and relations of actors as part of a sustainability transition. This article addresses this knowledge gap by exploring the potential of the concept of 'roles' from social interaction research. The role concept is operationalized for transition research to allow the analysis of (changing) roles and relation between actor roles in role constellations as indicative of changes in the social fabric and shared values, norms and beliefs. It also allows considering the use of roles as a transition governance intervention. This includes creating new roles, breaking down or altering existing ones and explicitly negotiating or purposefully assigning roles, as well as the flexible use of roles as resources.

Status

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Fit with the overall thesis

This article contributes to the aim of the thesis to clarifying the concept of actor roles in sustainability transitions and thereby further developing sustainability transitions theories. It addresses mainly the first subquestion of this thesis, namely *How can roles of actors in sustainability transitions be conceptualised?* Focusing on the multi-actor nature of transitions, the article proposes that fundamental changes in the roles of actors and in their relations with others are a vital element of any transition. Illustrated by empirical work in Carnisse, this article develops a 'roles-in-transition perspective', which proposes to understand roles as an interplay between stability and change, relates roles to change in social systems and considers political and power aspects.

3.1. Introduction

In 2007, the Netherlands introduced the Social Support Act, which focused on the 'active' role of inhabitants and citizens in providing social support and enhancing the social participation of vulnerable groups. The economic crisis and its associated budget cuts intensified an emerging discourse on changing responsibilities between citizens and government. Motivated by the changing face of the welfare state, it was argued that citizens needed to take their personal and social responsibility for the common good. In the Netherlands, this discourse is broadly referred to as 'active citizenship' (Marinetto, 2003; Newman and Tonkens, 2011) or 'participation society' (Putters, 2014; Tonkens, 2014), the latter as coined by King Willem Alexander in his yearly King's speech of 2013. In their emphasis on the necessity for more active citizens and the devolution of power to the local level, both discourses can be closely linked to the 'Big Society' discourse in the UK (Kisby, 2010; Ransome, 2011).

These ideas are especially reflected in national and local policies at the neighbourhood level. The following quote from a report on the current neighbourhood approach of the Ministry of Internal Affairs illustrates this point: "We search for different relationships between governments, institutions and citizens. Attempts to give concrete shape to these, often still in rudimentary form occur precisely in these neighbourhoods" (Deetman et al., 2011, p. 7). The Ministry of the Interior and Kingdom Relations describes its revised role in this neighbourhood approach as follows: "from active financial commitment linked with targets to a more facilitative role, acting on request in relation to what others do" (Ministry BZK, 2014: 2). The role of local government is increasingly understood as moving from controlling and containing to facilitating and supporting; the role of residents shifts from receiving services and bearing rights to becoming more active in their immediate living environment, and being subject to duties. Thus, changing roles and relations are high on the public agenda (PBL, 2011; ROB, 2012; WRR, 2012) and have direct repercussions on life and work in cities, towns and neighbourhoods all over the Netherlands.

Set in this context, this article empirically zooms in on Carnisse, a neighbourhood in the city of Rotterdam (The Netherlands) with an accumulation of social-economic problems. Considering these problems to be of a persistent nature implies that tackling them requires a societal transition. A transition is defined as a "radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies" (Grin et al., 2010: 1). The emerging field of transition research has a strong focus on socio-technological innovation (e.g. Geels, 2002; Rotmans and Loorbach, 2010b) in different socio-technical sub-systems or societal domains, such as the energy sector (cf. Verbong and Loorbach, 2012). However, in the last years transition thinking has also been applied to sustainability questions in cities, neighbourhoods and communities (Bulkeley et al., 2011; Seyfang and Haxeltine, 2012; Schroeder et al., 2013; Wittmayer et al., 2015). It is in these contexts that changes in the social fabric (related to the concept of social innovations, cf. Franz et al., 2012; Mouleart et al., 2013) become important drivers for change and where the concept of socio-technical transitions is extended to make it more apt for broader social analysis (cf. Grin 2010).

Transitions are described as "multi-actor processes, which entail interactions between social groups" (Geels and Schot, 2010, p. 11). Focusing on this multi-actor nature of transitions, this article proposes that fundamental changes in the roles of actors and in their relations with others are a vital element of any transition. Illustrated by the case study of Carnisse, it argues that transition research to date lacks a suitable vocabulary to analyse the (changing) interactions and relations of actors as part of a sustainability transition. We suggest that a promising concept is that of *roles*, which has a long history in social interaction research (Mead, 1934; Linton, 1936; Biddle, 1986). The concept of roles can be situated 'in between' the individual and society and has long been a "simple, but useful means for explaining self-society relationship" in sociology (Callero, 1994, p. 228, cf. Arditi, 1987). Roles are shared conceptions within a particular community and a change in role understandings can indicate changing interactions and relations between actors within such a community. As such, changes in roles can be indicative of changes in the broader social fabric and can provide new opportunities for multi-actor collaboration to deal with societal challenges and hence form an important part of transitions. The overall question we pose in this article is: *What is the potential of the concept of roles for describing and understanding the interaction and relations of actors in sustainability transitions and their governance?*

This question is addressed through a literature overview of transition research focusing on the key points of convergence of different streams within this emerging field and their treatment of actors and agency; and a focused literature review of roles theories, starting from classical works and overview articles and zooming in on three perspectives, which allow us to understand roles in relation to societal change. Throughout the article, we illustrate our argument by introducing a transition experiment in the neighbourhood of Rotterdam-Carnisse, in which we were involved as part of a transdisciplinary engagement funded by an EU-FP7 research project (InContext) and a municipally funded project (Veerkracht Carnisse)[40]. We organized a transition management process of problem framing, visioning and pathway development and facilitated actual experimentation to support the creation of alternative more sustainable ideas, practices and social relations in Carnisse. The case description and the illustrative examples are based on numerous interviews, participant observation, informal interactions on numerous occasions, document reviews, field-notes and the organisation and facilitation of seven deliberative meetings and six action-oriented meetings in the period from 2010 to 2015.

In the next section, we highlight the knowledge gap in transition research with regard to its treatment of actors, illustrating the analytical challenge this poses by introducing the transition experiment in Carnisse. This is followed by a focused literature review on roles

[40] The EU-funded FP7-research project InContext (2010-2013), aimed at better understanding the internal and external contexts that influence the ability of individuals and communities to deal with societal challenges through an action research approach based on transition management (www.incontext-fp7.eu). The municipal project is Veerkracht Carnisse (2011-2015), which aims at supporting the development towards a greener, more social and child friendlier Carnisse through increasing the resilience and self-organizing potential of the neighbourhood (www.veerkrachtcarnisse.nl).

theories (section 3.3) and an operationalization of the insights for transition research (section 3.4). We conclude the paper by summarizing the main insights and pointing to future research avenues (Section 3.5).

3.2. Analysing Actors, Roles and Agency from a Transition Perspective

3.2.1. Transition research

Transition research refers to an interdisciplinary research field focused on structural change in societal systems. Different research streams draw on complex systems theory, social studies of technology, innovation studies, governance literature, and several others (Grin et al., 2010; Markard et al., 2012; van den Bergh et al., 2011). For the purpose of this article, we focus on key points of convergence across this emerging field (cf. Grin et al., 2010) and its treatment of actors. The focus of transition research is on the dynamics and governance of historical and contemporary sustainability transitions. Transitions, as fundamental societal changes, are described as involving various patterns and pathways (De Haan and Rotmans, 2011; Geels and Schot, 2007), different phases (Grin et al., 2010; Rotmans, 2005), multiple actors (Farla et al., 2012; Geels, 2011; Wieczorek and Hekkert, 2012), and high levels of co-evolution, complexity, and uncertainty (Geels and Schot, 2010; Rotmans and Loorbach, 2010a, 2010b).

One of the main analytical frameworks is the Multi-Level Perspective (MLP), which distinguishes different levels of structuration and stability, namely niche, regime, and landscape. The main concept is the regime, a "semi-coherent set of rules carried by different social groups" (Geels, 2002, p. 1260). The niche concept refers to space for radical innovations, whereas the landscape is seen as the exogenous, wider context. Transitions are understood as "outcomes of alignments between developments at multiple levels" (Geels and Schot, 2007, p. 399). One of the critiques on the MLP concerns its lack of attention to actors and agency (Genus and Cooles, 2008; Smith et al., 2005). Geels and Schot (2007) counter this by pointing out that alignments are always enacted by social groups, and it is through their activities that different levels of structuration (i.e. niche, regime) are continuously reproduced. The regime is said to "orient and coordinate the activities of the social groups that reproduce the various elements of socio-technical systems" (Geels, 2011, p. 27). The degree of structuration is viewed to be higher at regime level, which makes its constraining and enabling influence larger than that of niches. As in Giddens (1984), actors are seen as embedded in structures, while reproducing them at the same time – structures do not exist out there, but only through use and reproduction in practice. Actors are not "passive rule-followers ('cultural dopes'), but active rule users and makers" (Geels and Schot, 2007, p. 403). Without further elaboration, those authors consider "role relationships" as part of these rules.

The main treatment of actors and agency dynamics can be found in the research stream focusing on the governance of transitions (Frantzeskaki et al., 2012a; Grin et al., 2010; Loorbach, 2010; Meadowcroft, 2009). This stream concentrates on multi-actor decision making, including questions relating to agency, governance mechanisms, power relations, underlying values, and legitimacy (Avelino, 2009; Grin, 2010; Kern and Smith,

2008; Smith et al., 2005). Governance refers to interactions between multiple public and private actors to pool resources and achieve collective goals (Kooiman, 2003). Different governance approaches have been described and developed with a prominent one being transition management. It is described as the "attempt to influence the societal system into a more sustainable direction" by exploring future options through "searching, learning and experimenting" (Rotmans and Loorbach, 2010a, p. 108-109). A specific focus of transition management is on 'frontrunners', individuals with specific competencies and innovative ideas or practices with regard to a persistent problem.

In their comprehensive review article on the treatment of actors and agency in transition research, Fischer and Newig (2016) identify four different typologies to group actors involved in transitions, namely systemic typology (actors related to the levels of the MLP), institutional typology (actors related to different institutional domains), governance typology (actors related to levels of governance) and intermediaries. A second recent publication proposes a heuristic framework for the analysis of actors and power relations in transitions, distinguishing between four categories of actors (state, market, community and third sector) and between actors at different levels of aggregation (individual actors, organizational actors and sector level actors) (Avelino and Wittmayer, 2015). A third more comprehensive attempt to scrutinize actors is a 2012 special issue by Farla et al. which identifies types of actors (policymakers and public authorities, firms, and others) as well as their strategies and resources.

As also outlined in these overview articles, we find that transition literature discusses actors as being from a variety of categories or backgrounds, such as policymakers, firms, social movements or civil society engaged in numerous activities and strategies (e.g. Farla et al., 2012; Grin et al. 2011; Loorbach, 2010). These actors can assume roles at different levels of structuration, such as regime actor' (i.e. being part of the regime) or 'niche actor' (i.e. being part of niches) (Geels, 2011; Jørgensen, 2012; Rotmans, 2005). While entrepreneurs, start-ups and spin-offs are often considered niche actors, 'powerful actors' such as the state are considered regime actors (Avelino and Wittmayer, 2015; Geels, 2014). While Farla et al. (2012) identify a certain focus on accomplishments and capacities of individual actors as levers for transitions, they also caution against this focus on the individual and point to the fact that there is never only a single actor involved in transitions. This can be related to the call for more attention to issues of power, politics and agency (Avelino, 2009; Hendriks, 2009; Hoffmann, 2013; Meadowcroft, 2009; Voβ et al., 2009). Such individual actors are described in roles such as 'frontrunner' (Rotmans and Loorbach, 2010a), 'change agent' (Nevens et al., 2013), 'champion' or 'policy entrepreneur', (Brown et al., 2013). Other roles are described as being open to both, individuals and collectives, such as the role of 'intermediaries' (Hargreaves et al., 2013). Collective actors in transition processes include public authorities, firms, social movements, civil society or research organisations (cf. Farla et al., 2012; Geels, 2014; Loorbach and Wijsman, 2013; Wieczorek and Hekkert, 2012).

From this overview, we found that the transition literature has at least two shortcomings in its treatment of actors. Firstly, work on conceptualising actors and their interactions has only recently begun (Avelino and Wittmayer, 2015; Farla et al., 2012; Fischer and Newig, 2016); most other articles focus on specific empirical contributions. Secondly,

there is substantial research done on the interactions of actors where these interactions relate to purposeful attempts to achieve a certain goal (i.e. the governance aspects). However there is considerably less attention for understanding the changing interaction and relations of actors on a more general basis and how these are indicative for and part of transitions. Thirdly, most of this work focuses on what one might refer to as 'transition roles', i.e. roles through which actors support or hinder a specific sustainability transition (e.g. 'frontrunner'). Such a role can be occupied by, for example, policy makers or citizens. However, the literature does not attend to the social roles of policymaker or citizen as itself being 'in transition'. We argue that changes in (the shared understanding of) social roles can be indicative of transformative change and therefore for an analytical focus on such social roles. Thus, rather than starting the analysis from an (often implicit) idea of a desirable transition, we suggest to focus on the social roles, how they are understood in society, how one role relates to others, how the roles and relations change over time, as well as how those occupying a given role come to terms with it and negotiate their own version thereof.

3.2.2. Case Study: Re-opening a community centre in Rotterdam-Carnisse, the Netherlands

To illustrate the challenge involved in analysing changing social roles as indicative of a sustainability transition, we turn to our empirical example of Rotterdam-Carnisse. Rotterdam is the second city of the Netherlands, counting almost 620.000 inhabitants and some 160 nationalities. Until recently, the port of Rotterdam was the world's largest port and the city has many heavily industrialized areas. Carnisse is considered a 'deprived' neighbourhood with almost 11.000 inhabitants in the Southern part of Rotterdam.

In this article, we zoom in on one particular part of our transdisciplinary engagement in Carnisse[41], namely the local struggles to re-open a community centre in a self-sufficient manner. Regarded as an isolated development, the closure of a community centre in Carnisse is just an example of how a group of citizens took matters into their own hands and struggled with an 'unfavourable' policy environment. However, this case does not stand on its own. Questions on the closure of community centres and ways to maintain or re-open them preoccupy municipalities and professionals all over the Netherlands (Boutellier and Huygen, 2012; Huygen, 2014; van der Zwaard and Specht, 2013). These closures are symptomatic of the ongoing struggles that residents, policymakers, and professionals face in making sense of broader developments, such as the economic crisis, budget cuts or a changing welfare state across Europe. All of these developments challenge current role understandings, such as the role of local governments, residents, and servicing institutions (Bakker et al., 2012; ROB, 2012; WRR, 2012). We consider the re-opening of the community centre as a transition experiment, as it takes a societal challenge as a starting point for experimentation and aims at contributing to changes in local structures, cultures and practices (cf. Van den Bosch, 2010). In the following, we

[41] For more elaborate descriptions of the overall engagement, see Van Steenbergen et al., 2015; Wittmayer et al., 2013, 2014.

introduce the developments concerning the re-opening of the community centre in three main phases.

Orienting and exploring (end 2011 until mid-2012)

The community centre Arend & Zeemeeuw (A&Z) in Carnisse had offered a number of different facilities, including a coffee house, kitchen, rooms for meetings and sport, which were used by primary schools, a kindergarten and the former local welfare organisation. By the end of 2011, it was closed due to municipal and organisational choices. One important choice was the decision of the district municipality Charlois to issue a tender for welfare work, which did not include resources for this centre. Shortly after, concerned residents formed an action group that investigated the possibilities for re-opening the centre, and launched a petition for doing so in March 2012. This group focused on getting the facts with regard to ownership structure, financial obligations and neighbourhood needs on the table. The centre was built on ground owned by the municipality of Rotterdam and the building had been owned by the former welfare organization until its bankruptcy following the loss of the tender. The municipality of Rotterdam accepted ownership of both the ground and the building only mid-2012. The announcement of the work of the action group left public officials in confusion regarding how to relate to this initiative. Should they oppose it, facilitate it, be sceptical or enthusiastic about it? Generally, they moved from being very sceptical in 2011 to being more receptive of the initiative. For instance, a director of the district municipality was "*unpleasantly suprised*" by its work, perceiving it as mobilising 'against' the district municipality[42]. However, by mid-2012, after several internal discussions, the district municipality declared their formal position as follows: "The district municipality Charlois facilitates the residents' initiative A&Z by thinking along and bringing in knowledge and experience. But the district municipality does not contribute to the exploitation of A&Z" (Deelgemeente Charlois, 2012).

Starting up (mid-2012 until mid-2013)

In the meantime, the citizen action group drew up a business plan and reached more than 300 people through a petition – both documents were used to lobby different municipal and organisational representatives. In October 2012, the district municipality questioned the legitimacy of this process and wondered about the level of commitment and energy of the residents. That same month, participants in a meeting about the future of the community centre did not even consider the district municipality: they did not involve the present policy officer in their deliberations.

As of January 1st, 2013, the action group formalized their engagement in a foundation, which unofficially re-opened the centre for exploitation and took on all daily tasks on a voluntary basis. This happened notwithstanding the ongoing negotiations with the municipality regarding rent and exploitation. In February 2013, an initial agreement was

[42] Fieldnotes on phone call by neighbourhood coordinator, April 4th 2012, Rotterdam

reached allowing the foundation to officially run the community centre, yet still without an official rent agreement. At the official opening of the centre in June 2013, a director of the district municipality announced their support with an incidental subsidy. While this came as welcome support, the district municipality also aimed to increase its influence on the activities, which led to strong disagreements with the foundation.

Stabilising and evolving (mid-2013 until mid-2015)

An institutional reform let to the abolishment of the district municipality Charlois and its replacement by a district committee in spring 2014. These institutional changes did not have many repercussions for the centre. On the contrary, the centre had diversified its income streams and developed into one of the main neighbourhood contacts for policymakers. As the foundation stated in an interview in 2014: "We can do this [be critical], because we don't need them [district committee]" (Beheerjebuurthuis.nl, 2014). However, the negotiations, struggles, and disagreements regarding the centre's rent, exploitation, and subsidies continued until the end of 2015. These were mainly taking place between the foundation and two municipal departments. While the Physical City Development department aimed at increasing the value of municipal property, the Societal Development department was responsible for the welfare system and interested in the social infrastructure provided by the centre. Tensions culminated in March 2015 when these struggles where debated in the City Council, preventing an imminent closure of the community centre. In this precarious, uncertain situation, the foundation successfully ran the centre, hosted organisations (e.g. primary schools and day care organisations), organized and hosted activities, received subsidies from charities and businesses to renovate (parts of) the building, and won second place in the Rotterdam City Initiative 2014 competition.

Through increased public attention, public dignitaries started noticing the centre. In his New Year Speech 2014, the clerk to Rotterdam City Council compared it with the opening of the newly built Central Station (a 600 million Euro project). In an interview, a former director of the district municipality characterised the re-opening in a self-sufficient manner as "a flagship project" for the neighbourhood and a symbol for larger scale changes in Dutch society, such as increased decentralisation, local government reform, a changing welfare state[43].

Clearly, this case does not describe a 'complete' transition but rather a transition experiment as part of ongoing change dynamics. The experiment is symbolic of the state of Carnisse and other neighbourhoods in Rotterdam and the Netherlands, and their coming to terms with broader developments, such as closures of social real estate, social entrepreneurship or shrinking budgets. We first turn to literature on roles to increase our understanding of the concept, before we subsequently operationalize it for transition research and illustratively apply them to analyse this case.

[43] Fieldnotes of meeting between former director of the district municipality Charlois, neighbourhood coordinator of Carnisse and researchers, November 18th, 2013, Rotterdam

3.3. Review of Roles Theories

The concept of roles dates back to the 1930s (Linton, 1936; Mead, 1934) and the literature shows little consistency in its conceptualisation and operationalization (Biddle, 1986; Gibson and Pennington-Gray, 2005; Winship and Mandel, 1983-1984). There are different ontological perspectives with regard to roles: from a functionalist perspective, roles exist and individuals 'take' or 'play' those roles; from an interactionist perspective individuals have some freedom in 'making' a pre-given role; and from a more constructivist perspective, individuals 'use', 'create' or 'negotiate' roles.

In this article, we follow the common sense bottom line that the concept of roles establishes a shared reality to which actors can refer and which offers a connection to "regularities in the cultural environments" (Lynch, 2007, p. 381). In our take on roles, these can be described as a set of recognizable activities and attitudes used by an actor to address recurring situations. This suggests that roles can be described as ideal-types, but that they are socially constructed and therefore open to negotiation and change. We focus on three perspectives in this literature: (1) roles as recognizable activities and attitudes, (2) roles as resource, and (3) roles as boundary objects. These perspectives allow us to understand roles as an interplay between stability and change, to relate roles to change in social systems and to take political and power aspects into account.

3.3.1. Roles as recognizable activities and attitudes

The functionalist perspective is one of the most prominent ones on roles. It regards the social as being made up of 'universally' agreed upon social positions and their interrelations, accompanied by a set of collective expectations (e.g. norms, beliefs, or preferences, cf. Biddle 1986), rights, and duties. Roles are enacted by representatives of the position through characteristic behaviour. For example, the social position of 'citizen' is related to others such as 'policymaker' or 'politician' and is accompanied by behavioural expectations such as casting one's vote, or clearing pavements from snow. These expectations are connected to norms and beliefs, in that roles can be enacted in appropriate and inappropriate ways, with the latter being followed by sanctions. As such, roles are seen as "agents of social conformity" (Gibson and Pennington-Gray, 2005, p. 445) in a functionalist perspective, leaving little room for flexibility, variability or personal agency.

The interactionist perspective on roles allows more room for agency. Rather than taking roles as a static given, its focus is on the 'role making' process: how roles are adopted, adapted, enacted, performed, and made by an individual (Biddle, 1986; Hilbert, 1981). This perspective starts from the individual (rather than from the pre-defined social position) and focuses on role enactment and its influence on the actor as well as the evolution of roles through interaction (e.g. issues such as identity and self-representation). As such, it has been criticised for not accounting for broader societal contexts, including issues of power, politics and structural constraints (Biddle, 1986; Callero, 2003).

Combining both perspectives, Turner (1990, p. 87) defines a role as "comprehensive pattern of behavior and attitudes, constituting a strategy for coping with a recurrent set

of situations, which is socially identified – more or less clearly – as an entity. A social role is played recognizably by different individuals, and supplies a major basis for identifying and placing persons in a group, organisation, or society [...] can be thought of as consisting of rights and duties, or of expected behaviour, provided these terms are interpreted broadly". He emphasises role *change* as "a change in the shared understanding and execution of typical role performance and role boundaries" (Turner, 1990, p. 88). A role can change in different ways[44]: a) a new role can be created, b) an established role can be dissolved, c) a role can change quantitatively (e.g. addition or subtraction of duties or rights, gain or loss in power), or d) it can change qualitatively (e.g. substitution of elements, reinterpretation of meaning, change in prominence of different elements). In addition, a role does not stand on its own, but "always bears a [...] relationship to one or more other roles, change in one role always means change in a system of roles" (ibid).

3.3.2. Roles as resource perspective

This perspective starts from the understanding that social structures control action and are reproduced by action in a dynamic process (i.e. structuration). Roles are considered as cultural objects, i.e. "social constructions that are widely recognized as legitimate and normal features of the social world" (Collier and Callero, 2005, p. 47). As cultural object, roles have a practical reality (they are assumed to be real), an interactive reality (they are used to construct the self), and a symbolic/cognitive reality (they are cognitive representations transcending particular situations).

Roles are considered to be both cultural assumptions and taken for granted rules guiding action and resources that can be used to achieve certain practical ends (Callero, 1994; building upon Giddens, 1984 and Sewell, 1992). Roles are viewed not as consequences of a pre-determined social position, but as resources that can be used to enact such positions and consequently establish social structure (Baker and Faulkner, 1991). Roles become "a vehicle for agency" (Callero, 1994, p. 230) and an "organizing concept used by [actors] *when they require it*" (Hilbert, 1981, p. 220 emphasis in original). Rather than playing roles (i.e. functionalist perspective) or making roles (i.e. interactionist perspective), individuals are considered to *use* roles to construct the self and as a resource for gaining access to cultural, social or material resources (Baker and Faulkner, 1991; Callero, 1994; Hilbert, 1981).

3.3.3. Roles as boundary objects

Acknowledging the role concept as a concept-in-use, Simpson and Carroll (2008) depart from the functionalist and interactionist perspectives towards an understanding of the socially embedded process of role construction. Starting from a flux ontology which

[44] Role change should be distinguished from related phenomena such as role transition or reallocation (an individual moves into another role), variability (each individual develops her own version of a particular role within accepted boundaries), and deviance (crossing the accepted boundaries of a particular role) (Turner, 1990).

embraces complexity and contestation, roles are viewed as boundary objects, "intermediary device[s] for the translation of meanings" (Simpson and Carroll, 2008, p. 46) in the context of identity construction processes. Roles are considered a vehicle for mediating and negotiating meaning in interactions, while also being (re)constructed through them. Identities, as well as roles, are considered more or less temporary stabilisations in an ongoing process of identity work.

This perspective emphasizes that neither roles nor identities, nor structures for that matter, are ever 'stable' or 'something out there'. Rather, we can treat them as temporary stabilisations for the sake of analysis or for guiding our action at a specific place and point in time. Instead of being pre-defined and static, roles such as policymaker or citizen seem to always be in the process of being constructed, deconstructed, reconstructed, contested, as well as enacted, made and used. Roles bridge the individual and societal levels in that they are intermediary and temporary results of their interactions; they are sites of struggle, power, and conflict. This perspective leaves room for considering the act of putting up a role as boundary object, as an act of agency, and leaves room for alternative meanings and improvisation.

3.4. Understanding Roles in Transitions

Transition research is interested in understanding social systems, their change dynamics and the purposeful activities of actors to influence and play into current societal dynamics to contribute to a more sustainable future (i.e. their governance). From the review of roles theories, we can establish that the concept of roles allows for a more systematic description and analysis of the interaction and relations between actors, which can be made productive for analysing current and historical transitions.

From this review, we derive three main insights:

- Firstly, the roles-as-recognizable-activities perspective holds that a single role always relates to one or more other roles and that a change in one has consequences for the others. This implies two distinct objects of analysis: the ***single role*** and a ***role constellation***. We propose the latter term to refer to webs of roles, which interact, interrelate and co-evolve with one another. While an analysis of the single role provides insights into its substance, a focus on the role constellation highlights the relations between different roles.
- Secondly, in line with the focus of transition research on change, we suggest distinguishing between two temporal aspects of the analysis. Both, single roles and role constellations can be analysed either at a ***specific point in time*** as a temporary stabilisation or ***over time*** focusing on how these change.
- Thirdly, the roles-as-resource and the roles-as-boundary-objects perspectives draw attention to the ways roles can be purposefully used and negotiated. We suggest taking the actual ***usage of roles*** as an object of analysis to further our understanding of the ways in in which actors purposefully contribute to more

sustainable futures. It also allows us to understand how actors struggle in coming to terms with and using roles in their daily life to attain a specific end, such as e.g. influencing a sustainability transition.

In this section, we discuss and operationalize the concepts of single roles and role constellations analysed both at a specific point in time and over time. We also discuss the actual usage of roles as an act of transition governance. Throughout this section, we refer to the transition experiment in Carnisse to illustrate our argumentation.

3.4.1. Analysing single roles in transitions

As outlined above, we consider roles as shared understandings, which can be described as a set of recognizable activities and attitudes used by an actor to address recurring situations. We suggest that there is a core of activities and attitudes, which are widely recognized and shared within a specific group of people or a social system[45] as belonging to a specific role. By way of example, this would be the activity of 'making policy' for the role of policymaker or 'casting one's vote' for citizen. However, next to such ideal-type descriptions, there are always competing ideas about other activities or attitudes, which are or should be part of that very role. Consider, for example, the Dutch discourse that policymakers should be 'less controlling' and 'more facilitative'. Such competing ideas are part of ongoing role negotiations in society, implying specific ideas about what is desirable and what is problematic. However, it also leads to struggles on individual level in terms of how to 'play' a role if the individual's role understanding deviates considerably from the shared role understanding.

Table 1: Analytical questions for analysing single roles in transition

Object of analysis	One specific point in time	Over time
Single Role	What is part of this role? - Which is the set of recognizable activities and attitudes widely shared and recognized to be part of this role? - Which other (competing) activities and attitudes are considered part of this role, and by whom? - What is considered problematic (or desirable) about it?	How did this role change? *Take two distinct points in time and consider qualitative and quantitative change, the dissolution and creation of the role.*

[45] The boundaries can be defined in different ways. Important examples are certainly geographical areas, such as city, region or nation; but also culturally defined communities (by common language or religion).

In a historical perspective, the focus is on how role understandings change and how this might be indicative and/or part of broader societal change. Apart from the creation and dissolution of a role, the change of a single role can be analysed by describing a shared role understanding at two specific points in time and discussing the differences between these. For this analysis, we build on the discussion of role change by the roles-as-recognizable-activities perspective indicating that roles can change quantitatively or qualitatively. Coherent with our framing of roles as activities and attitudes, a quantitative role change refers to an addition or subtraction of activities and attitudes or a loss of power and a qualitative role change refers to a change in activities and attitudes and the relative salience thereof, as well as a reinterpretation of its meaning.

Focusing on the re-opening of the community centre in Carnisse, we can identify a number of central roles. On an individual level, these include resident, policy officer, researcher, professional; and on a collective level, municipality, district municipality, district commission, welfare organisation, action group, and community centre foundation. In 2010, one of the important activities of the district municipality Charlois was the financial provision for the community centre through subsidies provided to the local welfare organisation. It also monitored the targets connected to the subsidy. It was the role of the welfare organisation to exploit and manage the place (incl. programming activities and engaging with volunteers and residents). Residents were visiting the place to attend specific activities such as sports, bingo or youth activities. Related to the community centre, we can therefore speak of a distant, results-focused attitude of the municipality, while the welfare organisation provided for the residents, who were acting as users. Competing ideas on the role of resident emerged, being more active and self-reliant and not dependant on either welfare organisation or district municipality. Obviously, this is but a broad stroke illustration of the shared understandings (e.g. not including all competing ideas) of specific single roles and their recognizable activities and attitudes.

While our five-year engagement does not allow analysing roles through the course of a transition, it does allow pointing to (emerging) changes in shared role understandings within this period. The district municipality Charlois had already stopped the financial provision for the community centre (quantitative role change), before it was abolished through institutional reform in 2014 (dissolution of a role). Simultaneously the district committee was introduced (creation of a new role) but it neither has the means to support the community centre financially nor does it play any specific role in relation to it. The activities of the Municipality of Rotterdam increased with regard to the community centre – from renting the ground to also renting the building and reaching out to support the foundation in exploiting the centre. This change in role can be considered alongside the 'participation society' discourse, which proposed that the role of (local) governments should be more 'facilitating' than 'directing'. In their tender for welfare work (2011/12), the district municipality Charlois enacted a new paradigm for welfare work – away from helping 'clients' and 'fixing' problems towards a more coaching role encouraging people to take matters into own hands. This means primarily a qualitative role change in terms of a reinterpretation of the role of welfare organisation. In addition, residents together with professionals have taken up the exploitation and management of the community

centre – changing their role from consuming to 'prosuming'. It also includes the creation of new roles in this context, namely action group and foundation.

3.4.2. Analysing role constellations in transitions

As outlined above, we define role constellations as webs of roles, which interact, interrelate and co-evolve with one another with regard to a specific issue. Analysing role constellations at a specific point in time implies firstly, to take stock of the related roles and secondly to describe the relations and interactions between these. There are different aspects of such relations and interactions worthy of analysis, for example a focus on their power aspects (cf. Avelino and Wittmayer 2015) or a simple description with regard to the stance of the roles towards one another (e.g. supporting, observing, opposing, challenging or competing).

Role constellations can be regarded as a vital part of analysing and describing persistent problems to which transitions are a response. Each framing of a persistent problem (in e.g. public discourse) bears implicit and explicit ideas about roles and responsibilities of and necessary interventions by different kinds of actors – an analysis of role constellations provides major insights into these ideas. One could argue that the construction of a persistent problem (and proposed solutions) comes with an implicit image of what is problematic (or desirable) about existing actor interactions and role constellations, and what kind of new role constellations are necessary. The Dutch discourse on 'participation society' or the UK discourse on 'Big Society' is such a problem analysis, which includes explicit ideas about the roles of and relations between citizens and governments in relation to provisions in the social domain. These discourses illustrate competing images of desirable role constellations.

In a historical perspective, an analysis can focus on the changes between role constellations, which are related to a specific sustainability issue at different points in time. These changes concern the actual roles, which partake in the role constellation (consider the possibility that roles have dissolved or have been created), and the relations between roles.

Table 2: Analytical questions for analysing role constellations in transition

Object of analysis	One specific point in time	Over time
Role Constellation	What is the role constellation about? - Which roles are part of it? - How are the relations and interactions between the roles described? - What is considered problematic (or desirable) about the role constellation?	How did the role constellation change? *Take two distinct points in time and consider the (change in) partaking roles as well as the change in relations between the roles.*

To give a broad stroke illustration of the insights such an analysis can provide, we turn to Carnisse. Rather than solely focusing on the substance, the focus in analysing role constellations is on the actual relations between roles. On an individual level, the role constellation in 2010 included at least resident, policy officer, professional; and on a collective level, municipality, district municipality and welfare organisation. Considering this composition, the role constellation has changed during the five-year involvement in terms of the actor roles involved. We have seen that the role of district municipality has given way to that of district committee, which in turn does not play a major role in relation to the community centre. New entrants to the role constellations were the Municipality of Rotterdam, as well as the action group fighting for the re-opening of the centre and, later, its formalised successor the foundation.

Building upon the description of the substance of the roles under section 4.1., we can identify the relation between district municipality and welfare organisation as a business relationship where the latter is accountable to the former. While the paradigm change in welfare work did not have consequences for this relation, it did change the relation between the residents and the welfare organisation. Whereas earlier the welfare organisation had a standard programme to help residents as clients, currently they activate residents to organize their own help or activities – thus reflecting a change from supply-driven to activating. The relation between district municipality/district committee and residents changed from the former providing for the latter (e.g. in terms of financial provision for the centre), towards one where the district committee does not interfere with the activities of residents concerning the centre. Policy officers of the district municipality Charlois were struggling with coming to terms with the tension between the upcoming and competing understanding of their role as facilitating society and the widely shared understanding of directing, controlling and monitoring projects. As stated by its director "me as director, but also the municipal organisation, we had to learn to just let it happen. And to just follow the developments by nearly sitting on your hands"[46]. During the four year period there was a constant tension between the owner, funder, manager and users of the community centre because of the break with a dominant role constellation that was rather stable in the previous years (since mid-1990s). The merging of actors, their roles and a tipping of previous power relations and interdependencies led to a continuous process of negotiation and giving meaning to one and another's role and position.

3.4.3. Analysing roles as governance interventions

The roles-as-resource perspective suggest that actors can use roles purposefully in their interaction with others as a resource for thinking, acting and achieving political ends. Such usages can be considered acts of agency and purposeful attempts of (transition) governance. However, governance activities relating to roles are broader and can include playing a role, making a role, creating a new role, destroying or altering existing ones, explicitly negotiating and purposefully assigning roles. In their interaction in relation to the re-opening of a community centre in Carnisse, some actors 'make' their roles, thus

[46] Interview, former director of the district municipality Charlois, July 7th 2014, Rotterdam

searching for the boundaries of a specific role, which eventually can lead to a change (qualitatively or quantitatively) in its broader societal understanding. In Carnisse, the shared understanding of the role of policy officer slowly changed to embrace the idea that a policy officer should be facilitating residents in their quest to improve their living environment. Other actors in Carnisse created roles, which had not been part of the existing role constellation, such as 'action group' or 'foundation'. Others continue to play their accustomed role (e.g. the local citizen association) and thereby reproduce existing role understandings.

Table 3: Analytical questions for analysing governance activities relating to roles

Object of analysis	One specific point in time	Over time
Single Role	Which governance activities related to roles are used and for which end?	How did the governance activities related to roles change?

The usage of roles is a highly political act. For example, the district municipality Charlois referred to the collective fighting to re-open the community centre not as an 'action group' as they themselves did, but as a "residents initiative" (Deelgemeente Charlois, 2012). In doing so, it framed the role of this new actor in a specific way including an understanding of who can be part of such an initiative (e.g. a resident but not a professional), and which resources are accessible (e.g. financially certain small subsidies, while not the power to decide upon the future of the community centre). We see this also in the ways that the Municipality of Rotterdam advised the action group: while one policy officer advised to set up a 'residents company', another focused on management by professionals and still a third one preferred the centre to be run by residents only. There is thus an apparent need for clarity and for pushing a dominant frame: an individual is to be either an entrepreneur, a professional or a resident. The framing of the 'other' is thus a means for distributing or withholding resources. Another aspect of using 'roles' in attempting to influence societal dynamics is that roles can be exclusive. There are limits to the usage of roles in that not every role is accessible to everyone. By way of example, the role of policy officer of Rotterdam and its associated resources may not be claimed and used by everybody, but only by individuals with an appropriate educational record and employment contract. Role designations and claims thus come with inherent assumptions about access to resources, responsibilities and power.

Using roles as resources, requires a capacity on the part of individual and/or collective actors to play into stimuli for role change and provide alternative role understandings, or even (re)invent them. Relating this to empowerment as one of the goals of transition management (Loorbach, 2007), the more empowered an individual is, the more this person might be inclined to make and use roles in alignment with her own vision, regardless of societal expectations (cf. Avelino, 2009). Thus, this governance approach to roles is about becoming aware of and seeing how roles are made and used and can be an important means for dis/empowering actors.

3.5. Concluding remarks

We argued that the transitions field to date lacks a suitable vocabulary to analyse the (changing) interactions and relations of actors as part of a sustainability transition. To address this gap, we explored the potential of the concept of 'role' for transition research. This concept also allows us to distinguish between 'transition roles' – roles actors use in supporting or hindering transitions, and the broader concept of social roles. A focus on the latter allows understanding (changing) roles and their (changing) relation to other roles as indicative of changes in the social fabric and shared values, norms and beliefs. It also allows understanding transition governance as a continuous searching, learning and experimenting process through which roles are (re-)negotiated over a period of time and in which actors use roles to reach certain ends.

This article provides three main insights for transition research. Firstly, it distinguishes between single roles and role constellations, which allow analysing both the shared and competing understandings of a role and the relation between different roles. Secondly, it analyses these as temporary stabilisations in the present, as well as over time, in order to trace changes. The article showed us that negotiations and struggles concerning what roles and relations are, can and should be are an ongoing part of both a transition governance intervention and a broader long-term societal transition. The persistent nature of societal problems also derives from the fact that actions tend to build on 'old' role understandings, rather than explicitly questioning current ones. This questioning needs to be part of transition governance interventions – thus, for instance, when envisioning sustainable futures this includes a questioning of current and a proposition for new role constellations. A third insight is that roles can be used not only explicitly, but also purposefully in interactions with other actors as acts of transition governance. It is, inter alia, through the creation and use of new roles or by breaking down and altering existing ones that role change prompts changes in collective processes and alters dominant institutional constellations (i.e. regimes). Therefore, we propose to consider the flexible use of roles as a particular form of transition governance intervention.

This article aims to fuel the critical and necessary debate on a more systematic analysis of actors and their roles in transition research and proposes three future research avenues. Firstly, this article suggests using the roles concept to analyse the social fabric and changes therein – illustrated by a case of social rather than socio-technical innovation. We propose that the concept has the potential to carve out the 'social' in socio-technical transitions – a proposition worthy of further investigation. A second future research avenue is using the proposed concepts for analysing empirical cases of historical and current transitions to further sharpen and amend it. Historical analyses of multi-actor dynamics, for example, can focus on changes from one role (constellation) to another within a specific sustainability issue (e.g. the changing role of local government in sustainable local development). With regard to current transitions, insightful research could focus on the different competing discourses and 'ideal type' descriptions of roles and their political implications, and/or the negotiation processes between collective actors and their broader surrounding (e.g. local government and the Dutch public debate on the participation society). Equally interesting to study are contexts, where roles are not changing, or where such role change proves difficult. A final research avenue

concerns the application of the operationalisation of the roles concept for the analysis of 'transition roles' – thus tying it back in again with the normativity inherent to sustainability transitions. In the spirit of our transdisciplinary engagement in the neighbourhood of Carnisse, this includes to question, be reflexive and to challenge our own roles as 'transition researchers' in the 'transitions in the making' that we are engaging in.

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4. Governing Transitions in Cities: Fostering Alternative Ideas, Practices, and Social Relations through Transition Management

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Abstract

Sustainability transitions pose novel challenges to cities that go beyond traditional planning and urban development policies. Such transitions require broader engagement, empowerment, and breakthrough strategies, which enable, facilitate, and direct social innovation processes towards adaptive and innovative urban futures. The transition approach offers a set of principles, a framework, instruments, and process methodologies to analyse as well as systematically organise and facilitate such social learning and innovation processes. During the past decade, researchers and policy entrepreneurs around the world have been experimentally applying the transition perspective in practice under the label of 'transition management'. This approach is based on bringing together frontrunners from policy, science, business, and society to develop a shared understanding of the joint complex transition challenge, to develop collective transition visions and strategies, and to start strategic experiments. In this chapter, we zoom in on the different elements of transition management (i.e., principles, framework, instruments, process methodologies) and their heuristic and operational use in the urban context.

Status

The article is a book chapter in an edited volume and can be referenced as follows: *Wittmayer, J.M. and D. Loorbach (2016) Governing transitions in cities: Fostering alternative ideas, practices and social relations through transition management. In Loorbach, D., Wittmayer, J.M., Shiroyama, H., Fujino, J. and S. Mizuguchi (eds.) Governance of Urban Sustainability Transitions. European and Asian Experiences. Springer, Tokyo.*

It is reproduced here in the version that is published in the book (with adaptations of the formatting).

Fit with the overall thesis

This article contributes to the aim of the thesis to contextualise transition management as a governance approach for the local context. It mainly addresses the second sub-research question of this thesis: *What does transition management at the local scale entail and how does it relate to other local processes towards sustainability?* This article provides a systematic overview of the applications of transition management on the local scale, analysing and reflecting associated promises and challenges. It also formulates a number of local, specifically urban, context characteristics, which are important for the application of transition management in that context.

4.1. Introduction

When talking about cities and the local level, there is no circumventing the impact that was caused by the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. Here, the local level prominently entered the stage as an important context in which to address sustainability concerns as "so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities" (UNCED 1992, Agenda 21, Chap. 28). In the decade after, this led to the emergence of thousands of Local Agenda 21 processes addressing sustainability concerns in cities, towns, and neighbourhoods all over the world (ICLEI 2012). Presently, some of these processes still flourish, whereas in Europe most have triggered follow-ups or have died out. The decreasing importance of this specific local process, as well as a more receptive local government sphere, are the backdrops for current ideas and practices of transition governance (Wittmayer et al. 2015).

A number of governance approaches have been developed in the context of a complex and uncertain world facing persistent problems deeply embedded in societal structures and multi-actor contexts. Such approaches aim to address the tension between "the open-ended and uncertain process of sustainability transitions and the ambition for governing such a process" (Frantzeskaki et al. 2012b). Examples are ideas and notions about adaptive governance (Olsson et al 2006), reflexive governance (Voß et al. 2006; Grin et al. 2010), or transition governance (Loorbach 2007; Frantzeskaki et al. 2012b). These governance notions address a reality perceived as multiscalar, complex, nonlinear, uncertain, normative, dynamic, complex, and path dependent. From different (multi-)disciplinary backgrounds, these notions have been further developed into more specific approaches, such as empowering designs (Leach et al. 2010), strategic niche management (Kemp et al. 1998; Schot and Geels 2008), and transition management (Rotmans et al. 2001; Loorbach 2010; Frantzeskaki et al. 2012b). This chapter zooms in on transition management as a form of transition governance and specifically focusses on its recent 'urban turn'.

When we refer to the urban context, we focus in particular on a number of specific characteristics of cities that should be taken into account in transition governance—namely, personal, institutional, and geographic proximity—as well as multiscalar and multi-domain interaction (see Table 1; cf. Loorbach and Shiroyama 2016, Chap. 1 , this volume[47]).

The notion of transition management was developed in the science policy debate leading up to the fourth National Environmental Policy Plan (NMP4) in the Netherlands in 2001 (Rotmans et al. 2001; Kemp and Rotmans 2009; Loorbach and Rotmans 2012; Voß 2014). During the past decade, researchers and policy entrepreneurs around the world have been experimentally applying the transition perspective in practice under the label of 'transition management.' This approach is based on (1) bringing together frontrunners from policy, science, business, and society to develop shared understandings of complex

[47] This chapter has been published as a bookchapter in an edited volume and refers to other chapters in this volume throughout.

transition challenges; (2) developing collective transition visions and strategies; and (3) experimentally implementing strategic social innovations.

Table 1: Characteristics of the urban context

Characteristic	Description
Geographical proximity	Cities as places where spatial distances are smaller as compared to regions or countries. *(Boschma 2005, Coenen et al. 2012, Raven et al. 2012)*
Multi-scalar interaction	Cities as being nested in and constituting of different spatial scales and networks. Scales as actively constructed and interacted with in ways that supports actors in achieving their goals. *(Coenen et al. 2012, Nevens et al. 2013, Coenen and Truffer 2012)*
Multi-domain interaction	Cities as places where changes in different domains (e.g. energy, mobility, social care) come together and interact. *(Nevens et al. 2013)*
Personal proximity	Cities as living environments in which people have personal, emotional and social stakes, including socially embedded relations and a level of trust. *(Related to the concept of social proximity by Boschma 2005)*
Institutional proximity	City share formal and informal institutions including laws and rules as well as cultural norms and habits. *(Boschma 2005)*

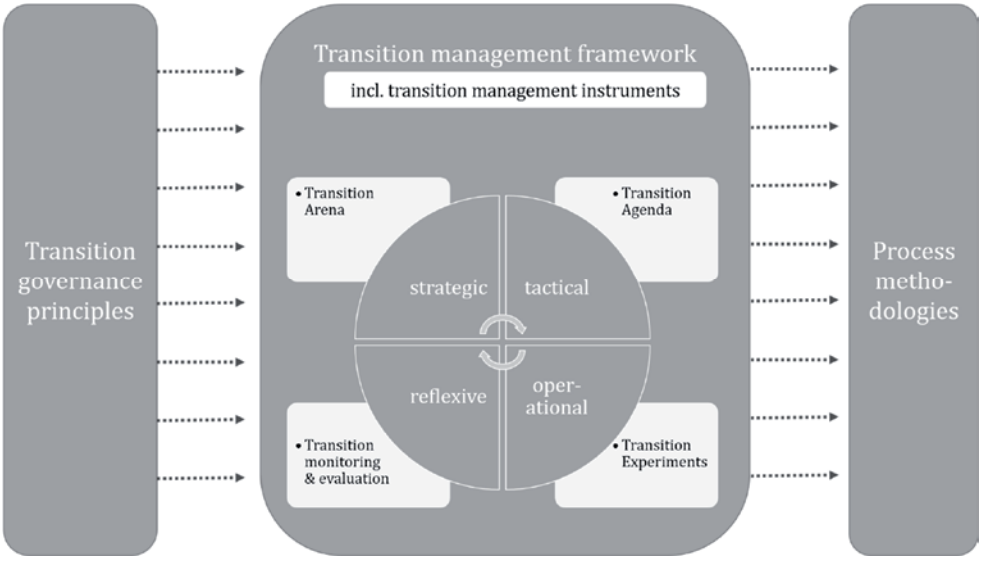
Transition management provides researchers with analytical lenses (i.e., heuristics; see Mizuguchi et al. 2016, Chap. 5 , this volume; Shiroyama and Kajiki 2016, Chap. 7 , this volume; Frantzeskaki et al. 2014a; Brown et al. 2013) to understand and analyse the dynamics of urban sustainability transitions both historically and in transitions in the making. Its concepts, introduced in more detail next, are also seen as powerful operational tools to help conceptualise and address the fundamental changes necessary to move towards sustainable cities. They help people working on urban development to understand the complexity of their task and the comple xity of the system they aim to influence and change. They also support articulating (shared) long-term ambitions to guide short-term actions (see Hölscher et al. 2016, Chap. 6 , this volume; Frantzeskaki and Tefrati 2016, Chap. 4 , this volume; Krauz 2016, Chap. 8 , this volume; Wittmayer et al. 2014a, b; Roorda et al. 2014).

Transition management has been challenged and further developed through theoretical work and heuristic and operational application. Theoretical contributions focus on developing the concept by either grounding it in specific theories (e.g., Rotmans and Loorbach 2009; Frantzeskaki et al. 2012b) or by critiquing specific aspects, most prominently issues of power, politics, and agency. In terms of the latter, much theoretical work as well as practical experimentation sought to deepen our understanding of power relations and political implications and how they could be addressed (Smith et al. 2005; Shove and Walker 2007; Hendriks 2009; Avelino 2009; Kern and Howlett 2009; Meadowcroft 2009; Smith and Stirling 2010; Kern 2012; Jhagroe and Loorbach 2014). These contributions identify challenges of transition management in terms of who is governing, whose framings count (in terms of system, problems, goals, sustainability), and what is the relationship with democratic institutions, incumbent regime actors, and

dominant discourses. Many of these challenges and others, such as the narrow focus on desired (versus undesired) transitions, technical systems, and a specific group of key actors, have been addressed in more recent work on transition management (see, for example, the chapters in this volume). Heuristically and operationally, transition management has been applied in a number of functional domains such as energy (Verbong and Loorbach 2012), water (Van der Brugge et al. 2005), and mobility (Avelino et al. 2012). Only quite recently has it been used to describe and prescribe governance processes in geographically bounded systems, such as cities (Nevens et al. 2013; Nevens and Roorda 2014; Ferguson et al. 2013; Wittmayer et al. 2014b, 2015), towns, and urban neighbourhoods (Wittmayer et al. 2014a, b).

After outlining the methodology (Sect. 2), we scrutinize transition management in the urban context by outlining different elements thereof and the ways these have been used heuristically and operationally (Sect. 3). With elements, we refer to (a) the principles of transition governance, (b) their translation in a management framework, and its associated operationalisation in terms of (c) instruments and (d) process methodologies (Fig. 1). Based on this analysis, we synthesise the promises and challenges for making space for alternative ideas, practices, and social relations in cities; and scrutinize the characteristics of the urban context and their meaning for transition management processes (Sect. 4).

Figure 1: Elements of transition management



4.2. Methodology

This chapter is based on both our experience in working with transition management and a literature review of transition management in the urban context. Both authors are involved in the practical and theoretical development of transition management thinking, from the very start of the concept (second author) up to its recent 'urban turn.' Our literature review encompassed more general literature on the theoretical and practical foundations of transition management next to literature on its applications in the urban context. Articles relating to the former were selected based on our experience with the field. These articles are used to provide an overview of the development of transition management, its different elements (principles, framework, instruments, process methodologies), as well as the different critiques it spurred. The literature on transition management in the urban context is just starting to emerge. We could identify a number of relevant articles examining the development, premises, and/or results of transition management in the urban context by using Scopus and snowballing. This sample was broadened by reviewing grey literature on transition management in the urban context such as project reports. For the latter, we mainly focussed on the outputs of two European projects that constituted a breeding ground for the conceptualisation of transition management in the urban context: the FP7-funded InContext project (2010–2013) and the EU-Interreg-funded MUSIC project (2010–2015). As our focus in this chapter is on applications of transition management, we did not include similar developments in transdisciplinary sciences in this review (Wiek 2007; Lang et al. 2012; Wiek et al. 2014).

4.3. Transition management

In this section we outline the elements of transition management, namely, the principles of transition governance, their translation in a management framework, and its associated operationalisation in terms of instruments and process methodologies (see Fig. 1). For each element, we first give a basic description and then show how it has been used in the context of cities, towns, and neighbourhoods. In so doing, we distinguish between different application types of transition management, namely, heuristic applications, employing the elements as an analytical lens for understanding and explaining governance processes, and operational applications, describing the application of transition management process tools to set up participatory sustainability processes (cf. Frantzeskaki et al. 2014b).

4.3.1. Transition Governance Principles

Since its inception, the concept of transition management as a governance approach to sustainability transitions has been theoretically further developed and grounded in complex systems, governance, and sociological theories (Loorbach 2007, 2010; Rotmans and Loorbach 2009; Grin et al. 2010; Frantzeskaki et al. 2012b). Based on an understanding of transitions as processes of fundamental long-term multilevel and multiphase change in complex, adaptive systems, a number of governance principles have been formulated. Building on work by Kemp and Rotmans (2009), Loorbach (2010, p.167–168) o utlines the following nine principles for transition management.

- The dynamics of the system create feasible and nonfeasible means for steering: this implies that *content and process are inseparable*. Process management on its own is not sufficient—insight into how the system works is an essential precondition for effective management.
- *Long-term thinking (at least 25 years) is a framework for shaping short-term policy* in the context of persistent societal problems. This concept requires backcasting and forecasting: setting of short-term goals, based on long-term goals, and reflection on future developments through the use of scenarios.
- *Objectives should be flexible and adjustable at the system level*. The complexity of the system is at odds with the formulation of specific objectives and blueprint plans. While being directed, the structure and o rder of the system are also changing, and so the objectives set should change too.
- *The timing of the intervention is crucial*. Immediate and effective intervention is possible in both desirable and undesirable crisis situations.
- Managing a complex, adaptive system means *using disequilibria as well as equilibria*. Relatively short periods of nonequilibrium therefore offer opportunities to direct the system in a desirable direction (towards a new attractor).
- *Creating space for agents to build up alternative regimes* is crucial for innovation. Agents at a certain distance from the regime can effectively create a new regime in a protected environment to permit investment of sufficient time, energy, and resources.
- *Steering from 'outside' a societal system is not effective:* Structures, actors, and practices adapt and anticipate in such a manner that these should also be directed from 'inside.'
- *A focus on (social) learning* about different actor perspectives and a variety of options (which requires a wide playing field) is a necessary precondition for change.
- *Participation from and interaction between stakeholders* is a necessary basis for developing support for policies but also to engage actors in reframing problems and solutions through social learning.

Following these principles, transition management clearly perceives the governance of sustainability transitions as an open-ended process of searching, learning, and experimenting within societies. It has a clear focus on innovation and sustainability, because "to develo p sustainably means to continuously innovate and redefine existing culture, structures and practices in an evolutionary manner" Frantzeskaki et al. 2012b, p. 25). These principles offer a basic starting point for experimental operationalisation as well as for analysis and reflection. Initially, these principles have been formulated, as well as further developed and empirically grounded, in the context of functional systems as well as a regional systems (cf. Loorbach 2007) and as such are not specific to the urban context. To date, there has been no reflection or adaptation of these principles to the urban context (Frantzeskaki et al. 2014b). The synthesis chapter of this book, which distils additional principles for transition governance in cities based on insights from this volume, is an exception in this regard (Wittmayer 2016, Chap. 9, this volume).

4.3.2. Transition Management Framework

The rather abstract governance principles have been translated in a management framework, the transition management cycle (see middle part of Fig. 1 for a simplified version). This framework distinguishes between governance activities at the following four levels (see Loorbach 2007, 2010).

- *Strategic-level activities*: Activities aimed at the long term through which the future is collectively debated and imagined; for example, visioning, long-term goal formulation, including collective goal setting and norm setting.
- *Tactical-level activities*: Activities aimed at the midterm and long term, targeting changes in established structures, institutions, regulations, and physical or financial infrastructures.
- *Operational-level activities*: Activities aimed at the short term, focussing on experiments and actions through which alternative ideas, practices, and social relations are practised, tried out, and showcased.
- *Reflexive-level activities*: Activities aimed at learning about the present state and dynamics in the system, and about possible future states as well as about the way from present to future: these include (collective) learning from ongoing operational, tactical, and strategic activities.

Although these activities are recognisable in other governance approaches or policy process models, their difference here lies in their focus on societal processes, persistent problems, fundamental change, and innovation as well as their normative direction (i.e., sustainability) (Frantzeskaki et al. 2012b; Loorbach 2010).

This framework has been used as a heuristic in cities to understand and interpret ongoing governance processes. By way of example, Frantzeskaki et al. (2014a) have been using the different governance levels as part of a mapping framework, which they developed to examine the governance imprint of urban partnerships in the redevelopment of the former Rotterdam City Port area along two axes: their impact in terms of synergies and the governance role they adopt. The framework makes it possible to identify agency patterns at different levels: the way these influence and interact with their broader context (i.e., the status quo) and add up to generate movement into a certain direction. From this perspective, each type of governance activity has distinguishable forms of agency, instruments, processes, and organisational logics. The authors conclude that actively seeking to engage with existing forms of transition governance through systematic intervention strategies supports influencing and accelerating transitions. Two contributions of this volume also use the levels of governance activity to reflect on (1) the value of an operational transition management envisioning process (Frantzeskaki and Tefrati 2016, Chap. 4, this volume) and (2) the transition governance activities in Higashiomi and especially the importance of the reflexive activities in realising a multi-niche innovation (Mizuguchi et al. 2016, Chap. 5, this volume).

4.3.3. Transition Management Instruments

This transition management framework (i.e., the transition management cycle) also connects a number of instrume nts to each of the governance levels. The cyclical nature of the framework implies that strategic-level activities are followed by tactical and operational instruments and closing the cycle with reflexive ones. However, the cycle has to be understood as iterative (Loorbach 2010); activities can be started at each of the governance levels, thus on the operational level rather than on the strategic level, for example (Van den Bosch 2010), and can run in parallel (Wittmayer et al. 2014a). Thus, the activities and instruments interact more than is implied by the following presentation.

On a strategic governance level, the so-called transition arena has been developed as a process instrument to develop a new narrative and discourse to frame and guide sustainability transitions; this is simultaneously referred to as a setting as well as a "small network of frontrunners with different backgrounds" (Loorbach 2010, p. 173). Frontrunners are selected based on their diverse societal values and perspectives and on the alternatives that they offer in terms of ideas, practices, or social relationships with regard to the status quo (Wittmayer et al. 2011). The perspectives of the frontrunners are subsequently confronted and possibly integrated in a participatory learning process (van Buuren and Loorbach 2009). A substantive outcome of the process is a transition narrative for the city, which consists of (a) a shared integral problem statement outlining the need for a transition, (b) a novel future perspective including sustainability criteria, and (c) transition images and pathways. This narrative plays into existing dynamics and discourses and creates alternative futures and discourses aimed at influencing the direction of change. The underlying idea is that this narrative inspires and motivates social innovation and creates a broader movement (Loorbach 2007). In addition, the process of producing the narrative should lead to social and second-order learning, through which participants (i.e., frontrunners) are encouraged to engage in tactical and operational activities, as outlined next.

Tactical governance activities include, for example, dividing the transition narrative in achievable steps or a roadmap, the transition agenda. Activities include the exploration of structural barriers through transition scenarios (Sondeijker 2009) or backcasting (Quist et al. 2011, 2013). Backcasting leads to the exploration and framing of specific transition pathways, which are further developed through negotiation, collaboration, and coalition building (Frantzeskaki et al. 2012b). Transition experiments, which are considered instruments at operational governance level, are aimed at learning about putting the narrative into practice, possibly along a certain transition pathway. This placement can take place either through conceiving of new alternatives realised through a project structure, or through broadening, deepening, and scaling up existing and planned initiatives and actions (Van den Bosch and Rotmans 2008). As opposed to a regular project, a transition experiment is an "innovation project with a societal challenge as a starting point for learning aimed at contributing to a transition" (Van den Bosch 2010, p. 58). Reflexive governance activities take place throughout to evaluate and monitor the transition process and the various levels and their interrelationships as well as the transition management framework itself: this is the reflection part where changes

in the urban fabric and dynamic become registered, existing tools are adapted, a nd new insights are formulated. Transition monitoring not only aims at gathering data but also includes intervention on the basis of these data (Taanman 2014).

These instruments have been translated for the urban context in the concept of 'Urban Transition Labs' (Nevens et al. 2013). Inspired by the transdisciplinary living labs approach, the authors "consider an Urban Transition Lab as the locus within a city where (global) persistent problems are translated to the specific characteristics of the city and where multiple transitions interact across domains, shift scales of operation and impact multiple domains simultaneously (e.g. energy, mobility, built environment, food, ecosystems). It is a hybrid, flexible and transdisciplinary platform that provides space and time for learning, reflection and development of alternative solutions that are not self-evident i n a regime context" (Nevens et al. 2013, p. 115). This approach promises the creation of a systems thinking mindset, a stra tegic agenda and related short-term actions, space, and empowerment starting from selective participation, as well as a setting of learning (Nevens and Roorda 2014).

The instruments and the underlying principles of transition management have inspired different developments. By way of example, the City of The Hague, The Netherlands experimented with a new kind of subsidy scheme for creating a climate movement in the city (Avelino et al. 2011; Wittmayer 2014). Also, the Japanese "Future City" Initiative has been inspired by the transition management approach (see Wittmayer et al. 2015, 2016, Chap. 3 , this volume). The transition arena process has also been used heuristically. Analysing a historical transition to improved stormwater quality treatment in Melbourne, Brown et al. (2013) reflect on the implications and lessons for transition management. One is that the main focus of transition management to date has been on the predevelopment phase of transitions with its focus on empowering frontrunners and niches (i.e., the transition arena process), whereas the acceleration phase of transitions might need a different focus and a better understanding of the institutional and policy context. Based on his work in a non-urban context—Dutch agriculture—Grin (2012) supports this conclusion regarding the role of frontrunners as helpful in accelerating developments but not sufficient; a larger group is needed to gain mass. More generally, not all scholars agree with a focus on selective participation of frontrunners, framing it as an 'elite group' (Smith and Stirling 2010), pointing to its legitimacy deficits (Hendriks 2009), and suggesting it as a problematic framing of an "enlightened" type of person (Jhagroe and van Steenbergen 2014, p. 2).

4.3.4. Transition Management Process Methodologies

Recent years have seen an adaptation of the framework and the instruments for the urban context in process methodologies or guidelines to be used either by (action) researchers (Wittmayer et al. 2011; Frantzeskaki et al. 2012a) or by local governments (Roorda et al. 2014) to implement a transition management approach in cities. In drawing up process methodologies for different 'target groups' (researchers, policy makers), different urban contexts (neighbourhoods, towns, cities), as well as different national contexts (different countries in Europe, Australia), the understanding of operational transition management

has diversified (in terms of numbers of phases, levels of detail, attention to ethics, etc.). Although these process methodologies are far more specific and detailed in terms of process description than other transition management accounts, they still do not provide a clear-cut recipe: they need translation and adaptation to the specific transition challenges and questions in the urban context (Nevens et al. 2013; Wittmayer et al. 2014b).

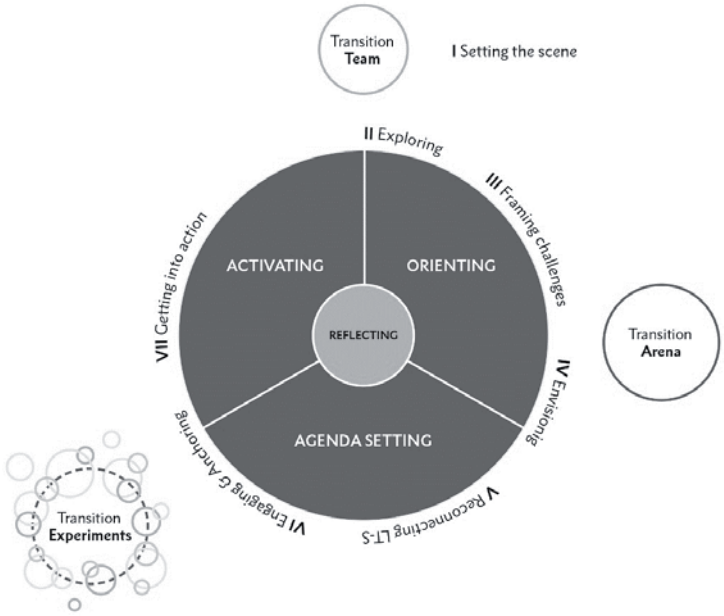
By way of example, we turn to Roorda et al. (2014), who operationalised transition management into a process methodology for urban policy makers aiming for climate mitigation in their cities (Fig. 2). This specific process methodology has been developed in close collaboration between researchers and policy makers and was implemented in five European cities focussing on clim ate mitigation as part of the EU Interreg-funded MUSIC project (2010–2015) (see Wittmayer et al. 2015, 2016, Chap. 3 , this volume). The process methodology distinguishes between different types of interventions that urban policymakers might use to influence the future of their city. It then outlines the different transition management instruments available for each of these more generic intervention types (see Fig. 2).

- Interventions aimed at *orienting* focus on positioning the city vis-à-vis societal developments and the municipality vis-à-vis other actors over time. Transition management instruments include, amongst others, system and actor analysis.
- Interventions aimed at *agenda-setting* focus on tactical governance activities in terms of integrating different agendas and practices and creating a sense of shared ownership and ambition for a sustainable future. Transition management instruments include, amongst others, transition agenda.
- *Activating* interventions focus on practices and setting up projects and experiments. Transition management instruments include transition experiments.
- Finally, interventions aimed at *reflecting* include the focus on supporting and enabling societal learning processes through both experience and cognitive engagement. Transition management instruments include transition experiments, monitoring, and evaluation.

The process methodology divides the intervention process into a number of phases, namely: (1) setting the scene for transition management, (2) exploring local dynamics, (3) framing the transition challenge, (4) envisioning a sustainable city, (5) reconnecting long term and short term, (6) engaging and anchoring, and (7) getting into action. These phases in turn are related to different settings or actors that foster interaction and focus on the emergence of alternative ideas, practices, and social relations; as such, it is an apt methodology for the predevelopment phase of transitions. The transition team, the transition arena, and the transition experiments (see Fig. 2) can be considered as actors and settings simultaneously. The transition team is a setting in which different individuals, such as urban policy makers, possibly specific actors from the city or transition experts, come together to negotiate the actual framing and embedding of the transition management instruments in the current (power and policy) context. As actor, the team is preparing and leading the actual transition management process. The transition arena simultaneously is the actor that is drawing up a new transition narrative

and roadmap for the sustainable future of the city an d the setting in which the urban frontrunners are negotiating this very future and agenda. In the same vein, the transition experiments are the actors that are practically addressing the societal challenges identified and consist of different frontrunners and stakeholders who experience the actual barriers and drivers for change by 'practising the transition.'

Figure 2: The transition management process structure (from Roorda et al. 2014, p. 14)



In the more operational applications of transition management, these process methodologies have been put into practice to organize contextualised transition management processes in cities, towns, and neighbourhoods (Nevens and Roorda 2014; Roorda and Wittmayer 2014; Wittmayer et al. 2013, 2014a, b; Ferguson et al. 2013; Frantzeskaki and Tefrati 2016, Chap. 4 , this volume; Hölscher et al. 2016, Chap. 6 , this volume; Krauz 2016, Chap. 8 , this volume). Most of these accounts show that a transition management approach does not hold "a silver bullet solution for actuall y realizing ambitious sustainability objectives" (Nevens and Roorda 2014, p. 120). Nevertheless, transition management does provide an action impetus and more intangible outcomes in terms of practising collaborative governance and system thinking (Nevens and Roorda 2014), and it holds promises with regard to creating space for alternative ideas, practices, and social relationships (Wittmayer et al. 2014a; Roorda et al. 2014).

Many of the writings on these transdisciplinary operational processes witness the engagement of their authors with the earlier mentioned challenges of transition

management in terms of the normative aim of sustainability (Wittmayer et al. 2014a), dis/empowerment dynamics (Hölscher et al. 2016, Chap. 6 , this volume), the r ole of visioning (Frantzeskaki and Tefrati 2016, Chap. 4 , this volume), or with regard to local power relationships (Krauz 2016, Chap. 8 , this volume). Transition management processes in cities have shown that spaces for interaction can be created indeed, but that assuming that these are power-free spaces would be naïve. Especially when such a process is organised by a municipality, the risk is high that participants retreat to accustomed social roles and relations (Roorda and Wittmayer 2014). If a municipality usually relates to its citizens through public participation processes focussing on consultation, then a first step of a transition management-based process is to problematise the expectations towards one another. A necessary part of such a process is the experimentation with different expressions and meanings of social roles and relations (Wittmayer and van Steenbergen 2014; Wittmayer et al. 2014b). In this line, recent writings also show critical reflexivity in relationship to the roles of researchers in such processes (Wittmayer et al. 2014a; Wittmayer and Schäpke 2014).

Next to operational applications, we can see the process methodologies also being used as an analytical frame (i.e., heuristic application) to analyse existing governance dynamics. Shiroyama and Kajiki (2016, Chap. 7 , this volume) use the operational framework by Roorda et al. (2014) to analyse the transition of the city Kitakyushu from an industrial to a green city by identifying transition arena, transition team, and transition experiment as settings and actors in this hist orical transition process.

4.4. Promises and Challenges of Governing Transitions in Cities, Towns, and Neighbourhoods

Although applying transition management heuristically to cities and their governance does yield promising insights, such as with regard to the understanding of multi-actor governance processes, the nestedness of different geographic scales, and types of actors as well as the interrelatedness of developments in different domains, to date, most applications in the urban context have been operational applications of prescriptive process methodologies. In this section, we therefore first focus onsynthesising the promises and challenges of transition management in cities for the more widely used operational applications (Sect. 4.1) before we focus on the characteristics of the urban context and its meaning for both heuristic and o perational transition management processes (Sect. 4.2).

4.4.1. Promises and Challenges for Operational Applications Management of Transition

Transition management in the urban context is not a univocal success story, as outlined earlier. It is an approach in development. Considering that long-term transformation of any system “will prove to be a messy, conflictual, and highly disjointed process” (Meadowcroft 2009, p. 323), transition management in cities should not be considered a tool box or silver bullet, but rather as an “exploration of a new city governance approach

for the co-creation of innovative pathways and processes in a strongly reflexive manner" (Nevens et al. 2013, p. 121). Overall, challenges for operational transition management are related to the contextualisation of the approach to a specific societal challenge, actor constellation, place, and time,; the fit wi th policy-making and decision-making institutions, as well as ongoing dynamics and developments,; holding on to the radical character (i.e., directed at fundamental change),; the importance of reflexivity and a space for learning, attention to politics and power relationships,; and the degree to which sustainable development as the long-term normative goal can be made meaningful locally (see Nevens and Roorda 2014; Wittmayer et al. 2014a, 2015, 2016; Roorda and Wittmayer 2014).

Roorda et al. (2014) outline three promises of transition management in the context of urban climate governance; namely, it holds the potential to provide (1) a sense of direction for the city, (2) an impulse for local change, and (3) collective empowerment as it enables actors to address challenges and seize opportunities. Complementing ongoing regular policy processes and arenas as well as broader social movements and dynamics, operational applications of transition management create interactive spaces for alternative ideas, practices, and social relations in transdisciplinary settings (Wittmayer et al. 2014a), which have the potential to shift existing structures, cultures, and practices or 'transitionise' existing policies over time. In the following we use the distinction between impacts in terms of ideas, practices, and social relations to discuss the promises and challenges of operational applications of transition management.

Alternative ideas refer to a reframing of the actual challenges, alternative long-term directions, imaginations of the future, new discourses, and narratives through which actors involved gain a sense of urgency and the feeling that the impossible becomes possible. These new ideas and knowledge emerge through mutual and deep exchange, confrontation of opposing perspectives, and interaction of people from diverse backgrounds. Especially, the creation of alternative narratives can be seen as practising agency that opens up to the "hypothetical, the possible, and the actual" (Brockmeier 2009, p. 228). Through engaging in the creation of narratives and alternative futures, we "undermine cultural norms and restrictions. It demonstrates that the mind interprets meanings as possibilities of action that reach beyond its own limits" (ibid.). The challenge in engaging in a process of visioning or idea generation is the balance between opening up and fostering their plurality and diversity and closing down this process towards the convergence of a shared, albeit plural, notion of the future, for example, through the notion of a 'basket of future images' (cf. Stirling 2008).

In addition to probing what is possible through imagination, transition management is about creating space to practising alternatives—putting the imagination into action, done through projects, experimentation, and transformative action. There are manifold examples of best practises out there. The idea of experimentation is different: it is not about reading what others have done and copying it one-by-one, rather it is about defining a societal challenge and a way to address it through experimentation with a focus on learning by doing in a multi-actor setting. By engaging in action, actors learn about and find ways to address structural barriers as well as shape their future images (Van den Bosch 2010; Taanman et al. 2012).

In theory, no one actor is seen to be in the driving seat, or actually 'managing' a transition, which sets transition management aside, for example, from Local Agenda 21 processes, where more often than not contrast, transition management aims to facilitate a joint societal searching and learning process in which ongoing actions by a range of actors are taken as a starting point to build new collaborative transition networks. As such, transition management opens a way to question and experiment with alternative social relations, such as between local governments and citizens, or between citizens and businesses. Policy institutions are both subject and object of transition governance: they can be important subjects in driving transition governance through their involvement and are also the object of transition as they are likely to change and gain a new understanding of their role and relationship to other actors. The emergence of new actors, such as the transition arena or follow-up networks, also questions and challenges the existing social fabric and local governance setting (Krauz 2016, Chap. 8 , this volume); this immediately ties in with challenges and questions with regard to the kind of relations, the power, politics, norms, and ethics involved, as outlined earlier. Who is driving the process, with which agenda, and to what end? How does the process relate to incumbent actors? More often than not researchers have been involved in different capacities, which asks for reflexivity with regard to the different roles that a researcher might use in operational applications (Wittmayer and Schäpke 2014) and with regard to assumptions and frameworks used as well as specific ethical and scientific quality criteria.

4.4.2. The Urban Context and Transition Management

Referring back to the characteristics of the urban context outlined earlier (see Table 1), we discuss these here in terms of their meaning for operational and heuristic applications of transition management.

- *Geographic proximity*: In cities, the spatial distances between actors are usually shorter than, for example, in regions or nations. Actors in cities are physically closer to each other and share a certain geographically bounded area. As put by Boschma (2005, p. 59) "Short distances bring people together, favour information contacts and facilitate the exchange of tacit knowledge." For operational transition management processes, this means that being located in a city and being about a city (rather than about a 'national energy system') can increase identification with the area and create a shared purpose. There is also the risk of reifying administrative boundaries in delineating a system; for example, neighbourhood boundaries might not be recognised b y actors (e.g., inhabitants) as such or might be an illogical confinement of inputs, activities, and impacts (cf. Wittmayer et al. 2013). Therefore, taking account of the construction of scale, to which we turn now, is important.
- *Multiscalar interaction*: Understanding cities as nested means that transition management applications, whether heuristic or operational, need to take multiscalar interactions into account. These scales can be national or international, neighbourhood or street, or any other geographic scale that is considered relevant. The city and 'its' actors actively construct relevant scales and interact with these in

ways that support them in achieving their goals (cf. Coenen et al. 2012). Through transition governance applications we can analyse this interaction as a two-way street and as such play into it. Cities may, for example, refer to EU-level strategies (e.g., Europe 2020) or EU-wide covenants (e.g ., Covenant of Mayors), to further their own ambition of CO reduction, bypassing national governance. Through their construction and interpretation of and reaction to certain events (such as budget cuts) cities can be inspiring other cities but also initiate new legislation on the national or international level.

- *Multi-domain interaction*: Taking a place-based system delineation involves that transition governance activities are not only taking account of changes in one domain, rather it is in actual places where changes in different domains (energy, mobility, water, …) come together and interact. As such, a place-based approach to transitions involves the multitude of dynamics between different domains in a specific place, increasing the complexity of the task at hand, but also providing numerous points of leverage. Working on CO reductions means that the process will focus not only on issues of energy provision and production but rather, in the process of problem framing and future visioning, have a b road and integral perspective that also encompasses issues in domains such as mobility, water, lifestyle, and tourism.
- *Personal proximity*: relates to the concept of social proximity (Boschma 2005): Cities, towns, and neighbourhoods are also environments in which people live, love, rage, or die. It is people in their roles as inhabitants, fathers, mothers, or engaged neighbours who become actors in transition governance activities, rather than (only) as professionals as is the case in many transition management processes in functional systems. People are involved in different roles and have clear personal, emotional, and social stakes as well as trust relationships: they live in the city, raise their children there, or cheer for the local football club—all these relationships are embedded and come with certain expectations and responsibilities. This definition makes urban transition management a collective endeavour of people striving for sustainable development in their own living environment and brings power struggles and the search for new roles and relations very close to the individual and his or her homestead.
- *Institutional proximity*: refers to proximity that originates in shared formal and informal institutions including laws and rules as well as cultural norms and habits (Boschma 2005). For certain issues, there might be a high extent of institutional proximity within a city (e.g., formalised governance processes), whereas for other issues this might be lower (e.g., if the city's population is composed of people from different national or cultural backgrounds). Transition management activities aim at changing institutional structures, cultures, and practices (Frantzeskaki et al. 2012b), and as such are working on creating new institutional proximity. In doing so, they work at the fringes of existing institutions (cf. Coenen et al. 2012).

4.5. Conclusion

The transition management-based analysis and interventions over the past years, including those described in this volume, have led to a more systemic, contextual, and effective way to develop alternative ideas, practices, and social relations. As a counterbalance to optimisation of existing systems, transition management thus aids in strengthening alternative dynamics and empowering actors to seek to change existing unsustainable systems. In the light of the changing contexts and dynamics and as actual transitions accelerate, it is increasingly evident that new and additional governance mechanisms need to be developed (Loorbach 2014). In contexts where the need or desirability of transitions is no longer an issue, alternatives are rapidly diffusing and incumbent regimes are fragmenting, adapting, and eroding.

This pivotal point is where new forms of top-down and formal policy are needed to help institutionalize new rules that emerge, as well as to stop investment in and work on unsustainable development. Especially, this latter point relates to the necessity of breaking down barriers and unsustainable practices in a more or less systematic way. As local renewable energy production becomes superior to centralised fossil fuel-based energy, policy at a certain point needs to phase out (its dependence on tax income from) fossil energy, creating a new norm—which then puts power issues centre stage. A challenge for the coming decade, it seems now, is to understand, analyse, and create breakthroughs in existing power structures by interlinking change-inclined regime members to emergent new power structures, next to developing alternatives and countermovements.

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5. Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management

AUTHORS

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ABSTRACT

Since the 1990s, the local level of governance has become increasingly important in addressing the challenge of sustainable development. In this article, we compare two approaches that seek to address sustainability locally, namely Local Agenda 21 and transition management. Discussing both approaches along six dimensions (history, aim, kind of change, governance understanding, process methodologies, and actors), we formulate general insights into the governance of sustainability in cities, towns, and neighbourhoods. This dialogue illustrates two related modes of thinking about sustainability governance. We touch upon the importance of an integrated perspective on sustainability transitions through which sustainability is made meaningful locally in collaborative processes. We suggest that the explicit orientation towards radical change is a precondition for governing sustainability in a way that addresses the root causes of societal challenges. Governing sustainability should address the tensions between aiming for radical change and working with status quo-oriented actors and governing settings. We conclude that governing sustainability should be about finding creative ways for opening spaces for participation, change, and experimentation, that is, for creating alternative ideas, practices, and social relations. These spaces for innovation encourage a reflexive stance on ways of working and one's own roles and attitudes, thereby preparing a fertile terrain for actors to engage in change from different perspectives.

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FIT WITH THE OVERALL THESIS

This article contributes to the aim of the thesis to contextualise transition management as a governance approach for the local context. It addresses the second and fourth sub-research questions of this thesis: *What does transition management at the local scale entail and how does it relate to other local processes towards sustainability?* and *What are the (changing) roles of actors in transition management in sustainability transitions at the local scale?* This article historically embeds transition management in relation to Local Agenda 21 processes and compares the two approaches to formulate general insights about the governance of sustainability in cities, towns, and neighbourhoods. It also outlines the roles and relations of the key actors in both processes.

5.1. Introduction

In addressing the challenges of sustainable development and sparking sustainability transitions, the local level has become increasingly important over the last 25 years (Meadowcroft 1997, O'Riordan 2001, Geissel 2009, ICLEI 2012). With an ever-growing portion of the world's population living in cities, analysts and commentators see their importance as transformational loci of change towards sustainability increasing (Betsill and Bulkeley 2007, Nevens and Roorda 2014). When we talk about the importance of the local level in addressing sustainability, Local Agenda 21 (LA21) processes constitute one of the most important developments from the past two decades (Meadowcroft 1997, O'Riordan 2001). Following Coenen (2009, p. 167) LA21 is "a local action plan for the achievement of sustainable development, which has to be worked out through a broad consultative process between local authorities, citizens, and relevant stakeholder groups; and eventually integrated with existing plans, priorities and programmes". The Agenda 21, adopted at the United Nations Conference for Environment and Development in Rio in 1992, gave a distinctive role to local governments to realise sustainability at the "level closest to the people" (UNCED 1992, Ch. 28). Consequently, LA21 processes emerged throughout the world, some of which are still active today, have triggered follow-ups, or have died out.

Next to LA21, there are numerous other approaches to address sustainability locally. One of these is transition management, which emerged at a science–policy interface about a decade ago in the Netherlands (Rotmans et al. 2001, Loorbach 2010). It is an "interactive and selective participatory stakeholder searching process aimed at learning and experimenting" (Grin et al. 2010, p. 140). It was systematically elaborated in the context of functional systems, such as energy or water, and has only recently been applied at the local level in cities, towns, and neighbourhoods. Whenever such a relatively new approach to local governance is introduced, both practitioners and researchers question its relations with other local sustainability approaches, particularly with established and semi-official ones such as LA21. These questions probe the suitability and added value of the newcomers in different contexts. What are their (different) aims? What kind of change do they aspire to? How are sustainability transitions achieved? Who are key actors and what are their roles?

Both approaches aim to address current global threats (e.g. climate change, poverty, environmental concerns), so as to further sustainability transitions (O'Riordan and Voisey 1997, Loorbach 2010). As such, they are expressions of the same search for more locally owned and sustainable futures. However, both have a distinct historical and local embeddedness (e.g. global policy level vs. Dutch science–society interface) and are set in changing local governance styles and priorities as well as changing societal discourses. The approaches are also linked to (inter)national sustainability strategies, though they are largely unconnected in terms of setting, timing, and actors. Taking these divergences as a starting point, this article is the first thorough attempt to bring the approaches into an organised discussion among practitioners and researchers. This will produce insights into governing sustainability in cities, towns, and neighbourhoods. This focus is furthermore important due to the increasing concentration on cities, as well as to the fact

that broader developments, societal challenges, and possible future directions acquire meaning and become tangible at this local level (Wittmayer et al. 2014).

The paper unfolds as follows. In the next section, we outline our methodology and analytical focus. We subsequently discuss six dimensions of LA21 and transition management, namely, their history and main developments; their vision; the kind of change they aspire to; their governance understandings; the processes through which these understandings are operationalised; and the roles of key actors. This analysis enables us to formulate insights into governing sustainability at the local level, and to take stock of the relative contributions of the two contrasting approaches to promoting sustainability at the local level.

5.2. Methodology

Given their different historical and theoretical bases, as well as the variety of their practices and interpretations (e.g. there never was a single version of either), LA21 and transition management are best understood as fluid, constantly re-invented, and adapted to local circumstances (cf. ICLEI 2012). As such they would seem to defy simple description and comparison. In this article, we address this challenge by focusing on the conceptual level of both approaches. This allows us to consider and transcend their manifold (empirical) interpretations. Following our aim to generate insights for the governance of sustainability at the local level, we use a comparative dialogue where both sides build upon one another. Our analysis is based on a review of scientific and grey literature, which explicitly refers to either LA21 or transition management as well as our experiences in scientifically and practically working with either LA21 or transition management in the urban context. As the latter is only starting to emerge (see section on History), there is limited conceptual and empirical work which has a strong focus on Northern and Western Europe. As such, we also focused our literature review for LA21 on this geographical area. The literature review was supplemented by a number of expert interviews focusing on the comparison in different locations

For LA21, the core of our literature review is 20 articles and chapters from four leading books (Lafferty and Eckerberg 1997, O'Riordan and Voisey 1997, 1998, Lafferty 1999). The articles were sampled through an eclectic search using Scopus as well as searches in specific journals focusing on local government and environmental policy and planning[48]. For being relevant, articles needed to focus on Northern and Western Europe, and examine the development, premises, and/or results of LA21. We also included five reports and official documents in our review including Agenda 21 as well as more implementation-oriented guidelines for LA21.

For transition management in the urban context, six relevant articles could be identified using Scopus and snowballing. For being relevant, articles needed to focus on Northern and Western Europe, and examine the development, premises, and/or results of transition management in the urban context. Two other lines of sampling were aimed at

[48] Search terms included "Local Agenda 21", "transition", and "sustainability" and search results were narrowed down by scanning first abstracts and then articles for their relevance.

broadening this small article base. Firstly, we reviewed grey literature on transition management in the urban context such as project reports with a main focus on the outputs of two European projects[49]. These projects and their outputs are relevant as these constituted a breeding ground for the conceptualisation of transition management in the urban context and led to the development of further research in this area elsewhere (e.g. Brown et al. 2013, Ferguson et al. 2013) and new research projects[50] (such as EU-FP7-funded ARTS and TESS projects).

Table 1: Analytical lenses for organizing a dialogue between governance approaches

History *From where?*	Where does the approach originate? For example, in which context did it originally emerge and how did this shape its philosophy and practice
Vision *What for?*	What are the aims of the approach? For example, how is sustainability understood and made meaningful in the specific locality and setting
Kinds of change *How different?*	What kind of change does the approach aspire? For example, does it question the current system fundamentally, or is it or is it focused on making predefined improvements
Governance understanding *How to achieve?*	How are the vision and the kinds of change achieved? For example, looking at the governance understanding including political settings, policy dynamics, and interpretations of participation
Process *How to implement?*	How is the governance understanding operationalized? For example, what are the process methodologies that come with the approaches
Actors *Who?*	Who are key actors and what are their roles? For example, looking at questions such as who participates, who initiates, the role of the local government or relations between actors and how these (might) change

The outputs of these projects were complemented with three additional reports about the practice of transition management in the local context. While all reports were reviewed following the analytical lenses outlined below, not all of them are cited in this article. Secondly, we included scientific literature on transition management as used in

[49] The EU-FP7 research project InContext included a transition management-based action research component in three European towns and neighbourhoods (10 reports and working papers) (see InContext 2015). The EU-Interreg project MUSIC developed and implemented a transition management-based guideline for policy-makers to reach their CO2 reduction targets in five Northwest European cities (three reports) (MUSIC 2015).

[50] Two examples are the EU-FP7 funded projects ARTS: Accelerating and Rescaling Transitions and TESS: Towards European Societal Sustainability.

the context of functional systems (rather than on cities), where this was appropriate, in order to enrich the discussion. These papers were sampled based on the experience of the authors with the field.

For the analysis of the literature, we developed a straightforward analytical lens based loosely on a number of readings with regard to governance and sustainable development (see Lafferty 2004, Kemp et al. 2005, Vob et al. 2006, Adger and Jordan 2009, Frantzeskaki et al. 2012). This analytical lens consisted of six dimensions (see Table 1), which are considered relevant in organising a fruitful comparative dialogue between governance approaches in general. The dimensions are: (1) history, (2) vision, (3) change aspirations, (4) governance understanding and (5) its operationalisation, as well as (6) actors.

5.3. History: where do LA21 and transition management originate?

Agenda 21 is an outcome of the 1992 United Nations Conference on Environment and Development in Rio and asserts an increasing urgency with regard to socio-economic (e.g. poverty) and ecological (e.g. loss of biological diversity, pollution of the biosphere) problems. It sets out a voluntary action plan to be addressed by a "global partnership for sustainable development" (UNCED 1992, Ch. 1), which puts national governments in the leading role for implementing the outlined actions and policies in conjunction with other governance levels and "major groups" (e.g. local authorities, women, farmers). Broad public involvement, including these groups, is seen as necessary for effective implementation and, more broadly, for sustainable development.

The participation and cooperation of local authorities is seen as "decisive" as "so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities" (UNCED 1992, Ch. 28). The role of local government is broadly understood as managing local infrastructure and planning processes, setting up policies and implementing those from other levels of government. Local authorities are also expected to have started a dialogue with their constituents and formulated an LA21 by 1996. The latter is referred to as a consultation and consensus-building process through which local authorities play out their "vital role in educating, mobilizing and responding to the public to promote sustainable development" (UNCED 1992, Ch. 28). They learn from their citizens, local organisations, as well as business and industrial organisations about "best strategies" to feed into policy programmes.

In Europe, LA21 processes were taken up by numerous municipalities and range from loose vision statements to formal action planning procedures (Lafferty 1999, Selman 2000, Coenen 2009). The processes take different organisational or institutional forms (Freeman 1996, Geissel 2009), and were named differently or had their name changed after a certain time (ICLEI 2012). Conceptually, Coenen (1998) outlines two aspects that distinguish LA21 from earlier local environmental planning, namely the nature of participation and the inclusion of issues of solidarity and justice next to environmental issues (see also Lafferty and Eckerberg 1997, Coenen 2009).

It was only when LA21 had already seen a remarkable uptake in Europe that transition management as a governance framework for sustainability transitions was developed at the science–policy interface of the fourth National Environmental Policy Plan (NMP4) in the Netherlands (Kemp and Rotmans 2009, Loorbach and Rotmans 2012). The context in which the NMP4 was negotiated in 2000 was characterised by (a) a lack of previous decision-taking, (b) the emergence of persistent problems such as climate change, and (c) the need for a long-term view (Kemp and Rotmans 2009). At this point in time, transition management still had to be theoretically and empirically grounded. By then, five rules of thumb for the governance of sustainability transitions had been formulated, namely long-term thinking as the basis for short-term policy, thinking in terms of multiple domains, different actors and different levels, learning as an important aim for policy, orienting policy towards system innovation beside system improvement, and keeping options open (Kemp and Rotmans 2009, p. 309).

This led to the development of a still-evolving research field on (sustainability) transitions (Grin et al. 2011, Van den Bergh et al. 2011, Markard et al. 2012). Along with the field, transition management's theoretical underpinnings have been further developed and based on complex systems, governance, and sociological theories (Loorbach 2007, 2010, Grin et al. 2010). An increasing number of scholars critically engaged with the approach and also debated issues of politics, power, and agency (Shove and Walker 2007, Avelino 2009, Hendriks 2009, Meadowcroft 2009, Vob and Bornemann 2011).

Its empirical basis has also been expanded through descriptive and prescriptive applications in a number of functional systems such as energy (Kern and Howlett 2009), water (Van der Brugge et al. 2005), and mobility (Avelino et al. 2012a). Since about 2010, it has also been applied in geographically bounded systems, such as cities (Ferguson et al. 2013, Nevens et al. 2013, Nevens and Roorda 2014, Frantzeskaki et al. 2014), towns, and urban neighbourhoods (Wittmayer et al. 2013, 2014). To date, transition management as a prescriptive approach for addressing sustainability problems in European cities has primarily taken place through European (research) funding and municipal funding. The number of cities, towns, and neighbourhoods currently applying or having applied a systematic transition management approach is small, and the contexts largely coherent.

Both LA21 and transition management have evolved within a specific historical context, and as such can be said to be children of their times and application contexts. While LA21 originated from a carefully negotiated policy document at the global level in the 90s, transition management originated from a science–policy interface in the Netherlands in the 2000s. Formally, the uptake of LA21 is a rather top-down process, whereas transition management has been propagated by scientific institutes in coordination with either national or local government, or civil society.

5.4. Vision: what do LA21 and transition management aim for?

Neither LA21 nor transition management is a single-issue approach; they are not constrained in their attempts to address environmental, social, and economic issues,

thereby differing from more managerial "tools" (e.g. those related to sustainable energy planning). The understanding of sustainable development emerging from Agenda 21 includes social, economic, and environmental aspects (UNCED 1992, Ch. 1). While social aspects, including global solidarity, featured strongly in local sustainability frameworks such as the Aalborg Charter (1994) and Commitments (2004), the European processes in practice focused mainly on environmental issues (Gibbs et al. 1998, Selman 1998, ICLEI 2012). By way of example, Swedish municipalities starting their LA21 processes in the 1990s focused mainly on waste handling, green purchasing, and water systems (Eckerberg and Forsberg 1998). Issues of solidarity, the long term, and far-away places were given less attention (Eckerberg and Forsberg 1998, Coenen 2009, Geissel 2009). Moreover, the social, environmental, and economic aspects were often considered separately (e.g. lists of projects referring to each of the three pillars) with little reflection on interdependencies. Critically, LA21 depends upon political and organisational accommodation and "buy-in" to efficiency of delivery with regard to public expectations.

Transition management places sustainability as its focus and explicit normative orientation, but it suggests neither a clear definition of the concept nor an explicit process. This opens space for context-specific interpretations, but also for ambiguity and argument, and makes transition management processes and outcomes prone to multiple interpretations of sustainability (Wittmayer et al. 2014). Frantzeskaki et al. (2012) propose that transition management combines a universalist (e.g. Brundtland definition) and a procedural (i.e. the need for a collective learning process) understanding of sustainability. In transition management practice, four dimensions of sustainability have been regarded as helpful in operationalising sustainability, namely environmental thinking (awareness of nature and natural resources), social thinking (consideration and acknowledgement of self and others), time horizon (short and long term) and interregional thinking (connection with other parts of the world, near and far) (Wittmayer et al. 2014). The same study found that in an urban context, social aspects are an interesting starting point for more encompassing sustainability processes.

In practice, the openness in terms of how sustainability is understood means that both processes can be adapted to local history and context and that sustainability acquires its meaning locally. Most LA21 processes, while officially open processes, had a predefined scope by the mere fact that environmental departments led them. Most transition management processes were led or accompanied by interdisciplinary researchers, and participants were selected, among others, on the basis of their diverging worldviews and interests. This arguably resulted in more integrated views on sustainability and offered the opportunity to frame it in a way that was meaningful to the community. As such, methodology does impact on what is being understood and implemented under the "sustainability" label. While sustainability remains a contested and ambiguous concept, looking at LA21 and transition management illustrates that there are shifts in how sustainability is understood – starting from a focus on environmental aspects to a broader conceptualisation, emphasising linkages and interdependencies across social, environmental, and economic issues (cf. O'Riordan 2009, Leach et al. 2010). It also underlines the importance of actual practice, process methodologies, and their implementation through which sustainability is made meaningful locally.

5.5. Kind of change: what kind of change do LA21 and transition management aspire to?

The process towards sustainability is referred to as "transition to sustainability" by LA21 scholars (O'Riordan and Voisey 1997, 1998, O'Riordan 2001) or "sustainability transitions" by transition management scholars (Grin et al. 2010, Loorbach 2010). Both imply that fundamental change is needed to tackle the overall sustainability challenge of improving quality of life without depleting resources (Selman 2000, Grin et al. 2010). LA21 processes originated from a carefully negotiated UN-policy document, the Agenda 21, which underlined the need for sustainable development but did not debate the nature of the necessary change nor question the underlying structure, culture, or practices of our society (e.g. the economic growth paradigm, cf. Du Pisani 2006). The impulse for Agenda 21 came from national governments, making use of a classic practice, the drafting of a policy document outlining activities for different groups. Consequently, LA21 focuses on consultation and consensus building, through which local governments would learn, the awareness of other stakeholders would increase, and sustainability targets would be set. While this can be understood as an orientation towards incremental change, Selman (2000, p. 51) indicates that notwithstanding its shortcomings, "there is still the prospect that it [LA21] provides a process capable of lubricating fundamental change".

Transition management includes a much more specific understanding of long-term fundamental change in socio-technical systems and broader societal systems. A sustainability transition is understood as a "radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies" (Grin et al. 2010, p. 1). The world is viewed as highly complex, uncertain, and dynamic, and as such harbouring a multitude of pathways to sustainability (cf. Leach et al. 2010). Based on this reasoning, transition management aims at influencing ongoing societal dynamics towards greater sustainability, stimulating societal critique and challenging the status quo. The actual practice then seems to always fall short of an idealised concept of change.

For LA21, the practical challenges and constraints for creating radical change included a lack of economic, human, time, and knowledge resources, limited outreach in the actual number of participants and their diversity, legal or regulatory constraints, and the internal compartmentalisation of local governments (Selman and Parker 1997, Eckerberg and Forsberg 1998, Meadowcroft 1999, Evans and Theobald 2003, Harvold 2003, Coenen 2009, Geissel 2009). Transition management faces similar dilemmas, as not all processes were similarly transformative in their outcomes (Wittmayer et al. 2013, Roorda and Wittmayer 2014, or see Kern and Smith 2008 on the Dutch energy transition). Whereas Selman and Parker (1999) consider that an undercurrent demanding a fundamental re-orientation of society has been muted in LA21, in transition management the demand for fundamental change is strongly present and persistent. The need for radical change in the long term is upheld, although it might come with rather small steps.

5.6. Governance understanding: how are sustainability transitions achieved?

For realising a sustainable society, LA21 proposes an approach that is much more participatory than earlier local government practices, which are typified as "top-down, bureaucratic paternalistic approaches" (Young 1997, p. 143). It suggests a consultation and consensus-building process through which local authorities play out their "vital role in educating, mobilizing and responding to the public to promote sustainable development" (UNCED 1992, Ch. 28), while learning from their citizens, local organisations, as well as business and industrial organisations to feed into policy programmes. For Selman and Parker (1997, p. 172), LA21 differs "from approaches based purely on official policies, management systems and performance targets, to one which requires significant cultural changes in local government and other public agencies".

Transition management shares the focus on participation of all actors in a societal learning process (rather than a policy process). It is based on a more elaborated understanding of governance due to its anchoring in a scientific context (Loorbach 2010). In embracing the complexity, uncertainty, and dynamics of sustainability challenges (Loorbach 2007, 2010), transition management is belying its name. It is not about managing, but rather about a participatory searching process, seeking to address persistent problems and influence the direction and pace of societal change towards sustainability. The focus is on creating space for actors to explore and build alternatives (e.g. ideas, practices, and social relations), as well as to challenge and change the status quo through experimentation and learning (Loorbach 2007, 2010, Grin et al. 2010, Wittmayer et al. 2014, cf. O'Riordan 2009). Transition management thus includes societal learning as an important aspect of the change process – as such it is a reflexive form of governance (Kemp and Loorbach 2006, Kemp et al. 2007, Voβ and Bornemann 2011).

In terms of local governance, these approaches illustrate a shift from planning to a focus on the participation of actors in decision-making processes in LA21, and to a societal searching, learning, and experimenting process in transition management. Though usually local authorities initiated the LA21 processes, this does not mean that the links with official policy-making were always strong; more often than not, LA21 was seen as complementary to regular decision-making processes, offering advice to representative bodies (Coenen 2009, Geissel 2009). LA21 and what it stands for was often sidelined when "important" economic decisions had to be taken (Moser 2001, Evans and Theobald 2003). The same might arguably hold for transition management. It departs from the assumption that we are all part of societal dynamics and any of us can purposefully organise a searching and learning process. As a result of this framing, it has been criticised for ignoring issues of power and politics (Shove and Walker 2007, Hendriks 2009, Meadowcroft 2009). Its process methodology (introduced below) is based on a setting (i.e. transition arena) that is explicitly small scale and introduced as a "shadow process" (Van Buuren and Loorbach 2009, Loorbach 2010). As such, transition management aims "to create a societal movement through new coalitions, partnerships and networks around arenas that allow for building up continuous pressure on the political and market arena to safeguard the long-term orientation and goals of the transition process" (Loorbach and Rotmans 2010, p. 239).

Both processes could be considered "safe" for local power. LA21 is not considered a threat by being formal, sought after by local government, and encouraging stylised participation. It was kept marginal, but used to promote green initiatives better environmental management, and more efficient delivery. More radical, and (more) independent of formal government, transition management is also considered safe with its focus on a shadow process of small-scale interaction for fundamental change.

5.7. Processes: how is the governance understanding operationalised?

The underlying governance opportunities allow interested parties a high degree of uptake of LA21 all over the world. The LA21 Planning Guide (ICLEI et al. 1996) and the Aalborg Charter (1994) outline steps for an LA21 process as follows: analysis of existing frameworks and means, establishment of partnerships and problem analysis, creation of a vision and an accompanying action plan, and lastly the implementation and monitoring thereof. In the subsequent Aalborg Commitment Implementation guide (ICLEI 2007), the emphasis is on the iterative character of implementation, along the following steps: baseline review, targets, political ratification, programme roll out, and evaluation.

Prescriptive methodologies of transition management propose a similar iterative process for applications in the context of cities, towns, and neighbourhoods: problem structuring, visioning, pathway development, agenda-building, and concrete experimentation (seeWittmayer et al. 2011, Nevens et al. 2013, Nevens and Roorda 2014, Roorda et al. 2014). Monitoring, evaluation, and reflection are key throughout the process to ensure the orientation towards long-term and fundamental change. A central instrument in this approach is the transition arena, a temporary setting that provides an informal but well-structured space to a small group of participants. These are specifically selected and referred to as change agents or frontrunners from diverse backgrounds and perspectives. The participating change agents engage in a series of meetings to jointly develop a new and shared vision, which they can directly link to their everyday practice. While similar at the outset, the steps of visioning in transition management and LA21 (where it is also referred to as target setting) are different in terms of their ambition and aim. In transition management, the vision is embodying the orientation towards radical change and visioning is about questioning and letting go of current ways of thinking – impacting on what those involved (and possibly third parties) consider (im)possible. In LA21, visioning is about providing a more pragmatic orientation, which is to be translated into concrete projects and targets. The latter can be made intelligible by referring to the policy context within which LA21 is embedded, where pressure is high to formulate SMART goals and find solutions that are doable, show quick results, and have political support.

The uneasy relationship with local government and formal decision-making processes shows in the outcomes of the process methodologies. Next to deliberative processes emphasising plan development, the majority of LA21 processes focused on practical demonstration or flagship projects (Moser 2001). Seemingly, these projects were designed to be either of a non-controversial nature and achievable within the authority of the local government (as in Sweden, Eckerberg and Forsberg 1998), or achievable without the need for local government support (as in Germany, Geissel 2009). In

Germany, and this might hold for other European countries, the projects did not threaten local power holders but "remained in environmentally and socially acceptable niches in the domain of symbolic politics" (Frings and Kunz 2006, p. 153 cited Geissel 2009, p. 409). Transition management processes resulted in visions and transition agendas for the communities, concrete shortterm projects, or other process spin-offs. At times, results were taken up by politicians and policy-making bodies (Wittmayer et al. 2013, Roorda and Wittmayer 2014).

5.8. Actors: who are key actors in LA21 and transition management and what are their roles?

Participants and initiators

In Agenda 21, participation was designed to be broad and representative, with underrepresented groups especially encouraged to participate (e.g. women, minorities, youth) (see Freeman 1996). In the actual LA21 practice, one of the challenges was the limited degree of outreach in the number of participants and their diversity (i.e. underrepresentation of businesses and overrepresentation of environmental groups) (Selman and Parker 1997, Evans and Theobald 2003, Harvold 2003, Coenen 2009, Geissel 2009). This skewed participation led to the interests of certain actors dominating processes, with others being poorly represented or not well versed in deliberating (Selman and Parker 1997, Coenen 2009). Rather than striving for representativeness, transition management explicitly selects change agents or frontrunners from a variety of backgrounds and perspectives not as representatives of their organisations but as individuals (Loorbach 2010). By doing so, it starts with a specific group of motivated people. The outcomes of the small group processes (e.g. sustainability vision or experiments) are later shared with a broader public.

By focusing on selective participation, transition management might sustain unequal power relations and support those already empowered. However, it can also play an important role in empowering frontrunners within the community and local administration, creating new networks and alliances independent of existing institutional ties. By focusing on a broad process, LA21 rarely goes beyond the usual suspects and inspires a broader range of people to engage for their more sustainable future. This is a well-analysed feature of participatory politics at the local level and is central to our thesis, namely that LA21 and transition management come from two different provenances with very contrasting timing and starting points.

The initiator has a major influence on the initial framing, the direction and outcome of the process, the participation, as well as the relation with other actors, including more formal decision-making organs (cf. Shove and Walker 2007, Wittmayer et al. 2014). To date, most transition management interventions have been initiated, coached, supported, or accompanied by academic actors. However, the initiative for and guidance of the entire process can also lie with municipalities, businesses, citizens, or entrepreneurs. Also, (local) governments and administrations do not need to agree or support it. In contrast,

the Agenda 21 is an agreement that makes governments responsible for implementation, and national governments have taken on different roles, for example, by passing laws requiring every local government to have an LA21 or by providing funding. With local authorities being understood as a "proxy" for local communities, they have mostly been in the driver seat for LA21 processes.

Roles of local government

In LA21, the role of local government is broadly understood as managing local infrastructure and planning processes, setting up policies, and implementing those from other levels of government. Local authorities were expected to have started a dialogue with their constituents and formulated an LA21 by 1996. In transition management, local government is understood to be one among many actors in the search for a more sustainable future. In practice, local governments are involved as funders, initiators, facilitators, participants, or process leaders, or a combination of these roles (e.g. Avelino et al. 2012b, Roorda et al. 2014). Transition management and the dominant daily practices and logics of local government are often based on different assumptions. While the former is about empowerment, an open process, accepting ambiguity and uncertainty, as well as encouraging reflection, the latter is about controlling, planning, accountability, representative legitimacy, and certainty. When these two paradigms meet, it is about "mediation between established (policy) institutions and policies and the developing transition projects, policies and networks" (Nevens et al. 2013, p. 8).

Both LA21 and transition management ask for changes within the local government and its administrative bodies. LA21 seeks to do so formally while transition management operates informally and in the context of what is administratively feasible. Five years after Agenda 21, a survey among active local governments showed changes in terms of the decentralisation of governance, the reform of department structures, and procedural changes (ICLEI 2012). Other analysts affirm that LA21 processes led to increased internal coordination between different departments (Selman and Parker 1999) and capacity building in local governments (Selman and Parker 1999, Evans and Theobald 2003). Still, the adoption of new structures and a culture of organisational learning was regarded as necessary (Evans and Theobald 2003). Transition management also led to the establishment of new ways of working within policy-making bodies (e.g. increased interdepartmental cooperation and an increased reflexivity with regard to their own role) (Nevens and Roorda 2014, Roorda and Wittmayer 2014). It also asks for a new working attitude from local governments (Nevens and Roorda 2014) – "taking vacation from one's role" (Piotrowski et al. 2013). This attitude includes a willingness to reconsider one's role as an individual and as an organisation, and to create time and support for action and reflection. In order to do so, individuals in charge of sustainability process in their local government need a mandate to pioneer the approach and to create a safe zone for experimenting with the new working attitudes and assumptions.

The role of local government and its administrative bodies in these two approaches is important, but also notoriously difficult to pinpoint, which is only partly due to the diversity of ways in which both LA21 and transition management are implemented. First

of all, while "local government" or "local administration" is used to refer to one seemingly coherent actor, it is more like a "black box" in which different departments, individuals, and political interests need to cooperate, and ignore, compete, and struggle with each other. Secondly, governments are inherently about providing stability, which often comes with an urge to plan and control – this goes against notions of learning, experimenting, and reflexivity. Where LA21 builds to a large extent on the status quo and formal decision-making structures, transition management focuses on innovating and changing these very structures and therefore sees local government as both a subject and object of change.

Relations of actors

Transition management aspires to initiate empowerment and joint creation processes with actors meeting on equal footing and sharing responsibility (Roorda et al. 2014) – an approach which can theoretically be implemented by different actors (e.g. local government, scientists, citizens). As put by Loorbach (2007, p. 284):

> Obviously, the ultimate goal of transition management should be to influence and empower civil society in such a way that people themselves shape sustainability in their own personal environments, and in doing so contribute to the desired transitions to sustainability.

Transition management explicitly opens interactive spaces for learning in which actors and individuals can experiment with new ideas, practices and, more importantly here, roles and social relations (Wittmayer et al. 2014).

LA21 involves learning processes for both authorities and other societal actors (Freeman 1996, Coenen 2009). Consequently, LA21 is also seen as trialling new forms of local governance, or "new forms of relations between the local administration and the civil society" (Eckerberg and Forsberg 1998, p. 344; see also Freeman 1996, Coenen 1998). Local authorities become "lead resourcer and facilitator, but joint stakeholder" (Freeman 1996, p. 77) moving away from a steering role (Coenen 2009). According to Geissel (2009, p. 410), many participants of LA21 processes in Germany "see the most important successes of LA21 as an improved flow of communication and information between the participating actors and a new culture of local co-operation between local politics, administration and civil society".

The stance of both shows a difference between viewing sustainability as a task for institutions (cf. LA21), or as a task for society and its actors (cf. transition management). The latter opens the debate to other approaches, where communities (e.g. transition towns or grassroots activism), third sector actors such as researchers (e.g. science shops or living labs), or social entrepreneurs (e.g. networks such as Impact Hub or Ashoka) are in the lead. Regardless of the actor driving the processes, they create a level playing field where new actors can engage purposefully in transition processes, and where all actors can experiment with and search for new attitudes and roles.

5.9. Synthesis of governance insights

From the discussion above, we can draw a number of governance insights. The first is that local approaches to sustainability are "children of their times" and that their origins matter (e.g. in terms of how their achievement can be understood). We outlined that LA21 are local processes aimed at implementing a global policy agenda for sustainable development and started over 20 years ago, while transition management emerged at a science–policy interface in the Netherlands about a decade ago. Following in the footsteps of LA21, transition management has co-evolved within a more receptive setting. LA21 has the allure of being more universal through global endorsement and national level support. Transition management, on the other hand, is set much more in the context of social movements, local experimentation, and grassroots development. Cherishing the plurality within each approach, but also across different approaches harbours interesting insights: there are different modes of governing sustainability locally that existed and continue to exist next to one other – some actors strive for radical change, others strive for optimisation. While some local governments are inclined to use planning approaches to deal with sustainability challenges, other actors rely on processes of searching, learning, and experimenting. Both modes do provide answers to different ranges and types of questions, and co-evolve with emergent understandings of the context in which they are used.

Our second insight is that, with regard to the normative aim of sustainability, a more integrated perspective explicitly taking social issues (e.g. social justice) into account took hold in the local context. Practising an understanding of sustainability as outcome and process gives the actors involved a role in both problem framing and in making sustainability meaningful locally. The methodology used in governing sustainability locally impacts what is being understood and implemented under the "sustainability" label. On a positive note, it enables moving from environmental, social, and economic pillar to sustainability as a much more integrated perspective. On a more critical note, this also means that it can reproduce current power relations and piecemeal change.

Our third insight is that the joint aim in the two approaches for fundamental radical change proved too challenging. Notwithstanding, the explicit orientation towards radical change is a precondition for governing sustainability in a way that addresses the roots of societal challenges. This orientation serves as a starting point for questioning the status quo and expanding people's understanding of what is possible – and thus provides a frame for one's own initiatives and choices. However, radical change is hard to evaluate and practice often seems to fall short of this ideal – also radical change goes in (pragmatic) small steps. The transformative potential of these steps can be enhanced through linking them with a future orientation. Engaging with these steps (activities, ideas, and initiatives) allows an element of creative learning about how to realise more sustainable futures.

Our fourth insight is that it indeed does matter who initiates and who participates in processes of this kind – both with regard to the actual meaning that sustainability acquires during the process, as well as with regard to the kind of change aimed for. The closer the process is to the incumbent regime actors, the less radical and transformative it can turn out. Rather than being sidelined by or purposefully set outside actual

decisionmaking processes, governing sustainability should be about finding creative ways for engagement. This can take place in spaces for change and experimentation, for example, for creating alternative ideas, practices, and social relations. These spaces can emerge in shadow processes, which allow for an orientation towards radical change, but need to keep a connection with the incumbent regime. Handling the tension between aiming for radical change and working with status quo-oriented actors is a cardinal test for local sustainability initiatives.

Finally, drawing the incumbent regime into the experimental space, where actors can experiment with new or different roles and start working on the social fabric of their community, is an important development, particularly for transition management This final insight relates to spaces for innovation to encourage reflection on ways of working, roles, and attitudes, and as such prepare a breeding ground for change. Nested in webs of relations and meaning, if one actor changes others might follow – especially so if these new relations can be experimented with in the first place. Who knows; this may open up creative space for convergence of the two approaches.

5.10. Conclusion

In recent years, we have seen shifts in public discourse on the roles and responsibilities of different actors in tackling societal challenges including sustainability challenges. Where earlier the focus was on the (local) government, it is more and more shifting towards citizens, social entrepreneurs, and civil society actors. This shift is especially obvious in relation to debates about austerity and retreating welfare states, such as the discourses and practices around “Big Society” in the UK, or “participation society” in the Netherlands (Scott 2010, Tonkens et al. 2013). While being national debates, many of the consequences are felt within cities. Taking the broader and more integrative understanding of sustainability as outlined earlier, these shifts harbour numerous challenges and problems for the future of local sustainability in cities.

In facing these challenges, the governance insights of this paper imply that actors need to cherish diversity in their approaches towards governing sustainability transitions. Neither LA21 nor transition management holds the silver bullet; rather both can be used for different ends and by different actors. Sustainability needs to be practised through actually doing and implementing ideas using specific methodologies. It is through this application that sustainability gains a localised meaning, which motivates actors to take responsibility for tackling societal challenges. In doing so, small concrete steps need to be oriented along ideas of radical change. Doing so can open up the transformative potential of current and new social practices. And finally, it is about finding creative ways for opening spaces for learning, change, and experimentation that are aimed at social innovation and at creating new social practices and practising new social relations.

The governance insights identified in this paper are but a starting point for addressing current and future problems and challenges of cities as transformational loci. Two main future research avenues seem worth pursuing. The first focuses on the further development of scientific insights with regard to the practices and concepts of the governance of sustainability transitions at the local level. Based on this article’s

conceptual comparative dialogue a more in-depth empirical analysis can help understand how these two approaches complement and/or challenge one another in practice. Such an approach would also allow insights as to actors (the same or different for each approach) and their motivations, as well as for forms of governance (participatory or bureaucratic). Such an empirical comparison can also inquire into the form that new social practices and relations take in addressing the shifts in the role of local governments in the context of austerity and a retreating welfare state. A comparison of transition management and LA21 and their operationalisation in social, political, and cultural context outside of the context of Northern and Western Europe would also be meaningful especially as transition management is now being taken up in different localities with different institutional settings. Additionally, it would be interesting to compare LA21 and transition management with other governance approaches focusing on sustainability (transitions), such as reflexive governance (Voβ et al. 2006) or adaptive governance (Olsson et al. 2006, Foxon et al. 2009) – both in theory and practice. This would be particularly interesting in the emerging post-austerity age in the urban context.

The second research avenue focuses on the kind of research in which academics are engaging. Researchers can play a role in taking on their "social responsibility" (Cornell et al. 2013, p. 67) through actively engaging with policy-makers and local communities rather than providing recommendations from "an ivory tower". This would be a form of critical action-oriented research where the researcher becomes both a partner and facilitator but not a manipulator. Transition management can also be regarded as a research approach (e.g. implemented through an action research methodology) through which to gain in-depth knowledge about the problems and challenges of/in a specific locality together with local actors and providing a methodology to address these in a collaborative and transdisciplinary fashion. As such, the researcher explicitly becomes an active social actor entering into a collaborative relationship, which allows for the creation of knowledge and transformative action that is useful for both research and practice. Ultimately, combining community engagement and policy with this approach to research may offer promising prospects for governing sustainability at any local level.

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6. Making sense of sustainability transitions locally: how action research contributes to addressing societal challenges

Authors

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Abstract

Today's society is facing a broad array of societal challenges, such as an unstable economic system, climate change and lasting poverty. There are no straightforward solutions, rather these challenges ask for fundamental societal changes, that is, sustainability transitions. Faced with the question of how these challenges can be understood and dealt with, we argue for action research as a promising approach. Focusing on their localized manifestations, we ask whether and how action research can support understanding and addressing societal challenges and making sustainability meaningful locally. We tackle this question on the basis of two case studies in local communities based on principles of transition management. Our main finding is that societal challenges, sustainability and sustainability transitions acquire meaning through practice and interactions in the local context. Action research can offer a space in which alternative ideas (e.g., knowledge, future visions), practices (e.g., practical experiments, transformative action) and social relations (e.g., new actors) can emerge to further a sustainability transition.

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Fit with the overall thesis

This article contributes to the aim of the thesis to develop action-oriented and transformative research approaches in sustainability transition research further. It mainly addresses the third and fourth sub-research questions: *What is the value of action-oriented research approaches for studying and supporting sustainability transitions in the local context? and What are the (changing) roles of actors in transition management in sustainability transitions at the local scale?* Based on two empirical examples of action-oriented transition management research, this article argues that action-oriented research is about finding ways to work together on the sustainability of a community and together create meanings and realities through means of spaces of interaction. The latter allow alternative ideas (e.g., knowledge, future visions), practices (e.g., practical experiments, transformative action) and social relations (e.g., new actors) to emerge which can further a sustainability transition. Such research aims at changing the local situation and leads to an in-depth, rather than a one-off, understanding of the local context dynamics and characteristics.

6.1. Introduction

Today's society must face numerous challenges, including climate change, the public debt crisis, an unstable financial and economic system, an ageing population, poverty and work migration flows. No straightforward solutions exist, as these challenges are disputed, normative, context-dependent and long-term, and involve multiple actors (Rittel and Webber 1973, Hisschemöller 1993). Following Grin et al. (2010), these challenges are symptomatic of or represent more fundamental persistent problems, which can only be resolved by a systemic shift, a transition.

Although of a global nature, it is at the local scale – in urban neighborhoods, communities, towns, cities and regions – that we most noticeably interact with these challenges. Here, they are contested, deconstructed and reconstructed, thereby becoming 'indigenized' (Appadurai 1990). How then, given their intrinsic diversity, can these challenges be understood and dealt with?

To answer this question, we propose a twofold approach: on the one hand, we relate societal challenges to debates about a desired future, that is, sustainability. On the other hand, we relate them to a process of change, that is, a transition. Combining these two concepts, Grin et al. (2010, p. 1) propose an understanding of sustainability transitions as 'a radical transformation towards a sustainable society as a response to a number of persistent problems confronting contemporary modern societies'. There is a growing body of research analyzing these transitions as long-term radical changes of societal systems (Van den Bergh et al. 2011, Markard et al. 2012). While many transition scholars focus on the global scale, we aim to explore local manifestations. In doing so, we propose to use an action research approach, which seeks to put 'social research to use for democratic social change' (Greenwood and Levin 2007, p. 5).

The main aim of this article is to explore whether and how action research can support communities in understanding and addressing societal challenges and making sustainability meaningful locally. In addressing this question, we discuss the benefits and dilemmas of an action research approach. We draw upon our experiences as action researchers in two European communities, Rotterdam–Carnisse (the Netherlands) and Finkenstein (Austria). The former is a neighborhood often portrayed as impoverished and is inhabited by residents who feel stigmatized and powerless in improving their living environment. The latter is a rural community of high potential, due to its geographical, natural and cultural setting, and heritage. This has, however, been hampered by low participation, lacking social cohesion and conflicting interests between geographically dispersed community members. Action research helped us to create and maintain a space for interaction between all involved. Both societal challenges and sustainability acquire meaning in such an interactive space and become grounded in a specific location and context. We suggest that alternative ideas, practices and social relations can emerge from these spaces to address societal challenges.

In Section 2, we begin by introducing the core concepts: sustainability linked to societal challenges, sustainability transitions as a change process to address these challenges and action research as a practice to combine understanding and addressing societal challenges. In Section 3, we introduce the specific action research approach we used, the

community arena, before analyzing its practice in Finkenstein and Rotterdam–Carnisse in Section 4. We then discuss contextualized meanings of sustainability, the importance of interactive and geographical space in sustainability transitions and the role of the action researcher.

6.2. Sustainability, societal challenges, transitions and action research

To understand and address societal challenges, we turn to two bodies of scholarship: on the one hand, sustainability research, which looks at desired futures for addressing societal challenges; on the other hand, (sustainability) transitions research, which focuses on understanding and governing transformational change processes. We introduce action research as a third notion, as it engages with these kinds of questions and seeks to make them intelligible. In this section, we establish an understanding of these three core notions and set the scene for our cases studies.

6.2.1. Societal challenges and sustainability

Sustainable development and sustainability[51] have become important concepts and normative guiding principles for international policymaking since the late 1980s. The Brundtland report established an understanding of sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987). Many understand this principle as a claim for inter- and intra-generational justice and for balancing economic development, social justice and environmental protection (see discussion in Hopwood et al. 2005). Five years later, numerous governments ranked sustainable development as a top priority at the United Nations Conference on Environment and Development in Rio de Janeiro. Linking the environment and development discourses, sustainable development became defined as the 'integration of environment and development concerns' focusing on 'the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future' (UNCED 1992, Ch. 1).

Though it is beyond the scope of our article to give a complete overview of the competing political trends and policy frameworks (see Dryzek 1997, Hopwood et al. 2005, Connelly 2007), we would like to highlight three points: first, sustainable development, while strongly influenced by its environmentalist roots, is increasingly broadened to include other aspects, such as social justice and poverty reduction (O'Riordan 2009). Second, societal challenges and sustainability are inherently ambiguous, contested and normative (Connelly 2007). These concepts are therefore of a political nature; their use and definition require societal deliberation. This implies that striving for sustainability means taking dynamics into account and recognizing the plural and political nature of the meaningmaking process (Leach et al. 2010). Third, we point to the inherent tension

[51] We use the concepts of sustainability and sustainable development as synonyms in this article since this is common practice in related scientific discourses. For an in-depth analysis of commonalities and differences between both concepts and terms see, for example, Lélé (1991).

between a universal understanding of sustainability and the apparent need for a continuous meaningmaking process. Miller (2013) draws a helpful distinction between universal and procedural understandings of sustainability, with the former embodied through, for example, the Brundtland definition and the latter in what he calls 'a process for identifying important societal values and pathways for a desirable future' (Miller 2013, p. 285).

6.2.2. Societal challenges, sustainability transitions and (their) governance

Societal challenges can best be regarded as 'persistent problems' (Grin et al. 2010, pp. 107–108): problems deeply embedded in society. They involve a multitude of interrelated actors, domains and scale-levels, and have no obvious points of leverage. To address them, scholars suggest that fundamental long-term changes are needed – sustainability transitions (O'Riordan and Voisey 1997, Grin et al. 2010). The notion of a sustainability transition is helpful in analyzing current societal dynamics (e.g., as expressed through societal challenges) by combining the direction of change (i.e., sustainable development rather than, for example, mere economic growth) with a specific process (i.e., transition rather than, for example, optimization). Fundamental change, however, is far from straightforward: 'it will require major changes to existing structures (e.g., institutions and markets), cultures (e.g., the culture of consumerism), and practices (e.g., unsustainable practices such as resource exploitation)' (Frantzeskaki et al. 2012, p. 24). In addition, though transitions may not necessarily lead to more sustainable system configurations, governance, research and facilitation may work in favor of it (Rotmans and Loorbach 2009).

Part of sustainability transitions research focuses on governance – how actors (can) influence the movement toward sustainability (Grin et al. 2010). Transition management is one of the main approaches (Loorbach 2010, Markard et al. 2012) in this regard and explicitly seeks to address persistent societal problems. It is described as an iterative, reflexive and complexity-based governance approach that postulates that there is neither a clear-cut meaning for the goal of sustainable development, nor an explicit process to lead our societies in that direction. In Miller's terms (Miller 2013), transition management combines the universal (e.g., Brundtland definition) and procedural definitions of sustainability (i.e., the need for contextualization and deliberation) (see also Frantzeskaki et al. 2012). While sustainability is seen as 'the baseline from which dialogue begins' (van Buuren and Loorbach 2009, p. 387), transition management advocates a collective meaning-making process.

Belying its name, transition management is not about management, but about organizing process and content through 'an interactive and selective participatory stakeholder searching process aimed at learning and experimenting' (Grin et al. 2010, p. 140). By developing and nurturing alternatives – referred to as niches or micro developments – the incumbent regime (i.e., the dominant structure, culture and practices of a societal system) can be superseded and society transformed (Grin et al. 2010). Part of influencing transitions is thus the creation of space for ideas, activities and actors to innovate and search for alternatives (Loorbach 2007, 2010).

The body of literature on transition management also debates issues of politics, power and agency (Shove and Walker 2007, Hendriks 2009, Meadowcroft 2009, Voß and Bornemann 2011), as its practice gives rise to questions such as: who is (not) organizing the process, who defines what is (not) sustainable, who is (not) invited to the process, which challenges are (not) addressed, and which solutions are (not) explored, and why? Action research offers a way to address these questions.

6.2.3. Action research

Action research aims to address and possibly solve real-life problems. It is mostly about normative notions comparable to sustainability, namely the enhancement of human flourishing, emancipation, democracy and the empowerment of those involved (Greenwood and Levin 2007, Reason and Bradbury 2008).

Action research has a long history reaching back to the work of John Dewey and Kurt Lewin in the early twentieth century. It spans approaches to collaborative research from different traditions, which share three elements: action (i.e., real-world change), research (i.e., the generation of new scientific knowledge) and participation (i.e., the collaboration of scientists with practitioners) (Greenwood and Levin 2007). In general, action research can be understood as the collaborative production of scientifically and socially relevant knowledge, transformative action and new social relations, through a participatory process addressing a particular question formed in the interaction between researchers and other actors (Dick 2004, Greenwood and Levin 2007, Reason and Bradbury 2008, Kemmis 2010). These characteristics make it an interesting approach for interpretive and critical policy analysis and closely related to dialogical approaches therein (Wagenaar 2011, Bartels and Wittmayer 2014 (this issue)).

Kemmis (2010, p. 425 emphasis in original) establishes an explicit relation between the process dimension of action research and the broad normative aim of sustainability: 'Action research aims to explore new ways of doing things, new ways of thinking, and new ways of relating to one another and to the world in the interest of finding those new ways that are more likely to be for the good of each person and for the good of humankind, and more likely to help us live sustainably'. As such, we see this approach as suitable for understanding and addressing broader societal challenges and their local manifestations. We share this aspect with researchers who focus on the governance of sustainability transitions (e.g., transition management) and either advocate or use action-research-based approaches (Schot and Geels 2008, Avelino 2011, Loorbach et al. 2011, Audet and Guyonnaud 2013, Audet 2014).

In this section, we introduced a basic understanding of our main concepts. Sustainability is taken as both a normative notion about a desired future in which societal challenges have been addressed and a continuous meaning-making process. Sustainability requires fundamental change processes in our society's fabric, understood as sustainability transitions. To facilitate sustainability transitions, rather than other kind of transitions, scholars postulate a reflexive governance approach referred to as transition management.Transition management can be practiced through an action research approach, which combines a normative agenda and a transdisciplinary research process.

In this way, an interactive space is created between researchers and practitioners, where alternative ideas (e.g., knowledge, discourses, visions), practices (e.g., transformative action, experimentation, learning) and social relations (e.g., actors) that further sustainability transitions are developed and nurtured. By opening this interactive space for alternatives, transition management as action research has the potential to render societal challenges and their possible answers meaningful in a specific locality

6.3. The community arena: space for sustainability transitions

As part of an EU FP7 research project, InContext, a consortium of researchers explored the context for sustainable behavior and the transformative potential of communities in addressing societal challenges. The project did so through theory development, case study work and action research. In this section, we outline the action research methodology that was developed: its basis, aims and the process it foresees.

The community arena methodology is largely based on the governance framework of transition management. Building on complex systems, governance and social theories, Loorbach (2010) proposes a number of tenets for transition management. Among others, these tenets suggest that: (1) process and content are inseparable (i.e., a system cannot be influenced without knowledge of it); (2) the participation of a variety of stakeholders is necessary for social learning, for a diversity of solutions and for supported outcomes; (3) a system cannot be effectively influenced from the outside; one becomes part of the system one aims to change; and (4) the creation of space is necessary for alternatives to emerge. These principles have been translated into a governance framework with activities at different levels – strategic (e.g., problem structuring, visioning), tactical (e.g., agenda setting, coalition forming), operational (e.g., experimenting) and reflexive (e.g., monitoring, learning) (Loorbach 2010).

The main aim of the community arena methodology was to empower communities to live more sustainably. There is an interactive space at the heart of the community arena, where researchers and stakeholders come together to reflect and act upon their individual and collective needs, values and beliefs, as well as the current situation of the community and desired future developments. Based on the action research (Greenwood and Levin 2007, Kemmis 2010) and transition management literature (Loorbach 2007, 2010, Grin et al. 2010), this is the locus for developing and nurturing alternative ideas, practices and social relations, all of which further sustainability transitions. While this interactive space is of an abstract nature, it is situated within specific social, geographical, economic, ecological and political contexts.

The community arena methodology includes a process design spanning five phases (Wittmayer et al. 2011a).

- In the *Preparation and Exploration phase* (phase 1), a team of researchers and at times locally relevant persons prepares a first (actor and system) analysis based on interviews, participant observation and document analysis. The team not only prepares, documents, analyses, monitors, co-ordinates, manages and facilitates the whole process, but also selects its participants.

- In phase 2, the *Problem Structuring and Visioning phase*, the team invites some 10–15 engaged individuals with divergent or alternative worldviews from the local community – referred to as change agents or front-runners. During several meetings, they discuss the status quo (what is the problem and what are the current societal challenges?) and envision a sustainable future for their community in 2030.
- In the third phase, *Backcasting, Pathways & Agenda*, the group formulates pathways and milestones for realizing this future by reasoning back from the future to the present. The process results in a change narrative, as well as immediate action points – the transition agenda.
- As part of the fourth phase, *Experimenting and Implementing*, the agenda is presented to the wider community and put into practice through a number of experiments or projects.

In the final phase, Monitoring & Evaluation (ideally taking place in parallel to the others), the goal is to make learning from process and experimentation about the current situation, the (desired) future and corresponding pathways explicit.

To put this framework into practice, various terms and processes need to be made explicit and adapted to a specific context. Answers have to be found to questions such as: what are 'alternative' worldviews? Who are front-runners or change agents? How to address sustainability in the community arena? We outline our choices in the case descriptions and discuss them in Section 5.

6.4. Case studies

In the following, we analyze the implementation of the community arena in Rotterdam–Carnisse and Finkenstein. For each case, we first introduce the local context, before describing how societal challenges were understood. We then analyze how the societal challenges in each community were addressed. Rather than looking at each challenge separately, we continue to focus on process and content. Thus, we examine how (1) the community arena process, (2) the resulting vision and transition agenda and (3) the resulting experimental activities led to the production of alternative ideas, practices and social relations to address the challenges faced by these communities.

Taken together, the answers to these questions lead to a contextualized understanding of societal challenges and sustainability, which we further discuss in Section 5. Our analysis includes a reflection on the intricacies of using action research as an approach to understand and address societal challenges in the two cases. We base our descriptions on project documentation[52] and methods that are outlined in the text.

[52] The process and outcomes of our action research in both Carnisse and Finkenstein are documented in a number of deliverables of the InContext project (see Wittmayer et al. 2011a, 2011b, 2012, 2013a, 2013b, 2013c).

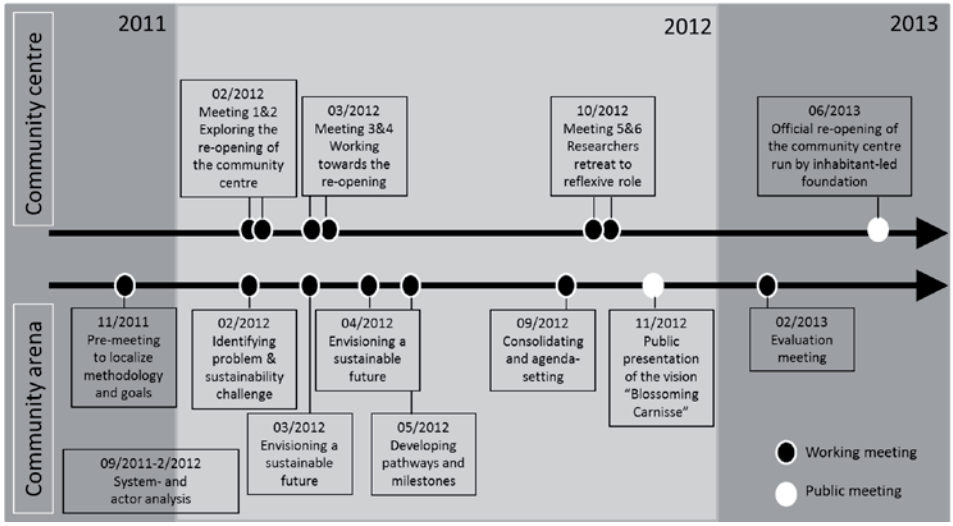
6.4.1. Rotterdam–Carnisse

Context

Carnisse is a neighborhood in the city of Rotterdam, the Netherlands, with some 11,000 (out of Rotterdam's 600,000) inhabitants. As part of Rotterdam South, Carnisse is currently labelled as 'neighborhood of extra interest' by the national government and scores low on a number of municipal indexes (e.g., social and security index). The first and third authors were involved as action researchers in the period from September 2010 to March 2013. We conducted some 60 interviews, did participant observation and document research, had informal contacts on numerous occasions, as well as organized and facilitated 13 participatory meetings. For an overview of the process, see Figure 1.

Based on the system and actor analysis (via interviews, participant observation and document analysis) and a pre-meeting with key interviewees, we adapted the initial process design. The deliberative process was started in parallel (rather than consecutive) to practical experimentation in February 2012. The deliberative process gathered about 15 local change agents to frame the present situation in Carnisse, envision their neighbourhood in 2030 and draw pathways toward this future in five meetings. The resulting future narrative, entitled 'Blossoming Carnisse', was shared with the neighborhood during a public meeting in November 2012. The practical experimentation focused on the reopening of a local community center, which was taken as a symbol of the current and possible future state of Carnisse, thereby acting as a link between the two processes. The community arena was rounded off with an evaluation meeting in spring 2013.

Figure 1. Timeline of the community arena process in Carnisse (slightly modified from Wittmayer and Schäpke 2014).



Understanding societal challenges in Carnisse

In the pre-meeting, the overall aim of the action research process was defined as supporting and stimulating inhabitants to shape and take ownership of the future of their neighbourhood and formulate desired (government) activities. The researchers decided not to invite local policy officers, as they seemed trapped in the dominant policy discourse (i.e., 'deprived neighborhood') and, above all, expressed disinterest in envisioning a future Carnisse through an open and participatory process. Building on the researchers' system analysis, participants extensively discussed the state and challenges of Carnisse during the first meetings. These challenges were embedded in a historical framing of the neighbourhood and its 'rich and turbulent history'. The researchers summarized it as follows:

(1) **Struggle for survival**: Carnisse is known as a working-class neighborhood, with poverty, low incomes and a small array of shops. The economic crisis and the accompanying government budget cuts left deep marks, and old welfare structures were being dismantled, such as public facilities, the local inhabitant organization, the welfare organization and the district municipality.
(2) **The individual and the collective**: Increasing individualization in Carnisse allows for personal freedom, but also means that greeting each other has become an exception rather than the norm. While everybody seems to 'be busy with their own lives' (Interviewee A, 2011), there is a common longing for more cohesion and a 'shared neighborhood feeling' (Interviewee B, 2011). This goes beyond individuals and includes a longing for more synergy and cross-pollination between institutional actors.
(3) **Diversity**: While the neighborhood is diverse in some regards – hosting about 170 nationalities, many different official churches and a variety of worldviews – , it is less so in terms of housing stock, street scenes, public space and shops. Many inhabitants expressed their frustration with the negative image of a 'deprived neighborhood' and were eager to relativize it by pointing to the many initiatives that were arising from within the community.
(4) **Connectedness**: Carnisse shows relatively high degrees of migration. The young, poorly educated and newly arrived immigrants move in, and the relatively better-off move out (usually starting families). This constant flow of people hinders bonding between people and the laying down of roots; Carnisse is seen as a transit station toward a better living environment. There is, however, a stable core of people with a nostalgic sense of the past, and places such as schools, churches and community centers that support the establishment of bonds.
(5) **Public space**: The quality of the housing stock in Carnisse is poor, which is related to the high degree of private ownership by large investors. The uncared-for exteriors give the neighborhood a desolate look, and the old interiors exacerbate social and economic problems. The public space is neglected and unappealing (e.g., there are few parks or green spaces), and many complain about it.

As researchers, we formulated the overall challenge as an orientation toward future thinking (rather than short-termism), with resilient and innovative practices (rather than cramped and nostalgic ones) based on an attitude of learning from alternatives (rather than controlling risks) (Van Steenbergen and Wittmayer 2012).

Addressing societal challenges in Carnisse

First, we put the process design and overall agenda up for discussion – most prominently during the pre-meeting, but also throughout the deliberative meetings. In doing so, we hoped to build a sense of shared ownership of process and outcome and thereby create a new practice: a group of inhabitants discussing and filling an open agenda according to their insights and concerns. This attitude and novel practice proved hard to maintain. The participants, while being attracted by the open agenda of the process, were used to outsiders giving clear directions and also expected this from us as researchers. In the feedback, it was mentioned that we 'should have been more decisive' (Interviewee C, 2013). Ultimately, it proved hard to strike a balance between fulfilling the need and wish for a process/content leader and offering an encouraging space for initiative, learning and interaction. By acting as we did, we prompted the definition of a new actor: 'activating researchers' (Participant A, 2011), and an alternative interpretation of what an outsider – a researcher – does: '… that you come along on the path of change and all that is part of it' (Participant B, 2011). This led to changing relations between residents and researchers.

Second, the participants developed a future vision for and of Carnisse, 'Blossoming Carnisse'. It was generally perceived as a guideline for future developments and focused on future images related to topics such as living together, public spaces, housing, economy and cooperation. By including new ideas, the vision addressed and countered the image of a desolate and impoverished neighborhood, and the related nostalgia relating to an individualizing society, poor housing quality or low economic activity. Each future image was connected with the present through a list of existing initiatives, such as Radio Carnisse or Neighbourhood Mediation. It was important for the participants to see that the neighborhood already engaged in activities addressing the five challenges and contributing to a blossoming future. This therefore functioned as a new practice, helping participants to defy the stigmatization of their neighborhood, while rethinking their relation to the district municipality.

Third, in the parallel experimentation trajectory that we were running, we picked up on a number of interview statements concerning the closure of a local community center. We invited residents for an orientation meeting, which led to the establishment of, first, an action group and, later, a foundation as a new local actor. With our support, they aimed at reopening the community center under citizen self-maintenance. The group faced a number of institutional, financial, emotional and legal challenges, but officially reopened the building almost one and a half years after the initial meeting. The process created space for new ideas to emerge, such as a self-managed community center, and helped to overcome feelings of powerlessness. Simultaneously, space was given to (formerly less active) residents and actors who had the drive, time and ideas to become engaged in the

action group and in the different activities connected to the running of a community center – in itself a new practice for most of those involved. This space further allowed all actors to search for new roles and relations: for inhabitants to care for their surroundings, for policy actors to search for what it means to support citizens through means other than money, and for us, the researchers, to deal with emotions, high expectations and issues of trust.

Based on this description, it turned out that the three-folded action research process (an open process design, future envisioning and practical experimentation) indeed created new and alternative ideas, practices and social relations. Participants (including the researchers) were able to translate abstract notions into tangible challenges and an innovative action-oriented perspective addressing these challenges in a number of ways.

6.4.2. Finkenstein

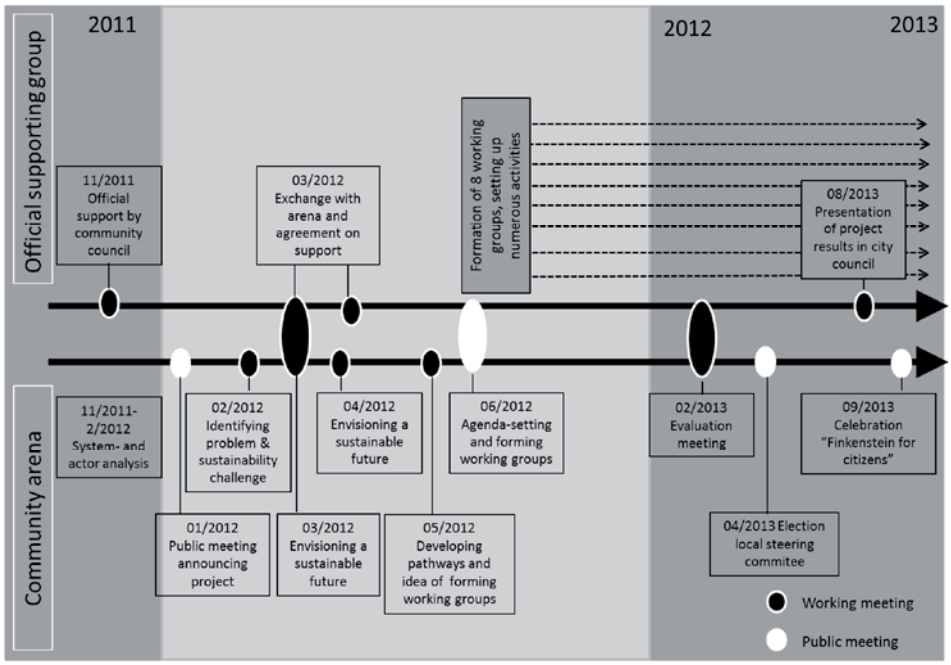
Context

Finkenstein am Faaker See is located in Austria, on the border to Slovenia and Italy, and is one of the largest communities in Carinthia (one of the nine Austrian Länder). About 8500 people live in Finkenstein – distributed over about 28 villages and settlements and divided into a Slovenian-speaking minority and a German-speaking majority. Since the 1980s, the population has been growing due to increasing birth rates and an incoming flow of people who work in cities nearby but favor the 'nice, beautiful' village for living. Most of the working population commutes, mainly to Villach, a nearby city.

The action research project in Finkenstein was led by a research institute from Vienna and a consultancy specialized in regional sustainable development, which together formed the implementing team. When the community council decided to officially support and cofinance the InContext project, locally referred to as the 'Lebensklima-Projekt' [Climate for life-project], a consultative body was created consisting of political representatives and other officials – the supporting group. The project started in late 2011 and included a participatory envisioning and agenda-setting process in the community arena, as well as the creation of up to nine working groups seeking to realize the vision through actions and experiments. In spring 2013, the official project ended, a local coordination team was elected, and some of the working groups continued to exist (see Figure 2 for an overview). This team was to build a bridge between local politicians and the administrative body on the one hand and the working groups, including citizens, on the other.

The second author was part of the larger InContext team and became engaged in Finkenstein during the final evaluation workshop. The fourth author initially supervised the action research process, but became more and more involved as the project progressed. The analysis of Finkenstein draws on personal experiences, evaluation results, some 70 interviews, 16 participatory meetings and project deliverables. In addition, there was intensive contact with other Finkenstein action researchers to complement our insights.

Figure 2. Timeline of the community arena process in Finkenstein



Understanding societal challenges in Finkenstein

We performed a system analysis based on desk research, document analysis and interviews. It was then discussed with the community arena members at the beginning of the arena process. The analysis disclosed the following dominating challenges (cf. Mock and Feiner 2012):

(1) **Limited political participation:** Many interviewees voiced concerns over the lack of participatory culture in community politics and pointed to a low level of citizen engagement and trust in local politicians. As in other parts of Carinthia, the political landscape is highly polarized – there are strong right-wing parties, and the established political system is perceived as rather narrow and, at times, 'feudalistic'.

(2) **Fragmentation and low social cohesion:** In general, social cohesion is characterized as low and individualization tendencies are pointed out. The long-established Slovenian minority remains partly marginalized, though the majority of conflicts have been settled. Newcomers from other Carinthian communities are seen as being less integrated in community life than families already living in Finkenstein for generations. In addition, the community is geographically dispersed over 28 villages and settlements, spread across a large area and each with its own problems and issues. While parts of the community are dominated

by (small- and medium-sized) industry, others rely primarily on tourism or (smallscale) agriculture.

(3) **Endangered or unused rich heritage:** Many interviewees expressed appreciation for the area's pristine natural environment, as well as for its location at the border to Italy and Slovenia. As such, they highlighted the potential for tourism and a high quality of life. There have also been conflicts of interest, particularly concerning large infrastructure and industry development. These having already led to environmental problems, citizen initiatives have sought to prevent further developments.

All in all, this analysis showed a perceived gap between the high potential of the community, with regard to its setting and heritage, and the lack of concrete positive results from these advantages. Interviewees also frequently reported related feelings of powerlessness and a sense that citizens were unable to change the local situation.

Addressing societal challenges in Finkenstein

First, and with regard to the arena process, we focused on opening up a broad space for actors and ideas. There was a strong interest in the 'Lebensklima' project from the beginning, as in the initial well-attended public meeting. Interviewees expressed their respective hopes: 'Something like your project has not been done here before!' (Interviewee D, 2012).

In selecting the community arena group, we aimed for diversity in terms of age, gender, profession, culture and length of residence in Finkenstein. We only selected individuals without formal political mandates, as they could contribute a certain degree of independence from established political interests to the arena process. There was one exception, where a person became member of a political party during the process and tried to use the community arena to recruit new members. Participants were also selected for their openness to critical and open debate on the future of the community, as well as for personal engagement within it. Although we proactively addressed the issue of legitimate participation, there was strong public criticism from certain political party representatives, which we addressed and clarified through personal conversations.

Alongside the community arena, a supporting group of local officials was established. The group aimed to institutionalize communication between the arena and officials and to secure official recognition of the arena results. As such, (new) actors were given space next to the established political institutions and administrative bodies. This led, simultaneously, to new relations through a working link to community politics via the supporting group. Generally, the community arena was part of establishing a new practice – more inclusive, participatory governance – and applying a form of direct democracy. Both new practice and social relations complement the existing political structures by involving citizens more actively and empowering them to be active.

Second, the vision and transition agenda directly and broadly address the societal challenges identified through new ideas and practices. During the meetings, as

researchers, we stimulated the emergence of alternatives by using a range of techniques, such as open moderation technique, or visioning through theater play. The open and activating facilitation was positively evaluated by participants (Omann et al. n.d.) and constituted a new practice in local participatory governance.

With the vision, new ideas on the future of Finkenstein were developed. The visioning led to a set of core principles and the symbol of a star, the 'Finkenstein'. The group declared its aim: to 'jointly shape Finkenstein for the benefit of all, nature and humans, and leading to freedom and joy of life' (Lebensklima 2012). Additionally, a good living climate in Finkenstein should be established that ensures 'that our lifestyles do not curb the possibilities of other people living on earth or of the generations to come' (Lebensklima 2012). The vision was further concretized into principles to guide upcoming activities in diverse areas, such as the economy (local economy, cooperation), environment (careful usage), social (living together, mutual support) and participation (active citizenship).

Third, societal challenges were addressed by setting up experiments, which led to alternative ideas, practices and social relations. In Finkenstein, about nine working groups were established on a diversity of topics, representing a new practice of collaboration. Participants developed numerous activities in them, all of which tackled the societal challenges identified. By way of example, a workshop series on local sustainability and a guided tour for bicycle tourism were initiated to take advantage of the local natural heritage in a sustainable way. Other activities included a workshops series on public participation and a welcome brochure for new residents. Both addressed the low participatory culture and connected to feelings of powerlessness, as well as the tendencies toward social fragmentation. For the working groups, we drafted communication guidelines to secure an open, respectful and productive dialogue within the groups, thereby consolidating the new practice of participatory governance.

A last major experiment related to the challenge of limited political participation was started just before the researchers exited the process. When ending our formal involvement in the process, we proposed the election of a temporary coordination team that would prepare the self-organized election of a permanent local coordination team. Two months later, a team of eight persons was elected through sociocratic[53] elections (as an alternative practice to democratic elections), establishing a new actor in the community. This was done to form a link between local politics and the public and thus improve communication and reduce feelings of powerlessness.

It turned out that the threefolded action research process (an open process design, future envisioning and practical experimentation) indeed created numerous new and alternative ideas, practices and social relations. Overall, the community arena process and outcomes formed a field of experimentation with a new and more participatory form of local governance – one relying on the establishment of new social relations, ideas and practices. As such, it directly addressed all three challenges outlined above.

[53] A sociocratic election is an intermediate form between consensus and majority vote, allowing all voters to temporarily block decisions in case of strong concerns.

6.5. Potentials and challenges of making sustainability meaningful locally

We return to our initial question and main argument to discuss the insights from the two case studies and point to the benefits and dilemmas from conducting action research. The discussion is divided into four parts, namely (1) locating societal challenges, (2) contextualizing sustainability, (3) creating interactive space and (4) practicing action research.

6.5.1. Locating societal challenges and sustainability transitions

Societal challenges acquire different meanings in different localities – as we see from our two cases. The notion of geographical context and its importance for sustainability transitions has, however, only lately become more prominent (Coenen et al. 2012, Raven et al. 2012, Truffer and Coenen 2012). Building on this work, we point out two key elements for the study of local communities.

We first turn to what is understood as 'community'. In InContext, we used administrative-geographical boundaries to delineate them, which made sense in terms of putting a research methodology into practice. While rather unproblematic for Finkenstein, the focus on the neighborhood scale in Carnisse had both positive and problematic aspects. We found that people could easily identify with it and had a sense of ownership with regard to local developments or the community center. Nevertheless, with Carnisse being only one seventh of one of the 14 districts of Rotterdam, the scale could be too small to tackle persistent problems. This sensitizes us for the dangers of a falsely understood localism, which prioritizes the 'local' as most suitable level for transformative change (Marvin and Guy 1997). Additionally, the boundaries of these administrative spaces proved to be rather fluid for residents; Carnisse is perceived as much larger and more inclusive geographically.

Second, the community arena is one of the first attempts to contextualize transition management for the local scale. This raises new questions about the interrelation of developments on different scales, for example, the linking of small, local changes to broader systemic change. In both communities, the action research processes and outcomes interacted with broader policy and societal discourses. In defining the challenges (and possibly their origins) locally, participants engaged in the political process of collective problem framing – a profoundly political act (cf. Bacchi 2009). For example, Finkenstein was seen as mirroring the broader Carinthian political culture with low participation and high polarization. In Carnisse, the closures of public spaces were related to the global economic downturn and associated budget cuts. In fact, community centers are being closed across Rotterdam and the Netherlands, and diverse actors struggle with the question of how to sustain these necessary meeting places. The developments in Carnisse are illustrative for these developments and provide inspirations to others. Hence, understandings of societal challenges are related to and interact with discourses and developments on multiple levels – for example, regional or urban, national and European – and across several areas – for example, citizenship, climate, sustainability and participation.

6.5.2. Contextualizing sustainability

Generally speaking, transition management combines universal and procedural definitions of sustainability (see Section 2). This approach has not been without its critics. Some scholars questioned how sustainability acquires meaning within the process, and how the results of the action research process can be assessed with regard to sustainability outcomes (Shove and Walker 2007, Rauschmayer et al. 2013). We will attempt to address these criticisms on the basis of the case studies.

In our research practice[54], we agreed to refrain as much as possible from using the term sustainability. In Carnisse, the term was seen as worn-out, vague and abstract, whereas in Finkenstein it was only used when talking about the project as such (e.g., to secure cofunding from the municipality) and, later in the process, when citizens created a working group on sustainability. Instead of constraining the participants by imposing a specific definition of sustainability, this approach allowed a plurality of values and meanings to surface. This conception fitted the dialogical nature of the space for interaction that we hoped to create, while fostering creativity and a sense of process and outcome ownership, as well as space for alternative ideas, practices and social relations. Notwithstanding this intention, our values and understanding of sustainability inevitably entered the process. Part of our definitional power was the initiation of the process, including the invitation of specific actors and the presentation of our analysis. Starting from the latter, we opened the floor to others to contest, deconstruct and systematically explore and develop a shared understanding of societal challenges, sustainability visions and the process as such. We also operationalized the concept of sustainability into four dimensions, which we used in our facilitation to motivate people thinking into these directions. These are (1) environmental thinking (awareness of nature and natural resources), (2) social thinking (consideration and acknowledgement of self and others), (3) time horizon (short- and long-term) and (4) inter-regional thinking (connection with other parts in the world, near and far).

Through an open process directed toward contextualization, systematic exploration and the development of alternative (more) sustainable visions and actions, sustainability gained a localized meaning in both cases. In Finkenstein, sustainability came to mean active political participation addressing the gap between the community's high potential and its geographical and social fragmentation. In Carnisse, addressing the challenges meant taking collective ownership of the neighborhood's future.

These four dimensions can be traced back in the outcomes of the community arena (e.g., the visions and projects). By focusing on quality of life in Finkenstein, both environmental and social issues were raised from the outset. In Carnisse, the social dimension became the entry point of the process and led to environmental concerns being raised at a later stage. Generally speaking, the Finkenstein arena developed a vision and agenda that includes several elements of universal sustainability, such as the claim that leading a good life today should not interfere with the ability of future generations or of others living in different places to do so.

[54] For earlier discussions on addressing sustainability in this research practice, see Wittmayer et al. (2013a, 2013c), Schäpke et al. (2013), and Wittmayer and Schäpke (2014).

6.5.3. Creating interactive space

At the heart of the community arena methodology lies an interactive space for researchers and change agents to foster alternatives to the mainstream. Such spaces allow 'for reflexivity and the questioning (and possible integration) of assumptions, knowledge, goals and values' (Wittmayer and Schäpke 2014). This is where societal challenges and sustainability come to be understood, the mainstream questioned, and alternative ideas, practices and social relations developed and nurtured. Taken together, these further sustainability transitions.

This interactive space is not something out there waiting to be discovered; it comes about through dialogical encounters between people. Greenwood and Levin (2007, p. 135) refer to it as an 'arena for dialogue', as through dialogue do we question our current understanding of the world and formulate alternatives (cf. Wagenaar 2011). As such, these spaces are temporal, dynamic and dependent on actors and context. In Carnisse and Finkenstein, the community arena as well as the experiments and working groups became interactive spaces. Our engagement as action researchers opened them, but it was the engagement and collaboration of local actors and the access to (external) funding that made it possible.

Such spaces are surely not exclusive to research processes where researchers have a decisive, but also changing and multifaceted role. The influence of the research teams was more significant at the beginning of the process by, for example, setting up the arena groups and inviting or excluding actors. Whenever practical and local knowledge was more important, such as in the working groups in Finkenstein or the community center in Carnisse, the role of the researchers became more modest – we were just one of many actors.

Opening and maintaining an interactive space is also hard work for a number of reasons. It means dealing with existing power holders as the Finkenstein case showed in relation to rival party politics. It also includes dealing with diverse worldviews, ensuring everybody has their say and questioning own and others engrained patterns of behavior, values and beliefs. In the deliberative visioning process in Carnisse, participants had strong expectations toward us to take the lead in setting the agenda and deciding on next steps or follow-ups. These stemmed from a long series of experiences with earlier participatory processes. In order to attain the collectively agreed-upon aim of the action research (i.e., to support and stimulate inhabitants to shape the future of their neighborhood), we deemed it necessary to question this behavior and to follow neither their invitation nor our personal impulses to take the lead. Our stance was not welcomed by all, as was expressed in the evaluation meeting.

The space created by bringing a group together to have a dialogue on the future of their community or to address a community challenge through experimentation cannot be reduced to an action research process – while being opened by it, it soon takes on a life of its own. In Carnisse, the action group and later the foundation explored new ideas and practices to reopen the community center. In practice, it turned out that the interactive space was not restricted to them, but also included others, such as the district municipality that was searching for new ways to relate to citizen initiatives. In

Finkenstein, citizens and (political) officials engaged in a new 'culture of cooperation and dialogue'. Both communities saw change agents and municipalities exploring alternative ideas, practices and forms of interaction for sharing societal responsibility (e.g., through the coordination committee in Finkenstein or the foundation in Carnisse). Thus, these interactive spaces were expanded to include policy officers in the dialogical process of making sense together (cf. Hoppe 1999). This proved difficult at times and not all encounters were positive. In Carnisse, for example, we experienced conflicts with policy officers who interpreted our activities for the reopening of the community center as directed against the district municipality. In more general terms, the effective creation of a space for alternative ideas, practices and social relations also depends on contextual arrangements with and the possible involvement of incumbent representatives.

6.5.4. Practicing action research: local political dynamics and the role of the action researcher

In implementing the community arena methodology, we were building a complementary 'shadow process' to current policymaking processes (cf. Loorbach 2010). It required us to make sense of the rather abstract transition management framework, translating it into concrete practice and (collectively) giving meaning to its concepts in Carnisse and Finkenstein. Taking decisions is another challenge faced by action researcher in the creation of interactive spaces: whom to (not) invite or select for participation, which official bodies to (not) relate to, which analysis to (not) make and what to (not) view as societal challenges.

All of these questions and corresponding decisions become sensitive and political once embedded in an actual context. Engaging with society and its problems puts the researcher in a de facto political role, prompting questions of definitional power (e.g., who defines the agenda and selects participants) and legitimacy (e.g., what are the relations of new actors with the existing political system) (cf. Shove and Walker 2007, Avelino 2011). While conventional scholarship downplays this aspect of the researcher's role, it is inescapable in action research. Taking one's 'social responsibility' as a researcher (Cornell et al. 2013) places high demands on one's personality and integrity.

The nature of the action research process is strongly connected to how the role of the researcher is understood (cf. Wittmayer and Schäpke 2014). In Finkenstein, the research team was seen as a role model or leader. For the practical process focusing on the community center in Carnisse, this understanding was more fluid and changed over time: the research team initiated the process of reopening the community center, became a regular participant and later an external advisor. Role understandings are subject to an ongoing negotiation process that peaks at specific moments (e.g., the pre-meeting in Carnisse where we were framed as 'activating researchers') (cf. Greenwood and Levin 2007). This can also make the researcher something of a pawn and places high demands on one's personality and integrity (e.g., when being personally approached to discuss problems) (cf. Coghlan and Shani 2005, Westling et al. 2014 (this issue)). These demands are intensified through the fact that action research involves taking difficult decisions – not after a long reflection, but in the midst of a high-paced process (Greenwood and Levin

2007). In this respect, working and reflecting as a team turned out to be crucial in making sense of developments.

As outlined above, the community arena is relatively open and flexible in terms of its concrete focus and implementation. It is therefore prone to instrumentalization by a number of actors, a tendency that the arena shares with other reflexive governance approaches (Voß and Bornemann 2011) or forms of action research (Boezeman et al. 2014 (this issue), Bonetti and Villa 2014 (this issue)). In an ideal world, this means that actors identify with and take ownership of the process and its outcomes, as was the case for parts of our work: the community center in Carnisse or the Finkenstein vision. However, this mechanism can also work negatively as we have seen in Finkenstein, where we had to deal with party politics.

6.6. Conclusions

In this article, we introduced sustainability as a dual concept: dynamic, plural and contested, but based on broad universal definitions, which can act as guiding stars. It is also an inherently political concept, which demands explicit public negotiation to become meaningful in a specific time and place. Sustainability is a prominent answer to address societal challenges, requiring fundamentally new and alternative structures, cultures and practices – a sustainability transition. We argued that action research can do just this by understanding and addressing societal challenges and making sustainability meaningful through the generation of new ideas, practices and social relations in an interactive space. The question we explored in this article is whether and how action research can support communities, like Rotterdam–Carnisse and Finkenstein, in understanding and addressing societal challenges and making sustainability meaningful locally. Concluding this article, we draw attention to its three main contributions.

The first is evidence that societal challenges are inherently context dependent and become meaningful only through practice and interaction. These concepts would have remained empty and abstract without the action research practice and its creation of interactive spaces. Our research shows that generic and global societal challenges become translated into a variety of manifestations at the local level; this happens through their interaction with a specific locality. At the same time, they can only be fully understood in relation to other scales (e.g., regional, national, global scale). The act of defining societal challenges and local manifestations is both a collective sense-making process and a political process. Interactive spaces, such as the community arena, are meant to address these aspects and assist in better understanding and dealing with societal challenges. This, in turn, has its own pitfalls and requires more thorough research into power dynamics and the politics of action research (cf. Shove and Walker 2007, Gaventa and Cornwall 2008, Kemmis 2008).

The second is that collective sense-making also takes place in relation to a desired future direction, for example, sustainability and sustainability transitions. While sustainable development includes broad universal notions, the community arena advocates combining these with a deliberative process. In our processes, universal notions of sustainability were translated into four dimensions supporting the searching and

learning process and allowing for the emergence of alternative ideas, practices and social relations. This has proved a fruitful combination and warrants further research, which could focus on the relation between sustainability and action research, and be compared to the community arena.

The third is that, at the local level, action research based on transition management principles is about finding ways to work together on the sustainable future of a community by creating and maintaining spaces for interaction. These are spaces for nurturing and empowering alternatives (whether ideas, practices or social relations) that have the potential to contribute to fundamental and sustainable change in the long term. They also enable incumbents and powerful actors to position themselves with regard to new developments and coevolve through dialogical encounters – being outside but not detached. As such, action research is also about facing the dilemmas and tensions that arise from searching for new ways of relating to and interacting with one another in a changing world. By looking at specific interactions, practices, social relations and ideas through the magnifying glass of action research, these are made explicit and can thereby become objects and mechanisms of change.

By not assuming the usual role of a distant observer, researchers experiment with action research for sustainability as a form of research that is process- and future-oriented and engages the researcher as part of the problem and the solution. By taking 'dialogue as the road to understanding' (Wagenaar 2011, p. 228), action research for sustainability overcomes the distinction between knowledge and action. Paraphrasing Kurt Lewin, it is by trying to change the local situation that we gain a deeper understanding thereof – that learning and knowledge production can take place. One becomes part of the high-paced local dynamics through engagement; we argue this should be accompanied with an active practice of self-reflection and a critical attitude. This is also important in light of the explicitly normative context of sustainability.

Action research can create spaces for interaction in which knowledge is coproduced, action is generated, and social relations are potentially redefined. Rooted in specific localities, these activities can address the local manifestations of societal challenges. These small steps create and foster alternatives in terms of ideas, practices and social relations that eventually add up to more fundamental system change toward sustainability. Although we cannot be certain that a sustainable future will emerge in Carnisse and Finkenstein, we think that action research projects like ours are arguably a very promising way for addressing the challenges involved with sustainability transitions.

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TE KOOP

7. Action, research and participation: roles of researchers in sustainability transitions

Authors

Julia M. Wittmayer; Niko Schäpke

Abstract

In sustainability science, the tension between more descriptive–analytical and more process-oriented approaches is receiving increasing attention. The latter entails a number of roles for researchers, which have largely been neglected in the literature. Based on the rich tradition of action research and on a specific process-oriented approach to sustainability transitions (transition management), we establish an in-depth understanding of the activities and roles of researchers. This is done by specifying ideal-type roles that researchers take when dealing with key issues in creating and maintaining space for societal learning—a core activity in process-oriented approaches. These roles are change agent, knowledge broker, reflective scientist, self-reflexive scientist and process facilitator. To better understand these ideal-type roles, we use them as a heuristic to explore a case of transition management in Rotterdam. In the analysis, we discuss the implications of this set of ideal-type roles for the self-reflexivity of researchers, role conflicts and potentials, and for the changing role of the researcher and of science in general.

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Fit with the overall thesis

This article contributes to the aim of the thesis to develop action-oriented and transformative research approaches in sustainability transition studies further. It mainly addresses the third sub-research question: *What is the value of action-oriented research approaches for studying and supporting sustainability transitions in the local context?* This article develops a systematic understanding of the activities, corresponding roles of as well as the accompanying challenges for researchers in action-oriented research approaches. Together with my co-author, I develop an appropriate vocabulary to explain and navigate the tensions and potentials that come with such different research activities and roles.

7.1. Introduction

The debate on the nature of science and its role in society has gained new ground in relation to sustainability transitions (e.g. WBGU 2011; ICSU Future Earth 2014). In it, science is at the service of society, which suggests that interdisciplinarity, transdisciplinarity and social relevance are the key elements of a science supporting sustainability transitions. These discussions are echoed in the growing attention paid to the role and nature of sustainability science (Miller et al. 2013; Wiek et al. 2012a; Lang et al. 2012; Komiyama and Takeuchi 2006; Miller 2013; Loorbach et al. 2011; Spangenberg 2011; Scholz 2011; Ness 2013).

Changes in understandings of what a researcher does and is supposed to do are emerging in this context, with researchers asked to ''recognise and accept their social responsibility'' (Cornell et al. 2013:67). In addition to answering research questions (Salas-Zapata et al. 2012) and providing ''the best evidence available'' (Kajikawa 2008:233), researchers now also engage in process and action-oriented activities: they guide collective learning processes (Pohl et al. 2010), mediate between different frames (Pohl et al. 2010), commit themselves to transforming reality (Salas-Zapata et al. 2012) and put sustainability into action (Loorbach et al. 2011). These are not typical activities for researchers, they lead to questions such as: What activities should researchers engage in and why? Which challenges, tensions and conflicts are likely to occur when engaging in more process and action-oriented research activities and how can these be addressed? How can the normative orientation of sustainability research be dealt with?

The tension between a ''descriptive-analytical and a transformational mode'' of sustainability science stands out in most contributions (Wiek et al. 2012a:5). This has repercussions not only on the discipline, but also on the roles of its researchers. In particular, frictions may emerge from a role understanding as descriptive analyst or activist (Wiek et al. 2012a, b; Salas-Zapata et al. 2012; Kajikawa 2008). In conceptualising the science–society interface for sustainability science, Miller (2013) distinguishes between 'knowledge-first' and 'process-oriented' approaches, relating these to different role understandings for scientists. The former views the scientist as a knowledge provider; the latter adds ''establishing, facilitating and participating in mechanisms or dialogues for change'' (Miller 2013:287). With these extra activities, come new challenges: they blur traditional role understandings and raise questions with regard to training requirements (i.e. Which competencies are needed?), quality criteria (i.e. What are appropriate quality standards for this kind of research?) and intervention legitimacy (i.e. What kind of intervention is legitimate by whom and why?). To date, the roles of researchers in process-oriented approaches to sustainability science have received insufficient attention (see Lang et al. 2012). This situation often leaves researchers without the appropriate vocabulary to explain and navigate the tensions and potentials that come with their 'new' activities and roles. As such, it hinders the reflexivity of practice and practitioners. Learning from experience, as well as developing and improving appropriate research methods is also limited.

This article establishes a more systematic understanding of the activities and corresponding roles of researchers in process-oriented approaches to sustainability science. To achieve this, we reviewed literature of action research (Greenwood and Levin

2007; Reason and Bradbury 2008) and transition management (Rotmans et al. 2001; Loorbach 2010; Grin et al. 2010). We chose action research for its longevity and experience as a process-oriented approach to science, and transition management as a specific example of process-oriented sustainability science that uses an action research approach.

By focusing on action research, we build upon a longestablished process-oriented approach to science that aims at ''the transformation of power relationships in the direction of greater democracy'' (Greenwood and Levin 2007:73). Action research dates back to the early 20th century (e.g. the work of John Dewey or Kurt Lewin), only later becoming known as mode-2 knowledge production and transdisciplinarity (Levin and Greenwood 2008). In general, action research can be understood as the collaborative production of scientifically and socially relevant knowledge, transformative action and new social relations through a participatory process (Reason and Bradbury 2008; Dick 2004; Bradbury and Reason 2003; Ramos 2006; Chandler and Torbert 2003). A rich research tradition, it has not been substantively linked to sustainability science (a start is being made by Miller 2013; Wiek et al. 2012a; van Kerkhoff 2013).

The broadness of action research is complemented with transition management, a specific process-oriented approach to sustainability science (Miller 2013). Transition management is about how actors (can) influence sustainability transitions. Building on complexity, governance and social theory, Loorbach (2007, 2010) suggests a number of tenets for this iterative, reflexive and exploratory governance approach. These principles can be put into practice through an action research approach: transition management can therefore link sustainability science and action research.

Following Miller's (2013) conceptualisation of the science–society interface, we differentiate between processoriented and knowledge-first approaches. In the ''Addressing key issues when creating and maintaining space for societal learning'' Section, we outline the creation and maintenance of spaces for societal learning as a core activity of process-oriented approaches. In creating and maintaining these spaces for societal learning, researchers are confronted with numerous issues, as a review of sustainability science, action research and transition management literature showed (for an early version of this review see Wittmayer et al. 2013a). We concentrate on four key issues that differ in process-oriented versus knowledge-first approaches to sustainability science, as these offer insights into the new and unconventional activities of researchers. The issues are ownership, sustainability, power and action. While this is not intended to be an exhaustive list, it covers challenges characteristic of researchers activities and roles in process-oriented sustainability science. This makes them adequate to systematically analyse and establish respective roles and activities. In the ''Roles for researchers in process-oriented sustainability science'' Section, we connect these activities to a set of ideal-type roles for researchers in process-oriented sustainability science: change agent, knowledge broker, reflective scientist, self-reflexive scientist and process facilitator. These ideal-type roles are partly based on role descriptions proposed in sustainability science literature. In the ''Action research for sustainability transitions in Carnisse'' Section, these roles serve to examine an empirical example of transition management in Carnisse, a neighbourhood of Rotterdam. This leads us to a discussion of self-reflexivity,

role conflicts and potentials, and transformative action in the ''Discussion'' Section. We conclude by highlighting the importance of action research for sustainability, the institutional implications of new researcher roles in process-oriented sustainability science, and further avenues of research.

7.2. Addressing key issues when creating and maintaining space for societal learning

What distinguishes process-oriented approaches to sustainability science from what Miller (2013) calls knowledge-first approaches is the process through which knowledge contributes to society. The latter envisions a boundary zone between science and society, where the salience, credibility and legitimacy of knowledge are negotiated. Researchers contribute the scientific knowledge and societal actors the goals and values. In contrast, process-oriented approaches see science and society as overlapping— as having created a space for collaboration and joint knowledge production. Researchers are (only) one of the knowledge providers in this space, but they also facilitate the exploration of sustainability pathways and actively participate (Miller 2013).

We argue that creating and maintaining this 'space' is one of the core activities of researchers in process-oriented approaches: this is where science and society address real-world problems, generate knowledge, formulate solutions and pilot actions for a more sustainable future. A number of fields describe this spatial idea in different terms: in transition management, it is a transition arena, which is conceptualised as a protected space (Loorbach 2010); in writings on transdisciplinary science, it is an agora (Pohl et al. 2010 drawing on Nowotny et al. 2001); in action research, it is a communicative space (Wicks and Reason 2009 drawing on Habermas) or an arena for dialogue (Greenwood and Levin 2007); and in writings on participatory processes, it is a participatory space (Sinwell 2012). These spaces aim to contribute to learning on a societal level, which is why we refer to them as spaces for societal learning.

Overall, these spaces are characterised by the co-construction of social reality by their participants—common futures, lived reality, social identities and roles are all negotiated within them. Boundaries are also blurred, meaning for example that there is no clear separation between the activities of a researcher, an inhabitant or a policy maker. Spaces for societal learning allow for reflexivity and the questioning (and possible integration) of assumptions, knowledge, goals and values. The openness and uncertainty thereof nonetheless poses ''an overall challenge for sustainability researchers'' (Pohl et al. 2010:270). To create and maintain this kind of space, a set of key issues needs to be addressed: ownership, sustainability, power and action. In addressing these, researchers engage in activities that differ from more conventional research activities. To describe these activities, we reviewed action research and transition management literature.

Ownership

This issue concerns the ownership of (parts of) the problem, the process, its outcomes and its possible continuation. These questions tend to arise in process-oriented

approaches to sustainability science, as science and society are seen as collaborating within the framework of (research) projects to define problems, desirable futures and immediate actions. In knowledge-first approaches, society is instead seen as the problem owner, and science as taking these up in the form of research questions. Science remains in charge of the research process and scientific outcome, which can be used by societal actors to resolve given problems.

Ownership notions in an action research process are strongly linked to the intensity of stakeholder involvement: from mere information giving, to collaborative decision making and empowerment (Stauffacher et al. 2008). Ownership (as involvement) cannot be imposed or assumed: it evolves over a projects' lifetime, assuming different shapes as a result of multiple factors (e.g., the nature of the problem, the project context and the skills of the facilitator) (Greenwood et al. 1993). In practice, researchers are frequently one of the problem co-owners, initiating the process with varying sources of funding and goals (Roorda et al. 2012; van den Bosch 2010; Loorbach 2007).

At the outset of a transition management process, researchers carry out system and actor analyses to learn about them and their challenges (Loorbach 2007). The focus is on 'frontrunners', persons who already address issues in their sector or community (through action or deliberation) and can therefore be considered as having a sense of problem ownership. Research participants are selected on the basis of knowledge, competencies and worldviews, rather than on hierarchical power, representativeness or authority (van der Brugge and van Raak 2007; van Buuren and Loorbach 2009; Loorbach 2010). In the subsequent participatory process, the system analysis is shared, contested and collectively re-developed.

Ownership also relates to questions of process leadership—researchers facilitate processes in a variety of ways. For example, they can depend entirely on skills and knowledge (as preferred by Greenwood and Levin 2007), or they can use a methodological guideline (as is done in transition management). The collective negotiation, modification and adaptation of this guideline often enhance process ownership. In addressing 'ownership', researchers carry out a number of activities to create and maintain space for societal learning: they analyse the dynamics and actors of the system in question, initiate the process, select and motivate participants, facilitate the process so as to make participants co-owners of the process and empower them to lead it.

Sustainability

In process-oriented approaches to sustainability science, sustainability is negotiated and defined through the interaction of different parties in spaces for societal learning. This is where a shared understanding of possible pathways for sustainability is established. In knowledge-first approaches, science is seen as value-free (cf. Miller 2013)—fundamental research takes place on the basis of the problems that society has defined (e.g. unsustainability).

The action research literature does not frequently refer to sustainability, with the exception of Kemmis (2010) who calls for 'action research for sustainability'. More commonly, the goals of action research are the enhancement of human flourishing, emancipation, democracy and the empowerment of those involved through critical reflection (Greenwood and Levin 2007; Reason and Bradbury 2008).

Transition management, in turn, explicitly refers to the Brundtland definition of sustainability (Frantzeskaki et al. 2012): ''sustainability [is] the baseline from which dialogue begins'' (van Buuren and Loorbach 2009:387). Still, transition management scholars contend that a definition needs to be contextualised and agreed upon. Sustainable development, in turn, is conceptualised as an open-ended process with an open agenda, which includes a continuous redefinition of goals and a diversity of pathways. Scientists need to acknowledge that this is not a value-free endeavour and that its normative implications have to be considered (see also Miller 2013). This acknowledgement should be accompanied by a self-reflexive attitude on the role and power of the scientist in shaping the process and its outcomes (Wittmayer et al. 2013a).

In operational terms, transition management creates spaces for shared learning about sustainability (both process and content): ''in transition arenas, a vision, an agenda and a social commitment to sustainability values for a specified issue are formed'' (Frantzeskaki et al. 2012:27). Action researchers can initiate these spaces and be seen as an integral part of the process unfolding within them. This can be done by providing analytical input and normative orientations towards sustainability, rather than by remaining an outside observer (Loorbach et al. 2011).

In addressing sustainability, researchers initiate and participate in a learning journey based on sustainability values and support in making sustainability meaningful within a given context. They provide knowledge based on a system analysis related to sustainability, while providing space for participants to critically reflect on the roles and meanings associated with sustainability. They also engage in a (self-) reflexive practice on the possible consequences and implications of their normative orientation towards sustainability.

Power

In a space for societal learning, which blurs the boundaries between participants, an important question is who determines the contours of the space and sets its direction: power-free spaces do not exist. As power influences internal group dynamics and external relations, it is essential for researchers involved in creating spaces for societal learning to consider it and its effects. This is arguably less the case in knowledge-first approaches, in which roles are defined from the outset.

In terms of internal group dynamics, participants (including the researcher) very likely differ in their ability to influence the research process and its outcome (e.g. Grant et al. 2008). Action research aims at allowing all voices and (unconventional) viewpoints to be expressed (Bradbury and Reason 2003). Researchers do so by developing a quality relationship to and among participants (Clinton 1991), or following up on emerging

contradictions and finding ways to address ''undiscussables'' (Bradbury and Reason 2003:165). To interact appropriately with power holders external to the participating group, researchers need to understand the political context and its underlying power relations, which they can be said to manage (Greiner and Schein 1988). Researchers ''need to be prepared to work the political system'' (Coglan and Shani 2006:537). As such, action researchers should become political entrepreneurs (Buchanan and Badham 1999) with a ''reflective self-critical perspective'' (Coglan and Shani 2006:537).

Internal group dynamics are influenced in a variety of ways in transition management processes, for example by selecting and inviting participants. To reach the highest potential for fundamental change, actor selection should involve both moderate and radical actors, as well as those with the capacity to develop new structures and institutions (i.e. transformative power) and those with the capacity to create new resources (i.e. innovative power) (Avelino 2011). Other means of influencing group dynamics are the use of specific facilitation methods (see e.g. Wittmayer et al. 2011a; Roorda et al. 2012). In transition management, the researcher facilitates the process and is responsible for condensing, analysing and mirroring back the outcomes of each meeting to the participants (Loorbach 2007; van den Bosch 2010; van Buuren and Loorbach 2009). In terms of external power dynamics, the transition arena is outside of regular policy arenas (van Buuren and Loorbach 2009). Whether power struggles and politics are made explicit and debated depends on the context. Once formulated, the resulting sustainability vision is re-connected to political, social and economic realities (Loorbach 2010) with the group acting as its ambassador. For Loorbach (2007):284, ''the ultimate goal of transition management should be to influence and empower civil society in such a way that people themselves shape sustainability in their own environments, and in doing so contribute to the desired transitions to sustainability''.

When addressing 'power' in the creation of spaces for societal learning, the researcher selects participants, facilitates the learning process, mediates between different perspectives, encourages the expression of all viewpoints, analyses and condenses the outcomes of each meeting and networks with other stakeholders that are not (directly) involved in the group. The researcher also engages in selfreflexive practice with regard to his/her role in internal and external power dynamics.

Action

Action is one of the distinguishing features of process-oriented approaches. Researchers actively facilitate research processes, which are aimed at fostering action or real-world change. This also allows learning about sustainability pathways. In knowledge-first approaches, the aim of real-world change is seen as 'contaminating' research results by mixing scientific and normative elements.

Understanding and changing relations are not the only goals of action research; Kemmis (2010):425 proposes action or the changing of history as the ''principal justification for action research''. This action component is one of the approach's distinguishing features, and as put by Greenwood and Levin (2007):6: ''action is the only sensible way to generate

and test new knowledge''. The concept of action in terms of real-life change should be directed towards distinct goals and expressed through specific activities.

Transition management focuses on ways to influence sustainability transitions (Grin et al. 2010)—this involves prescriptive governance tenets, as well as processes directed at real-world change. To this end, researchers facilitate an iterative, stepwise process of problem structuring, visioning, backcasting and short-term action formulating. Through these actions, also considered as transition experiments (van den Bosch 2010), actors ''either recreate system structures or they choose to restructure or change them'' (van Buuren and Loorbach 2009). These experiments allow researchers and participants to create spaces for learning about long-term visions and the challenges associated with realising them—action is thereby directly connected to learning. For a researcher, transition management is a process-oriented approach that ''goes beyond collaborative or participatory research to facilitating or actively participating'' (Miller 2013). Specific activities in this regard include creating interdisciplinary teams for research projects, being a knowledge broker, putting sustainability in action through informing and aiding in policy formulation, and creating paradigms or lifestyle icons of sustainability (Loorbach et al. 2011).

In both action research and transition management, the explicit goal of 'action' is real-life change. Researchers actively facilitate or participate in the learning process and in the actual experiments (e.g. the creation of paradigms or lifestyle icons of sustainability), they support in policy formulation, while at the same time observing, reflecting and analysing these actions and their relations to the longterm vision.

7.3. Roles for researchers in process-oriented sustainability science

In what preceded, we have deepened the understanding of process-oriented approaches to sustainability science by reviewing the literature on action research and transition management. We proposed to take the creation and maintenance of spaces for societal learning as their overarching aim. These spaces include the collaborative production of scientifically and socially relevant knowledge about persistent problems, transformative action and experimentation with new social relations. Action research adds a necessary critical orientation to addressing persistent societal challenges to sustainability science.

Based on this review, the following table (Table 1) summarises the different activities of researchers in addressing the four key issues in creating and maintaining space for learning, and proposes corresponding researcher roles. To introduce these roles, we either refer back to and build on role designations employed (but not further outlined or explained) in the broader field of sustainability science, or suggest new ones. As sustainable development is the bottom line (Kates et al. 2001; Cornell et al. 2013), all these roles have a normative starting point, but engage differently with normativity.

Table 1: The activities and roles of researchers in sustainability science

Key issue	Activities of researchers	Proposed roles for researchers
Ownership	- Analyse dynamics and actors	Reflective scientist
	- Initiate process - Select participants - Facilitate process	Process facilitator
	- Motivate participants - Empower participants to lead/ own the process	Change agent
Sustainability	- Initiate and participate in a learning journey based on sustainability values	Change agent
	- Support in making sustainability meaningful in the given context - Provide space for critical reflection	Knowledge broker
	- Provide knowledge on the basis of analysis	Reflective scientist
	- Engage in a (self-) reflexive practice with regard to own normative orientation	Self-reflexive scientist
Power	- Select participants - Facilitate learning process - Encourage expression of all viewpoints	Process facilitator
	- Mediate different perspectives	Knowledge broker
	- Analyse outcomes	Reflective scientist
	- Network with stakeholders outside the group	Change agent
	- Engage in self-reflexive practice with regard to internal and external power dynamics	Self-reflexive scientist
Action	- Facilitate process and experiments	Process facilitator
	- Participate in process and experiments - Support in policy formulation	Change agent
	- Observe, reflect and analyse actions	Reflective scientist

- Following the initial role understanding of Pohl et al. (2010), the researcher as reflective scientist performs a number of activities closest to what is conventionally understood as 'research'. These include systematically collecting, analysing, interpreting and reporting data from an observer point of view. Researchers aim to gain scientific knowledge in accordance with the quality criteria of their disciplines (Pohl et al. 2010). This can include striving for objective or intersubjectively recognisable results, while generally not engaging in normative questions. While dominant in knowledge-first approaches to sustainability science, the reflective scientist (or knowledge provider, Miller 2013) also plays a role in process-oriented ones.
- The role designation of process facilitator is also borrowed from Pohl et al. (2010), referring to the activity of facilitating the learning process. In the context of process-oriented sustainability science, this role includes the initiation of the process, the selection of participants, as well as the initiation and facilitation of concrete short-term actions. The societal learning process, as understood by transition management, includes learning from thinking (through a deliberative problem formulation process, visioning and the definition of strategies) and

learning from doing (through short-term actions or experiments). Both kinds of learning processes can be initiated and facilitated by researchers in a normative way, namely through designing a 'sustainable' process (e.g. just, inclusive, future oriented).

- The role designation of knowledge broker is used by Miller et al. (2013) in the context of solutions-oriented research and by Loorbach et al. (2011) for scientists wanting to assume an active role in sustainability transitions. As a knowledge broker, the researcher mediates between different perspectives—an 'intermediary' according to Pohl et al. (2010). He/she also provides space for critical reflection and engages in making sustainability relevant and tangible in different contexts. This entails the mediation of contextual perspectives on sustainability, and relates to Wiek's (2007) notion of 'epistemediator': someone who ''would facilitate the (epistemic) process of joint knowledge generation''. Next to traditional mediation, in the sense of organising the process, this would include organizing ''peer reviews of the knowledge generated'' (Wiek 2007:57). The process of brokering and mediating knowledge should result in what Miller et al. (2011):177 refer to as 'sustainability knowledge', which is socially robust, recognises system complexity and uncertainty, acknowledges multiple ways of knowing and incorporates normativity and ethics.
- Similarly to the knowledge broker, the role of change agent has been presented but not further specified by Miller et al. (2013) in the context of solutions-oriented research. Rather than 'only' initiating and facilitating learning processes or experiments, this role also includes the explicit participation of the researcher in processes aiming to address real-world problems. By assuming the role of change agent, the researcher seeks to motivate and empower participants, for example, to address local (sustainability) challenges, and networks with stakeholders outside the protected space. These activities are similar to those that Stoecker (1999) ascribes to the roles of animator (helping to develop a sense of importance) and community organiser (catalysing, stimulating and enabling people) in participatory research. The researcher, as all other participants, becomes part of the problem and the solution, thereby highlighting the importance of the process as a site of trust building, motivation and empowerment.
- The last role is the self-reflexive scientist, which refers to being reflexive about one's positionality and normativity, and to seeing oneself as part of the dynamic that one seeks to change. Using a mirror analogy, Stirling (2006) offers a useful distinction between reflection and reflexivity. Reflection refers to the ''faithful reflection of all that lies in the field of view'' (Stirling 2006:227), whereas reflexivity includes the recognition that the subject, when looking into the mirror, is a big part of the object. Reflexivity is therefore ''the way in which the attributes of the subject help condition the representation of the object and how these representations themselves can help recondition the subject'' (Stirling 2006:227). Engaging in process-oriented research includes being one's own research instrument. This instrument, oneself, can also change throughout the research

process. Most action research includes a selfreflexive practice with regard to the one's own normative orientation and to internal and external power dynamics. Rauschmayer et al. (2011) even consider experiences in personal transformation and awareness practices as being a pre-condition for facilitating transformation processes.

This account of process-oriented approaches to (sustainability) science proposes that researchers engage in a wide range of activities, which can be abstracted into idealtype roles that in practice necessarily overlap, change over time and are context-dependent. Although there are no detailed rules or guidelines connected to social roles, they may direct one's actions, as well as the expectation of others. Actual behaviour is not necessarily bound by a certain role definition; it is based on the interpretation and improvisation of the person occupying the role. The competences and skills of researchers therefore become important when navigating the research field (see Loorbach et al. 2011; Levin 2012). In the ''Discussion'' Section, we further analyse trade-offs and conflicts, as well as potentials between and within different roles and activities.

7.4. Action research for sustainability transitions in Carnisse

In this section, the ideal-type roles are used as a heuristic for analysing an empirical case of transition management. We introduce the methodology and the local context, as well as a short summary of the transition management process, before analysing the roles taken in addressing each of the four key issues.

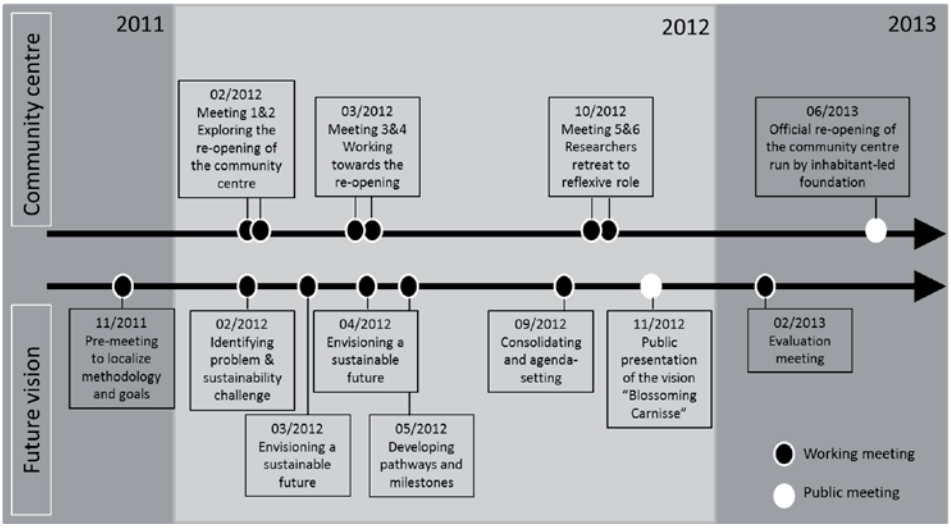
The community arena: action research in practice

The community arena methodology is a first attempt to contextualise the transition management process for local communities as part of the EU-funded InContext project (Wittmayer et al. 2011a). This project aimed not only to better understand the internal and external contexts that influence the ability of individuals and local communities to deal with societal challenges, but also to facilitate and learn about processes that can enhance their transformative potential towards sustainability. Both authors were involved in this project. The first author led the action research work package and was part of the action research team in Carnisse from September 2010 to March 2013. The research consisted in some 60 interviews, participant observation and informal contacts on numerous occasions. In addition, seven deliberative meetings and six actionoriented meetings were organised and facilitated. The process and outcomes are documented in a number of project deliverables (see Wittmayer et al. 2011a, b, 2012, 2013a, b, c). The second author was involved in the theory and synthesis work packages.

Carnisse is an urban neighbourhood in which some 10,000 out of Rotterdam's 600,000 inhabitants are living. It is known as a 'deprived' neighbourhood scoring low on a number of municipal indexes and is marked by a high turnaround of inhabitants, which represent about 170 nationalities. Severe budget cuts in the municipality threaten the continuation of social work, as well as community facilities. The focus of the community arena process

(see Fig. 1 for a timeline) was on quality of life in the neighbourhood and was co-financed by the Dutch government. In the beginning, the activities were to be of a more deliberative nature (e.g. problem structuring, envisioning, pathway development) and were to be followed by others of a more practical nature (e.g. short-term projects to (learn about how to) reach a long-term goal).

Figure 1: Timeline of the transition management process in Carnisse



In the Preparation and Exploration phase (phase 1), a transition team was assembled consisting of two InContext action researchers and members of a partner project through which co-financing was secured. This team prepared, documented, analysed, monitored, coordinated, facilitated and evaluated the whole process. It brought together various parties, was responsible for internal and external communication, acted as an intermediary in disagreements and had an overview of all activities taking place in and between arena meetings. Until February 2012, the researchers were very active in the neighbourhood, interviewing, attending meetings and getting acquainted with the locality, as well as reviewing literature about the neighbourhood, i.e. doing a system and actor analysis. They also had initiated a pre-meeting to discuss the localization of the approach for Carnisse. As of February 2012, in phase 2, the Problem Structuring and Visioning phase, the researchers invited 15 out of about 40 local interviewees to take part in the community arena. These frontrunners met in total seven times in the community arena setting. Their first meetings focused on discussing the status quo (identifying problems and current sustainability challenges) and envisioning a sustainable future, which they named 'Blossoming Carnisse 2030'. By May 2012, the third phase, Backcasting, Pathways & Agenda Building, had also been completed. Backcasting was used to come up with pathways and milestones to realise the arena's vision. As part of the fourth phase, Experimenting and Implementing, the vision was presented to a

broader audience in the neighbourhood in November 2012. After this broadening, the methodology prescribed that a number of innovative projects should start. Due to the local context, one of these projects had already started in parallel with the deliberative process in February 2012. It concerned the reopening of a local community centre that had been closed due to the bankruptcy of the local welfare organisation.This centre was officially re-opened in June 2013 and is now run by an inhabitant-led foundation. As part of the last phase, Evaluating and Monitoring, the researchers held a number of reflective monitoring interviews and organised an evaluation meeting in February 2013, where all participants evaluated the process and outcomes and formulated future ambitions.

Ownership in Carnisse

As outlined above, ownership relates to the intensity of participant involvement and process leadership. The researchers had not been invited by the community to support them in addressing a certain challenge; instead, the neighbourhood had been chosen through negotiations between the public administration and the research institute during the writing phase of an EU FP7-funded research project. As such, there was no local ownership at the beginning of the process. The researchers started by performing a system and actor analysis (i.e. reviewing literature, interviewing community change agents) to establish an initial understanding of the transition challenges faced by the neighbourhood. These activities can clearly be attributed to the reflective scientist. To increase process ownership and address local weariness of participatory processes, the research team organised a first meeting to discuss the localization of the process design. This led to (a) an intensive discussion about the role of the researchers: a researcher who collaboratively instigates action was different from previously known ones, (b) a change in the process design by putting deliberating and experimenting in parallel rather than in consecutive order, and (c) an explicit agreement on a shared goal for the process. Empowering the local community to design a process that fits their purposes and allows them to put their own questions on the agenda is part of the change agent role, which also included motivating participants to take part in the process. Later on, activities attributable to the role of process facilitator became dominant. The research team facilitated the process following adapted methodological guidelines, selected and invited participants, prepared the meetings and monitored progress. Activities linked to the ideal-type role of self-reflexive scientist were also important. Working in a team of two, the researchers engaged in (self-) reflection and reflexivity with regard to their own position (e.g. the discussion during the meeting on process design) and to their new role as action researchers. They were searching for ethical boundaries in terms of what can be asked from or expected of community members, and of how their own expectations thereof shaped the collaborative research process.

Sustainability in Carnisse

Sustainability becomes meaningful through the interaction of different parties in and for a specific context. In Carnisse, the concept ‘sustainability’ had a negative connotation for

some who assumed that it would force them to give up certain things or that they would not be in a position to change anything. Others considered 'sustainability' an academic and abstract term, rather than an everyday concept that they could relate to. A minority thought that it was a worn-out term, and as such meaningless in the local context. Rather than focusing on the term 'sustainability', the community arena process aimed to play into local dynamics (i.e. a good quality of life) as a starting point—thereby hoping to catch the essence of sustainability without falling into quarrels about the notion itself. The researchers took this decision as reflective scientists based on an analysis of local attitudes. In their role as knowledge brokers, they refrained from imposing any preconceived ideas or values on participants, but instead helped to make sustainability meaningful locally. The researchers operationalized it into four dimensions: environmental thinking (awareness of nature and natural resources), social thinking (consideration and acknowledgement of self and others), time horizon (short and long term) and interregional thinking (connecting the local with other parts of the world). As process facilitators, the researchers introduced these dimensions as questions in the facilitation to ensure that discussions included a critical reflection on sustainability values. Again, the normative concept of sustainability was accompanied by the reflections of the researcher (acting according to the role of self-reflexive scientist) on, for example, how open or closed the agenda of the process could be and should be or on what sustainability meant for the individual researcher. Based on this reflexivity, the researchers outlined their self-understanding of an action researcher as being self-reflexive, postponing judgment and aiming to increase the reflexive capacity of individuals and the group.

Power in Carnisse

The issue of power includes mediating internal group dynamics, as well as relations to the political and institutional context. In Carnisse, the research team initiated, organised and facilitated the process—all activities clearly attributable to the role of process facilitator. Though meaningful for processes at a sectoral level (e.g. energy, long-term care), the 'frontrunner' concept turned out to be rather problematic to operationalize on a community level. Taking into account the more intimate relations and (hidden) power structures, the researchers had to develop more explicit criteria for selecting participants. The research team used a set of general criteria for group composition (e.g., diversity in gender, age, occupation), rather than focusing exclusively on individual capacities and skills. Once the group was formed, facilitation techniques took the lead role in mediating power dynamics. In smaller groups as in plenary rounds, the quieter participants were carefully encouraged to express themselves (for example, by taking turns). The role of process facilitator gave the researchers a prominent and lead role within the group. This, however, mainly concerned the deliberative part of the process (i.e. problem framing, envisioning and pathway development)—the community drove the more concrete activities, including the re-opening of the community centre. As reflective scientists, the researchers analysed each meeting's discussions, as well as their relation to the earlier system analysis, feeding their analyses back into subsequent arena meetings for further discussion and consolidation. During meetings, the researchers

acted according to the role of knowledge broker, mediating between worldviews with the aim of establishing a common problem perception, as well as a shared vision of the future. Mediation also took place with actors outside the community arena; the researchers networked with other actors in the field within a change agent role, for instance, through regular contact with municipal officers or other neighbourhood institutions. This role was enacted by connecting actors interested in re-opening the community centre, to build confidence in translating ideas into action. Activities corresponding to the role of self-reflexive scientist were present in dealing with power dynamics and the role of the researcher on the community level: this included fieldnotes, as well as discussions in the research team.

Action in Carnisse

Action implies that researchers take an active part in the research process and contribute (to) activities leading to real-life changes. While co-designing the process in Carnisse, it became clear that 'taking action' would be a key element of the transition management process. The researchers were initiating and partly facilitating the action-oriented project focusing on the community centre, activities attributable to the role of process facilitator. The researchers took the role of change agent by participating in processes which aimed at real-life changes (e.g. the reopening of a community centre, creating a future vision for the neighbourhood and a network of ambassadors). Not everybody saw these outcomes in a positive way; some participants felt that large-scale action was missing, such as physical change in terms of renovated or new houses, or the involvement of all inhabitants. Based on an analysis of the monitoring interviews and of the evaluation meeting, activities belonging to the role of reflective scientist, the researchers concluded that the overall process led most participants to feel empowered. They learned about their neighbourhood and, at times, gained insights that led to self-reported changes in beliefs and values. Again, in addressing action, the researchers also took the role of self-reflexive scientist, reflecting on the implications of their actions throughout the process and their decisions on the community level.

7.5. Discussion

Researchers, especially those engaging in process-oriented sustainability science, are not only players in the scientific arena (and bound to the corresponding rules), but are also ''active in other arenas as well, which makes them responsible and accountable for other activities, such as their role in societal change processes'' (Rotmans 2005:20). In the following, we discuss the challenges and potentials that emerged in developing and applying the set of ideal-type roles, and reflect on their wider implications.

Importance of self-reflexivity

The activities and corresponding ideal-type roles, sketched on the basis of the literature review, can be considered adequate for describing the research practice that took place

in Carnisse. One prominent outcome of the case analysis is that the role of the self-reflexive researcher was present in addressing all four issues, rather than only in addressing sustainability and power. The personality and training of the researchers (with backgrounds in social anthropology and sociology) encouraged this, as did the importance given to self-reflexivity in the action research literature (e.g. Reason and Bradbury 2008). Such an attitude increased the researcher's awareness of his/her own position in terms of time, place, background and normativity. This also allowed the researcher to understand herself/himself as part of the dynamic that he/she was aiming to change. Reflexivity makes it possible to re-adjust principles, goals and processes by inviting multiple interpretations in the common knowledge production process (Stirling 2006; Miller et al. 2011). It further gives the researcher the means to deal with the multitude of activities and roles that arise throughout the research practice.

Role conflict and potential

Obviously, the five ideal-type roles that we describe are abstractions: they are not easily distinguishable, overlap in practice and are dependent on individual understanding and performance. The neat ideal-type roles are also in opposition to the messiness of the actual collaborative research process: it is not straightforward, includes numerous actors, perspectives and values, and can only be planned to a certain extent. Decisions are often taken on the spot with researchers facing information deficits and contradicting interest—they are constantly engaging in ''skilful improvisation'' (Greenwood and Levin 2008:130).

Nevertheless, we propose that these ideal-type roles and their possibly conflicting aims can help explain some of the dilemmas, challenges and choices experienced by researchers in the research process. In Carnisse, the researchers faced a dilemma when having to decide on how to deal with the issue of 'sustainability'. They were aware of the scientific evidence for pressing sustainability concerns (as reflective scientist) and were prepared to spark actions to address them (change agent). However, they were equally aware of the limits of their knowledge (self-reflexive scientist), and aimed to empower participants to develop their own understanding of sustainability (as process facilitator). This situation calls for ways that safeguard the overall goal of the research approach (e.g. the learning space), as well as the personal and professional integrity of the researcher. Assuming a 'third' role, and thereby using a different role as a resource, is one possibility. In our example, the researchers took the role of knowledge broker: they refrained from introducing sustainability based on their own understanding, and opened the discussion to the different dimensions of sustainability (e.g. aspects of time and place as part of inter- and intergenerational justice).Another strategy is to make an explicit choice in which activities (not) to engage in as a researcher.

Quite simply, engaging in activities (i.e. adopting different roles) inevitably has a range of consequences for the process, the outcome and the wider societal context. Analysing challenges, dilemmas and choices in actual research practice through the lenses of the ideal-type roles allows us to interpret these as conflicting aims of different roles—and potentially as conflicting aims of the overall research project. Doing so allows the

researcher to consciously and explicitly decide how to navigate these dilemmas, challenges and potentials in everyday research design. It provides a heuristic to enhance reflexivity.

The challenge of integrating a change agent's role

The change agent role is furthest away from the more common role of a (supposedly) neutral, reflective scientist. Our case study showed that this role is crucial when aiming to empower participants in a community transition management process. However, positioning oneself may give rise to tenuous positions. For the researchers in Carnisse, giving voice to and acting upon concerns about the closure of the local community centre, led to a confrontation with the local administration, which felt threatened. This situation highlighted questions of communication, group dynamics and power imbalances. It is in this context that we see the added value of getting immersed in the field: one can analyse and understand challenges and opportunities from within and from different perspectives. Reflexivity provides a sensible basis for action in such a context.

While the role of the change agent was crucial in this instance, it might not be for all transition management (or process-oriented sustainability science) research. The concrete context and goals, as well as the competences and willingness of the researcher, are decisive for the roles and activities (not) to perform. We see that the set of ideal types provides a vocabulary for researchers to define their self-concept and can be used for transparency towards others with regard to roles (not) taken. A sensitive consideration and transparency are important: it is not about one or the other role, but much more about a complementary integration of different roles, using them as resources. This can take place within one person or within a team of researchers, where each one adopts a different role. As process-oriented sustainability science has multiple facets and serves a diversity of aims, the activities and roles of researchers must necessarily be plural and multi-facetted—they must go beyond being purely reflective scientists.

Institutional implications

Most of the identified activities and related roles have conventionally not been part of the scientific repertoire. Scientists experiment and improvise with new activities and roles to deal with the challenges of actual research practice and evolving concepts of science. Our suggested set of ideal-type roles also has institutional consequences. Three aspects need to be taken into account to ensure informed decision making and high-quality research design beyond the scale of the individual researcher: firstly, process and action-oriented scientists have different training and competence needs (Levin 2012; Wiek et al. 2011; Loorbach et al. 2011; Pohl et al. 2010; Stauffacher et al. 2006). Secondly, separate quality criteria exist for processoriented sustainability science (Cornell et al. 2013; Bergmann et al. 2005, for action research see: Reason and Bradbury 2008; Greenwood and Levin 2007). This closely relates to the third point, the re-orientation of higher education, which is needed to equip researchers to deal with the new activities and roles outlined in this article. Key aspects include the design of education programmes, career

opportunities for researchers in universities and beyond, grant and funding schemes building on the principles of process-oriented sustainability science, and formats for inter- and transdisciplinary cooperation during study and research (Yarime et al. 2012; Fadeeva and Mochizuki 2010; Holm et al. 2013; Schneidewind and Singer-Brodowski 2013).

7.6. Conclusion

In sustainability science, the re-definition of the role of the researcher warrants thoughtful examination and lively discussion within and beyond the scientific arena. While researchers' trainings and research quality criteria are hotly debated, their role understandings have been passed over until now. In this article, we focus on process-oriented approaches to sustainability science, including transition management and action research. What these approaches have in common are the creation and maintenance of spaces for societal learning. In engaging with these spaces as a form of science–society interface, researchers need to address four key issues: ownership, sustainability, power and action. These issues are addressed through a number of activities, which we have clustered to correspond to five ideal-type roles for researchers engaging in process-oriented sustainability science: reflective scientist, knowledge broker, process facilitator, change agent and self-reflexive scientist.

This article deepens the understanding of process-oriented sustainability science, based on the analysis of two research approaches: (1) zooming in on one specific example of process-oriented sustainability science—transition management; and (2) zooming out of sustainability science by turning to action research, as a related and longstanding process-oriented approach to science. While transition management represents a relatively new approach, action research offers experiences in navigating the actual research practice and exploring new roles for science and researcher. In accepting their social responsibility, scientists from both approaches aim to create spaces for societal learning by, inter alia, giving space to participants, fostering mutual learning about sustainability challenges and possible solutions, and being critical of power relations and implicit ideologies. Transformative action and real-world change are the overarching directions of these activities. As such, we advocate action research for sustainability (Kemmis 2010). First, it emphasises the action and outcome orientation of research: its orientation towards solutions (cf. Miller et al. 2013) and the changing of history (cf. Kemmis 2010). Secondly, as opposed to pure activism, it highlights the role of research, which links different modes of science and different epistemologies based on systematic experimentation and reflexivity. And finally, it links outcomes and research to the normative concept of sustainability.

This article also formulates a set of ideal-type roles for researchers engaging in process-oriented sustainability science. By drawing out these ideal types, rather than glossing over the messiness of actual research practice, we provide researchers with a language and framework for distinguishing different activities and roles. We thereby aim to contribute to informed decision making on how to design research processes. We encourage researchers to further explore, contest, experiment and develop the roles. This

language and framework can help researchers in analysing their own research practice, and in becoming aware of the kind of roles fitting personal competences, skills and interests, as well as the situation at hand. It therefore has the potential to increase the reflexivity of researchers and sustainability science. As abstract concepts, the roles are helpful to compare different instances of process-oriented approaches to sustainability science, for example, other transition management practices (less focused on social sustainability or the local level), or other approaches such as the transdisciplinary case study approach (Scholz 2011). Other challenges lie in including different issues—such as ethics or politics—and in exploring the appropriateness of the discussed roles beyond sustainability science.

Finally, developing a new understanding of what it means to be a researcher needs space: space in terms of time for individual experimentation and skill development, which we mentioned above, but also institutional space. It is up to universities to rethink their relation to society, to support (rather than hinder) their professionals in defining research outputs—for example, in terms of publications and societal relevance—and to offer opportunities for young and socially engaged scholars. This call also goes to funding bodies or research schemes, such as the initially mentioned Future Earth programme or the EU-Horizon 2020; these should allow researchers to take on different roles, rewarding rather than punishing them for doing so. Furthermore, selection criteria in funding programmes ought to acknowledge skills and training for researcher roles other than the reflective scientist.

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Intermezzo B: Selected insights from the action-oriented research in Rotterdam Carnisse

In this Intermezzo, I reflect upon four years of action-oriented research and the more conceptual and theoretical insights it produced. The aim of this Intermezzo is twofold. Firstly, it aims to provide more in-depth knowledge about the empirical context of this thesis and the kind of theoretical insights it offers. Secondly, in doing so it aims to substantiate further that applying transition management (in this case at the local scale) can also be considered a research methodology to formulate, explore and test hypotheses regarding sustainability transitions and their related governance challenges as well as the effectiveness and challenges of applying transition management.

Table B.1: Selected theoretical insights for transition research from research in Carnisse

Insights about sustainability transitions at the local scale
1. Sustainability transitions on the local scale problematize system boundaries and need to take scalar interactions into account.
2. For arriving at a localised sustainability understanding, an open process is needed to question the status quo.
Insights about the governance of sustainability transitions at the local scale
3. Risk averse policy approaches focusing on short-term problem solving not only fall short in addressing sustainability transition challenges on the local scale but also are part of the problem.
4. Transition governance on the local level should take alternative ideas, practices and social relations as entry point. Their combination leads to mutual inspiration and reinforcement.
Insights about (changing) roles of actors
5. Actors and roles are changing quickly in Carnisse making for a precarious social and institutional fabric necessitating more effort to sustain, empower and facilitate critical roles.
6. The purposeful assignment or choice of role designations is a highly political act of governance.
Insights about transition management
7. The concept of frontrunner is not obvious. It is rather about who is frontrunning in relation to a specific issue.
8. Transition management on the local scale takes place within people's lifeworld. This implies high personal, emotional and social stakes and asks for more empathic, personal and less disruptive approaches.

Using the original research questions of this thesis as a red thread, this Intermezzo provides a number of selected conceptual and theoretical insights (for an overview see

Table B.1) developed through the action-oriented research focused on a better understanding of local transition dynamics, the role of government and citizens, and the (potential) impact of transition experiments. These insights are grounded in our work in Carnisse and constructed through the variety of research methods outlined in Section 2. While they are not discussed in relation to or grounded in academic literature, they do provide a rich output and evidence of the value of the research approach followed, as well as a basis for further research (see Chapter 8). This Intermezzo closes by reflecting upon using transition management as a way of doing action-oriented research.

B.1. Insights about sustainability transitions at the local scale

Using sustainability transition thinking on the local scale revealed the current inadequacy of transition vocabulary for analysing changes at this level. This meant that when starting our work in Carnisse, we had to operationalize transition thinking for the work on the local scale, including questions regarding the meaning of sustainability and system boundaries.

Insight 1: Sustainability transitions on the local scale problematize system boundaries and need to take scalar interactions into account.

In transition research, the focus has long been on functional systems, such as energy, water or agriculture with an implicit national focus. The system under study was delimited by a focus on its function. This one-sided system delineation has already been criticised by Avelino (2011) for reproducing the dominant way in which systems are delineated in society, which could be viewed as reproducing an important cognitive element of the regimes under study (e.g. a functionalistic approach to policy). In the following, I outline a number of questions, observations and insights from our empirical work in Carnisse with regard to system delineation.

A first question concerns the kind of boundaries to take to delimit 'Carnisse'. Starting our work we were pondering whether to take the administrative boundaries of the neighbourhood, any geographical aspects that act as 'natural' boundaries (rivers, broad streets, etc.) or a group of people thinking of themselves as 'people of Carnisse'. Rather than starting from a cultural or social concept of a community defined by shared values and experiences, we focused on place-based communities. Individuals in such communities are living in geographical proximity, thus within short distances (cf. Chapter 4). We took the administratively demarcated neighbourhood boundaries of the city of Rotterdam as system boundaries. Systems delineated in such a way include different functional domains and their interaction (rather than focusing on one domain only).

Secondly, taking these administrative boundaries had positive aspects as most people could easily identify with and relate to it. Asked whether neighbourhood boundaries play a role, an inhabitant of Carnisse outlined: "*Yes, very much. [I] was surprised by that. There*

is a sort of village feeling. You know each other. A lot of people do not leave Carnisse."[55] The link between Carnisse and the idea of a village was made more often: "*There are people who do not know where Carnisse is, that is somewhere between … traffic pipes, there is the Pleinstreet and the Dorpsstreet, the extension of the Groene Kruisstreet and there is … there is something next to it, something in between and … you never go there. This reveals itself as a sort of neighbourhood with village character*."[56]. Carnisse is considered a "*wonderful quiet enclave between the traffic flows*"[57] and a "*vacation destination*"[58]. This identification of the neighbourhood points to the importance of emotions and feelings of belonging in place-based systems, which are not easily found in functional systems (personal proximity, see Chapter 4). Taking a place-based approach to analyse and engage with transitions should therefore pay extra attention to cultural and emotional aspects.

Thirdly, there is the question of the relevancy and construction of scales. The Municipality of Rotterdam introduced area-focused working in 2008 (see Intermezzo A.2), making the area leading in terms of policymaking. Yet, what constitutes a relevant area scale is disputable. The austerity measures following the economic crisis led to the closure of community centres all over Rotterdam with the argument that there were more than enough left within each district. For this measure, the municipality chose a district rather than a neighbourhood scale approach, meaning that the scale of Carnisse was not considered relevant for this decision. As such, it completely ignored the emotional aspects connected to such places as local community centres. However, people share dear (childhood) memories related to these places. This illustrates that the actual construction of scale is something done by actors on a case-by-case basis including researchers. System delineation thus cannot be taken for granted or 'natural'.

Fourthly, such a place-based system delineation also points to the importance of different scales and their interaction. For the experiment regarding the re-opening of the community centre (see Chapter 3 and Section 2.2.3 for a more in-depth outline), different governance scales are important and interact. For one, there are actors on a neighbourhood level interested in exploiting and running the centre. Secondly, there are actors on district level, such as the welfare organisation or the district municipality: the former is interested in renting rooms, while the latter was responsible for the development plan of the parcel. Thirdly, actors on municipal level include different departments of the Municipality of Rotterdam, which own and rent out the building as well as support the process towards self-maintenance. Other governance levels include the national level, which through decentralisation measures put a burden on the social budgets of the city and thereby on the provision for the centre. In addition, global

[55] Interview with inhabitant and professional from a local church, October 3rd, 2011, Rotterdam. Dutch original: "*Ja, heel erg. Was ik verrast door. Men heeft echt een bepaald dorpsgevoel. Je kent elkaar. Heel veel mensen komen Carnisse niet uit*."

[56] Participant at community arena meeting, February 22nd, 2012, Rotterdam. Dutch original: "*Er zijn mensen die weten niet waar Carnisse ligt, dat ligt ergens tussen…verkeersriolen, je hebt de Pleinweg en je hebt de Dorpsweg, het verlengde van de Groene Kruisweg en je hebt…er ligt nog wat naast er ligt nog wat tussen en…daar kom je nooit. Nou dat blijkt een soort wijk te zijn met een dorpskarakter*."

[57] Participant at community arena meeting, February 22nd, 2012, Rotterdam. Dutch original: "*heerlijk rustige enclave tussen die verkeersstromen in*"

[58] Interview with inhabitant, January 5th, 2012, Rotterdam. Dutch original: "*vakantieoord*"

financial governance plays a role, as the economic crisis was one of the justifications for budget cuts, which meant the end of financial provision for the centre.

A fifth question concerns whether one can fruitfully talk about a transition on the scale of a neighbourhood. Carnisse is just one out of eight neighbourhoods of the district Charlois, which in turn is one out of 14 districts (now areas) of the municipality of Rotterdam. Such a small scale might actually be too small to tackle persistent and systemic problems. This relates to an emerging academic discussion about acknowledging the need for society-wide structural change while the focus is often on smaller scales, such as functional systems or as in our case, a neighbourhood. The question here is in how far change processes on neighbourhood level are connected to the necessity of a broader societal transformation and what they contribute to it (cf. Loorbach 2014, Wittmayer and Hölscher 2016). Next to these questions, we can also connect the neighbourhood with broader societal change, by understanding its ideas, practices and social relations as symbols for struggles and possibilities elsewhere. The fact that community centres are closing is not unique to Carnisse, however through studying it we connected it to broader societal narratives of change such as social entrepreneurship, a changing welfare state or participation society and active citizenship, or re-use of social real estate in an age of austerity. A study of sustainability transitions on the neighbourhood scale thus can point to glocal issues: issues with global relevance happening at local places. While it is thus questionable whether the neighbourhood is the best scale for an intervention (cf. Marvin and Guy 1997), it does provide numerous insights into system failures (cf. Insight 3) and can act as a breeding ground for experimentation.

Aspects of this discussion have been taken up under the umbrella of 'geography of transitions' in transition literature lately, showing the importance of place for transitions (cf. Coenen et al. 2012, Coenen and Truffer 2012). My research shows that the neighbourhood is a place where transitions are taking root, where system boundaries (whether of sectoral or institutional nature) become blurred, where system failures show and where experiments are located.

Insight 2: For arriving at a localised sustainability understanding, an open process is needed to question the status quo[59].

As discussed elsewhere (see Chapters 1, 5, 6), transition research is explicitly linked to the goal of sustainable development, but there is no clear definition of sustainability. In addition, transition management explicitly focuses on sustainability but does suggest neither a clear definition of the concept nor an explicit process for defining it. Based on our experiences in Carnisse, I argue that for arriving at a localised sustainability understanding an open participatory process is needed.

Already within the consortium of the FP7-project InContext (for more information, see Section 2.2.), which formed an important context for our work in Carnisse, competing understandings of sustainability existed. Depending on their research backgrounds or personal convictions, the members of the research consortium had different

[59] Parts of this text rely heavily on Wittmayer et al. 2013, pp. 12-17.

understandings of the term sustainability and vivid discussions ensued on how it should be used in the work in the pilot projects, among which Carnisse. The discussions did not lead to one fixed definition but made visible the plurality of existing ideas together with a number of common denominators, such as a focus on the long term and considerations for far-away places and people.

For the overall pilot project work, we decided to not use the term explicitly in the process as a) some link sustainability with negativity in terms of having to give up certain things or not being in a position to change anything; b) some consider 'sustainability' an academic and abstract term, rather than an everyday concept that they can relate to; and c) some consider sustainability a worn-out term. We also decided not to introduce a narrow definition of sustainability but to let a local understanding thereof emerge. This was in line with the open-endedness and the 'learning-journey-character' of the envisioned transition management process. Part of this learning journey is to render the concept meaningful in the locality in question.

For Carnisse specifically, we started from the assumption that rather than telling people what is good for them or for the world and what they should do, we wanted to organize a process where these issues could be critically discussed. Therefore, the focus of the process in Carnisse was on how life should look like in the neighbourhood in 2030. While neither using the term explicitly nor a narrow definition thereof and aiming for an open process, our understanding of sustainability entered the process more indirectly through providing the frame: initiating the process, inviting specific actors and presenting our analysis. We framed the process broadly in terms of a good quality of life for all now and in the future – herewith hoping to catch the essence of sustainability without falling into quarrels about the notion itself. Starting from our system analysis, we opened the discussion to all participants of the process to contest, deconstruct, explore and develop a shared understanding of the problem and possible future directions. Our facilitation of this discussion included a number of dimensions aiming to evoke 'sustainability thinking'. These dimensions constituted an operationalisation of sustainability (Wittmayer et al. 2012):

- environmental thinking (awareness of nature and natural resources),
- social thinking (consideration and acknowledgement of self and others),
- time horizon (short and long term) and
- interregional thinking (connection with other parts in the world, near and far).

To understand what sustainability came to mean in Carnisse, we traced back the four dimensions in the actual vision produced and the experimentation. The analysis of the vision document (rather than the vision discussions) is outlined in Table B.2. One prominent reference to sustainability is in the name of one of the six pathways of the vision 'Blossoming Carnisse': "… green sustainable oasis". The vision as a whole shows a focus on the consideration and acknowledgement of self and others, the social thinking aspects, while aspects of interregional thinking were only touched upon. The organization of transition management on the local scale as a place-based process seems to enhance the identification of the participants on the one hand with the visible and

graspable social issues rather than with the more (intangible) environmental problems in Rotterdam and on the other hand with their immediate surroundings rather than the wider world. The focus on the local place also comes to the fore in the actual experimentation, the re-opening of the community centre. It contains aspects of social thinking (communication, social cohesion, social learning etc.), environmental thinking (re-use of existing buildings, promotion of regional products, etc.) while interregional thinking and long-term thinking play a minor role.

The participatory process was open, while not unguided. It led to a contextualised understanding of sustainability for Carnisse, in terms of taking collective ownership of the neighbourhood's future. Both, the vision and the experimentation show that the focus of the process was on the dimension of social thinking in Carnisse. With the overall focus of the process on (quality of) life in the neighbourhood in 2030, social issues were a natural entry point and led to aspects of the 'environmental thinking'-dimension emerging at a later stage. Operationalizing sustainability in four dimensions was meaningful in that it helped staying close to the local dynamics (e.g. issues of social cohesion) while linking these to the other three dimensions and like this putting these on the agenda. In the face of increasing environmental pressures, one can question whether such an approach yields enough and fast enough progress.

Table B.2: Analysis of 'Blossoming Carnisse' vision document along the four sustainability dimensions (adapted from Wittmayer et al. 2013: 15)

Dimensions	**Vision document: Blossoming Carnisse 2030**
Social thinking**:** **Consideration and acknowledgement of self and others.**	- Living together - Social relations - Language and diversity - Helpfulness and respect - Safety - Creativity: thinking beyond the conventional - Activity: individually and in groups - Cohesion - Flexibility in choosing residence - Knowledge building - Inclusive meeting places - Local economy, sharing and employment
Environmental thinking: **Awareness of nature and natural resources.**	- Renewable energies - Emphasize nature and how it should be treated - Re-use of space - Greening of the neighbourhood - Natural diversity - Local economy
Interregional thinking: **Connection with other parts in the world, near and far**	- Attractive neighbourhood - History building
Time horizon: **Connect short and long term**	- Renewable energies - Building renovations - Connecting long term thinking and doing in the present

Likely, there will never be a societal consensus on the question of what is sustainable. However, using an open approach based on sustainability dimensions and facilitated from a transition perspective leaves room for the emergence of a contextualised definition of a desirable sustainable future. Such a perspective is neither forced upon participants by 'experts' during the process, nor will it be implemented for them. Rather, it is them, who are to realize their desired future. This makes the work both vulnerable and powerful. It also points to the modest role of the researcher and the powerful position of participants in terms of their daily choices and steps in the process of sustainable development.

B.2. Insights about the governance of sustainability transitions at the local scale

Insight 3: Risk averse policy approaches focusing on short-term problem solving not only fall short in addressing sustainability transition challenges on the local scale but also are part of the problem.

In Carnisse, we have observed and engaged with a policy culture marked by uncertainty, discontinuity, fragmentation, linear and short term thinking on a day-to-day level. The local policy institutions and the various levels of the city administration can be characterised as having a tendency toward creating the illusion of control and certainty accompanied by an adversity to taking risk and experimenting. Arguably, the latter traits can be considered advantageous for guaranteeing stability and a continuation of the status quo as one might expect from governmental policy bodies. However, for guaranteeing stability in turbulent times and for anticipating radically different (specifically more environmentally sound and socially prosperous) futures, such a policy approach is not only unsuited but also actually hinders developments.

In the following, I illustrate a number of these traits of the policy practice in Carnisse, using our experience of collaborating with the district municipality Charlois and the Municipality of Rotterdam in the Veerkracht project. The Veerkracht project is a collaboration of four organisations (Rotterdam Vakmanstad, Bureau Frontline, Creatief Beheer and DRIFT) which aimed to develop new ways of making the neighbourhood more resilient (for more background information see Section 2.2.2). After a period of almost three years of negotiating and lobbying between the consortium and the Municipality of Rotterdam, the project was accorded in August 2011, at a time of general budget cuts. The funding came from a budget remnant of the Pact of South programme, which was discontinued after 2011 when the National Programme Rotterdam South was started (see Intermezzo A.2 for more information on the specific programmes). The budget was unlabelled, which allowed for an open project proposal and room for learning-by-doing. After a period of unclarity with regard to which organisation would be the contracting agency, the district municipality Charlois (of which the neighbourhood Carnisse is administratively part) took the role until 2014 when it was abolished. Thereafter, one of the municipal departments of Rotterdam took ownership until the end of the project period in 2015. Such discontinuity is deeply rooted within the municipal

organisation. Due to ongoing reorganisations and the then upcoming abolishment of the district municipality, posts within the (district) municipality were only filled on a temporary basis. During the lifetime of the Veerkracht project, four different individuals occupied the role of contractor for the project within the (district) municipality subsequently. This is not only illustrative for the uncertainty municipal employees are confronted with regarding dismissal, relocation or simply working topics. It also illustrates the discontinuity of personnel and knowledge within such a policy body, adding to an environment that discourages learning and reflexivity – both necessary traits for addressing persistent societal problems.

Within the district municipality, the open project proposal but also the organic way in which the Veerkracht project aimed to develop their approach let to some frustration and incomprehension. It clashed with a policy culture of SMART-thinking[60], DIM-trees[61] and use of (quantitative) indices. In an interview six months into the projects lifetime, a policy officer voiced her discomfort with the fact that no concrete goals had been agreed upon at the beginning of the project: "*What did you achieve lately and what are we going to do concretely in the time to come, and that needs to be very SMART. […] [The director of the National Programme Rotterdam South] needs SMART formulations; he wipes the floor with everything else. Consider that he wants to achieve a number of things. These need to be very concrete. He needs to be able to explain it. He needs to be able to say: I want to have six narcissus in a little while*."[62] The district municipality worked with a program management approach referred to as DIM, a Dutch abbreviation for goal, efforts and resources, represented in a tree figure (see Figure B.1). The top of the tree states an overarching goal for Rotterdam-South, which is translated in SMARTly-formulated goals for 2015. These are then matched to diverse efforts and results. In this logic, the Veerkracht project is considered one effort (thus one box) to reach a specific objective in 2015. However, the Veerkracht project considered its practices to be more integrative and to have influence on many of the other objectives and efforts as well – see Figure B.1 for the arrows illustrating these influences. The district municipality thus isolated specific problems and SMARTly formulated short-term targets to work on them. In this line of thinking, the Veerkracht project was also expected to formulate its goals in a SMART manner – up to the number of narcissuses planted with the overall goal to lead to a raise of 0,1 % on the social index of the neighbourhood (see Intermezzo A.1, Van Steenbergen et al. 2015). This working method focusing on compartmentalising and linearity does not seem apt for persistent problems, which are connected and complex rather than straightforward and linear. In contrast, the Veerkracht project takes daily practices as a starting point to develop interventions organically. Partly based on

[60] SMART is an acronym, which stands for specific, measurable, attainable, realistic and timely

[61] DIM stands for Doel (goals), Inspanning (efforts) and Middelen (resources).

[62] Interview with policy officer district municipality Charlois, January 24th, 2012, Rotterdam. Dutch original: "*Wat hebben jullie bereikt in de afgelopen tijd en wat gaan we de komende tijd concreet doen en dat zal heel SMART moeten. […Directeur van NPRZ] heeft SMART nodig, die veegt de vloer met alles aan. Denk wel dat ie een aantal dingen wil. Moet concreet gemaakt kunnen worden. Hij moet het kunnen uitleggen. Hij moet kunnen zeggen: ik wil straks 6 narcissen.*"

transition thinking, it invites to think about combinations, synergies and linkages as well as developing a red thread between activities.

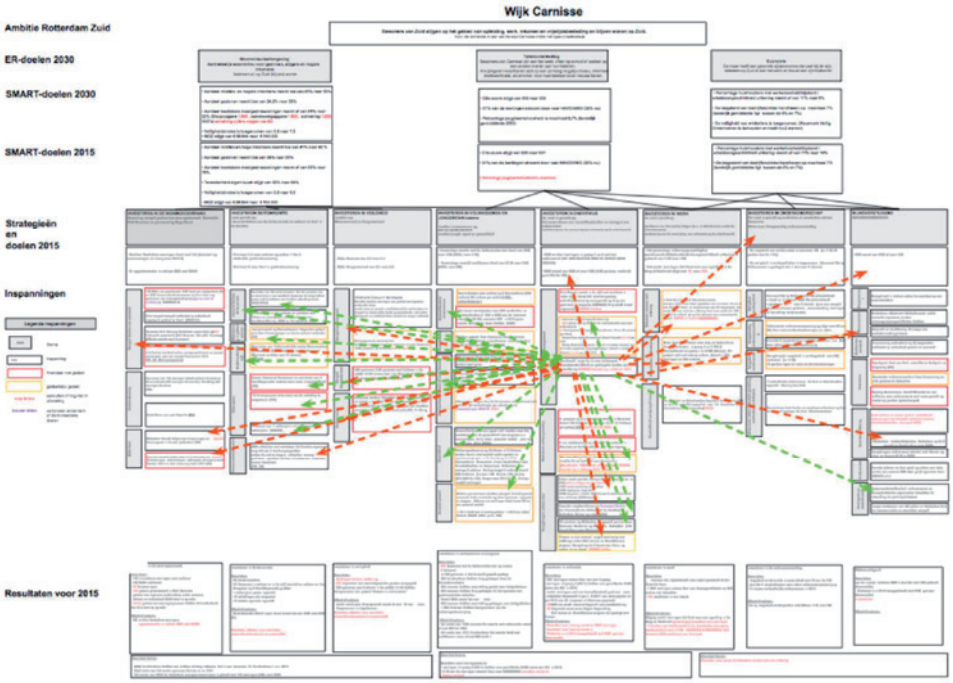
In principle, the Veerkracht project had been accorded funding for four years, which was paid out on a yearly basis. The Veerkracht partners were very assertive about the need for having the certainty of a commitment for four years and considered it a deal-breaker should there be any attempt to cut the funding earlier. This was in accordance with their view that their experimental and organic approaches needed time to be adapted to and land in the local context. The district municipality on the other hand were eager to have yearly performance evaluations along SMARTly-formulated indicators and to connect these to a decision on whether to prolong the project. These kinds of evaluations focus on miniscule changes of dozens of indicators rather than being oriented towards an overall goal of improving living conditions. It mirrored the ways that the district municipality was governed internally, namely a project management approach working for clearly defined problems: "*you have to substantiate with numbers that it is working, otherwise you do not get new people*".[63] Outside the organisation, such an approach leads to perverse stimuli with those being evaluated, such as e.g. organising one more event to reach the agreed-upon amount of inhabitants through activities[64], rather than searching for, developing or stimulating innovative and transformative practices and ideas. This practice is also in stark contrast with what a transition perspective considers necessary to address persistent problems. The latter considers reflexivity and support for experimentation as the main goal of monitoring. The compromise between the two approaches to monitoring and evaluation was that the Veerkracht project set its own quantitative yearly targets in a year plan and reported on the progress based on this plan – next to more reflexive monitoring activities (Van Steenbergen et al. 2013a, 2013b). These different approaches to monitoring and evaluation illustrate the focus of the district municipality on the short-term output rather than long-term impact of projects. It also attest to a culture of control and illusion of certainty rather than of learning and reflexivity. Finally, it also indicates the risk and experimentation averseness of the municipality.

Facing budget cuts and a dawning municipal reorganisation, this policy approach did not only stand in contrast with the approach of the Veerkracht project, but also posed a challenge to policy officers and policymakers of the district municipality. The budget cuts are, according to a self-employed entrepreneur working in the neighbourhood, "*demolition without vision*"[65]. The director of the inhabitants' organisation put it as follows: "*The illusions of today rule*"[66]. Pointing to the DIM-tree at the wall of his office, a

[63] Interview with policy maker district municipality Charlois, January 6th, 2012, Rotterdam. Dutch original: „*je moet het cijfermatig onderbouwen dat het werkt, anders krijg je geen nieuwe mensen*".
[64] The organisation contracted for youth work for example had to reach 928 unique youngsters with their activities in a year (Interview with professional youth work, November 2nd, 2011, Rotterdam)
[65] Interview with self-employed entrepreneur, September 19th, 2011, Rotterdam. Dutch original: "*kaalslag zonder visie*"
[66] Interview with director of the inhabitants organization Carnisse, August 17th, 2011, Rotterdam. Dutch original: "*De waan van de dag regeert*".

policy maker said, "*everything that is written down there has been cut down*"[67]. According to him, "*the climate forces you to be creative; in making mistakes new things are born*"[68]. However, this creativity does not show, for example, in dealing with a project such as Veerkracht.

Figure B.1: DIM-tree of district municipality Charlois with arrows inserted by the Veerkracht project to indicate influence of their practices on other objectives (Source: Van Steenbergen et al. 2013b: 37)



The current policy approach falls short of providing a long-term vision and ambition, which provides overall direction and coherence to guide short-term actions. Such a sense of direction could result in more active, courageous and experimental players focusing on societal change rather than on optimisation. On the contrary, the Veerkracht project showed that room for experimentation, continuity, a long-term orientation and overriding goals are important ingredients for developing a neighbourhood network. Rather than only falling short, the existing policy approach is actually part of persistent problems. Instead of engaging in governing a virtual reality of SMARTly formulated problems and goals, an attitude of learning offers the possibility to embrace the

[67] Interview with policy maker district municipality Charlois, January 6th, 2012, Rotterdam. Dutch original: "*alles wat da opgeschreven is is wegbezuinigd*".
[68] Interview with policy maker district municipality Charlois, January 6th, 2012, Rotterdam. Dutch original: "*klimaat dwingt creatief te zijn in het foutgaan worden nieuwe dingen geboren*"

complexity of the issues in question in Carnisse. Starting to work from daily practice is in contrast with the approach of the municipality and therefore does provide the outlined insights into policy dynamics, the struggle of individual policy officers as well as the slipperiness of the system. While this approach is not aimed at a systematic analysis of the policy domain, it does provide a more detailed and deeper insight into the workings of the policy system as a by-product.

Insight 4: Transition governance on the local level takes alternative ideas, practices and social relations as entry point. Their combination leads to mutual inspiration and reinforcement.

Prescriptive transition management processes usually started with creating a vision for the (geographical or functional) system in question (see e.g. Loorbach and Rotmans 2010, Loorbach et al. 2016). There are however other examples where a transition management process started not with visioning but with experimenting (Van den Bosch 2010). Based on our practice in Carnisse, I argue that rather than conceiving of the transition management governance activities (see Chapter 4 for an overview) in a stepwise manner, these can better be considered as mutually inspiring and reinforcing. It is thus not a question of starting with one or the other activity nor of following the steps in a specific order. Rather, the question should be for which aspect a specific context most pressingly needs an alternative. Is it with regard to ideas (as related to visioning, agenda setting, monitoring) or practices (as related to experimenting)? This aspect should be taken as a starting point.

Based on the experience in Carnisse and in the MUSIC project (Roorda et al. 2014, Chapter 3, Chapter 6) I also argue that social relations should be a third aspect. According to Loorbach (2007), the "ultimate goal" of transition management should be to empower civil society actors to take matters into their own hands. This implies a change in social (power) relations between different societal actors (cf. Avelino and Wittmayer 2015, Chapter 3). Making these relations explicit in either experimentation or in describing persistent problems or future images can also be one of the entry points.

From earlier involvement in a neighbourhood adjacent to Carnisse, it had become clear that 'taking action' was to be an important element of any participatory process (Wittmayer et al. 2011 Annex, pp. 33). This 'taking action' was in Carnisse often juxtaposed to 'only talking' and can be considered a legacy of past and ongoing participatory processes initiated by or with involvement of the district municipality Charlois. For example, the involvement of inhabitants in the frame of the National Programme Rotterdam South consisted mainly in programming irregular evening events together with the inhabitants' organization Carnisse (B.O.C.[69]). One such evening in 2012 was opened by the director of the district municipality and the chairperson of B.O.C., followed by a presentation of a policy officer about the problems and challenges of the neighbourhood. Then the public was asked to get together in smaller groups, each headed by a policy officer on the topics employment, talent development, economy, and living

[69] Short for 'Bewonersorganisatie Carnisse'

environment. The inhabitants were asked, "*to take part in the conversation*" and that this was the first in a series of conversations but that there would be "*no business done tonight*" [70].

Such an approach to participation evokes questions about the meaning of participation and about the processes in which inhabitants participate. In Carnisse, participation seemed to refer to the fact that inhabitants are informed about ongoing policy processes, that they can provide input to a preset agenda but that decisions are made elsewhere. Inhabitants are thus placed outside of policymaking and decision making processes. Factually, this interpretation does not consider the ample existing voluntary engagement of inhabitants (thus their 'doing') in the public sphere– be it their engagement as member of an inhabitants surveillance group (Burger Blauw), in organising the 'summer terrace' event or a Christmas party – as 'participation'. This might explain their weariness with regard to these processes.

It was against this background that we were to implement a transition management process based on the methodology drawn up in the InContext research project. However, this methodology foresaw to first hold a number of deliberative meetings (meaning 'talking') before taking concrete action. Facing this dilemma, we invited five change agents from Carnisse to present and discuss a first draft of the emerging problem description and the design of the community arena process. Following the discussions, we adapted the process design to more evenly balance activities focusing on 'thinking' (i.e. discussions) and activities focusing on 'doing' (i.e. a more practical focus). The actual transition management process included deliberative participatory meetings of problem framing, visioning and path development (as suggested in phases 2 and 3 of the methodology) in parallel with more action-oriented experiments (as originally suggested in phase 4) (see Section 2.2.3 for the full process outline).

For many inhabitants in Carnisse, the experimentation was the most important entry point: the focus on establishing alternative practices with regard to running a community centre. However, it was through creating a new narrative for Carnisse consisting of a problem framing, future images and paths that the experimentation with regard to the community centre was more than 'just' a localized practice. As outlined earlier, the fact that community centres were closing was not unique to Carnisse. Through connecting it with societal narratives of change such as social entrepreneurship, a changing welfare state, participation society, or re-use of social real estate in an age of austerity, it became a symbol for the state of Carnisse and other neighbourhoods in Rotterdam and the Netherlands. It was such a narrative acting as a red thread that was missing for most current policy interventions (see Loorbach et al. 2009, Visitatiecommisse Wijkenaanpak 2011a, Intermezzo A.2) but also for most voluntary engagements of citizens. As put by a participant of the process in an evaluation interview: "*In Blossoming Carnisse you work with a vision, all the other institutions work from the basis of what is necessary; this is more*

[70] Director of the district municipality, Inhabitants evening March 6th, 2012, Rotterdam.

patchworking. Putting patches on a wound, but not curing it."[71] While the experimentation with new practices was thus the suitable entry point in Carnisse, it was the combination with new ideas about problem framing and alternative futures that strengthened it. From evaluation interviews, we learned that our attempts of keeping the 'thinking' and 'doing' trajectories separated, a legacy of the initial methodological design, were confusing to those who were part of both trajectories. From their perspective, it would have been better to combine these straight from the start.

Both, the narrative of Carnisse as well as the experimentation concerning the community centre highlighted existing and alternative as well as problematic and desirable social relations between societal actors. One of the future images is titled 'to working together towards blossoming' and outlines: "*Carnisse has become known in Rotterdam for the effective collaboration between professionals, policymakers and local communities which is based on equality and respect. […] local communities support professionals in their first working weeks and help them to get started. The neighbourhood also has the right to decide about new professionals and the distribution of resources via an engaged and active neighbourhood committee."*[72] (Community Arena Carnisse 2012: 14). The vision thus imagined a greater say for inhabitants with regard to which professionals would provide support to their fellow inhabitants[73]. The experimentation is about actually practicing and struggling with newly conceived roles and relations. In relating with the action group advocating a re-opening of the community centre, the district municipality is struggling with the role understanding brought forth in the participation society discourse, of a government, which is more facilitating and supporting, rather than controlling and containing (see Insight 6, Chapter 3 for more on this). Especially in case of the latter, our research approach allowed us to observe such struggles from close-by.

A reflection on this aspect of the process is that an explicit participatory reflection on roles and social relations should be part of a transition management process possibly including individuals occupying the roles in question, e.g. policy maker, activist. In Carnisse, this aspect only revealed itself to us in a late stage prompting us to organize three sessions with the board members of the foundation running the community centre including explicit reflections on the roles of different actors and possible future options in 2014. This insight thus points to the importance of not taking a methodology as a blueprint, but to engage with the locality in question to understand whether the need for alternative ideas or practices is more pressing. It also can point to the role that an explicit

[71] Interview with inhabitant, November 14th, 2012, Rotterdam. Dutch original: "*Bij Bloeiend Carnisse werk je met een visie. Al de andere instanties werken vanuit wat nu nodig is; dat is meer pleisterwerk. Pleistertjes plakken op een wonde, maar de wond niet genezen.*"

[72] Dutch original: "*Carnisse is in Rotterdam bekend komen te staan om de effectieve en op gelijkwaardigheid en onderling respect gebaseerde samenwerking tussen professionals, beleidsmakers en lokale gemeenschappen. […]Professionals worden nu bijvoorbeeld in hun inwerktijd door de lokale gemeenschap opgevangen en wegwijs gemaakt. Ook heeft de wijk een beslissingsrecht bij het werven van nieuwe wijkprofessionals en het verdelen van middelen via een betrokken en actieve wijkraad.*"

[73] This visionary image is closely connected to the high turnaround of actors and roles as outlined in Insight 5.

focus on social relations can play in questioning and challenging current roles and relations.

B.3. Insights about (changing) roles of actors

Insight 5: Actors and roles are changing quickly in Carnisse making for a precarious social and institutional fabric necessitating more effort to sustain, empower and facilitate critical roles.

As outlined in Intermezzo A, Carnisse is known as a deprived neighbourhood with a number of problems including housing, schooling, security and work. Using a transition perspective, what can also be diagnosed as problematic is the policy environment, which is not conducive to change, and experimentation and lacks an overall direction and red thread for its activities (see Introduction and Insight 3). However, having worked in Carnisse for a prolonged time, what is most noticeable is that one of the obvious problems is the rapid change of the social and institutional fabric.

Providing a broad stroke sketch of the institutional fabric of Carnisse in both 2011 and 2014 will illustrate this insight[74] (see Table AE1 in Appendix E and Figure B.2). In 2011, I counted 27 individual and collective roles making up the institutional fabric; in 2014, only ten of these do still exist in the same form. Eight of the roles have changed, meaning they include different/other activities than before[75] and another nine have ceased to exist. However, the same amount (9) has also been created. What we saw is that actors occupying newly created roles started up their activities and searched for their added value in the neighbourhood (e.g. Veerkracht, Museum Rotterdam) other roles saw their budgets shrinking (e.g. inhabitants organisation). The individual and collective actors occupying those roles were also reorienting their activities and redefining what this role meant. In doing so, both actors occupying newly created and changed roles rely heavily on an existing network of inhabitants contributing to a restless climate and increasing suspicion and competition amongst groups and individuals.

What is not shown in Figure B.2 and Table AE1 is the fact that roles can be occupied by different actors. By way of example, four different individuals have been occupying the role of 'area manager' from 2011 to 2014. With regard to inhabitants, a role which is not included in the table, one of the issues is that individuals occupying this role change more

[74] This analysis has had a number of predecessors, for example in Van Steenbergen and Wittmayer (2012, 2014). It focuses mainly on the (semi-)professional roles for individual and collective actors, which we have dealt with in relation to our action-oriented research. For different purposes, this analysis can also be done more detailed (e.g. also working out the functional roles of actors in the neighbourhood) and differentiated (e.g. between individual and collective roles)

[75] When analyzing the change of roles, I focused on change in activities that are core to the role understanding. There is always a certain difference in intensity of activities over the years – however here the focus is on a more general level. If 'providing workshops' is one of the core activities defining a role, I consider this role to have changed when 'providing workshops' is not part of the core activities anymore. I do not consider it a role change if the kind of workshop provided changed.

rapidly than in other neighbourhoods of Rotterdam. Statistics show a high circulation of individuals moving in and out of the neighbourhood – Carnisse is considered an 'arrival neighbourhood' for migrants coming to the Netherlands. Once they have oriented themselves or have climbed the social ladder, they leave to other neighbourhoods or municipalities (see Intermezzo A).

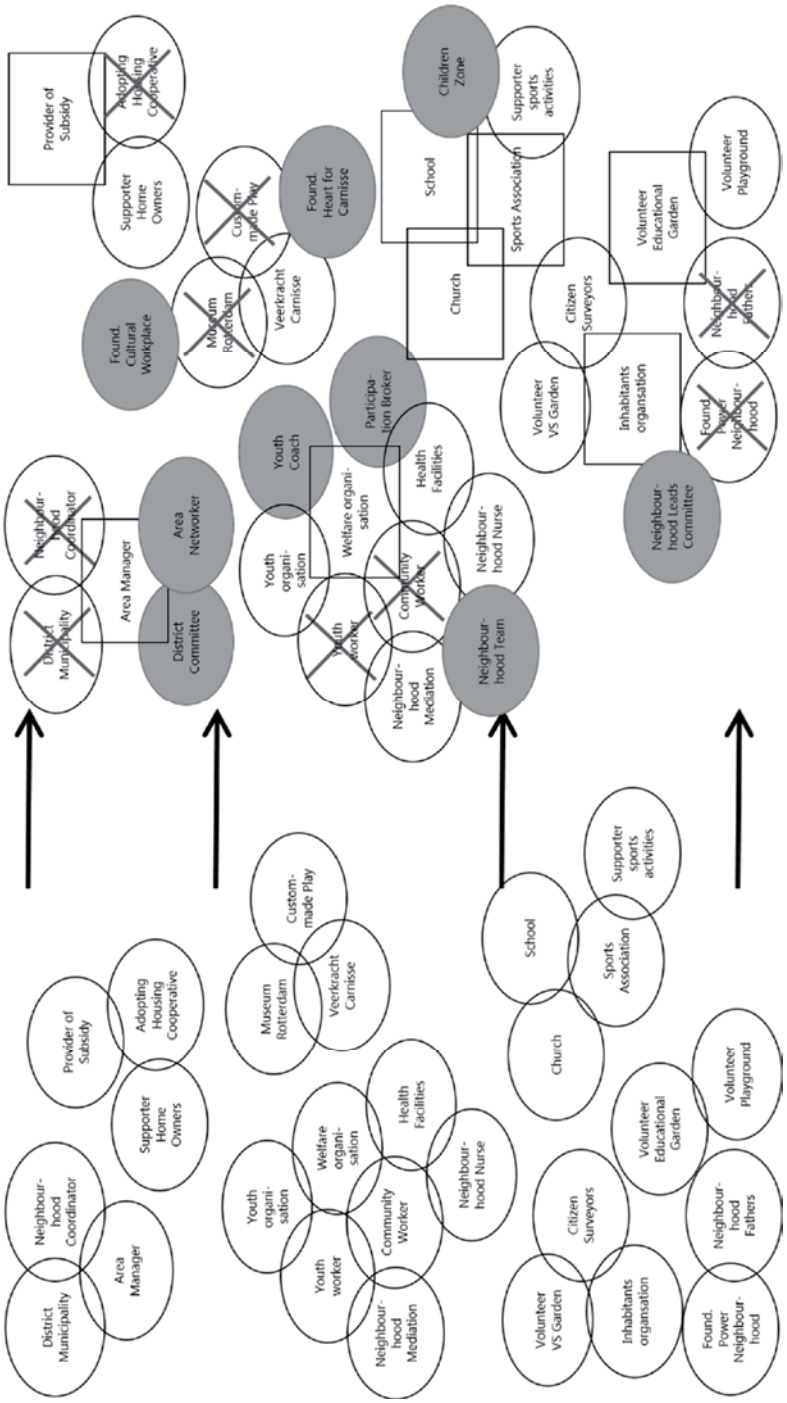
Both the high turnaround of roles and of actors contribute to a precarious institutional and social fabric with a perforated memory. However, there are also counterexamples, such as the one individual, who has first occupied the role of youth worker and currently is youth coach. Asked about the high turnaround of professionals, a board member of the community centre indicated in 2015 that she has "*the idea that it is stabilising*"[76]

In addition, what the statistics about the circulation of inhabitants do not show is that there is a core of individuals who stay. These inhabitants, together with the few professionals that have a longer career in Carnisse, are the backbone of the institutional fabric and constitute the collective memory. However, as changes are happening so fast and numerous – they are being asked, and at times overasked, for contributions and orientation in the neighbourhood. This again weakens the overall institutional fabric.

The quick changes in the roles and the actors occupying those roles seemed to have contributed to the preservation of the experienced problems. It disrupted the continuity of relations, of knowledge and the building of resilient alternatives. It mirrors the dynamic of the current policy system and seems to be part of the problem. It could therefore be interesting to think about critical roles that could provide for or strengthen a desirable (sense of) continuity.

[76] Interview with board member of community centre, June 3rd, 2015, Rotterdam. Dutch original: "*Ik heb het idee dat het wat stabiliseert*"

Figure B.2: Overview of changing roles in Carnisse 2011 to 2014



Insight 6: The purposeful assignment or choice of role designations is a highly political act of governance.

During our engagement in Carnisse, we repeatedly saw the importance of role designations and how assigning or choosing these can be an act of governance and a particularly political act.

The collective actor working towards the re-opening of the local community centre Arend & Zeemeeuw (A&Z; Eagle & Seagull) referred to itself as 'Action group preservation Arend & Zeemeeuw'. This group elicited the possibilities for re-opening the centre, worked out the facts with regard to ownership structure, financial obligations and neighbourhood needs and launched a petition. From the beginning, the district municipality Charlois had an uneasy relationship with this actor.

Already the announcement of the work of the group on the project website of Veerkracht Carnisse and via twitter left the director of the district municipality "*unpleasantly surprised*"[77]. The neighbourhood coordinator of Carnisse called me and a colleague as part of the action group to account for the group's action; it was perceived as mobilising 'against' the district municipality. In a subsequent conversation, the neighbourhood coordinator shifted between different positions: from being cooperative ('we can only do it low profile if we want to keep it') to pessimistic ('the building will be sold by OBR [Municipal department of Rotterdam], that is for sure') to desperate ('once they [the action group] are in, I will not be able to get them out anymore and will have to offer replacement rooms which I do not have'). Barely a month later, the attitude had shifted and the neighbourhood coordinator approached us for information about the building to host a public meeting organized by the district municipality. Mid-2012, the district municipality declared its position with regard to the action group, referring to it as "*residents' initiative*", through official communication. It declared as follows: "*The district municipality Charlois facilitates the residents' initiative A&Z by thinking along and bringing in knowledge and experience. But the district municipality does not contribute to the exploitation of A&Z*"[78] (Deelgemeente Charlois 2012). In October 2012, another policy officer of the district municipality questioned the legitimacy of this process as he had not seen enough protest with "*banners*"' and wondered about the level of commitment and energy of the residents[79].

This short outline of the uneasy relationship indicates a number of issues. Firstly, it shows how the district municipality is struggling to define its relation with the action group. As a new actor and role, this group also questions the self-understanding of the district municipality. Secondly, it indicates a change in the role understanding of the district municipality: from structurally providing for community centres through subsidizing welfare work, towards a new situation of providing advice and knowledge instead. The

[77] Fieldnotes on phone call with neighbourhood coordinator, April 4th 2012, Rotterdam

[78] Dutch original: "*De deelgemeente Charlois faciliteert het bewonersinitiatief A&Z door meet e denken en kennis en ervaring in te brengen. Maar de deelgemeente levert geen bijdrage aan de exploitatie van A&Z.*"

[79] Fieldnotes on meeting with area manager District Municipality Charlois, policy maker Municipality of Rotterdam, project assistant Veerkracht, October 16th 2012, Rotterdam

latter is in line with the allegedly new role for government as being primarily 'facilitating', in line with the national discourses on the 'participation society' in times of austerity. Thirdly, it shows that the own role understanding of the district municipality has repercussions for its relation with others leading to the framing of the new actor in a very specific way. The role designation 'residents' initiative' includes a clear understanding of who can be part of such an initiative (e.g. a resident but not a professional), and which resources are accessible (e.g. financially certain small subsidies, while not the power to decide upon the future of the community centre).

A second instance of purposefully considering role designations also relates to the re-opening of the community centre. In 2013, a formal foundation had been established which took care of the daily activities at the centre as well as its strategic orientation. With regard to the latter, several policy makers from the Municipality of Rotterdam gave – conflicting – advice. While one policy officer advised to set up a company and let it being managed by professionals, another favoured to have it managed by residents on a voluntary basis and a third one suggested to found a 'residents' company'. Of these options, the first one is a market-oriented practice and the second one a community-oriented practice relating to the framing as 'residents' initiative'. These options show that there is an apparent need for clarity and for pushing a dominant frame: an individual is to be either a professional or a resident. These framings are also exclusive: as residents cannot be part of the first option and professionals not of the latter. However, such a clear division seems illusionary. While the foundation is expected to run the centre in a 'professional' manner, they are also expected to do so voluntarily – actual a mixture of both roles. This is illustrated by the following quote of a board member of the community centre "*Yes, actually we are crazy, it is voluntary work, we do not receive one cent and still a lot is expected from us*"[80]. The third option however, 'residents' company', does play more into this heterogeneity. It provides an alternative, new role framing combining elements of the other two. A 'residents company' is a social enterprise run by residents where they earn and spend money for the good of their neighbourhood[81]. It also plays into the (upcoming) ideas around social entrepreneurship.

The purposeful assignment of role designations but also the choice (if it is given) for one or the other role designation is a highly political act. Role designations come with inherent assumptions about access to resources, responsibilities and power. On the one hand, choosing a role designation thus includes the choice for access to certain resources but not to others. On the other hand, assigning a role designation, includes framing an actor in specific ways, and is a means for distributing or withholding resources.

[80] Interview with board member of the community centre, June 2nd, 2015, Rotterdam. Dutch original: "*Ja eigenlijk zijn we gewoon gek, het is vrijwilligerswerk, we krijgen er geen cent voor en toch wordt er zoveel van ons verwacht*"

[81] See www.bewonersbedrijven.nl and http://www.lsabewoners.nl/bewonersbedrijven (accessed August 12th, 2016)

B.4. Insights about transition management

The actual application of transition management, either as an action-oriented research approach or as a governance approach, should be preceded by a thorough, possibly participatory, context (or systems) analysis. Such an analysis points to specificities in the local context, which are important for an adaptation of the approach. Such adaptation is not always straightforward or foreseeable and comes with numerous dilemma's to be faced and choices to be taken. In Carnisse, this included for example the choice to have experimentation and deliberation in parallel, rather than consecutively, using the development of alternative practices as an entry point (see Insight 4). In the following, I detail two selected insights for transition management. I hint to others in Section 2.2.3 on the action-oriented research process.

Insight 7: The concept of frontrunner is not obvious. It is rather about who is frontrunning in relation to a specific issue[82].

The transition management principle of selective participation (rather than broad participation) of 'frontrunners' is controversially discussed in literature for referring to an 'elite group' or enlightened person and suffering from legitimacy deficits (Hendriks 2009, Jhagroe and Van Steenbergen 2014, Smith and Stirling 2010). Frontrunners are selected for having specific competencies, innovative ideas or practices, or for their backgrounds and worldviews rather than for their hierarchical power, representativeness or authority (Van der Brugge and Van Raak 2007; Van Buuren and Loorbach 2009; Loorbach 2010). The underlying idea is that those critical of the status quo and already addressing issues in their sector or community can be considered to have a sense of problem ownership and to be in a position to generate a radically new narrative about the future of a system.

In Carnisse, the 'frontrunner' concept turned out to be rather problematic to operationalize. How can one find a person with specific competencies in a community? Taking the personal proximity as discussed above into account – the relations between people are more intimate and power structures are not revealing themselves easily to outsiders at the beginning of their engagement. We started our system and actor analysis by interviewing potentially interesting individuals which we identified through desk research (searches in newspaper articles, internet, policy documents, etc.), snowballing, and through local informants. Rather than blindly staring at the list of competencies an individual frontrunner should possess, we let an understanding of 'frontrunner in Carnisse' emerge, based on the interviews that we conducted.

Most of the people were working long hours for their income and did not have or were not willing to spend their spare time participating in an open envisioning process – for some it was enough to tell their story during the interview. Others were more concerned with the practical issues: setting up market stalls for the yearly 'summer terrace' event or volunteering weekly at the children's playground. Yet another group could be termed 'participation professionals' – sometimes also referred to as 'the usual suspects'. These

[82] This text is partly based on Wittmayer et al. 2012

inhabitants have time, know their way in the neighbourhood politics and are present at the majority of the participatory events. In addition, there are those that have interesting ideas for the neighbourhood but have not yet found a way to channel these. In the end, we invited for the deliberative process people with passion for the neighbourhood – they were active, had new ideas, came up with alternative actions or felt an urgency for change. Thus, rather than intrinsic competences, we considered the option that everyone can be a change agent with regard to a specific issue (rather than another issue) or at a specific point in time (while not in another). Understanding a role such as 'frontrunner' not as rigid or given – but as something that different actors can play, make or use, makes the concept more fluid and thereby more inclusive (cf. Jhagroe and Van Steenbergen 2014, Chapter 3). Referring back to Insight 6, in this case it was us as researchers purposefully assigning a role to those willing to take it on.

Next to these more customized criteria for individual participants, we also focused on the group as a whole and used a set of general criteria for group composition (e.g., diversity in gender, age, occupation). In doing so, we took account of some of the criticisms about the exclusivity and non-representativeness of other transition management processes, and provided for alternative voices from a wide variety of backgrounds to be heard. The participants were from different professional backgrounds, such as welfare-professionals, a primary school teacher, a creative entrepreneur and an artist, while others participated primarily as residents. Not every participant lived in Carnisse or even near Carnisse, but all shared a certain passion for the neighbourhood. With regard to gender, the group was rather well balanced. However, the group was not diverse regarding ethnicity (with the large majority being white Dutch while the neighbourhood is ethnically far more diverse) or age (with a range from 30 to 70 years, missing teens and tweens).

On a more general level, this insight points to the volatility inherent in transition roles. There *is* no such person as a frontrunner (or niche player or regime player for that matter). Rather, individuals (or collectives) can play, make or use the role of frontrunner in relation to a specific issue at specific points in time. In transition analysis and transition processes, we should therefore stay away from essentialising individuals but rather think about which roles are necessary for a transition to take off or accelerate.

Insight 8: Transition management on the local scale takes place within people's lifeworld. This implies high personal, emotional and social stakes and asks for more empathic, personal and less disruptive approaches.

Much more than on a functional system level, transition management on the local scale means interacting with people in their personal lifeworld. These immediate living environments are the places, where they work, live, raise their children and perform numerous daily activities. Due to this, participation in a transition management process on that scale implies high personal, emotional and social stakes. This insight is closely related to the characteristic of cities outlined in Chapter 4 as 'personal proximity', the fact that cities are living environments, "*in which people have personal, emotional and social stakes, including socially embedded relations and a level of trust*" (Wittmayer and Loorbach

2016: 15). Participants have an emotional or personal relation to places they live or work through spending their past and present there – being facilitated or hindered by it in their self-actualisation. Threats to or changes in these immediate surroundings seem to be closer and have more to do with oneself than changes at other levels or domains (which might actually be far more pervasive). This can also lead to the 'not in my backyard' (NIMBY) effect. In Carnisse, we saw this in a number of ways.

Firstly, while Carnisse is a neighbourhood of about 11.000 inhabitants, there is a limited group of people passionate enough about the neighbourhood to get in action. When engaging in a first round of interviews in 2011/2012 to get to know the neighbourhood and the views of its inhabitants and the people working there, we used the snowball method to find new interviewees. We found a saturation point, in that we were referred to already known people, after about 40 interviews. This means that there is a rather small circle of people currently active in the neighbourhood or known for having and voicing alternative ideas about its future. This point shows that the group of people that we would invite as participants to a transition management process was small, but also that people partly knew each other, raising their personal and social stakes when taking part in such a process.

Secondly, transition management activities in Carnisse were investigating 'how life in Carnisse could be in 2030' and 'how Carnisse can start blossoming'; Questions immediately relating to people's lifeworld. The resulting vision of a 'Blossoming Carnisse' produced alternative ideas about a future Carnisse and its people: where they buy their groceries, meet friends, or recreate, what kind of houses they live in, how they relate to their fellow inhabitants and let their voice being heard. In discussing current issues and formulating future images, the participating change agents were navigating the big questions of our time, such as unemployment, poverty, migration, housing and energy, green spaces or local democracy, as experienced and addressed by themselves, their friends or neighbours. The questions were also investigated through 'experimentation' in the living environment, the efforts to re-open a local community centre in a self-maintained way. High emotional stakes accompanied these efforts. The centre is a place where people engaged in activities such as a bingo evening, a women-only breakfast or where they bring their children to day-care or pick them up after extracurricular activities. Participants also share dear (childhood) memories about the centre.

Thirdly, the transition management activities we unfolded had repercussions for people's personal and social lives. During interviews, different, unrelated people had indicated that they are interested in or active for a re-opening of the community centre. We invited them for a meet-up, which resulted in the establishment of an action group exploring possible ways to keep the centre open. This exploration was done through lobbying, retrieving information but the group also decided to more or less squat the building – which was tolerated but is not strictly legal. As such a practice with high personal risk. Further risks to their personal and social lives relate to controversies and rivalry in terms of how the centre should be run. For example, in the beginning of 2013, four individuals registered a foundation in January 2013 to run the community centre. Two weeks into its existence, the four board members had the first discrepancies and after barely a month, the board had split in two camps, each pointing to the other for misconduct. The irony is

that both camps had the same goal, the self-maintenance of the community centre for the best of the community, but they disagreed on how this could be achieved. This divide included the break-up of a friendship.

Fourthly, from a more disengaged point of view, one can consider the re-opening of the community centre as 'experiment', as an activity that can succeed or fail providing opportunity for learning. However, this is not how those actually being engaged in the re-opening would consider it. For those keeping the centre open, it is not an experiment but a 32-hour voluntary working week including evenings or weekends. It costs blood, sweat and tears and comes on top of a job and the care for children, family and friends. Through their engagement, board members of the foundation also became the target of critique by third parties who did not agree with the way things were done. As such, these activities involved high personal stakes and left their marks on people's lives. In turn, these lives also had repercussions for the transition management process. The loss of dear ones or own sickness meant that people dropped out of the process or ceased their engagement with the community centre.

Transition management activities at the local scale thus come with high emotional, personal and social stakes, in that they engage a limited group of people; concern 'big' possibly contentious questions about the future revealing different, at times conflicting, worldviews; directly take place at people's front door involving dear places and people. As such, these activities should not be considered lightly, rather, they make transition management a particular ethical endeavour. They also require a more modest and down to earth facilitation and an adapted change ambition, along with tact regarding intercultural and personal issues.

B.5. The value of action-oriented transition research for analysis, engagement and reflection

In this Intermezzo, I provide a number of selected insight based on the action-oriented research work done in Carnisse. As such, this chapter further substantiates the claim that through an action-oriented research approach and more specifically applying transition management as a research methodology, valuable insights can be gained. While this is not the focus of this thesis, it allows demonstrating the promising combination of analysis, engagement and reflection.

As a research methodology, transition management includes the following elements:

- ***Sense making***: Action-oriented research can be considered a learning journey through which all participants (including the researcher) engage in a process of exploring, constructing, deconstructing and understanding a system, its current problems and future possibilities.
- ***Gaining an inside perspective***: As action researcher, one becomes part of the system one studies over a longer period. This taking part is made explicit and allows, similarly to proper participant observation, to gain an understanding from within the system or social group one studies. Such a perspective cannot be gained through other research methods such as an interview or a focus group. The

insights gained can be analysed from an outside perspective and as such compared to other cases, localities and issues.

- ***Developing insights, questions and actions***: Through the empirical engagement and the inside perspective, insights (see this Intermezzo) as well as new research questions and foci can be developed (see this thesis, specifically the foci on actors and roles). The overall body of knowledge can be enriched through scrutinizing such insights and questions both conceptually and empirically, as well as through describing new empirical contexts. It also allows, based on the sensemaking with others, the inside perspective and the theoretical knowledge to formulate potential transformative actions for the context in question.
- ***Experimentation***: The empirical engagement includes experimentation with the developed insights, questions and actions to learn for sustainability transitions and their governance.

In terms of transition research, transition management as research methodology makes most sense for understanding systems in development and providing a temporary impulse to such systems through different activities such as visioning, agenda setting, experimenting or monitoring. It is in itself an innovation, which can add to a necessary transition of the science system towards engaged and socially productive social sciences.

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"Until we embark on the journey, we will not know how we may become transformed by our experience"

O'Riordan and Voisey 1997: 3

8. Conclusion

Five years after the initial engagement in Carnisse, I start this conclusion with a truism posed by Heraclitus: the only constant is change. The places that we worked with, be it the community centre or the community garden, are still or again under pressure. The two-headed team that kept the community centre open and running all these years, who fought, made allies and withstood the pressure and uncertainty of for example not knowing whether or not and when there would be a rental contract and against which conditions, broke apart in 2015. This was around the time, when the municipality revised their welfare policy (City of Rotterdam 2015) with the aim to offer welfare work at the neighbourhood level, closer to its inhabitants through nominating 'Houses of the Neighbourhood' – the community centre in Carnisse was to be that 'House' for Carnisse (Gebiedsgids 2016). Consequently, it would receive subsidies on a structural rather than incidental basis and therewith establish a more structural position vis-à-vis the policy environment in Rotterdam. However, how can we interpret such developments? Are they a breakthrough towards a more secure existence? Will they increase dependency on governmental funding linked to policy implementation requests and thus decrease independency in terms of finances, programming and identity of the place? While inhabitants and professionals reinvent practices and places, bestow them with new meaning and experiment with new forms – life in Carnisse remains precarious and changing.

If the budget cuts had not been so desperate back in 2011 and the impacts so far-reaching, one could interpret the developments in the last years as a phase of 'experimentation': The Municipality of Rotterdam withdrew subsidy from long-standing institutional arrangements such as the community centre, to uncover how inhabitants and professionals would react, what they value and demonstrate, fight or make sacrifices for. However, firstly, I doubt that the massive cutbacks were guided by such a long-term vision. Secondly, I would hope that more deliberative ways could be found to engage in dialogues and action with inhabitants through which localised and decentralized solutions could have emerged. Thirdly, experimentation is meaningful only if it is accompanied by an attitude and practice of reflexivity and learning. Thus, while Rotterdam engages in visioning, agenda setting and action implementation (see Intermezzo A) – the coherence and connection between these different governance activities is still missing as is a policy environment receptive for learning and experimentation. We could stage the inventive resilience of a neighbourhood such as Carnisse in opposition to and in spite of the convulsive policy interference of its municipality.

This final chapter returns to the knowledge gaps formulated in the introduction and highlights the contributions of this thesis by answering the research questions (Section 8.1). Based on these contributions, I articulate remaining questions for a future research agenda (Section 8.2).

8.1. Addressing the knowledge gaps and highlighting the contributions

The main research question of this thesis has been: **How can we increase our understanding of sustainability transitions and their governance at the local scale, the changing role of actors therein and in particular, the role of research and researchers?** Answering this question, I address theoretical, empirical and methodological contributions to the emerging sustainability transitions field, sustainability science and governance theories.

This thesis contributes to understanding transitions as including fundamental changes in the interactions between actors in the social fabric of a system. It introduces the concept of actor roles and advances an understanding of changing roles and role constellations as indicative of changes in the social fabric. It also proposes to understand the purposive usage of roles as governance activity. It advances our understanding of transition management as a governance approach to better comprehend and further sustainability transitions at the local scale. The thesis focuses on a new empirical dimension, namely socio-economic problems on local scale. It is this conceptualisation in the context of communities, which puts the spotlight on social and personal relations. Methodologically, it enhances an understanding of more diverse forms of doing research including action-oriented approaches with both their contributions and challenges. Next to the scientific knowledge gain, the work leading up to this thesis also had social impacts on the life in the neighbourhood of Carnisse. Besides the re-opened community centre and the developed vision document, it also produced less tangible impacts. These include a new narrative about the neighbourhood, individual and social learning throughout the research process as well as network formation.

In the following, I synthesize the main insights from the different chapters, answer all four sub-questions in devoted sections and highlight the contributions of this thesis.

8.1.1. How can roles of actors in sustainability transitions be conceptualised?

To date, a transition is described as a radical change of a socio-technical (sub-)system. Following the premises of the Multi-level Perspective it is the outcome of developments at different structuration levels (i.e. niche, regime and landscape) usually driven by a socio-technical innovation. However, in cases in which technology does not play (a major) role – such an understanding seems too narrow. This holds especially in cases where social innovations, thus new social relations and practices, are driving change; thus, where changes in the practices and social relations of actors result in changes of the broader social fabric. This thesis therefore proposed *to use 'roles' as a concept for analysing the interactions and relations of actors in sustainability transitions and to take*

fundamental changes in the roles of actors and their relations as a vital element of any transition.

Taking this understanding of transitions as a starting point, makes it immediately obvious that the field of transition research and specifically the governance part thereof misses a suitable vocabulary to analyse and discuss changes in actor roles and role relations as aspects of transitions and their governance. In this thesis, I addressed this gap by proposing a *roles-in-transition perspective*, which is based on three different perspectives in roles theories: 1) roles as recognizable activities and attitudes, (2) roles as resource, and (3) roles as boundary objects. Together, these allow us *to understand roles as an interplay between stability and change, relate roles to change in social systems and take political and power aspects into account*. By combining social interaction research with transition research, I contribute to broadening both fields.

In our article (Chapter 3), we proposed three main insights for the conceptualisation of roles for transition research. The operationalisation of the role concept for transition research allows analysing (changing) roles and (changing) relation between actor roles in role constellations as indicative of changes in the social fabric, its power relations and shared values, norms and beliefs. It also allows considering the use of roles as a transition governance intervention.

Firstly, we distinguish between single roles and role constellations. Roles are viewed as culturally informed ideal-types of a set of recognizable activities and attitudes to handle recurring social situations. As social constructions which are considered legitimate and which are widely shared, roles can be described for individual and collective actors, are subject to social negotiation processes and change over time. Analysing roles allows for grasping shared and competing understandings thereof. In addition, roles do not exist (or change) in isolation, but are interdependent and a change in one role implies a change in another related role. To capture this aspect, we proposed to focus on role constellations: webs of roles, which interact, interrelate and co-evolve with one another related to a specific issue. Such role constellations are a vital part of the framings of problems and solutions in transition research, which bear implicit or explicit ideas about actor roles, their relations and the accompanying activities and attitudes. Analysing these allows insights into shared and competing understandings of the relations between different roles.

Secondly, we propose to analyse roles and role constellations as temporary stabilisations in the present, as well as over time, in order to trace changes. Negotiations and struggles concerning what roles and relations are, can and should be are an ongoing part of both a transition governance intervention and broader long-term societal transitions. Transition (governance) efforts, with the aim to challenge and alter existing structures, cultures and practices (of which roles and role relations are part) will lead to tensions between existing and new understandings of structures, cultures and practices and therefore to cracks in role understandings. The persistency of societal problems also derives from the fact that actions build upon 'old' role understandings, rather than explicitly questioning and realigning current ones along newly emerging understandings of structures, cultures and practices. This questioning needs to be part of transition

governance interventions – thus, for instance, when envisioning sustainable futures this includes a questioning of current and a proposition for new role constellations.

Thirdly, this thesis proposed that roles are and can be used purposefully and explicitly in interaction with other actors as acts of transition governance. Such purposeful usage includes the creation of new roles, the alteration or breaking down of existing ones, the explicit negotiation of roles and the purposeful assignment of roles. An analysis of such interventions and framings sheds light on their highly political character, as e.g. assigning a certain role to an actor can grant or deny access to certain resources or the fact that not all roles are accessible to everybody (see also Intermezzo B.3, Insight 6).

8.1.2. What does transition management at the local scale entail and how does it relate to other local processes towards sustainability?

Initially, transition management was mainly applied in the context of functional systems and domains on national scale. Only since about 2010, applications increasingly focused on more local scales, such as neighbourhoods, towns and cities. However, this practical development had not yet been systematically analysed or historically embedded. This thesis contributed to 1) a more systematic development of transition management on the local scale and 2) a historical embeddedness of the approach in the history of local sustainability governance.

Firstly, this thesis provided a systematic overview of the applications of transition management on the local scale, and analysed and reflected associated promises and challenges (Chapter 4). In this article, we substantiated the distinction between two types of applications, namely those developing it as a heuristic and those developing it as an operational methodology. As a heuristic, transition management provides a lens through which to describe, understand and interpret past and ongoing governance efforts. As operational methodology, it can be used by a diversity of actors (amongst others by researchers through an action-oriented research approach) to organize temporary transition impulses and support ongoing sustainability transitions and their governance. In addition, we formulated a number of local, specifically urban, context characteristics, which are important for the application of transition management in that context. These are geographical, personal and institutional proximity as well as interactions and interdependencies between different scales and domains.

Secondly, this thesis historically embedded transition management in relation to a prominent other approach addressing sustainability locally, Local Agenda 21 processes (Chapter 5). The latter's decrease in importance together with a generally more receptive and ambitious attitude of local governments is the backdrop for operational and to a certain extent heuristic applications of transition management. This comparison led to a number of insights for governing sustainability (transitions) locally. Firstly, rather than striving for a one-fits-all solution, diversity in governing approaches for sustainability transitions needs to be cherished. Secondly, a more integrated perspective of sustainability took hold on the local scale and sustainability needs to be practiced through activities, projects and experimentation to gain meaning locally. Thirdly, small concrete steps (such as activities, projects and experiments) need to be connected to ideas of

radical change (rather than optimization) to ensure that they address the roots of the problems rather than combating symptoms. Fourthly, governing sustainability on the local scale needs to find creative ways for engagement, which can deal with the tension between the need for radical change and the need to connect to incumbent players and dominant discourses. A final insight relates to the need to open spaces for learning, change and experimentation for various actors aimed at social innovation and the creation of new social practices, relations and ideas.

Finally, I take the opportunity to point to and discuss a number of additional insights emerging from the different chapters with regard to transition management at the local scale. These include *1) the interplay between global societal problems and local problems, 2) the tension between an open agenda for a transition management process and its potential instrumentalization, 3) transition management as meta-governance approach building upon other local governance initiatives and 4) the potential of transition management to both understand the status quo and to explicate solutions.*

Firstly, global societal problems such as climate change or inequality translate into a variety of local manifestations through their interaction with local dynamics and characteristics. As such, it seems adequate to address these problems in their local manifestations, while critically analysing and connecting them to the broader societal problems of our time. This thesis shows that firstly, transition management is perfectly suitable to take account of and relate local developments to developments at other scales and vice versa, and secondly, to engage in the active construction and discussion of relevant scales and their interdependencies (see also Intermezzo B.1, Insight 2). It also suggests the local as a suitable entry point for analysis, understanding and action.

Secondly, transition management is applied through a collaborative approach with a relatively open-ended agenda, which needs to pay close attention to local politics and issues of instrumentalization (see also Intermezzo B.1, Insight 1). Rather than being located within local government and understood as a policy process (as e.g. the majority of LA21 processes), transition management is considered a societal learning process including a myriad of societal actors, such as local government, civil society, business or science. This variety, next to the relative openness and flexibility in terms of concrete focus and actual implementation practice of transition management instruments, make these prone to being captured or instrumentalized by dominant interests. While the openness of the process is meant to provide room for deliberation, discussion and context-specific interpretations, it also opens room for ambiguity, conflict and argument. In general, transition management harbours a number of paradoxes, such as the one of providing an open-ended process through which sustainability will be defined and a more normative and universal standpoint with regard to the meaning of sustainability. These paradoxes cannot be solved in general terms but only through being embedded in a specific local context, which is where questions of ethics and normativity arise. This vulnerability is related to broader normative questions with regard to desired futures and to questions with regard to responsibilities for the 'common good'. Especially the latter is addressed through the focus on the roles of different actors in current policy discourses across Europe as well as in this thesis.

Thirdly, there is not one transition management, rather depending on the local dynamics and characteristics as well as the aims and goals of the initiating and engaging actors, there are different instruments and activities that can be employed (e.g. next to the transition arena, also transition experiments or transition monitoring). These in turn need to build on a thorough understanding of the local context including existing initiatives such as for example Transition Town initiatives or corporate social responsibility projects. Starting from these, transition management can act as a meta-governance approach by focusing on the synthesis between such initiatives, creating a shared narrative or linking them to increase impact. However, rather than propagating transition management as the 'silver bullet', I pledge for an open mind and an informed choice in terms of which approach fits which question and who has the legitimacy to drive such a process as long as the overall orientation towards radical change on the long term is upheld.

Fourthly, transition management on the local scale holds the potential for understanding and identifying engrained structures, cultures and practices and for explicating new ones (see for example Intermezzo B.2, Insight 3). This thesis outlined that transition management provides an action impetus as well as space and time for developing alternatives. However, at times this is not enough to break through engrained patterns and practices. Especially the relation between policy making and citizens has been engrained in habitual ways of, to put it black and white, one consulting and informing and the other giving input and receiving. The pitfall of transition management processes is that they can be regarded in exactly the same light by for example citizens: participating in a deliberative forum rather than taking the broader invitation to take an active part in societal change processes. It is therefore necessary to upfront explicitly and critically address the relation and roles of different actors and to work on changing attitudes and expectations of actors towards one another in local governance settings.

8.1.3. What is the value of action-oriented research approaches for studying and supporting sustainability transitions in the local context?

While most of the research done and insights gained in sustainability transitions research is in the context of applied research, little attention has been paid to more action-oriented research approaches. In this thesis, I argued for a more diverse research practice, including action-oriented approaches, focusing both on their contributions and on their challenges. I thereby connected methodological discussions in sustainability science to reflections on the research practice and the role of the researcher in transition research. I distinguish between three main methodological contributions of this thesis, namely 1) outlining a transition research perspective conducive to action-oriented research approaches, 2) investigating the potential of action-oriented research to understand and address societal challenges, and 3) systematizing the activities and roles of researchers in action-oriented research and associated challenges.

Firstly, this thesis outlined a research perspective for transition research conducive to more action-oriented research by drawing together insights from research approaches in the interpretive, transdisciplinary and action research tradition. (Chapter 2). Throughout this

thesis, I have argued and demonstrated that transition management can be understood and applied as an action-oriented research methodology. I based such an approach on a view of science and society as overlapping and influencing one another rather than constituting separate spheres. Societal values and norms influence scientific activity through amongst others funding schemes, student interests or science policy. Research activities influence societal developments through amongst others material and non-material inventions, innovations, knowledge, framings and actions. The foremost activity of action-oriented research is the creation and maintenance of explicit spaces for interaction, where developments can be questioned, ideas discussed, futures envisioned, solutions piloted and ideas experimented with.

Action-oriented research approaches put the spotlight on the 'messiness' of research processes, the normativity involved as well as the craft that research always constitutes. I argued that more than other research approaches, action-oriented ones make us aware that in much of the social sciences we seem to uphold epistemological framings close to the natural sciences rather than looking into the kind of epistemologies and methodologies needed to address the societal and research questions at hand. If we take the uncertainty of knowledge as well as the complexity of our societies as a starting point, we also need to acknowledge that questions and problem framings are changing and shifting and need adaptive and abductive research processes. Action-oriented approaches also make us aware that while striving for objectivity, all researchers and research are normative including the research object of transition research (i.e. a sustainability transition). I argued for the need to be reflexive to support the researcher's own reflection and learning, to answer critical questions and to increase transparency, trustworthiness and accountability of the research results.

Secondly, this thesis investigated the potential of action-oriented research to increase our understanding of and to address societal challenges as well as to make sustainability meaningful locally (Chapter 6, Intermezzo B). This investigation showed that the knowledge gained through local engagement leads to an in-depth, rather than a one-off, understanding of the local context dynamics and characteristics from an inside perspective. Knowledge is ideally gained through thinking and doubting by engaging with existing knowledge and literature but also through engaging and trying to change a situation or system. Such understanding does not focus on discovering meaning or realities 'out there', but rather on the creation of meanings and realities through engagement and interaction. Such research thus includes a critical eye for the political nature of concepts such as transition, societal challenges or sustainability as well as an acknowledgement of the uncertainty and insufficiency of knowledge. It can also lead to the development of new theoretical insights and questions.

Research activities supporting sustainability transitions can be diverse and include more than only action-oriented research approaches, e.g. next to organising a participatory process or establishing a transition experiment also influencing public debate through newspaper contributions or public lectures. Rather than providing recommendations on e.g. which 'barriers' need to be removed, and then refraining, researchers stay involved and accompany (or support) putting their recommendations into practice. In a more action-oriented research approach, researchers develop solutions in a collaborative and

transdisciplinary fashion together with local actors. Important for such approaches is to be transparent about the aims of the research and the corresponding activities – this allows for their accountability with regard to scientific and social merit. I argued that in such research, a practice of reflexivity and critical distancing could improve ones' role understanding and contribution to the process. However, the investigation also showed the limits of what can be changed through such a locally oriented process, while pointing to the broader framework conditions that need to be addressed through different routes.

Thirdly, this thesis established a systematic understanding of the activities, the corresponding roles as well as the accompanying challenges for researchers in action-oriented research approaches in sustainability science and transition research (Chapter 7). While researchers' trainings and research quality criteria are on the agenda, the role understanding of researchers has been passed over. This thesis established the creation and maintenance of a space for interaction for societal and scientific actors to address real-world problems as one of the core activities of action-oriented research. Next to systematically collecting, analysing, interpreting and reporting data, researchers using action-oriented research approaches also facilitate learning processes and short-term actions; they mediate between different perspectives, provide space for critical reflection and engage in making sustainability relevant and tangible in different contexts. In addition, they also may motivate and empower participants by helping to develop a sense of importance or catalysing, stimulating and enabling people. Finally, they engage in a self-reflexive practice with regard to their own normative orientation and to internal and external power dynamics. With my co-author, I described these activities as part of five ideal type roles, namely: change agent, knowledge broker, reflective scientist, self-reflexive scientist and process facilitator. This thesis opened up a reflexive methodological discussion, by developing an appropriate vocabulary to explain and navigate the tensions and potentials that come with 'new' activities and roles.

Such an action-oriented research approach does not come without its questions, challenges and limitations – as this thesis has also shown. One of the main limitations is that, like other research approaches, also action-oriented ones are not a panacea and are not suitable for all types of research questions. Their further development requires institutional space in terms of training requirements, funding scheme requisites, career opportunities and evaluation schemes for scholarly work. These challenges in the broader context are accompanied by a two-fold challenge in the research practice. On the one hand, related to the creation and maintenance of spaces for interaction, learning and reflection, challenges include ownership of the process and the outcomes, definition and operationalisation of sustainability, issues of power and politics as well as the actual action the researchers engage in. On the other hand, related to data collection and analysis, challenges include for example upholding a certain degree of systematicity and produce trustworthy, transparent and reflexive research results. Such a discussion makes visible, that action-oriented researchers are active social actors and aim for producing scientific, social and reflexive knowledge as well as real-life change. They explicitly (rather than implicitly) assume a political role, which raises questions of power and legitimacy placing high demands on the personality and integrity of the individual researcher.

8.1.4. What are the (changing) roles of actors in transition management at the local scale?

This thesis has argued that transition management processes or interventions influence current societal dynamics and possibly foster sustainability transitions through developing alternative or new social relations, which include changing actor roles, interactions and activities. Putting this insight into the spotlight and taking it as an entry point means that questioning and experimenting with alternative roles, relations and interactions can be made a more explicit part of transition management on the local scale. The transition management engagement in Carnisse was conducive to such an analytical perspective as it took place in a context, which explicitly put the roles and relations of actors on the agenda. The broader Dutch discourse on the 'participation society' came with a more or less implicit image of what is considered problematic about existing role constellations: An overtly protective state should retreat to make space and facilitate initiatives by citizens who have to 'become more active' in addressing what had hitherto be understood as public issues. During the five years of engagement, my colleagues and I have seen a change of the role of the district-level government of Charlois from being a full-fledged governmental body (district municipality) to constituting nothing more than a committee being responsible for a small district budget (district committee). Next to this transfer of power towards the Municipality of Rotterdam, the latter also received more responsibilities and (restricted) budgets from the national government through national decentralisation processes of social care.

As a practice focused on supporting learning processes, transition management asks for new activities and attitudes from local governments and administrations. Rather than directing and controlling, it is about encouraging reflection, being part of an open-ended process and accepting ambiguity and uncertainty. These activities in turn question internal governmental and administrative structures and cultures as well as the relations with external actors. In most transition management processes, local governments are involved as both subject and object of transition governance: they play a role in initiating, funding or facilitating transition management interventions, but they also are subject to change. In Carnisse, we witnessed how administrative workers were struggling: they were not supposed to act as before (as mirrored in the participation society discourse) and they could not do so (due to budget cuts and changed governmental structures). Especially the engagement surrounding the community centre allowed room for implicit and explicit discussion and experimentation with the how and what of new roles and role understandings and the search of policy actors for what it means to support citizens through means other than money (see Chapter 3).

A newly emerging role understanding of local government and administration also questions existing role understandings such as that of citizen. From a transition management perspective, citizens are asked to engage in various ways in addressing and solving specific public questions, rather than leaving them with local government only. As within local government and administration, also this asks for a change in current mainstream practices and attitudes by continuing to or starting to engage with such questions of public interest as part of the own life world to the extent possible and desirable. Our engagement in Carnisse made the strength, drive and pride of the

neighbourhood and its inhabitants visible: rather than being puppets on the long arm of the government, inhabitants of Carnisse showed their potential to withstand pity and make misfortunes productive – they, their places and practices are adaptive in interpreting and playing into societal dynamics. After all, the community centre is still open and accessible to serve the neighbourhood.

8.1.5. Summarizing the main contributions

This thesis contributes as follows to the development of transitions research:

Theoretical contribution: This thesis is advancing an understanding of transitions with a focus on the changing interactions among actors. These are considered as indicative of changes in the social fabric of a system, its power relations and shared values, norms and beliefs. It focuses not on socio-technical transitions build around technological innovation, but on a conceptualisation of transition thinking in communities at the local scale. This directs our attention to personal and social relations as an analytical focus and therewith to 'social' transitions build around social innovations. It does so by introducing the concept of actor roles as an analytical device to transition research.

Empirical contribution: This thesis is describing and outlining an understanding of transition management as a governance approach for sustainability transitions at a local scale, and more specifically for understanding and addressing socio-economic transition dynamics on the local level. It does so by contrasting transition management with other approaches to governing sustainability, historically embedding it, systematizing its different usages and analysing and reflecting on its promises and challenges on the local scale.

Methodological contribution: This thesis is explicating and further developing an action-oriented research approach for sustainability transition research. More specific, it is exploring transition management as an action-oriented research methodology. It reconsiders the applied research practice to make it more productive not only for the analysis and understanding of sustainability transitions but also for supporting these. Action-oriented approaches are both useful and challenging. They are useful in creating spaces for reflexivity, interaction and learning and in generating scientific, social and reflexive knowledge as well as actual action and thus supporting sustainability transitions whilst studying them. These approaches are challenging in the actual operationalization in messy, contested and diverse contexts, which put high demands on researcher's identity and integrity.

Besides these contributions, the work leading up to this thesis also had ***social impacts in that it influenced everyday life in Carnisse***. While consequences and impacts are notoriously hard to pinpoint in such action-oriented research, together with my colleagues at DRIFT, I provided a temporary impulse to a neighbourhood at very turbulent times. This impulse consisted of different things: the collaborative formulation of a positive narrative about the neighbourhood based on its strength rather than retelling the policy reality of a deprived neighbourhood; the creation of an empowered network open for reflection, learning and experimentation; as well as the practical

support for new initiatives that emerged. However, our work also fell short in transforming actual policy structures, cultures and practices in Rotterdam and produced valuable insights into the persistency of problems and the complexity of achieving more radical transitions at the local scale. So rather than a structural impact, our work primarily achieved process results in terms of a build-up of capacities, shared discourses, networks, stimulating entrepreneurship and enabling new initiatives. In this thesis, I argue for the potential of such 'small and soft' approaches that develop the capacities for self-organisation and reduce dependence, especially if these are connected to bigger, political and critical questions of our time. This is where researchers and universities can play a decisive role.

8.2. Remaining questions and challenges: a research agenda

As social and cultural anthropologist, I was above all trained in reflecting on, understanding and making understandable meaning-making processes. It is explication that anthropology is after, based on description and understanding rather than prescription or experimentation in search for general laws. This thesis is witness to this orientation and a first step towards unravelling the notion of culture for sustainability studies. It does so through highlighting the role of actors and their meaning-making processes (including researchers) as well as hinting towards the role of more 'intangible' aspects of our societies in sustainability transitions. However, these are but the first steps and in the following I outline avenues for a future research agenda based on the contributions of this thesis.

Interaction of actors: the concept of roles

In this thesis, I made a start with conceptualising roles of actors for sustainability transition research and developing a vocabulary through which to analyse their interaction and change as part of a transition. These conceptualisations rely heavily on my work in Carnisse for illustration. In a next step, the insights with regard to role change, the concept of role constellations and the use of roles as governance activity need thorough empirical grounding and further development. Empirical analysis could focus on historical transitions, outlining the changes of roles and role constellations over time, such as e.g. the changing roles of governments and businesses in international climate negotiations or of (wo)men in our society. Empirical analysis could also focus on current transition dynamics, describing and unravelling competing discourses with regard to role descriptions and their political implications. Other foci in transitions in the making can be current role constellations and how these are (represented to be) part of specific problem framings or the negotiation processes involved in aiming to change roles; with regard to understanding regime dynamics it could be insightful to understand instances where roles were/are not changing or where change proves difficult. With the future playing a big role in sustainability transition research, an analysis of role constellations might be potentially interesting for future scenarios or visioning.

I also see merit in further developing these concepts as reflexive tools for transdisciplinary engagements as well as for training courses for professionals, such as those that I am involved in through DRIFT's Transition Academy. In this context, participants found it rewarding to relate the more abstract notions of sustainability transitions to their own possibilities and activities through discussing, reflecting on and learning about their own and others' roles in such transitions in the making. Developing such reflexive tools more systematically is another future (research) avenue.

Sustainability transition governance on the local scale: diversity in activities

This thesis contributed to an understanding of what transition management comes to mean and can achieve on a local scale in a context where it is necessary to create momentum and a mobilizing narrative (i.e. the predevelopment phase of a transition). It also outlined a number of insights about sustainability governance on the local scale. These include, amongst others, that there is no 'one size fits all contexts' solution; that small steps need to connect to ideas of radical change on the long term as well as to broader societal developments; and that creative ways for opening spaces for learning, interaction and experimentation are necessary.

Against the insight that our societies are increasingly aware of the issues at hand as well as desired futures, what is needed are instruments and approaches apt to realize such visions and capitalize on the momentum in what could be considered the acceleration phase of transitions. Next to developing insights on what can be done and how, we also need to understand what actors need to stop doing, what needs be broken down and how to proactively deal with collapse and demise (cf. Loorbach 2014). Thus an emerging research question is: How can acceleration dynamics be understood and which analytical perspectives and operational instruments are needed to understand and facilitate the build-up of new structures, cultures and practices as well as the breakdown of existing ones? Analytically, it makes sense to take stock of different approaches and instruments that exist through (historical) analysis of the governance activities employed by actors in cities, towns or neighbourhoods in different phases of a transition. Such analysis does not need to stop by looking at activities employed by local government, but rather should include also other actors, such as e.g. social innovation actors. The resulting instruments and approaches might need reinterpretation in the light of transition governance principles but also need to be applied and thereby further developed in operational applications through transdisciplinary and action-oriented research engagements.

Action-oriented research for sustainability transitions: the many remaining challenges

Action-oriented research approaches have been around for nearly a century, however, mainstream scholarship and institutions have only started (re)discovering them – with sustainability transitions research not being an exception. This thesis has shown that such approaches are apt and meaningful for studying and supporting sustainability transitions in the making on the local scale. However, there is work ahead in clarifying

for which questions and through which specific methodologies these approaches contribute to both, societal and scientific development in the broader context of sustainability transitions.

Issues and questions which remain concern firstly, institutional space with regard to career choices, training requirements or funding requisites or more fundamentally the discussion of what kind of science we practice and what kind of university and education is supportive for such. Secondly, other questions concern the legitimacy, ethics, power dynamics and political implications of such research – explicitly engaging with a real-life setting means that a researcher needs to position herself and her activities. What does not only 'instrumental' action-oriented research look like but also critical action-oriented research in sustainability transition research? Thirdly, such research approaches need individuals and research communities who constantly develop skills and learn from experience: attention needs to be given to the exchange and peer-review of appropriate research methods as well as the ways through which these are taught. Fourthly, to safeguard the relevance and quality of action-oriented research, a continued exchange and discussion is necessary with regard to quality criteria for action-oriented research approaches in sustainability transition research. To address these questions, we can make the experience and insights of other fields productive for sustainability transitions research.

Another step is to take some of these lessons into 'mainstream' scientific activity: Why does the action researcher need to worry about intervention legitimacy and not the researcher who writes a research report? Why are normativity and ethics an issue in action-oriented research, while these aspects are downplayed in other approaches? Putting attention to such issues is not about discarding or dismantling science, but about increasing transparency and accountability and balancing expectations towards scientific results.

Looking forward: The notion of culture in sustainability transitions and its governance

My training in anthropology as well as its focus on the notion of culture has been an undercurrent in as well as an umbrella for this thesis, mirrored in its attention for locality, the roles of actors as well as alternative research methods. I conclude this thesis by putting a further explication and integration of the notion of 'culture' in sustainability transition research on the agenda.

While 'culture' is said to be one of the main aspects defining societal systems, next to structures and practices (cf. Frantzeskaki and De Haan 2009) – it is still an underexposed notion in the study and understanding of transitions (see Verhees 2012 for an exception). It is often juxtaposed to technological innovations and quick fixes, as the 'soft', hard to grasp issues of society which often stand in the way: 'if only we would all stop eating meat or start using electric cars…'. Insights from for example social and cultural anthropology as the main discipline for studying cultures in all their variety, breadth and depth have not yet found their entry into the study of sustainability transitions.

Moving beyond a reification of culture as either 'driver' or 'barrier' of a sustainability transition, can lead to a more fine-grained understanding of what moves, touches and makes sense to people. As exemplified by this thesis, it can point our analysis towards new analytical foci such as localities, everyday lives, emotions, identities, worldviews, narratives, myths and rituals and to different domains of life, such as kinship, religion, or aging. This includes a whole variety of research questions such as: Which narrative are initiatives telling about why the world has to change, who has the power to do so and how it takes place? How do people across the globe give meaning to global challenges such as climate change, mass migration and inequality? What are the culturally informed perceptions, understandings and responses to such challenges and how have these changed in the past? What is the adaptive capacity of societies in the light of such challenges? What are local definitions of future sustainability? Such aspects are downplayed in current transition research with its focus on socio-technical systems, while they constitute a big part of what makes us human and what makes societies 'tick'. Also in terms of methodologies, anthropology and its use of participant observation, ethnography or visual methods does provide us with insights in how to study such questions and gain an understanding of these 'non-rational' aspects which emerges in the interaction with people. As such, and true to my training as anthropologist I suggest the further unpacking of the notions of 'culture' and 'meaning-making' as one of the promising overarching research avenues for sustainability transitions.

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Appendices

Appendix A: Overview of project related publications for InContext, Veerkracht and MUSIC projects

Table AA.1: Overview of project-related publications

InContext
Wittmayer, J., Van Steenbergen, F., Quist, J., Loorbach, D. and C. Hoogland (2011) *The Community Arena: A co-creation tool for sustainable behaviour by local communities. Methodological Guidelines*. Deliverable 4.1, InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Wittmayer, J., Van Steenbergen, F., Bohunovsky, L., Baasch, S., Quist, J., Loorbach, D. and C. Hoogland (2011) *Pilot projects getting started. Year 1 Status Report*. Deliverable 4.2, InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Wittmayer, J., Van Steenbergen, F., Baasch, S., Feiner, G., Omann, I., Quist, J. and Loorbach, D. (2012) *Pilot projects on a roll. Year 2 pilot specific reports*. Deliverable 4.3. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191
Wittmayer, J.M., N. Schäpke, G. Feiner, R. Piotrowski and S. Baasch (2013) *Action Research for Sustainability. Reflections on transition management in practice*. Research Brief/Deliverable 5.2. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Piotrowski, R., S. Langsdorf, A. Rok i.c.w. J. Wittmayer and K. Umpfenbach (2013) *Going out of the town hall. The benefits and how they can be achieved*. Policy Brief/Deliverable 5.3. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Wittmayer, J., F. van Steenbergen, S. Baasch, G. Feiner, M. Mock and I. Omann (2013) *Pilot projects rounding up. Year 3 Pilot-specific report*. Deliverable 4.4. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Wittmayer, J., M. Mock, F. van Steenbergen, S. Baasch, I. Omann & N. Schäpke (2013) *Taking stock – Three years of addressing societal challenges on community level through action research Pilot specific synthesis report*. Deliverable 4.5. InContext: EU ENV.2010.4.2.3-1 grant agreement n° 265191.
Wittmayer, J.M., F. van Steenbergen, D. Loorbach, M. Mock and I. Omann (2013) *Exploring the transformative potential of communities*, In Quist, J., Wittmayer, J., Umpfenbach, K. and Bauler, T. (2013) Pathways, Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles. Sustainable Consumption Transitions Series, Issue 3 Proceedings of SCORAI Europe & InContext Workshop, 7-8 October 2013, Rotterdam. The Netherlands.
Quist, J., Wittmayer, J.M., Van Steenbergen, F. and D. Loorbach (2013) *Combining backcasting and transition management in the community arena*, In Quist, J., Wittmayer, J., Umpfenbach, K. and Bauler, T. (2013) Pathways, Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles. Sustainable Consumption Transitions Series, Issue 3 Proceedings of SCORAI Europe & InContext Workshop, 7-8 October 2013, Rotterdam. The Netherlands.
Schäpke, N, Omann, I., Mock, M., Wittmayer, J. and A. von Raggamby (2013) *Supporting sustainability transitions by enhancing the human dimension via empowerment, social learning and social capital*, In Quist, J., Wittmayer, J., Umpfenbach, K. and Bauler, T. (2013) Pathways, Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles. Sustainable Consumption Transitions Series, Issue 3 Proceedings of SCORAI Europe & InContext Workshop, 7-8 October 2013, Rotterdam. The Netherlands.
MUSIC
Roorda, C., Frantzeskaki, N., Loorbach, D., Van Steenbergen, F. and Wittmayer, J. (2012). *Transition Management In Urban Context – guidance manual, collaborative evaluation version*. Drift, Erasmus University Rotterdam, Rotterdam.
Roorda, C. and Wittmayer, J., (2014). *Transition Management in five European cities – an evaluation*. DRIFT, Erasmus University Rotterdam, Rotterdam.
Roorda, C., Wittmayer, J., Henneman, P., Steenbergen, F. van, Frantzeskaki, N. and Loorbach, D. (2014). *Transition Management in the Urban Context. Guidance manual*. Drift, Erasmus University Rotterdam, Rotterdam
Veerkracht

Van Steenbergen, F. & Wittmayer, J. (2012) *Carnisse in transitie? Een verkenning van het verleden, het heden en de toekomst van een Rotterdamse wijk*. DRIFT-uitgave. E 2012.05
Van Steenbergen, F., Wittmayer, J.M., and Loorbach, D. (2013) *Denken vanuit Doen. Monitoringsraamwerk Veerkracht*. Drift, Erasmus University Rotterdam.
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Appendix B: Overview of interviews and meetings in the MUSIC project

The following table gives an overview of the interviews that provided input for the research. The table covers the interviews I conducted myself as part 1) of my coaching activities of the City of Ludwigsburg, 2) of the actual transition management process in the City of Ludwigsburg and 3) of the monitoring activities within the MUSIC project.

Table AB1: Overview of interviews as part of the MUSIC project

#	Date	Function and/or organisation	Focus of interview
2011			
1	10.1.	Policy official Ludwigsburg	Monitoring MUSIC project (written survey): Transition management process
2	10.3.	Project lead pilot Mehrgenerationenhaus	Monitoring MUSIC project: Pilot project
3	10.3.	Policy official Ludwigsburg	Monitoring MUSIC project: Transition management process
4	22.9.	Inhabitant Ludwigsburg	System analysis interview Ludwigsburg process
5	22.9.	Inhabitant Ludwigsburg	System analysis interview Ludwigsburg process
6	21.9.	Policy official Ludwigsburg	System analysis interview Ludwigsburg process
7	21.9.	Inhabitant Ludwigsburg	System analysis interview Ludwigsburg process
8	7.12.	Policy official Montreuil	Monitoring MUSIC project (written survey): Transition management process
2012			
9	18.6.	Policy official Aberdeen	Monitoring MUSIC project: Transition management process
10	24.4.	Policy official Ludwigsburg	Monitoring MUSIC project: Transition management process
11	24.4.	Policy official Ludwigsburg	Monitoring MUSIC project: Transition management process
12	25.4.	Policy official Ludwigsburg	Monitoring MUSIC project: Transition management process
13	26.4.	Transition team member Montreuil	Monitoring MUSIC project: Transition management process
14	27.4.	Policy official Ghent	Monitoring MUSIC project: Transition management process
15	24.9.	Transition team member Montreuil	Monitoring MUSIC project: Transition management process
16	15.10.	Inhabitant Ludwigsburg/Active in diverse associations	Evaluation of Ludwigsburg process
17	16.10.	Inhabitant Ludwigsburg/Initiator Cycling Initiative	Evaluation of Ludwigsburg process
18	16.10.	Inhabitant Ludwigsburg	Evaluation of Ludwigsburg process
19	16.10.	Inhabitant Ludwigsburg/Journalist	Evaluation of Ludwigsburg process
20	16.10.	Inhabitant Ludwigsburg/Teacher Grammar School	Evaluation of Ludwigsburg process
21	17.10.	Inhabitant Ludwigsburg	Evaluation of Ludwigsburg process
22	28.10.	Policy official Ludwigsburg	Monitoring MUSIC project (written survey): Transition management process
23	8.11.	Inhabitant Ludwigsburg/Passive House Owner	Evaluation of Ludwigsburg process
24	8.11.	Inhabitant Ludwigsburg	Evaluation of Ludwigsburg process
25	6.12.	Transition team member Montreuil	Monitoring MUSIC project: Transition management process
2014			
26	16.9.	Policy official Rotterdam	Monitoring MUSIC project: Transition management process
27	18.9.	2 Policy officials Montreuil	Monitoring MUSIC project: Transition management process

The following table gives an overview of the meetings that provided input for the research. The table covers the meetings I attended as 1) part of my coaching activities of the City of Ludwigsburg, 2) part of the actual transition management process in the City of Ludwigsburg and 3) the consortium meetings of MUSIC.

Table AB2: Overview of attended meetings as part of the MUSIC project

#	Date	Meeting	Focus of meeting
2011			
1	10.3.	Meeting Transition team Ludwigsburg	Introduction to transition management
2	4.5.	Meeting Transition team Ludwigsburg	Introduction to transition management
3	5.5.	Meeting Energy Concept Ludwigsburg	Connecting transition management to other processes
4	18.-20.5.	Project Meeting MUSIC consortium	Sharing and learning
5	31.5.	Meeting Transition team Ludwigsburg	System & Actor Analysis Ludwigsburg
6	21.9.	Meeting Transition team Ludwigsburg	System & Actor Analysis Ludwigsburg
7	8.11.	Arena Meeting 0	Part of Transition management process
8	16.-18.11.	Project Meeting MUSIC consortium	Sharing and learning
9	7.12.	Meeting Transition team Ludwigsburg	System & Actor Analysis Ludwigsburg
2012			
10	12.3.	Arena Meeting 1	Part of Transition management process
11	23.4.	Arena Meeting 2	Part of Transition management process
12	25.-27.4.	Project Meeting MUSIC consortium	Sharing and learning
13	21.5.	Arena Meeting 3	Part of Transition management process
14	4.7.	Arena Meeting 5	Part of Transition management process
15	17.7.	Presentation Lord Mayor	Part of Transition management process
16	12.9.	Arena Meeting 6	Part of Transition management process
17	16.10.	Energy Market	Broadening transition management process
18	9./10.11.	Future conference	Broadening transition management process
19	19.-20.11.	Project Meeting MUSIC consortium	Sharing and learning
2013			
20	12.-14.6.	Project Meeting MUSIC consortium	Sharing and learning
2014			
21	8.10.	Convention: Energy Transition locally	Sharing the transition approach with neighbouring communes

Appendix C: Overview of Interviews in Carnisse

The following table gives a full overview of the interviews, which we held as part of the action research process in Carnisse in phases 2 (Orienting and Exploring) and 3 (Getting involved). For phase 4 (Monitoring and ad-hoc support), I give full details for the interviews that I have conducted. The tables indicate when the interview was conducted, by whom and its focus. We recorded the interviews upon receipt of interviewee consent and wrote interview summaries. I used the latter for data analysis in the different articles.

Table AC1: Overview of interviews in phase 2 and 3 of the action research process in Carnisse (Interviewer: JW - Julia Wittmayer, FvS – Frank van Steenbergen, JvH – Jeanette van Hoop)

#	Date	Interviewee role (organisation)	Interviewer	Focus of interview
2011				
		Phase 2: Orienting and Exploring		
1	9.8.	Professional - District Municipality	JW & FvS	System & Actor analysis
2	17.8.	Semi-Professional - Inhabitants organisation (BOC)	FvS	System & Actor analysis
3	19.9.	Entrepreneur (Self-employed)	JW & FvS	System & Actor analysis
4	23.9.	Professional - Built environment (Urbannerdam)	JW & FvS	System & Actor analysis
5	28.9.	Professional - Welfare work (Charlois Welzijn)	JW & FvS	System & Actor analysis
6	3.11.	Professional - Welfare work (Charlois Welzijn)	FvS	System & Actor analysis
7	3.10.	Inhabitant/Professional - Church (Kerk van Nazarener)	JW & FvS	System & Actor analysis
8	4.10.	Professionals - Built environment (Havensteder)	FvS	System & Actor analysis
9	29.9.	Inhabitant/Professional - School (Kameleon)	FvS	System & Actor analysis
10	6.10.	Professional - School (Klaver)	JW & FvS	System & Actor analysis
11	11.10.	Professional - Arts	FvS	System & Actor analysis
12	13.10.	Semi-Professionals - Foundation (Marokkaanse Vereniging, buurtvaders)	FvS	System & Actor analysis
13	18.10.	Inhabitant	JW	System & Actor analysis
14	18.10.	Professionals - Entrepreneurship (Ondernemersvereniging Charlois)	FvS	System & Actor analysis
15	18.10.	Inhabitant adjacent neighbourhood	JW & FvS	System & Actor analysis
16	24.10.	Inhabitant	FvS	System & Actor analysis
17	2.11.	Professional - District Municipality	JW & FvS	System & Actor analysis
18	2.11.	Professional - Youth work (TOS)	JW	System & Actor analysis
19	2.11.	Inhabitant	JW & FvS	System & Actor analysis
20	3.11.	Inhabitant	FvS	System & Actor analysis
21	1.12.	Inhabitant	JW & FvS	System & Actor analysis
22	1.12.	Inhabitant	JW	System & Actor analysis
23	6.12.	Inhabitant	JW & FvS	System & Actor analysis
24	7.12.	Professional - Healthcare (Zichtbare schakels)	FvS	System & Actor analysis
25	7.12.	Professional - Healthcare (Nancy Zeelenberg)	FvS	System & Actor analysis
26	9.12.	Inhabitant	JW & FvS	System & Actor analysis
2012				
27	5.1.	3 Semi-Professionals - History (Stichting Historisch Charlois)	JW & FvS	System & Actor analysis

28	5.1.	Inhabitant	JW	System & Actor analysis
29	6.1.	Professional - District Municipality	JW & FvS	System & Actor analysis
30	9.1.	Inhabitant	JW & FvS	System & Actor analysis
31	12.1.	Professional - Healthcare (Zorgimpuls)	JW & FvS	System & Actor analysis
32	19.1.	2 Semi-Professionals - Participation/Inhabitants	JW & FvS	System & Actor analysis
33	24.1.	2 Semi-Professionals - Youth (playground) & Professional - District Municipality	JW & FvS	System & Actor analysis
34	24.1.	Professional - District Municipality	JW & FvS	System & Actor analysis
35	24.1.	Professional - District Municipality	JW & FvS	System & Actor analysis
36	25.1.	Professional - School (CSG Calvijn - Maarten Luther)	JW & FvS	System & Actor analysis
37	30.1.	2 Professionals - Welfare work (DOCK)	JW	System & Actor analysis
38	6.2.	Inhabitant	JW	System & Actor analysis
39	7.2.	Other (Volkstuinvereniging)	JW & FvS	System & Actor analysis
40	15.2.	Professional - Welfare (former Charlois Welzijn)	JW & FvS	System & Actor analysis
41	16.2.	Inhabitant & Semi-Professional - Inhabitants organisation (BOC)	FvS	System & Actor analysis
		Phase 3: Getting involved		
42	1.3.	Other (former involvement in community centre)	JW	Experimentation
43	16.3.	Professional - Foundation (Opzoomer Mee)	FvS	System & Actor analysis
44	27.3.	Inhabitant/Professional - Church (Kerk van Nazarener)	JW	System & Actor analysis
45	29.3.	Professional - Welfare work (DOCK, former Charlois Welzijn)	JW	Experimentation
46	4.4.	Professional - District Municipality	JW	Experimentation
47	4.4.	Professional - Participation (Museum Rotterdam)	JW & FvS	System & Actor analysis
48	4.4.	Professional - Municipality of Rotterdam	JW	Experimentation
49	28.4.	3 Professionals - Municipality of Rotterdam, School (Klaver), Welfare Work	JW & FvS	Experimentation
50	23.5.	Professional - Welfare work (DOCK)	FvS	System & Actor analysis
51	23.5.	Professional - District Municipality	FvS	Experimentation
52	4.7.	Professional - Participation (Stichting Vrijwilligers Rotterdam)	FvS	Experimentation
53	9.7.	Professional - Welfare work (de Hefgroep)	FvS	Experimentation
54	12.7.	Inhabitant	JW	Experimentation
55	12.7.	2 Professionals - District Municipality	JW	Experimentation
56	19.7.	2 Professionals - Welfare Work/Participation (self-employed)	JW & FvS	Experimentation
57	13.11.	Inhabitant	JW & FvS	Evaluation deliberative process
58	13.11.	Professional - Welfare (former Charlois Welzijn)	JW & FvS	Evaluation deliberative process
59	14.11.	Semi-Professional - Inhabitants organisation (BOC)	FvS & JvH	Evaluation deliberative process
60	14.11.	Inhabitant	JW	Evaluation deliberative process
61	14.11.	Professional - Municipality of Rotterdam/Self-employed	JW	Experimentation
62	15.11.	Professional - School (Klaver)	JW & FvS	Evaluation deliberative process

63	15.11.	Inhabitant/Professional - School (Kameleon)	JW & FvS	Evaluation deliberative process
64	6.12.	Inhabitant	JW & FvS	Evaluation deliberative process
2013				
65	18.2.	Professional - Welfare (former Charlois Welzijn)	JvH	Evaluation deliberative process
66	18.2.	Inhabitant	JvH	Evaluation deliberative process
67	19.2.	Professional - School (CSG Calvijn - Maarten Luther)	JvH	Evaluation deliberative process
68	25.2.	Inhabitant	JvH	Evaluation deliberative process
69	3.3.	Inhabitant/Professional - Church (Kerk van Nazarener)	JvH	Evaluation deliberative process
70	10.3.	Professional - School (Klaver)	JvH	Evaluation deliberative process
71	27.3.	Semi-professional - Sport (Tennisvereniging Z'67)	FvS	Monitoring Veerkracht
72	3.4.	Professional - Healthcare (CJG)	FvS	Monitoring Veerkracht
73	4.4.	Professional - School (KBS Elisabeth)	FvS & JvH	Monitoring Veerkracht
74	9.4.	Professional - Municipality of Rotterdam & Professional - District Municipality (Environment)	FvS & JvH	Monitoring Veerkracht
75	10.4.	Professional - School (De Klaver)	FvS & JvH	Monitoring Veerkracht
76	16.4.	Professional - School (De Kameleon)	FvS	Monitoring Veerkracht
77	18.4.	Inhabitant adjacent neighbourhood	FvS	System & Actor Analysis
78	2.5.	Professional - District Municipality	FvS	Monitoring Veerkracht
79	2.5.	Professional - District Municipality	FvS	Monitoring Veerkracht
80	2.5.	Professional - District Municipality	FvS	Monitoring Veerkracht
81	23.5.	Professional - School (Klaver) & Inhabitant	FvS & JW	Experimentation

In phase 4: Monitoring and ad- hoc support, a total of 73 interviews have been conducted, out of which the following 11 by myself.

Table AC2: Overview of interviews in phase 4 of the action research process in Carnisse
Interviewer: JW - Julia Wittmayer, FvS – Frank van Steenbergen, SR – Sarah Rach

#	Date	Interviewee role (organisation)	Interviewer	Focus of interview
2014				
1	11.2.	Professional - Municipality of Rotterdam (Environment)	JW & SR	Monitoring Veerkracht
2	11.2.	Professional - Municipality of Rotterdam/Self-employed	JW & SR & FvS	Monitoring Veerkracht
3	13.2.	Veerkracht partner	JW & SR	Monitoring Veerkracht
4	25.2.	Semi-professional - School (Elizabeth School)	JW & SR	Monitoring Veerkracht
5	25.2.	Inhabitant adjacent neighbourhood/Volunteer	JW & SR	Monitoring Veerkracht
6	11.6.	Professional - Municipality of Rotterdam	JW & SR	Monitoring Veerkracht
2015				
7	2.6.	Inhabitant/Board member Community Centre	JW	Monitoring Veerkracht
8	2.6.	Professional - Welfare Work (DOCK)	JW	Monitoring Veerkracht

9	2.6.	Professional - Municipality of Rotterdam Area Charlois	JW	Monitoring Veerkracht
10	2.6.	Professional - Municipality of Rotterdam Area Charlois	JW	Monitoring Veerkracht
11	3.6.	Professional - School (de Klaver)/Board member Community Centre	JW	Monitoring Veerkracht

Appendix D: Overview of Meetings in Carnisse

The following table gives an overview of the meetings that provided input for the research. The table covers the meetings we organised or attended as part of the action research process in Carnisse in phases 2 (Orienting and Exploring) and 3 (Getting involved) as well as single important meetings of phase 4. Different types of official meetings are covered:

a) meetings organised by ourselves as part of the action research process;
b) meetings organised by others to which we were invited and where we were active participants
c) and meetings organised by others to which we were invited and which we observed.

However, unofficial, preparatory or working meetings are not recorded here. The table covers when the meeting took place, who attended it from the DRIFT team and our involvement (i.e. type of meeting). These meetings are reported on in fieldnotes, for those that were organized by ourselves, we also shared official minutes.

Table AD1: Overview of meetings in the context of the action research process in Carnisse
Attendee: JW - Julia Wittmayer, FvS – Frank van Steenbergen, SR – Sarah Rach, DG – Diane Geldof

#	Date	Meeting	Organization	Type	Attendee
2011					
			Phase 2: Orienting and Exploring		
1	11.10.	Inhabitants meeting Amelandseplein Carnisse	District Municipality Charlois	b	JW & FvS
2	15.11.	Community Arena - Preparation meeting	DRIFT	a	JW & FvS
2012					
3	25.1.	New Years Reception Charlois	District Municipality Charlois	c	JW
4	30.1.	Lunch-Meeting for volunteers	Welfare Organization DOCK	c	JW
			Phase 3: Getting involved		
5	1.2.	Community Arena - Experimentation meeting 1	DRIFT	a	JW & FvS
6	22.2.	Community Arena - Experimentation meeting 2	Community Center Action Group	a	JW & FvS
7	22.2.	Community Arena - Deliberative meeting 1	DRIFT	a	JW & FvS
8	6.3.	Community Arena - Experimentation meeting 3	Community Center Action Group	a	JW & FvS
9	6.3.	Inhabitants meeting Carnisse	District Municipality Charlois	c	JW & FvS
10	14.3.	Neighbourhood implementation gathering	District Municipality Charlois	b	FvS
11	15.3.	Community Arena - Deliberative meeting 2	DRIFT	a	JW & FvS
12	28.3.	Community Arena - Experimentation meeting 4	Community Center Action Group	a	JW & FvS
13	4.4.	Community Arena - Deliberative meeting 3	DRIFT	a	JW & FvS

14	8.5.	Inhabitants meeting Charlois	District Municipality Charlois	c	DG
15	16.5.	Community Arena - Deliberative meeting 4	DRIFT	a	JW & FvS
16	22.6.	Kick-Off Island of Hope	Church of the Nazarener	b	JW
17	12.7.	Summer Terrace Amelandseplein	Inhabitants organization BOC	c	JW
18	14.7.	Street party Texelsestraat	Inhabitants	b	JW & FvS
19	19.7.	Summer Terrace Amelandseplein	Inhabitants organization BOC	c	JW & FvS
20	6.9.	Community Arena - Deliberative meeting 5	DRIFT	a	JW & FvS
21	18.10.	Community Center meeting (experimentation)	Community Center Action Group	c	JW & FvS
22	19.10.	Island of Hope Meeting	Church of the Nazarener	b	JW
23	7.11.	Community Center meeting (experimentation)	Community Center Action Group	c	FvS
24	13.11.	Community Arena - Deliberative meeting 6	DRIFT	a	JW & FvS
25	14.11.	Clean-up community centre	Community Center Action Group	b	FvS
26	22.11.	Inhabitants meeting - Presentation Blossoming Carnisse	District Municipality Charlois	b	JW & FvS
27	28/29 .11.	Veerkracht Open Innovation Festival	Veerkracht	b	FvS
28	6.12.	Community Center meeting (experimentation)	Community Center Action Group	c	JW
2013					
29	24.1.	New Years Reception Charlois	District Municipality Charlois	c	JW & FvS
30	5.2.	Community Arena - Evaluation meeting	DRIFT	a	JW & FvS
31	23.5.	Networking meeting Charlois	District Municipality Charlois	c	JW
32	22.6.	Community Centre - Official re-opening	Community Center Action Group	c	JW & FvS
Single important meetings after phase 3					
2014					
33	25.3.	Community Centre reflection meeting 1	DRIFT	a	JW & FvS & SR
34	22.4.	Community Centre reflection meeting 2	DRIFT	a	JW & FvS & SR
35	27.5.	Community Centre reflection meeting 3	DRIFT	a	JW & FvS & SR

Appendix E: Overview of changing roles in Carnisse 2011 to 2014

Table AE.1 Overview of changing roles in Carnisse 2011 to 2014

	2011		2014		
#	**Role**	**Activity**	**Role**	**Activity**	
1	Area manager [Gebieds-manager]	manage coordinators; relate with board of the district level government	Area manager [Gebieds-manager]	manage area networkers; link between municipal departments and neighbourhood	Role changed
2	Welfare organisation [Welzijns-instelling]	provide support for people in problem situations or specific needs (e.g. with debt, in social isolation); organise events in the neighbourhood; exploit community centres	Welfare organisation [Welzijns-instelling]	provide support for people in problem situations or specific needs (e.g. with debt, in social isolation); organise events in the neighbourhood	Role changed
3	Inhabitants organisation [Bewoners-organisatie]	provide support to inhabitants of Carnisse regarding housing living environment, finances and job applications; publish neighbourhood newspaper; provide Dutch courses	Inhabitants organisation [Bewoners-organisatie]	provide support to inhabitants of Carnisse regarding housing living environment, finances and job applications; provide meeting rooms; publish neighbourhood newspaper; provide Dutch courses (with half the budget)	Role changed
4	Volunteer at the educational garden [Vrijwilliger op de educatieve tuin]	work under the regie of municipal service in the garden	Volunteer at the educational garden [Vrijwilliger op de educatieve tuin]	engage for running the Carnisse Garden under self-maintenance of inhabitants	Role changed
5	Sports Association [Sport vereniging]	provide facilities and lessons for sporting	Sports Association [Sport vereniging]	provide facilities and lessons for sporting; aim to contribute to the development of the neighbourhood	Role changed
6	School [School]	provide lessons; organise curricular and extra-curricular activities (e.g. Kinderpersbureau, …)	School [School]	provide lessons; organise curricular and extra-curricular activities (e.g. …); moore cooperation between schools	Role changed
7	Provider of subsidy for development of Rotterdam South [Subsidie-verstrekker]	provide subidy and develo projects for improving the situation in Rotterdam South physically, socially and economically	Provider of subsidy for development of Rotterdam South [Subsidie-verstrekker]	provide subsidy and develop projects for improving the schooling, work and housing situation in Rotterdam South	Role changed

8	Church [Kerk]	provide ideological support and services for members; host food bank and clothing bank	Church [Kerk]	provide ideological support and services for members; host food bank and clothing bank; organise Island of Hope network	Role changed
9	X		District committee [Gebieds-commissie]	advise municipality; organise participation; supervise implementation in the area	Role created
10	X		Area networker [Gebieds-netwerker]	represent district in contact with professionals, inhabitants, and organisations working in the neighbourhood	Role created
11	X		Participation broker [Participatie makelaar]	support inhabitants in devising and implementing projects to improve their neighbourhood	Role created
12	X		Youth Coach [Jongerencoach]	organise activities for youth and children	Role created
13	X		Neighbourhood team [Wijkteam]	support in upbringing children, structuring and planning day and homework; support with questions regarding work, finances, leisure time	Role created
14			Foundation Cultural Workplace Carnisse [Stichting Cultuur Werkplaats Carnisse]	provide a place for encounters; organise workshops for developing skills	Role created
15	X		Foundation Heart for Carnisse [Stichting Hart voor Carnisse]	provide place for people to meet each other; organize activities (Zumba, Bingo, ….); house kindergarden	Role created
16	X		Neighbourhood Leads Committee [Buurt Bestuurt Comité]	gather and identify the top 3 issues to be worked on for the neighbourhood	Role created

17	X		Children Zone	stimulate parental commitment; work on increasing learning time; provide vacation school; collaborate with kindergarden and schools to improve school performance of children	Role created
18	District-level government [District Municipality]	policy making and implementation on district level	X		Role dissolved
19	Neighbourhood Coordinator [Wijk coordinator]	link activities, inhabitants, professionals etc. with the district-level government	X		Role dissolved
20	Community worker [Opbouw-werker]	improve the housing- en living conditions of inhabitants through strengthening inhabitants initiatives	X		Role dissolved
21	Youth worker [Jongeren-werker]	organise activities for youth and children	X		Role dissolved
22	Museum Rotterdam	create encounters between inhabitants through providing place; record interaction as 'modern heritage'; make radio programme Radio Carnisse	X		Role dissolved
23	Custom-made Play [Speel op Maat]	create a play about Carnisse; organise playing rounds	X		Role dissolved
24	Foundation Power Neighbourhood [Stichting Krachtwijk]	organise Zumba lessons and citizenship trainings	X		Role dissolved
25	Neighbourhood Fathers [Buurtvaders]	survey the neighbourhood in a group to improve livability and security	X		Role dissolved
26	Adopting housing cooperative [Adoptie-corporatie]	work on concrete measures to increase quality of housing stock	X		Role dissolved

27	Youth organisation [Jongeren-organisatie]	work with youth on squares, providing toys at location Zonnetje	Youth organisation [Jongeren-organisatie]	work with youth on squares, providing toys at location Zonnetje	Role stayed
28	Neighbourhood nurse [Wijkverpleeg-kundige]	provide nursing tasks in the neighbourhood	Neighbourhood nurse [Wijkverpleeg-kundige]	provide nursing tasks in the neighbourhood	Role stayed
29	Health facility [Zorginstelling]	provide elderly care	Health facility [Zorginstelling]	provide elderly care	Role stayed
30	Volunteer Van Swietenhof Garden	take care of the Van Swietenhof Garden	Volunteer Van Swietenhof Garden	take care of the Van Swietenhof Garden	Role stayed
31	Neighbourhood Mediation [Buurt-bemiddeling]	support neighbours in solving problems and arguments	Neighbourhood Mediation [Buurt-bemiddeling]	support neighbours in solving problems and arguments	Role stayed
32	Citizensurveyors [Burgerblauw]	survey the neighbourhood in groups of citizens and report situations which are not "clean, intact or secure" (schoon heel of veilig).	Citizensurveyors [Burgerblauw]	survey the neighbourhood in groups of citizens and report situations which are not "clean, intact or secure" (schoon heel of veilig).	Role stayed
33	Supporter for home owner associations [VVE Ondersteuner]	inform, stimulate and facilitatw home owner associations regarding renovations	Supporter for home owner associations [VVE Ondersteuner]	inform, stimulate and facilitatw home owner associations regarding renovations	Role stayed
34	Supporter for sport activities [Sportsupport]	support, stimulate and facilitate recreational sport in Rotterdam (incl. school sport associations)	Supporter for sport activities [Sportsupport]	support, stimulate and facilitate recreational sport in Rotterdam (incl. school sport associations)	Role stayed
35	Volunteer Playground [Vrijwilliger speeltuin]	exploit playground, organise activities	Volunteer Playground [Vrijwilliger speeltuin]	exploit playground, organise activities	Role stayed
36	Resilient Carnisse [Veerkracht Carnisse]	develop and organise activities in four areas: at home, in public space, in schools and in the neighbourhood	Resilient Carnisse [Veerkracht Carnisse]	develop and organise activities in four areas: at home, in public space, in schools and in the neighbourhood	Role stayed
37	Squarecoach Amelandse-square [Pleincoach Amelandseplein]	intitiate, coordinate and support activities at Amelandseplein; deal with complaints regarding the square	???		Unclear

38	Committee of Amelandse-square [Amelandseplein commissie]	organise summer terrace event	???		Unclear

Samenvatting

Maatschappijen over de hele wereld worden met fundamentele duurzaamheidsvragen in de vorm van sociale en ecologische crises geconfronteerd. Daar hoort groeiende ecologische druk bij, zoals klimaatverandering, grondstofuitputting of niet-duurzame consumptie- en productiepatronen, maar ook sociale crises, zoals het onderuit gaan van het financiële en economische systeem na 2008, het ontmantelen van welvaartsstaten, armoede en massa-migratie. Er bestaan geen panklare, eenduidige oplossingen voor deze problemen. Ze zijn complex, onzeker, het is lastig ze te doorgronden en te sturen en ze zijn niet gestructureerd. Deze problemen zijn van mondiale aard, maar het is in wijken, gemeenschappen, klein-stedelijke gebieden, steden en regio's waar we het duidelijkst interacteren met deze problemen en waar nieuwe inzichten over hoe ermee om te gaan ontstaan. Deze dissertatie zoomt in op hoe complexe en grootschalige maatschappelijke uitdagingen weerklank hebben op lokale schaal, welke antwoorden getriggerd worden en hoe gemeenschappen op lokale schaal door geëngageerd onderzoek in staat kunnen worden gesteld om hun eigen antwoorden te vinden. Om te begrijpen hoe duurzaamheidsvraagstukken op lokale schaal aangegaan kunnen worden, zoomt deze dissertatie in op een specifieke plek in Nederland: De wijk Carnisse in het Zuiden van Rotterdam.

Vanwege de economische crisis die in 2008 aan de mondiale oppervlakte kwam en de bijbehorende bezuinigingen op de nationale begroting kwamen niet alleen de Nederlandse regering, maar ook andere traditionele investeerders zoals woningcorporaties in financieel zwaar weer en hadden duidelijk minder te besteden. Dit had zijn effect op lokaal beleid: waar eerder financiële injecties tastbare interventies in achterstandswijken faciliteerden werd nu de nadruk gelegd op een actieve rol voor inwoners en burgers. Dit fenomeen wordt vaak beschreven als 'actief burgerschap' of 'participatiesamenleving' en is deel van een bredere hervormingsagenda voor de welvaartstaat; gedreven door het veranderend karakter van de welvaartsstaat worden burgers geacht zelf verantwoordelijkheid voor het eigen welbevinden en voor die van de gemeenschap te nemen. De rol van de lokale overheid wordt steeds meer gezien als faciliterend en ondersteunend dan als controlerend en behoudend, en de rol van de inwoner wordt er steeds meer één van actief zijn in de nabije omgeving en het vervullen van maatschappelijke plichten dan één van ontvangen van (overheids)diensten en verworven rechten. De verandering van deze rollen en de interactie tussen die rollen staat hoog op de publieke agenda en heeft directe invloed op het leven en werken in de steden, klein-stedelijke gebieden en wijken in heel Nederland.

Deze dissertatie onderzoekt hoe bredere ontwikkelingen, sociale trends, dynamieken en discoursen manifest worden door te interacteren met de leefwerelden in de wijk Carnisse. Hoe 'landt' nationale politiek, zoals decentralisatie van bv. overheidsdiensten, op lokaal niveau? Wat is die economische crisis eigenlijk en hoe wordt er betekenis aan gegeven? Carnisse is slechts één van de lokaliteiten waar mondiale en nationale problemen, gebeurtenissen en trends zich manifesteren, interacteren met leefwerelden en waar ze betekenis verwerven. In deze dissertatie gebruik ik Carnisse als exemplarisch

voorbeeld van de zoektocht van steden en lokale gemeenschappen wereldwijd naar het adresseren van kwesties die daarbij aan bod komen en het verkennen van mogelijke toekomstige routes om ermee om te gaan. Vanuit een transitieoogpunt staan de kwesties in Carnisse niet op zichzelf, maar hangen samen met elkaar en andere, aanpalende kwesties en zijn ze van persistente aard. Wetenschappers betogen een 'duurzaamheidstransitie' als noodzakelijk voor het confronteren van deze kwesties. Gebaseerd op dit betoog hebben mijn collega's en ik gewerkt met bewoners en (wijk)professionals van Carnisse in een poging de uitdagingen die de wijk heeft te analyseren, te begrijpen en aan te gaan, gebruikmakend van transitiemanagement als actie-georiënteerde onderzoeksmethode.

Deze dissertatie richt zich op de lokale schaal van wijken, klein-stedelijke gebieden en steden en hun interactie met mondiale problemen en duurzaamheidsvraagstukken. Op dit niveau is onze interactie met deze kwesties het meest evident. Hierdoor kunnen we het huidig begrip van rollen van actoren, de relaties ertussen en de bijbehorende activiteiten onder de loep nemen. Eén van deze rollen is die van wetenschapper; wat zijn de juiste benaderingen en methoden voor het bestuderen en ondersteunen van duurzaamheidstransities op een lokaal niveau? Geplaats in de context van een Nederlandse wijk en de kwesties waarmee deze geconfronteerd is, gebaseerd op transitieonderzoek en geïnspireerd door actie-georiënteerd onderzoek dient deze dissertatie drie doelen:

- het leveren van een bijdrage aan het onderzoek naar duurzaamheidstransities door het concept van rollen van actoren in lokale duurzaamheidstransities te verduidelijken
- het contextualiseren van transitiemanagement als besturingsmethode op lokaal schaalniveau
- het leveren van een bijdrage aan het ontwikkelen van actie-georiënteerde en transformatieve onderzoeksbenaderingen in het onderzoek naar duurzaamheidstransities

Dit leidt tot de volgende hoofdonderzoeksvraag voor mijn dissertatie: **Hoe kunnen we de kennis over duurzaamheidstransities en hun governance op een lokale schaal, de veranderende rol van actoren en, in het bijzonder, de rol van het onderzoek en de onderzoeker vergroten?**

Ik beantwoord deze vraag via een aantal hoofdlijnen, die als volgt worden samengevat:

De ***theoretische bijdrage*** van deze dissertatie is een nieuw perspectief op transities met een focus op de veranderende interactie tussen verschillende actoren. Deze worden gezien als indicatief voor veranderingen in het sociale weefsel van een systeem, zijn machtsrelaties, gedeelde waarden, normen en overtuigingen. Het richt zich niet op socio-technische transities, maar op een conceptualisatie van transitiedenken in gemeenschappen op lokaal niveau. Dit verschuift de focus naar persoonlijke en sociale relaties als analytische focus en dus naar sociale transities die voortkomen uit sociale

innovaties. Ik doe dit door het concept 'rollen van actoren' als een middel tot analyse in transitieonderzoek te introduceren.

De empirische bijdrage: Deze dissertatie beschrijft en kadert 'transitiemanagement' als governancebenadering voor duurzaamheidstransities op lokaal niveau, en meer specifiek voor het begrijpen van en antwoord vinden voor sociaal-economische transitiedynamieken op locaal niveau. Dit doe ik door transitiemanagement te vergelijken met andere governancemethoden, het te kaderen in historisch perspectief, verschillende toepassingen te systematiseren en het analyseren van en reflecteren op de potentie en de uitdagingen op lokaal niveau.

De methodologische bijdrage van deze dissertatie is het verder verklaren en ontwikkelen van een actie-georiënteerde onderzoeksmethode voor duurzaamheidstransities. Specifiek verkent het transitiemanagement als een actie-georiënteerde onderzoeksmethodologie. Ik heroverweeg daarbij toegepaste onderzoeksmethodes om ze effectiever te maken, niet alleen voor het analyseren en begrijpen van duurzaamheidstransities maar ook voor het ondersteunen ervan. Actie-georiënteerde onderzoeksmethodes zijn tegelijk bruikbaar en uitdagend. Bruikbaar bij het creëren van ruimte voor reflexiviteit, interactie en leren en bij het genereren van wetenschappelijke, sociale en reflexieve kennis en daadwerkelijke actie, daarbij duurzaamheidstransities ondersteunend terwijl ze worden onderzocht. Het operationaliseren van deze benaderingen is zeer uitdagend in meestal onoverzichtelijke, betwiste en gevarieerde contexten. Van de onderzoeker vraagt dit een hoge mate van bewustzijn van identiteit en integriteit.

Naast deze bijdragen heeft het werk aan deze dissertatie ook **sociale gevolgen gehad: het heeft het leven in Carnisse beïnvloed**. Terwijl het altijd moeilijk is om consequenties en gevolgen van actie-georiënteerd onderzoek te duiden, heb ik samen met mijn collega's van DRIFT een tijdelijk impuls aan een wijk in turbulente tijden gegeven. Deze impuls bestond uit verschillende dingen: het gezamenlijk formuleren van een positief verhaal over de wijk dat gebaseerd is op zijn sterke kanten en dus niet op de beleidsrealiteit van een achterstandswijk; het creëren van een empowered netwerk dat open staat voor reflectie, leren en experimenteren; en praktische ondersteuning voor nieuwe initiatieven. Ons werk leidde niet tot het daadwerkelijk veranderen van beleidsstructuren, –culturen en -praktijken in Rotterdam. Het bracht inzichten in de persistentie van de problemen en de complexiteit van het voor elkaar krijgen van meer radicale transities op lokale schaal. In plaats van een structurele impact heeft ons werk vooral procesresultaten gehad met betrekking tot het ontwikkelen van capaciteiten, gedeelde verhalen, netwerken, het stimuleren van ondernemerschap en het faciliteren van nieuwe initiatieven. In deze dissertatie pleit ik voor het potentieel van dit soort 'kleine en softe' benaderingen, die capaciteiten ontwikkelen voor zelforganisatie en afhankelijkheden reduceren, vooral wanneer deze met grote, politieke en kritische hedendaagse vragen verbonden worden. Hierbij kunnen onderzoekers en universiteiten een belangrijke rol spelen.

Deze dissertatie is gebaseerd op vier artikelen en een boekhoofdstuk, gekaderd in een algemene introductie, methode en conclusie. Twee Intermezzo's geven meer informatie over de wijk Carnisse, als empirische setting van deze dissertatie. Intermezzo A introduceert de wijk en geeft een overzicht van 10 jaar beleidsactiviteit. Intermezzo B geeft geselecteerde inzichten voor alle onderzoeksvragen gebaseerd op de rijke empirische data voortkomend uit vier jaar actie-georiënteerd onderzoek.

Het eerste hoofdstuk leidt de centrale onderzoeksvraag en onderzoeksdoelstellingen in en plaatst deze in de context van (het werk in) Carnisse. Het introduceert de theoretische, empirische en methodische context van deze dissertatie. Het hoofdstuk geeft een beknopt overzicht van transitieonderzoek als theoretische thuisbasis van deze dissertatie en onderbouwt dat deze een adequaat vocabulaire mist om veranderingen in de rollen en relaties van actoren als onderdeel van een transitie in het sociale weefsel van onze maatschappijen te analyseren en bediscussiëren. De empirische focus van deze dissertatie is op de lokale schaal van wijken, klein-stedelijke gebieden en steden – een schaalniveau waarop transitieonderzoek en transitiegovernance vooruitgang heeft geboekt. Echter, terwijl transitiemanagement op dit schaalniveau toegepast werd, mist een systematisch overzicht van de praktische en analytische inzichten en een historische inbedding. Wat betreft methodologie, wil deze dissertatie bijdragen aan het verder ontwikkelen van actie-georiënteerde en transformatieve onderzoeksbenaderingen in het onderzoek naar duurzaamheidstransities. Deze zijn onderontwikkeld en missen een systematisch begrip van de activiteiten, corresponderende rollen en bijbehorende uitdagingen voor onderzoekers.

Het tweede hoofdstuk gaat in op de in deze dissertatie gebruikte onderzoeksbenadering en –methodologie. Het brengt inzichten van onderzoeksbenaderingen van de interpretatieve, transdisciplinaire en actieonderzoekstraditie bijeen om een onderzoeksperspectief voor transitieonderzoek te ontwerpen dat bevorderlijker is voor actie-georiënteerd onderzoek. Ik beschrijf een blik op maatschappij en wetenschap als overlappende en elkaar beïnvloedende in plaats van aparte sferen en beargumenteer dat de belangrijkste activiteit van actie-georiënteerd onderzoek het creëren en onderhouden van ruimtes voor interactie is, waar ontwikkelingen ter discussie gesteld kunnen worden, ideeën uitgewisseld, toekomsten bedacht, alsmede met oplossingen en ideeën geëxperimenteerd. In dit hoofdstuk leg ik de relatie tussen actie en kennis uit, stel ik een aantal kwaliteitscriteria voor dit soort onderzoek voor en bespreek vragen over normativiteit en subjectiviteit. Meer praktijkgericht beschrijft dit hoofdstuk ook de onderzoeksprojecten waar ik onderdeel van uit maakte, de institutionele context bij DRIFT en het actie-georiënteerde onderzoeksproces in Carnisse.

Het derde hoofdstuk is een artikel met de titel *Roles in Transition: Insights from role theory for understanding sustainability transitions,* dat bijdraagt aan de doelstelling van deze dissertatie om het concept van rollen van actoren in duurzaamheidstransities te verduidelijken. Met focus op de multi-actoren karakter van transities, stelt het artikel voor om fundamentele veranderingen in de rollen van actoren en hun relaties als een belangrijk element van elke transities te begrijpen. Geïllustreerd door het empirische werk in Carnisse en gebaseerd op een review van rollentheorieën in sociale interactie onderzoek ontwikkelt dit artikel een 'rollen-in-transitie perspectief'. Dit perspectief stelt

voor om rollen te begrijpen als een wisselwerking tussen stabiliteit en veranderingen, het verbindt rollen met veranderingen in socialen systemen en neemt politieke aspecten en aspecten van macht in overweging. De operationalisatie van het concept van rollen voor transitiesstudies maakt het mogelijk om (veranderende) rollen en (veranderende) relaties tussen actoren rollen in rollenconstellaties als indicatief voor veranderingen in het sociaal weefsel en zijn machtsrelaties en gedeelde waarden, normen en overtuigingen te begrijpen. Het maakt het ook mogelijk om het flexibel gebruik van rollen als een strategische transitiegovernance-interventie te benaderen.

Hoofdstuk 4 is een boekhoofdstuk met de titel *Governing Transitions in Cities: Fostering Alternative Ideas, Practices, and Social Relations through Transition Management*. Het draagt bij aan de doelstelling van deze dissertatie om transitiemanagement als governancebenadering voor de lokale schaal te contextualiseren. Dit boekhoofdstuk geeft een systematisch overzicht van toepassingen van transitiemanagement op het lokale schaalniveau door beloftes en uitdagingen te analyseren en erop te reflecteren. Het zoomt in op de verschillende elementen van transitiemanagement (principes, raamwerk, instrumenten en proces methodologiën) en hoe deze zowel als heuristiek alsmede operationeel in de stedelijke context gebruikt worden. Het formuleert een aantal lokale, specifiek urbane contextkarakteristieken die voor de toepassing van transitiemanagement in deze context belangrijk zijn. Deze zijn geografische, persoonlijke, institutionele nabijheid alsmede interacties en onderlinge afhankelijkheid tussen verschillende schaalniveaus en domeinen.

Hoofdstuk 5 is een artikel met de titel *Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management*. Het draagt bij aan de doelstelling van deze dissertatie om transitiemanagement als governancebenadering voor de lokale schaal te contextualiseren. Dit artikel geeft een historische inbedding van transitiemanagement in relatie tot Lokale Agenda 21-processen en vergelijkt de twee benaderingen in zes dimensies, namelijk geschiedenis, doel, aard van verandering, begrip van governance, procesmethodologie en actoren. Deze vergelijking heeft tot een aantal inzichten voor de governance van duurzaamheid(stransities) op het lokaal niveau geleid. Ten eerste, in plaats van te streven naar een 'one-fits-all' oplossing zou diversiteit in governance-benaderingen voor duurzaamheidstransities gekoesterd moeten worden. Ten tweede, een meer geïntegreerd duurzaamheidsperspectief heeft op lokale schaal zijn intrede gedaan en duurzaamheid zou in de praktijk gebracht moeten worden door activiteiten, projecten en experimenten om lokaal betekenis te krijgen. Ten derde, kleine concrete stappen (zoals activiteiten, projecten en experimenten) zouden met ideeën van radicale verandering (in plaats van optimalisatie) verbonden moeten worden om zeker te stellen dat ze de wortel van de problemen aanpakken en niet alleen de symptomen bestrijden. Ten vierde, de governance van duurzaamheid op lokale schaal moet creatieve wegen voor engagement vinden, die met de spanning tussen de behoefte voor radicale veranderingen en de behoefte om verbinding te maken met invloedrijke spelers en dominante discoursen om kunnen gaan. Een laatste inzicht heeft te maken met het openen van ruimte voor leren, verandering en experimenteren voor verschillende actoren met sociale innovatie en het creëren van nieuwe sociale praktijken, relaties en ideeën als doel.

Hoofdstuk 6 is een artikel met de titel *Making sense of sustainability transitions locally: how action research contributes to addressing societal challenges.* Dit artikel draagt bij aan het doel van de dissertatie om actie-georiënteerde en transformatieve onderzoeksbenaderingen voor het onderzoek naar duurzaamheidstransities verder te ontwikkelen. Gebaseerd op twee empirische voorbeelden van actie-georiënteerd transitiemanagement onderzoek, beargumenteert dit artikel dat actie-georiënteerd onderzoek als focus heeft wegen te vinden om met elkaar aan de duurzaamheid van een gemeenschap te werken en gezamenlijk betekenis te geven en realiteiten te creëren door ruimtes voor interactie. Deze laten alternatieve ideeën (bijv. kennis, toekomstvisies), praktijken (bijv. praktische experimenten, transformatieve activiteiten) en sociale relaties (bijv. nieuwe actoren) toe die duurzaamheidstransities vooruit kunnen helpen. Zulk onderzoek heeft ten doel de lokale situatie te veranderen en leidt tot een diepgaand, in plaats van oppervlakkig, begrip van de dynamieken en karakteristieken van de lokale context.

Hoofdstuk 7 is een artikel met de titel *Action, research and participation: roles of researchers in sustainability transitions.* Dit artikel draagt bij aan het doel van de dissertatie om een actie-georiënteerde en transformatieve onderzoeksbenaderingen voor de studie van duurzaamheidstransities verder te ontwikkelen. Gebaseerd op literatuur over actieonderzoek en transdisciplinair onderzoek alsmede empirisch werk in Carnisse, ontwikkelt dit artikel een systematisch begrip van de activiteiten, corresponderende rollen en bijhorende uitdagingen voor onderzoekers in actie-georiënteerde (of proces-georiënteerde) onderzoeksbenaderingen. Het specificeert een aantal ideaaltypische rollen voor onderzoekers wanneer ze met sleutelvragen bij het creëren en onderhouden van ruimte voor sociaal leren worstelen. Deze zijn change agent, kennismakelaar, reflectieve onderzoeker, zelf-reflexieve onderzoeker en proces facilitator. Dit artikel bespreekt ook implicaties voor de zelf-reflexiviteit van de onderzoeker, in termen van rollen conflicten en potentiëlen, en voor de veranderende rol van de onderzoeker en onderzoek in het algemeen.

Het afsluitende hoofdstuk beantwoordt de onderzoeksvragen, benadrukt de theoretische, empirische en methodologische contributies voor het groeiende veld van duurzaamheidstransities, duurzaamheidsonderzoek en governance theorieën en beschrijft een toekomstige onderzoeksagenda.

Zusammenfassung

Gemeinschaften weltweit stehen vor fundamentalen Nachhaltigkeitsherausforderungen in der Form sozialer und ökologischer Krisen. Hierzu zählen wachsende ökologische Belastungen wie Klimawandel, Rohstoffverknappung und zunehmende Konkurrenz um Rohstoffe oder untragbare Produktions- und Konsummuster, sowie soziale Problemstellungen wie der Zusammenbruch des finanziellen und ökonomischen Systems nach 2008, Veränderungen des Wohlfahrtsstaates, demographischer Wandel, Armut und Massenmigration. Aufgrund komplexer Interdependenzen zwischen Ursache und Wirkung, auf welchen diese derzeitigen Problemstellungen und Krisen basieren, werde sie oft als ‚persistente Probleme' charakterisiert. Für diese Art von Problemen existieren keine einfachen Lösungen; die Probleme selbst sind umstritten, kontextabhängig, und systemisch, sie sind tief in gesellschaftlichen Strukturen verwurzelt, ihre Formulierung normativ, und sie betreffen viele verschiedene Akteure. Die dargestellten Probleme sind globaler Natur. Am deutlichsten treten sie jedoch in Nachbarschaften, Kleinstädten, Städten und Regionen auf. Hier bilden sich auch neue Einsichten darüber, wie man diesen Problemen begegnen kann. Diese Doktorarbeit konzentriert sich auf die lokalen Auswirkungen dieser komplexen und großen gesellschaftlichen Herausforderungen, sowie die Art und Weise wie lokale Gemeinschaften durch engagierte Forschung befähigt werden um ihre eigenen Lösungen zu finden. Diese Arbeit konzentriert sich insbesondere (exemplarisch) auf eine Nachbarschaft im Süden von Rotterdam, Carnisse, da sie mit persistenten sozialen, ökonomischen und ökologischen Herausforderungen konfrontiert ist.

Aufgrund der Wirtschaftskrise von 2008 und den damit einhergehenden Haushaltskürzungen war nicht nur die niederländische Regierung in finanziellen Problemen und konnten weniger Geld aufbringen, sondern auch andere traditionelle Investoren in Nachbarschaften, wie beispielsweise Wohnungsbaugenossenschaften. Diese finanziellen Probleme beeinflussten unmittelbar deren Politik und Handlungen mit Bezug auf und in Nachbarschaften. Während sie früher in die physische Entwicklung sozial-ökonomisch benachteiligter Nachbarschaften investierten, hoben sie nach und nach die aktivere Rolle hervor, die Bewohner und Bürger einnehmen sollten. Letzteres wird auch in den Diskursen zu ‚Aktive Bürgerschaft' und ‚Beteiligungsgesellschaft' erläutert und ist damit Teil einer weiteren Agenda zur Neugestaltung des Wohlfahrtsstaates: Motiviert durch die Neugestaltung des Wohlfahrtsstaates sollte jede/r Bürger/in seine/ihre persönliche Verantwortung übernehmen, sowie die weitgefasstere Verantwortung für das Gemeinwesen. Die Rolle der lokalen Verwaltung verändert sich in zunehmendem Maße von „kontrollierend und eindämmend" zu „unterstützend und fördernd". Die Rolle des Bewohners verändert sich von einer Anrechtshaltung und dem Empfangen von Dienstleistungen zu einer Verpflichtungshaltung und einer aktiveren Teilhabe am Lebensumfeld. Demnach sind sich verändernde Rollen und Interaktionen Teil des öffentlichen Interesses und wirken sich direkt auf das Leben und Arbeiten in Städten, Kleinstädten und Nachbarschaften in den Niederlanden aus.

Diese Doktorarbeit untersucht, wie allgemeine Entwicklungen, gesellschaftliche Trends, Dynamiken und Diskurse sichtbar werden und wie sie mit gelebten lokalen Realitäten in der Nachbarschaft Carnisse interagieren. Welche Formen nehmen nationale Regelungen auf lokaler Ebene an, wie zum Beispiel Dezentralisierungen? Was ist ‚die Wirtschaftskrise' und welche Bedeutung erlangt sie? Carnisse ist nur eine Lokation, in welcher globale und nationale Probleme, Fragestellungen und Trends sichtbar werden, mit lokalen Realitäten interagieren und Bedeutung erlangen. Diese Doktorarbeit betrachtet Carnisse als einen exemplarischen Ort für die Suche von Städten und lokalen Gemeinschaften weltweit um ihre Probleme anzugehen und mögliche Zukunftsrichtungen zu erkunden. Vom Standpunkt der Transitionsforschung aus können die Probleme in Carnisse am besten als miteinander verbunden und persistent verstanden werden. Wissenschaftler halten eine Nachhaltigkeitstransition als erforderlich, um diese Probleme anzugehen. Ausgehend von diesen wissenschaftlichen Arbeiten haben Kollegen und ich Transitionmanagement als einen handlungsorientierten Forschungsansatz verwendet, um zusammen mit Bewohnern und Berufstätigen in Carnisse die Herausforderungen der Nachbarschaft zu analysieren, zu verstehen und anzugehen.

Demnach konzentriert sich die vorliegende Doktorarbeit auf die lokale Ebene von Nachbarschaften, Kleinstädten und Städten und der Interaktion mit globalen Problemen und Nachhaltigkeitsfragen. Auf diesem Level interagieren wir am sichtbarsten mit diesen Problemen und stellen dadurch Rollenverständnisse, Akteursbeziehungen und entsprechende Aktivitäten in Frage. Eines dieser Rollenverständnisse ist das des Forschers: Was sind geeignete Methoden, um Nachhaltigkeitstransitionen auf lokaler Ebene zu untersuchen und zu unterstützen? Eingebettet im Kontext einer niederländischen Nachbarschaft und der Fragen und Probleme die sich ihr stellen sowie basierend auf Transitionsforschung und inspiriert durch handlungsorientierte Forschung hat diese Doktorarbeit drei übergeordnete Ziele:

- einen Beitrag zur Transitionsforschung durch die Klärung des Konzepts der Aktorenrolle in lokalen Nachhaltigkeitstransitionen
- die Kontextualisierung von Transitionmanagement als Governance-Ansatz für die lokale Ebene
- einen Beitrag zur Entwicklung eines handlungsorientierten und transformativen Forschungsansatzes in der Forschung zu Nachhaltigkeitstransitionen

Hieraus ergibt sich die folgende übergeordnete Forschungsfrage: **Wie kann das Verständnis von Nachhaltigkeitstransitionen und deren Governance auf lokaler Ebene die sich verändernde Rolle von Akteuren und insbesondere die Rolle von Forschung und des/der Forschers/Forscherin verbessert werden?**

Diese Doktorarbeit beantwortet diese Frage durch eine Anzahl von Beiträgen:

Theoretischer Beitrag: Diese Doktorarbeit klärt das Verständnis von Transitionen durch einen Fokus auf die sich verändernden Interaktionen zwischen Akteuren. Diese weisen auf Veränderungen im gesellschaftlichen Gefüge eines Systems und dessen

Machtsbeziehungen und geteilten Werte, Normen und Überzeugungen hin. Fokus wird hierbei nicht auf sozio-technische Transitionen, die auf technologischen Innovationen basieren, gelegt, sondern auf der Konzeptualisierung von Transitionsdenken in Gemeinschaften auf lokaler Ebene. So wird als analytischer Fokus besondere Aufmerksamkeit auf persönliche und soziale Beziehungen gelegt und damit auf ‚soziale' Transitionen, die auf sozialen Innovationen aufbauen. Dies wird durch die Einführung des Konzepts der Aktorenrolle als analytisches Element in der Transitionsforschung erreicht.

Empirischer Beitrag: Diese Doktorarbeit beschreibt Transitionmanagement als einen Governance-Ansatz für Nachhaltigkeitstransitionen auf lokaler Ebene, insbesondere auf das Verstehen und Angehen sozioökonomischer Transitionsdynamiken auf lokaler Ebene. Dies wird erreicht durch den Vergleich von Transitionmanagement mit anderen Ansätzen zur Nachhaltigkeitsgovernance, der historischen Einbettung, Systematisierung von Anwendungsmöglichkeiten sowie Analyse und Reflektion der Versprechungen und Herausforderungen bei Anwendung auf lokaler Ebene.

Methodologischer Beitrag: Diese Doktorarbeit erarbeitet einen handlungsorientierten Ansatz für die Forschung von Nachhaltigkeitstransitionen und entwickelt diesen weiter. Fokus liegt hierbei auf der Erkundung von Transitionmanagement als einer handlungsorientierten Forschungsmethodik. Die derzeit angewandte Forschungspraxis wird reflektiert um sie produktiver für Analyse, Verständnis sowie Unterstützung von Nachhaltigkeitstransitionen zu gestalten. Handlungsorientierte Forschungsansätze sind sowohl nützlich als auch herausfordernd. Sie dienen der Einrichtung von Räumen für Reflexivität, Interaktion und Lernen und bringen wissenschaftliches, soziales und reflexives Wissen sowie entsprechende Aktivitäten hervor. Sie erörtern und unterstützen Nachhaltigkeitstransitionen. Diese Forschungsansätze sind in der tatsächlichen Operationalisierung herausfordernd, da sie in chaotischen, umstritten und verschiedenartigen Kontexten geschieht, welche mit hohen Anforderungen an die Identität und Integrität des Forschers einhergehen.

Neben diesen wissenschaftlichen Beiträgen hatte die Forschungsarbeit als Basis dieser Doktorarbeit auch **soziale Auswirkungen, da sie das Leben in Carnisse beeinflusste**. Es ist offenkundig schwierig, für solche handlungsorientierten Forschungsansätze Konsequenzen und Auswirkungen genau zu definieren. Meine Kollegen bei DRIFT und ich haben einer Nachbarschaft einen zeitlich begrenzten Impuls gegeben. Dieser Impuls beinhaltete verschiedene Aktivitäten; das gemeinschaftliche Formulieren einer positiven Geschichte über die Nachbarschaft basierend auf ihren Stärken anstelle einer Wiederholung des politischen Diskurs über eine sozial benachteiligte Nachbarschaft, die Bildung eines befähigten Netzwerkes, das gegenüber Reflektion, Lernen und Experimenten offen ist sowie die praktische Unterstützung für neu aufkommende Initiativen. Allerdings hat unsere Arbeit die tatsächlichen Strukturen, Kulturen und Praktiken, insbesondere die der Rotterdamer Politik nicht transformiert. Sie gibt wertvolle Einblicke in die Persistenz der Probleme sowie in die Komplexität, die mit dem Erreichen radikalerer Veränderungen auf lokaler Ebene einhergeht. Anstatt struktureller sozialer Auswirkungen hat unsere Arbeit vor allem Prozessresultate erreicht: das Aufbauen von Kapazitäten geteilter Diskurse und Netzwerke; Stimulanz von

Unternehmertum und das Ermöglichen neuer Initiativen. In dieser Doktorarbeit argumentiere ich für das Potenzial solcher ‚kleinschrittiger und weicher' Ansätze, da sie Kapazitäten für Selbstorganisation schaffen und Abhängigkeiten reduzieren. Forscher und Universitäten können bei der Verbindung dieser Ansätze mit größeren politischen und kritischen Fragen unserer Zeit eine entscheidende Rolle spielen.

Diese Doktorarbeit beinhaltet vier Artikel und ein Buchkapitel, welche durch eine übergeordnete *Einleitung*, *Methodologie* und *Schlussfolgerung* gerahmt werden. Die Arbeit beinhaltet auch zwei *Intermezzos*, welche auf die empirische Umgebung in Carnisse eingehen. Intermezzo A stellt die Nachbarschaft sowie die politischen Aktivitäten der letzten zehn Jahre vor. Intermezzo B bietet ausgewählte Einsichten zu den verschiedenen Forschungsfragen. Sie basieren auf den empirischen Daten, die während der vierjährigen handlungsorientierten Forschung gesammelt und analysiert wurden.

Das erste Kapitel stellt die übergeordnete Forschungsfrage vor und kontextualisiert diese in Carnisse. Es stellt auch den theoretischen, empirischen und methodologischen Rahmen dieser Doktorarbeit dar. Es liefert eine bündige Übersicht der Transitionsforschung als theoretische Basis dieser Doktorarbeit und hebt das Fehlen geeigneter Konzepte für die Analyse und Diskussion von Veränderungen in sozialen Rollen und ihren Verbindungen als Teil einer Transition im gesellschaftlichen Gefüge hervor. Der empirische Fokus dieser Arbeit liegt auf der lokalen Ebene von Nachbarschaften, Kleinstädten und Städten, auf der Fortschritte in der Transitionsforschung und Transitions-Governance Fortschritte stattfanden. Während Transitionmanagement auf dieser Ebene angewandt wurde, fehlt jedoch eine systematische Übersicht der praktischen und analytischen Einsichten sowie dessen historische Einbettung. Im methodologischen Sinne zielt diese Doktorarbeit darauf ab, an der Weiterentwicklung handlungsorientierter und transformativer Forschungsansätze in der Transitionsforschung beizutragen. Diese sind bislang unterentwickelt; es fehlt unter anderem ein systematisches Verständnis der Aktivitäten, einhergehenden Rollen und Herausforderungen für Forscher.

Im zweiten Kapitel werden Forschungsansatz und Methodologie dieser Doktorarbeit erläutert. Es bringt Einsichten von Forschungsansätzen unterschiedlicher Traditionen (interpretative, transdisziplinäre und Aktionsforschung) zusammen um eine Forschungsperspektive für Transitionsforschung zu entwickeln, die förderlicher für handlungsorientierte Forschung ist. Ich skizziere eine Sicht auf das Verhältnis von Wissenschaft und Gesellschaft als überschneidend und gegenseitig beeinflussend, anstatt sie als getrennte Sphären zu sehen. In erster Linie zielt handlungsorientierte Forschung auf die Erschaffung und Erhaltung von Interaktionsräumen, in welchen Entwicklungen hinterfragt, Ideen diskutiert, Visionen entwickelt, Lösungen in Pilotprojekten getestet und Experimente entwickelt werden. In diesem Kapitel erläutere ich die Verbindung zwischen Aktion und Wissen sowie eine Anzahl Qualitätskriterien für eine solche Forschung und diskutiere Fragen zu Normativität und Subjektivität. In praktischer Hinsicht erläutert dieses Kapitel auch die Forschungsprojekte, an denen ich beteiligt war, den institutionellen Kontext bei DRIFT sowie den handlungsorientierten Forschungsprozess in Carnisse.

Das dritte Kapitel ist ein Artikel mit dem Titel *Roles in Transition: Insights from role theory for understanding sustainability transitions.* Dieses verfolgt die Absicht, das Konzept von Akteursrollen in Nachhaltigkeitstransitionen zu klären. Fokus wird gelegt auf die Eigenschaft von Transitionen um verschiedene Akteure einzubeziehen. Fundamentale Veränderungen in den Rollen von Akteuren und ihren Beziehungen mit anderen werden als wesentliches Element jeglicher Transition gesehen. Illustriert durch die empirische Arbeit in Carnisse und basierend auf einer Literaturübersicht von Rollentheorien der sozialen Interaktionsforschung, entwickelt dieser Artikel eine ‚Rollen-in-Transition'-Perspektive. Durch diese Perspektive werden Rollen als ein Zusammenspiel von Stabilität und Veränderung dargestellt, Rollen mit Veränderungen in sozialen Systemen verbunden und politische sowie Machtsaspekte berücksichtigt. Die Operationalisierung des Rollenkonzeptes für die Transitionsforschung erlaubt es, (sich verändernde) Rollen und (sich verändernde) Beziehungen zwischen Akteursrollen in Rollenkonstellationen als Hinweis auf Veränderungen im gesellschaftlichen Gefüge eines Systems, seinen Machtsbeziehungen und geteilten Werten, Normen und Überzeugungen zu analysieren.

Das vierte Kapitel ist ein Buchkapitel mit dem Titel *Governing Transitions in Cities: Fostering Alternative Ideas, Practices, and Social Relations through Transition Management.* Es trägt zur Absicht dieser Doktorarbeit bei, Transitionsmangement als einen Governance-Ansatz für die lokale Ebene zu kontextualisieren. Dieses Buchkapitel liefert eine systematische Übersicht über die Anwendungen von Transitionmanagement auf lokaler Ebene, welche dazugehörige Versprechungen und Herausforderungen analysiert und reflektiert. Es fokussiert sich auf verschiedene Elemente des Transitionsmanagements (d.h. Prinzipien, Rahmwerk, Instrumente und Prozessmethodologien) sowie deren heuristische und operationelle Verwendung im städtischen Kontext. Außerdem formuliert es eine Anzahl lokaler, insbesondere städtischer, Kontextcharakteristiken, welche wichtig sind zur Verwendung des Transitionsmanagements. Zu nennen sind geographische, persönliche und institutionelle Nähe sowie Interaktionen und Wechselbeziehungen zwischen verschiedenen Ebenen und Sektoren.

Kapitel 5 ist ein Artikel mit dem Titel *Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management*. Es trägt zur Absicht der Doktorarbeit bei, Transitionsmangement als einen Governance-Ansatz für die lokale Ebene zu kontextualisieren. Der Artikel verbindet die Entwicklung des Transitionmanagements historisch gesehen an „Lokale Agenda 21"-Prozesse und vergleicht die beiden Ansätze entlang sechs Dimensionen, namentlich Geschichte, Zielsetzungen, Art der Veränderung, Verständnis von Governance, Prozessmethodologien und Akteure. Dieser Vergleich hebt eine Anzahl von Einsichten für die Governance von Nachhaltigkeit(stransitionen) auf der lokalen Ebene hervor: Erstens sollte Diversität in Governance-Ansätzen geschätzt werden anstatt eine Einheitslösung anzustreben. Zweitens hat sich eine integriertere Perspektive auf Nachhaltigkeit auf lokaler Ebene durchgesetzt und Nachhaltigkeit bedarf einer Praktizierung durch Aktivitäten, Projekte und Experimente um lokale Bedeutung zu erlangen. Drittens bedürfen kleine konkrete Schritte (wie Aktivitäten, Projekte und Experimente) einer Verbindung mit Ideen von radikalem Wandel (anstatt Optimalisierung) um sicherzugehen, dass sie die Wurzeln der Probleme anpacken und

nicht nur Symptome bestreiten. Viertens bedarf die Nachhaltigkeitsgovernance auf lokaler Ebene kreativen Engagements, welches mit der Spannung zwischen der Notwendigkeit für radikalen Wandel und der Notwendigkeit für Verbindungen mit etablierten Akteuren und dominanten Diskursen umgehen kann. Eine letzte Einsicht bezieht sich auf die Notwendigkeit, Räume für Lernen, Veränderung und Experimente verschiedener Akteure zu öffnen um soziale Innovationen und neue soziale Praktiken, Beziehungen und Ideen zu bewirken.

Das sechste Kapitel ist ein Artikel mit dem Titel *Making sense of sustainability transitions locally: how action research contributes to addressing societal challenges.* Dieser Artikel trägt zur Absicht der Doktorarbeit bei, handlungsorientierte und transformative Forschungsansätze weiterzuentwickeln. Basierend auf zwei empirischen Beispielen handlungsorientierter Transitionmanagement-Forschung wird das Argument angeführt, dass diese darauf abzielt Wege zu finden um gemeinsam an der Nachhaltigkeit einer Gemeinschaft zu arbeiten. Handlungsorientierte Forschung schafft Interaktionsräume, in welchen Bedeutung und Realitäten geformt werden. Diese Räume erlauben eine Herausbildung alternativer Ideen (z.B. Wissen, Zukunftsbilder), Tätigkeiten (z.B. praktische Experimente, transformative Aktivitäten) und sozialer Beziehungen (z.B. neue Akteure), welche eine Nachhaltigkeitstransition weiterbringen können. Solch eine Forschung zielt auf die Veränderung der lokalen Situation ab und führt zu einem gründlichen, anstatt einem oberflächlichen, Verständnis der lokalen Dynamiken und Charakteristiken.

Kapitel 7 ist ein Artikel mit dem Titel *Action, research and participation: roles of researchers in sustainability transition.* Es trägt zur Absicht der Doktorarbeit bei, handlungsorientierte und transformative Forschungsansätze weiterzuentwickeln. Basierend auf der Literatur zur Aktionsforschung und transdisziplinären Forschung, sowie auf der empirischen Arbeit in Carnisse, entwickelt dieser Artikel ein systematisches Verständnis der Aktivitäten, einhergehenden Rollen und Herausforderungen für Forscher in handlungsorientierten (d.h. prozess-orientierten) Forschungsansätzen. Der Artikel beschreibt eine Anzahl idealtypischer Rollen für Forscher im Umgang mit Schlüsselfragen in der Erschaffung und Erhaltung von Räumen für gesellschaftliches Lernen, namentlich Agent des Wandels, Wissensvermittler, reflektierender Wissenschaftler, selbst-reflexiver Wissenschaftler und Prozessunterstützer. Der Artikel diskutiert auch die Implikationen für die Selbstreflexion von Forschern, für Rollenkonflikte und –potentiale, sowie für die verändernde Rolle des Forschers und der Wissenschaft im Allgemeinen.

Das letzte Kapitel beantwortet die Forschungsfragen. Es hebt die theoretischen, empirischen und methodologischen Beiträge zum entstehenden Forschungsfeld der Nachhaltigkeitstransitionen, zu Nachhaltigkeitsforschung und Governance-Theorien hervor. Außerdem umreißt es Ideen für zukünftige Forschung.

About the Author

Julia M. Wittmayer was born in Germany in 1979. She obtained an undergraduate diploma in Business Administration (with honours) in 2001 from the University of Greenwich, London. After having worked for four years in the project management of a Localisation and Translation Company in Cologne, Germany, she moved to the Netherlands to pursue her studies. In 2007, she graduated with a Masters in Social and Cultural Anthropology (cum laude) from the Free University Amsterdam. With an overall focus on 'human security', she specialized in the 'Development and Social Change' track and spend a fieldwork period in Lesotho, Africa. For her Master Thesis, which was shortlisted for the Africa Thesis Award 2008, she studied the interaction of the local population with broader societal influences in the form of Transfrontier Conservation and Development Areas.

After a short period as researcher at an international consulting firm, she started working at DRIFT in 2008. In the beginning, she focused on monitoring and evaluation of transition programs on the national scale (i.e. related to agriculture, mobility and healthcare). Currently, she focusses on social innovations and social sustainability in urban areas and on local scale – this includes researching new initiatives and practices at the interfaces of government, market, community and Third Sector (e.g. Participatory Budgeting), developing and conducting transition management process as well as monitoring or evaluating transition initiatives on the local scale (i.e. in urban neighbourhoods). She is particularly interested in the interaction and roles of actors in sustainability transition processes, with a specific interest for the role of research and transdisciplinary engagements. In her work, she occupies a number of different roles herself: next to researcher and consultant, she is also a lecturer at DRIFT's Transition Academy, leading the theme 'Transformative Science and Action Research'. In the latter capacity she engages with professionals in translating concepts from transition research to address issues in their specific professional contexts.