

The background of the cover is a vibrant, abstract collage. It features a mix of warm colors like orange, red, and yellow, and cooler colors like blue and green. There are various textures and patterns, including what looks like a map of Europe in the upper right, a small heart in the middle left, and some stylized figures or shapes. The overall effect is a complex, layered visual that suggests themes of global interconnectedness and social complexity.

# **Reflexively stumbling towards sustainability**

## **Understanding social learning in regional governance networks**

**Anne Jifke Sol**

# Propositions

1. Reflexivity is a way out of lock-in in social learning processes.  
(this thesis)
2. Change agents are boundary spanners in the discursive spaces in governance networks.  
(this thesis)
3. Governance networks are transition laboratories for new democracy.
4. VN interventions in geopolitical conflicts need better understanding of the nature of war and peace.
5. Personal leadership is at the core of sustainable development.
6. Legalised euthanasia as accepted medical treatment improves the quality of life.
7. Democratic societies create smarter people than undemocratic societies.

Propositions belonging to the thesis entitled:

Reflexively stumbling towards sustainability: understanding social learning in regional governance networks.

Anne Jifke Sol

Wageningen, 8 June 2018

Reflexively stumbling towards sustainability:

understanding social learning  
in regional governance networks

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Reflexively stumbling towards sustainability:

understanding social learning  
in regional governance networks

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## **List of abbreviations and acronyms**

WSI	Dutch Regional Platform Foundation, with regional stakeholders
LAG	Local Action Group
ENLDT	European Network for Local Development Teams
LEADER	Liaison Entre Actions de Développement de l'Economie Rurale, an European Programme for Regional and Rural development
NGO	Non-Governmental Organization
TL	Transformative Learning
LfSD	Learning for Sustainable Development
EE	Environmental Education
RMA	Reflexive Monitoring in Action
MSC	Most Significant Change
NMU	NGO for environmental education in Utrecht
RVO	National Agency for Learning for Sustainable Development
MAI	Multi Actor Innovation
WUR	Wageningen University and Research



## Chapter 1: General introduction

## **1.1 Context of the thesis**

We live in the Anthropocene (Da Veiga, 2017); an era during which so-called planetary boundaries are being exceeded and people all over the world are challenged to deal with the wicked and urgent sustainability problems (Rittel and Webber, 1973) created by one single species – homo sapiens. Solutions need to be found rather urgently at different governance levels and geographical scales. This thesis privileges localized regional approaches for addressing such challenges. A multi-level regional approach (Kaiser and Prange, 2007) to sustainable development has several advantages in that, for one, regional actors often have somewhat unique localised knowledge that is not available outside the region and that can help in identifying promising directions for sustainable development (Bohunovsky et al., 2010). Furthermore, at the regional level it is often possible to involve the actors that are in power and that have the capabilities to implement possible solutions - a capacity to act - (Horlings, 2006). This agency presumably emerges from a social learning process (Wals, 2007; Friedman, 1987; Bohunovsky et al., 2010; Wildermeersch, 2008; Pahl-Wostl, 2006). In regional development processes, different (groups of) actors often have different ideals and images of what a region is and what it should be (Quétier et al., 2010). Pekkarinen and Harmaakorpi (2006, p. 410) note: "The real competitive advantage of regional innovation networks is based on their ability to create knowledge in a collective and interactive learning process". An important question then becomes: to what extent are the different actors that are involved, able to find future trajectories for the benefit of all? We know now that we cannot solve these complex and highly contested problems with the knowledge, behaviours and policy we have now (Wals and Corcoran, 2012). At a deeper level the question whether trying to get 'a regional competitive advantage' is perhaps part of the problem rather than of the solution, may need to be asked. We need deep and radical changes in the way we think, relate, value and act. For this, we might well be required to learn in other ways than we are used to. A transition (Rotmans, 2006; Grin, 2011) perspective requires a combination of personal and societal transformations both for which transformative and reflexive social learning (Wals, 2007; Mezirow, 2000) seem conditional. This research explores such learning processes in the context of Dutch semi-formal regional networks trying to transition towards more sustainable practices in a range of domains. Particular attention is given to the nature and quality of the stakeholder interaction, barriers and levers influencing such interaction, and to the role of reflexivity.

## 1.2 Societal and scientific challenges

Sustainability transitions require new approaches for the creation of knowledge, values, relations, actors, roles and actions within new governance networks (Beers and van Mierlo, 2017).

Creating learning pathways towards sustainability does not simply occur through the mere combination of existing knowledge, but requires on-going interaction between multiple actors willing and able to lay their own values and interests on the table (Koutsouris, 2008). Sustainability problems are best addressed when multiple actors with diverse interests and perspectives develop a shared frame on a jointly perceived problem or challenge, which enables joint action (Pahl-Wostl, 2006; van der Wal, 2015; Sriskandarajah et al., 2010). This process is increasingly referred to as social learning. Social learning in this thesis is defined as an interactive and dynamic process in a multi-actor setting where knowledge is exchanged and where actors learn by dialogue and co-create new knowledge in on-going interaction (Chapter 3). Social learning, as I will elaborate later on, has been shown to facilitate innovation and possibly foster the pathway for positive transitions in social-ecological systems (Cundill, 2010; Stephens and Graham, 2010; Tukker and Butter, 2007; De Kraker, 2017).

Effective social learning processes are crucial within the multi-actor networks where different interests, perspectives, visions and ambitions interact within so-called discursive spaces (Pesch, 2015), that invite dialogue and generative confrontation. A key challenge for social learning is how to make good use of the diversity that often characterizes governance networks. Earlier research has shown that social cohesion and related trust as well as joint commitment between participating actors in addressing a concern, influence the quality of social learning (Wals, 2007).

Governance networks are networks where many actors are involved (e.g. municipalities, entrepreneurs, educational institutes, NGO's, citizens and other actors), with a relatively stable character where solutions proposed for (wicked) problems and challenges are contested. The different actors are engaged in (semi-formal) relationships with a high degree of interdependency (Klijn et al, 2010). Governance networks are regarded as a sort of platform 'where a multitude of actors are involved in multilateral negotiations' (van Kersbergen and van Waarden, 2004, p.150). These networks can help communities respond to wicked problems, as they consist of a plurality of actors in society and aim to co-create new knowledge, new relations and new policy. Governance networks (Termeer and Dewulf, 2012; Newig et al., 2010; Hajer and Versteeg, 2005) seek to invite this pluralism in situations where old routines no longer suffice in light of wicked sustainability challenges or, in other words, where a transition is needed.

Transition scholars (Loorbach, 2010; Kemp et al., 2009) argue that learning processes are at the core of transitions (Beers et al., 2016). However, they have offered little on the way of conceptualising these learning processes, which makes it difficult to study and foster those (Beers et al., 2016). The concept of social learning is promising in this context (e.g., Wals, 2007; Vinke-de Cruijf and Pahl-Wostl, 2016; Ison, Blackmore and Laquinto, 2013), because it takes the diversity of actors, knowledge, perspectives, languages and interests, which is inherent in transitions, as a starting point (Wals, 2007; Chapter 3) for the creation of new shared knowledge (van der Wal, 2015).

Many accounts of social learning (e.g. Pahl-Wostl and Hare, 2004; Schusler et al., 2003; Bouwen and Taillieu, 2004; Woodhill, 2003) provide rich images of the various factors and processes involved in social learning and its needs for facilitation. However, the *dynamics* of social learning have not received such attention from scientists (Bouwen and Taillieu, 2004; Reed et al., 2010). The challenge of a successful social learning process underscores the need for theories about social learning that can help us understand social learning not only in terms of the interaction taking place between the stakeholders, but also in terms of the dynamics, in terms of knowledge and social relations, produced by this interaction (Beers et al., 2010) and how these mechanisms can contribute to the resilience of social-ecological systems (De Kraker, 2017).

High information sharing, improved communication and relation-building leading towards new knowledge, new relations and new actions (Beers and van Mierlo, 2017), can indicate effective or successful social learning processes. Ineffective or weak and unsuccessful social learning can be recognised by lack of engagement, lack of accountability, ambiguous decision making and deficient coordination (Reed, 2010). It seems important to make better use of reflexive practice (Feindt, 2015) in order to better (re)orient on existing value systems (Horlings, 2015) and patterns of (un)-sustainable behaviour for sustainability transitions.

This PhD research aims to contribute to a better understanding of social learning processes in local or regional governance networks seeking to become more sustainable in a co-determined issue (e.g. greening of school playgrounds, transitioning towards more sustainable energy or localised food systems).

### **1.3 Research questions**

Based on the above, it can be argued that although there is some evidence of effective and ineffective social learning (Leys and Vancley, 2011), it is not clear which properties play a role in the dynamics of the social learning processes. Moreover, although in some cases social learning has been proven to foster innovation and to create avenues for sustainability transitions (Keen et al. 2005; Wals 2007), the challenge of understanding

the interactions and the dynamics in knowledge and relations remains. Concluding, there is theoretical and practical need for better insight and knowledge on emergent properties in social learning processes in governance networks in regional transition contexts.

The context and scientific and social relevance sketched so far, leads to the following over-arching research question for this thesis: *What fosters social learning processes in regional governance networks for sustainability transitions?*

This main question has been sub-divided in four sub-questions:

1. How can regional development be supported with action research with students as boundary spanners?
2. What is the role of trust, commitment and reframing in social learning in multi-actor innovation networks?
3. What is the role of change agents at tipping points in social learning?
4. What is the role of reflexivity, trust, commitment and reframing in the relation between social learning processes and social learning outcomes in regional governance networks?

1

## 1.4 Analytical framework

In this thesis reflexivity is seen as a condition for the development of trust and commitment, and the associated possibilities for reframing perspectives, assumptions and values, as well as for the co-creation of new knowledge and possibilities to act or to

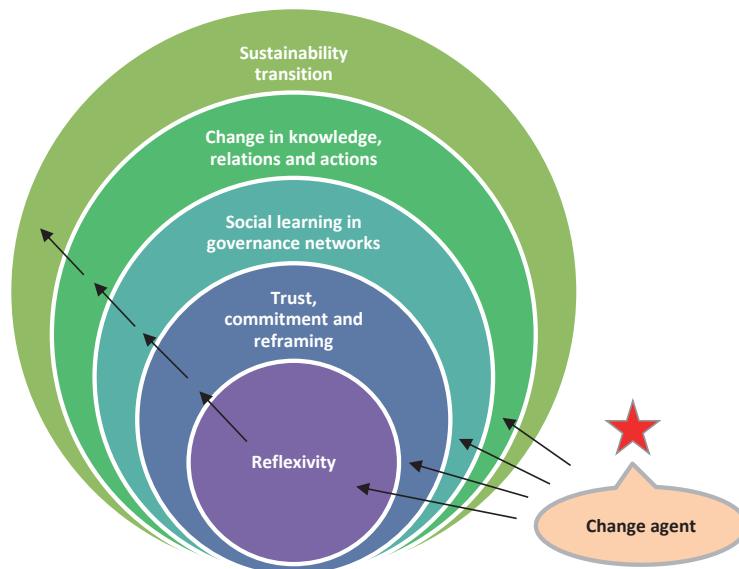


Figure 1: Analytical framework of the relations between the concepts.



make change. Social learning can trigger changes in knowledge, perspectives, values, relations and actions (including policy-decisions) which might contribute to sustainability transitions depending on the normative direction the learning takes. The configuration of the key concepts used in this thesis can be captured by an analytical framework (Figure 1).

Reflexivity is positioned at the centre of the framework as it is seen as the heart of social learning. In the framework it is assumed that reflexivity has an effect on emergent levels of trust, commitment and reframing as it often involves acts of re-thinking, re-orienting, re-calibrating caused by some discomfort, dissonance or disorientating dilemma's and divergent perceptions and values. In this thesis, I have studied the influence of reflexivity on trust, commitment and reframing.

The levels of trust, commitment and reframing are the emergent properties of social learning which comprise the second inner circle in the figure. The thesis seeks to obtain more clarity on the interrelatedness between these properties. The middle circle represents the effects of changes in trust, commitment and reframing on the dynamics of social learning in governance networks. Here the basic definition of social learning as 'an interactive and dynamic process in a multi-actor setting where knowledge is exchanged and where actors learn by dialogue and co-create new knowledge in on-going interaction' is used (see Chapter 3).

The outcome of the social learning process can be seen in changes in knowledge, relations and actions (fourth inner circle), which might have an impact on the level of sustainability transitions which also involve changes in or enactment of values (the fifth and outer circle of the framework). Each circle in the model presupposes the other circles, meaning that all circles can play a role at the same moment, following the multi-level perspective model of transitions (Geels, 2002; Geels and Schot, 2007).

Finally, without change agents (placed outside, because they can move freely across the different levels) these dynamic interrelations might not come to work because of ongoing lock-in dynamics, lack of learning, status-quo-oriented exercise of power, in-group trust dynamics and so on. It is assumed that change agents can support group dynamics in governance networks (Neuens et al., 2013). Change agents might also perform effective interventions within governance networks by taking on a boundary spanning role (Williams, 2002). Hence, in order to better understand their influence, special attention is given to the role of change agents in Study 3 and Study 4 (Chapter 4 and 5).

## 1.5 Methodology

The methodological design in this thesis is based on social constructivism (Gergen, 1999), which starts with the notion that meaning and knowledge develop within social relationships. Therefore, social interactions and their meaning in the context of social learning will be monitored and evaluated within governance networks.

As the research aims at contributing to understanding the dynamics of the learning processes in governance networks and to dealing with sustainability problems, action research (Reason & Bradbury, 2002 and 2008) appears most suitable. An action research approach has both a research end and a pedagogical end, in that it helps improve practice simultaneously. The research interventions might support the awareness and the process of knowledge co-creation of the network (Senge and Scharmer, 2006; Tress et al, 2003,) and might at the same time provide insights in the dynamics in social learning. Action-research might be defined as 'the study of a social situation with a view to improving the quality of action within it' (Kibwika, 2006; Steeples, 2004, p. 1). In addition, it aims to supply useful ways to help people act more intelligently, self-reflectively and skilfully, leading to change (McNiff, 2002, in Steeples, 2004). My basic assumption, based on Gaventa and Cornwall (2001) is, that action research, when done collaboratively, is an interactive inquiry process, which is potentially empowering and innovative, as it involves peoples' own critical reflection and learning.

In this thesis grounded theory plays a specific role in the first two studies. Grounded theory is described by Groot (2002, p. 43) as a 'general methodology for developing theory that is grounded in empirical data that have been systematically gathered and analysed, where the data themselves provide a starting point for the research. In this research (especially in Chapter 2 and 3) grounded theory is practiced in order to discover the important theoretical aspects that might relate. This assumed relation could be developed into a hypothetical model (Chapter 3) to be 'tested' empirically (Chapter 4 and 5). Second, the relation between a specific theoretical concept (reflexivity) and the hypothetical model (the emergent, dynamic and relational properties of social learning; trust, commitment and reframing) has been tested as well (see Chapter 5). The analytical framework depicted in figure 1 has been developed in order to relate and combine the most important theoretical aspects of this thesis.

In all studies in this thesis, a retrospective approach was applied as well. Such an approach is helpful when social networks have a history together or when the process takes a longer period of time and specific research interventions are planned. The methodology that fits best within this approach is the Reflexive Monitoring in Action (RMA) approach (van Mierlo, 2010). It is an important methodology for making implicit meaning of experience explicit after and during the interactions in the social learning process. The key premise of RMA is that transitions and innovations require joint

construction and negotiation of meaning as well as period, if not continuous, reflection on: how (inter)actions lead to change, what those changes constitute, and what keeps things from changing. Therefore, RMA is seen as an interventional research instrument to capture the dynamics in reflexivity, trust, commitment and reframing as emergent properties of the social learning process and as way to foster the awareness of the network participants about their own beliefs and actions. This awareness might support actions around possible tipping points in social learning processes (Chapter 4).

These methodological approaches are also part of a broader trend of sustainability research on governance networks (Klijn, 2010), that rely on social learning processes (Wals, 2007) in relatively protected discursive spaces (Pesch, 2015). Examples of such research approaches can be found in a broad range of urban living labs (Voytenko et al., 2016), transition labs (Frantzeskaki et al., 2017), challenge labs (Holmberg, 2016) and other experiential labs (Schnäpke et al., 2015).

The methodological approaches that appear best suited for monitoring and evaluating interaction and learning within these sometimes loose and semi-formal networks (retrospective, action research, reflexive and constructivist), requires the use of different tools and techniques. This invited a combination of retrospective analysis, reflexive monitoring, semi-structured surveys, open interviews and learning histories eliciting the most significant changes (Davies and Dart, 2015). The combining of different approaches within research is often referred to as the mixed method approach (Pearce, 2012) and is used to balance out the strengths and weaknesses of any one method to produce a richer set of evidence or, rather, a richer body of insights that makes plausible that certain phenomena are taking place.

## 1.6 Short overview per chapter

The main overarching question is; what fosters social learning in multi-actor governance networks? In each of the studies, different influences in social learning processes have been studied. An overview will be given of the research question and methods used per chapter and corresponding sub-study.

## Chapter 2

Title	Action Research in a regional development setting: students as boundary workers in a learning multi-actor network
Research question 1	How can regional development be supported with action-oriented research with students as boundary workers?
Sub Question	What is the role of boundary spanners in social learning?
Research Design	The project "Bridge to the Future" invited the students to work in an action-oriented, learning-by-doing mode, by regarding their co-

	operative inquiry as an essentially emergent process. The action-oriented approach implied that the students would work in a transdisciplinary fashion (Regeer, 2010), meaning that they would interact with the complexity of society <i>and</i> would integrate different disciplines in their research. They would stay for several weeks in the area to get to know the relevant actors, the issues at stake and the region itself.
Methods	Action-Research
Data sources	Notes and minutes from monthly meetings, scientific and governmental reports

### Chapter 3

Title	Social Learning in regional innovation networks: trust, commitment and reframing as emergent properties of interaction
Research question 2	What is the role of trust, commitment and reframing in social learning in multi-actor innovation networks?
Sub Question	Are trust, commitment and reframing interrelated?
Research Design	The researchers took the written descriptions of the key events from the first year of the project as a basis for reflection and interpretation in retrospect. In retrospect means, that the methodology applied is not an evaluation, but an ex-post analysis. This approach can serve as a reflexive inquiry during which the research team tries to (re)describe and (re)interpret data, ideas and concepts. The aim is to bring together past experience in order to highlight 'lessons learned' with specific interest in those aspects that are seen as key elements for social learning (Rodela et al., 2012; Dillon and Wals, 2006).
Methods	Retrospective and ex-post analysis
Data sources	Interview notes, transcripts, written reports of key events

### Chapter 4

Title	Strengthening ecological mindfulness through hybrid learning in vital coalitions
Research Question 3	What is the role of change agents at tipping points in social learning?

Sub Question	How to know the right intervention as change agent?
Research Design	In this chapter, the method of reflexive monitoring was applied in one of the cases in a biodiversity program. The applied methodology in the monitoring of this case was reflexive monitoring in action (RMA) based on van Mierlo et al. (2010) and Guyt (2008). Techniques used to generate data included: multi-actor 'reflect or think shops' with the involved stakeholders, personal interviews and the creation of so-called 'learning histories' (Kleiner and Roth 1997). During the transformation process we were particularly interested in 'interventions' and 'tipping points' (Malcolm Gladwell 2000; Scheffer, 2010) that accelerated the change process.
Methods	Reflexive Monitoring on Action sessions and Learning Histories with key players
Data Sources	Reports of key events, interview notes, reports of the programme

## Chapter 5

Title	Reframing the future, the role of reflexivity in governance networks in sustainability transitions
Research Question 4	What is the role of reflexivity, trust, commitment and reframing as interrelated and emergent properties in social learning processes and outcomes?
Sub Question	What is the role of change agents in social learning processes?
Research Design	Reflexive Monitoring in Action (RMA) (van Mierlo et al. 2010) techniques were combined with the Most Significant Change approach (Davies and Dart, 2015) and were applied in all three networks in both 2014 and 2016. Surveys with 22 active network partners were also conducted in 2014 and in 2016. Questions were about network ambitions and perceptions on trust, commitment and reframing in 2014 and 2016. Learning Histories were obtained through face-to-face interviews with nine active network partners in 2016, in order to gain deeper understanding.
Methods	Reflexive Monitoring in Action, Survey and Learning Histories
Data Sources	Workshop reports, Observations, Transcribed Interviews, Survey

## **1.7 Structure of the dissertation**

After this general introduction, five chapters will follow. Chapter 2, 3, 4, and 5 are seen as the body of this thesis and they correspond with the four research sub questions. Chapter 2 has been published as a book chapter. Chapters 3, 4 and 5 have been published in peer reviewed scientific journals. Chapter 6 provides the conclusion and discussion of key findings, as well as reflections on the limitations of the research.





## Chapter 2: Action research in a regional development setting: students as boundary workers in a learning multi-actor network

### Abstract

The educational experimental project 'Bridge to the Future', which took place between 2002 and 2007, aimed primarily at supporting the regional development process by action- oriented student research. The second aim was to develop students' roles as boundary workers in the co-creation of knowledge in a regional setting. Our basic assumption, like Gaventa and Cornwall (2001), is that collaborative research is empowering and innovative because it links science and society in such a way that it involves peoples' own critical reflection and learning. Actors' roles need to be redefined during this process. This causes uncertainty which needs coaching and facilitation. The 'Bridge to the Future' project started with a kick-off meeting in the area with regional stakeholders, students, supervisors and a project leader. The integrated research question developed there represented the complexity of the regional issues and provided an interdisciplinary starting point for the students. The research question became a boundary object, which created possibilities for communication, interaction, learning and reflection. During monthly meetings different viewpoints were exchanged and discussed in a multi-stakeholder setting, which slowly developed into a learning community, providing a base and network for regional actors to develop plans collaboratively. As boundary workers the students and their research empowered the people from the area and provided a stronger sense of identity. Important impact of the project in the area is a LEADER network, rural art and rural tourism projects, international exchange visits and the actual development of biomass installations. We conclude that collaborative landscape research can be valuable if actors learn to take on new roles, are supported in creating boundary objects, organise reflection and are able to develop new knowledge, for sustainable development and the management of landscapes.

### Keywords

Action research, regional development, learning, multi-actor network, students, boundary workers.

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## 2.1 Introduction

In this chapter we discuss a higher education experiment in the Westerkwartier region in the province of Groningen, the Netherlands. Students and their supervisors acted in a network of co-operating stakeholders working together for regional development. The experiment, called 'Bridge to the Future'<sup>1</sup>, started in 2002 with the aim of bridging gaps between research, college education and regional development. Although the project lasted for five years, we reflect primarily on the first year of the project in this paper.

The region of interest was the Westerkwartier in the province of Groningen, which saw a stagnation of rural development. Farmers expected a decline in their incomes due to world market liberalisation and needed more land to enlarge their farms. Nature organisations perceived slow nature development and anticipated the transformation of more farmland into nature areas. Villages became less attractive places in which to live, because jobs and people migrated to other areas. These issues required an innovative approach towards sustainable development. One farmer, representing a large nature organisation of farmers, faced the dilemma of agricultural development or nature (vs. integrating them both). The local state forestry manager was looking for ways to both improve nature and to work with farmers. These two actors started bridging their regional values and interests, right at the time when Wageningen UR commissioned a project with doctoral students on the subject of rural development. The project team consisted of one project leader and three lecturers from educational institutions within Wageningen UR. The project team approached the regional actors in the Westerkwartier and so the project 'Bridge to the Future' project started. It was aimed primarily at supporting the regional development process and chose an action research approach in order to amplify joint learning and co-creation of new knowledge. The second aim was to let students work and learn in such a way that they could be the bridging actors in the co-creation of knowledge in a regional setting.

At a kick-off meeting in the area, regional stakeholders, students and project team members (the students' supervisors and the project leader) formulated the following shared problem statement and research question: How can we simultaneously maintain the landscape as it is, keep farming economically viable and improve the region's vitality?

This integrated research question represented the complexity of the regional issues and acted as a point of reference in which the various stakeholders could recognise their own interests and problem perceptions. Meanwhile it provided an interdisciplinary starting point for the students, inviting them to align their disciplinary backgrounds with the integrated reality of the region. As such the research question

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<sup>1</sup> A collaboration between Wageningen University and the agricultural colleges Van Hall and Larenstein in the Netherlands.

became a boundary object, which created possibilities for communication, interaction, learning and reflection on the interrelated issues at stake.

Regional stakeholders were the State Forestry Department, agricultural nature organisations, heritage organisations, three municipalities, the province and rural tourism entrepreneurs. Supervisors came from Rural Innovation Education at Van Hall Larenstein (a Dutch professional higher education institute) and the Animal Science Group at Wageningen University. The project involved students that originated from different disciplinary backgrounds, such as animal sciences, landscape management, social sciences, and rural innovation management sciences.

### **2.1.1 Role shifts**

The project operated in a context of democratic power relations, in which regional stakeholders were challenged to articulate their own wishes. As meaning and knowledge are (re)negotiated in the process of knowledge creation, the actors involved have to reconsider their own position, perspective and role. This might mean that both researchers and social actors have to redefine their roles and develop a set of common values, norms, terminology and procedures (Friedman, 2001). Traditional and formal roles of all the actors involved might shift slightly towards coaching roles. This can create uncertainty, miscommunication and even distrust, all possible causes of friction between the actors concerned. The students, their supervisors and regional stakeholders thus faced uncertainty about both their own and others' roles during the action research process. Indeed, what can people expect from each other when formal roles no longer wholly apply?

In regional development and complex issues within these processes, knowledge cannot just be brought in from outside, it has to be co-created in learning networks together with regional actors. In such a case people create networks or arrangements, called knowledge arrangements (Geerling-Eiff et al., 2007), or multi-actor innovation networks (Beers et al., 2010), in which learning is emphasised and knowledge is actively created and disseminated by all parties in the professional existing network. Why do we speak of 'transdisciplinarity' in the context of this regional development project? Local knowledge is assumed to be an important contribution to the development of novel and more adequate solutions to local problems. The role of local knowledge is key here, because 'transdisciplinary research goes beyond multi- or interdisciplinary research by crossing the borders (if any) between science and society'. Also by performing transdisciplinary research, knowledge from different social and academic actors is integrated (Regeer, 2009).

How does the regional development project contribute to student learning? According to Wenger (1998), students learn as they engage in meaningful practices and

are provided access to resources that enhance their participation in those practices. By 'opening their horizons,...they can put themselves on learning trajectories...they can identify with, and [be involved in] actions, discussions, and reflections that make a difference to the communities that they value.' Although that is not the role of the student in traditional education, it is exactly what we, as a project team, aimed for.

In summary, there were exciting challenges ahead, mostly related to new roles in action- oriented research. The challenges were threefold. Firstly, how would regional actors see their roles in the action research process, and how would they act? Secondly, it was the first time the students would work in an action-oriented research manner. The challenges for them were: how to behave in the field, how to cope with uncertainty, how to work with each other's disciplines and characters and how to conduct participative fieldwork, co-create new knowledge and deliver a thesis? Would they – being trained as traditional scientists – merely behave as observers, or would they really participate? Thirdly, the project was an educational experiment, which meant that the supervisors had to explore their new roles as facilitators, project team members and coaches instead of being the 'traditional' senders of knowledge (Friedman, 2001).

So the basic focus of this paper is on role dynamics and boundary work in the process of action research in the context of the project on integrated regional development.

### **2.1.2 Bookmark**

In Section 2 we address the approach of the research. We detail the theoretical arguments to be chosen for the action research approach in the context of rural development, and describe how we designed the action research process. In Section 3 we discuss process and implementation, answering questions such as: how did the design work out, what did we observe with regard to interaction among the stakeholder groups, region, students and project team/supervisors? What was the role of the scientist vis à vis the stakeholders and what sort of frictions did we encounter? In Section 4 we turn to the lessons learned, in which we also address the meaning of our results for action-oriented research -with students- in a regional context. Conclusions and recommendations are discussed in Section 5.

## **2.2 Approach**

### **2.2.1 Theoretical justification**

The application of scientific knowledge to real-life problems is not always the best solution, for it lacks an orientation towards action. The actual disconnection between knowledge institutes (science) and regional development (society) (Nowotny et al., 2001)

is illustrated by the lack of innovative solutions for complex problems such as climate change, poverty and hunger in ecologic, economic and social sustainability issues (Friedman, 2001). The disciplinary approach of traditional scientists leads to partial awareness and lack of integration. Secondly, the traditional way of knowledge creation leads to a lack of commitment for action, for this knowledge is not embedded with stakeholders (Gaventa and Cornwall, 2001). In order to overcome these problems new approaches for the creation of knowledge are needed. We see action research as a possible approach for building new bridges between different stakeholders. In action research, the researcher is one of the stakeholders involved. As a stakeholder, his/her goal is to involve stakeholders, to learn collaboratively, in a transdisciplinary manner, and to co-create innovative and contextualised knowledge (Senge and Scharmer, 2006; Tress et al., 2003).

The role of the researcher here is to create conditions under which practitioners (such as farmers, managers, and social workers) can build and test 'theories of practice' for the purpose of learning (Friedman, 2001). Action research is not a single recipe for a simple problem, it is more of a 'family of approaches' that share several commonalities (Reason and Bradbury, 2001):

- Action research engages people in collaborative relationships, opening new collaborative spaces, in which dialogue and development can flourish;
- It draws on different sources of knowledge; for example both experiential and scientific knowledge;
- It is strongly value-oriented, searching for issues that are significant for specific communities; and
- It is a living, emergent process which cannot be pre-determined.

Action research is recognisable by its approach on 'inquiry in action' (Reason and Bradbury, 2008) and can be a vehicle for building new relationships between academia, development agencies and society at large. It creates a platform for new modes of learning to understand societal needs. 'Action researchers do not only observe and describe the situation; they also take action to improve the situation' (Kibwika, 2006). Action research, according to Kibwika (2006), enables scientists to intervene and participate in development with the community in order to gain experiences that can make research and education more relevant. This also means that knowledge is jointly constructed: 'Truths become products of a process in which people come together to share experiences through a process of action, reflection and collective investigation' (Gaventa and Cornwall, 2001). Indicating that there should be a certain level of equality, 'research can be a partner in a coalition, not a body that is to gain special knowledge, or sit in judgment on the other actors' (Gustavsen, cited in Kibwika 2006).

An action researcher has to take a different role from a traditional scientist. In order to really be a partner in a regional development process, relations between regional actors and scientific actors have to become more equal and democratic. They need time and effort to increase their engagement with each other's lives, perceptions, values and interests. 'The core contribution of research is to create relationships between actors and arenas where they can meet in democratic dialogue' (Gustavsen, cited in Reason and Bradbury, 2006). Democratic dialogue requires first that those who are directly affected by the research problem at hand participate in the research process. Secondly, it requires the recognition that knowledge is socially constructed and embedded. And thirdly, it requires that different forms of knowledge are recognised. Doing so opens up the possibility for new communities with new ideas (Gaventa and Cornwall, 2001).

Action research invites its participants to take action towards the desired change process through reflection and self-analysis by all participants. The specific settings in which this process takes place can have a pivotal influence on its success: the exchange of multiple perspectives must be possible, and plurality and multiple pools of knowledge should be accounted for and stimulated. This in turn creates mutual commitments to further contacts and joint efforts between participants (Gustavsen, 2004, cited in Braun, 2006).

Our basic assumption, like Gaventa and Cornwall (2001), is that action-oriented research is empowering and innovative because it links science, knowledge and democratic society in such a way that it creates more democratic forms of knowledge, it generates action by relative powerless groups in society and it involves people's own critical reflection and learning. Clearly, action research differs from traditional research, in which members of a system are subjects or objects of the study. In contrast, action research focuses on how all stakeholders, not only the researchers, can engage in the process of inquiry (Coghlan and Brannick, 2010). As Friedman (2001) puts it: 'The goal of action-oriented science is research in practice, not research on practice.'

Historically, action research projects are underpinned by the concept of collaborative learning and change, making action research a choice methodology to assist learning organisations, learning regions and regional networks in new innovation projects (Braun, 2006). Regional development projects are good examples of the multi-faceted arenas that include complex issues. Scholars increasingly speak of 'learning regions', crucial places in which learning processes, knowledge development and innovation take place (Wiskerke, 2007). In such a region, the various stakeholders involved form a learning system that, if successful, better equips the region for coping with continuous change and uncertainty (Wals, 2009).

The developing process of new collaborative research methods is called boundary work. Action-oriented research makes the connection with society by opening up the boundary between science and society, and by engaging in action, joint formulation of research questions and the definition of possible indicators. At the interface of both worlds regional questions can be translated into research questions and scientific knowledge can be translated into practical and usable knowledge. The interface is not a clear and sharp boundary, but a fuzzy area where science and region overlap (Turnhout et al., 2007). In this fuzzy area science and society engage in joint knowledge production. As different cultures, perspectives and languages of the multi-stakeholder network meet here, some communication problems might arise.

If knowledge, experiences and perspectives are shared across boundaries, this might lead to co-creation, which possibly leads to new knowledge. The process of crossing boundaries is accompanied by uncertainties and often requires new competences. The new methods that prove to be helpful and supportive are called boundary objects (Regeer, 2009). A boundary object is an object with different meanings in different worlds, but a structure sufficiently common to act as a means of translation. Boundary objects facilitate discussion, negotiation, and decision-making. The creation and management of these objects is a key process in developing and maintaining coherence across intersecting social worlds (Turnhout et al., 2007). Crossing boundaries of disciplines or practices is one of the main challenges of transdisciplinary research, especially when cultures clash or differ greatly from each other (Regeer, 2009).

Boundary work operates at the interface of different communities, for example communities of experts and communities of decision-makers. With boundary work the prevalence of different norms and expectations are mediated (Cash et al., 2003). Boundary work needs to be managed by 'boundary organisations' with functions in communication, translation and mediation. These boundary workers need mandates to act as intermediaries between science and society (or policy). Moreover, when investments in these communications are made, then knowledge is more effectively connected to action and the salience, credibility, and legitimacy of the information is higher (Cash et al., 2003). In order to ensure these effects dual accountability is needed, by which boundary managers operate on both sides of the boundaries (of science and society) in order to build effective information flows. This in turn can create a boundary object which facilitates discussion among parties with multiple interests, regarding differences in perspective, values and desired outcomes. Interestingly, Cash et al. (2003), note that in many cases single individuals play 'key boundary spanning' roles, independent of their particular organisational affiliations. They operate as the 'lubricant' for overcoming frictions at the boundaries.



### 2.2.2 Design of the research process

In order to establish bridges between science and society (our primary aim), through which research can contribute to society, sustainability and to the empowerment of local actors, we took a democratic, bottom-up approach (Gustavsen, 2001) in our action research approach, where methods for crossing boundaries (Sarkassian et al., 2010; Regeer, 2009) could be applied. A secondary aim was to create a learning network consisting of regional stakeholders, supervisors and students. As these students are the scientists, policy makers or entrepreneurs of the future, the action research by students should be performed in such a way, that they could be the learning and bridging actors in the co-creation of knowledge in a regional setting.

The fieldwork took place between January and June 2003. The research plan included three ways in which the students could communicate perceptions and questions, experiences, and knowledge from their fieldwork. The first way of interaction was at several meetings, such as a kick-off meeting, monthly meetings and a regional day. The second way concerned student disciplinary interaction as a group working on a transdisciplinary question. The third way was through their personal encounters in their fieldwork doing interviews and try-out workshops with regional stakeholders. Communication events such as the regional day, which were organised for the first time as part of the research, were expected to pique the curiosity of local people, and to involve them in the project. In other words, we wanted these events to cause local people to cross their own boundaries, and participate in the ideas and opinions of other stakeholders.

So what did we decide to do in the Westerkwartier, knowing and assuming that certain boundaries might be there? First, the project's action research approach required us to adopt a learning-by-doing attitude, and not follow a fixed research plan that was prepared without input from local stakeholders. Furthermore, we knew that the students were inexperienced in collaborative research, in working in a trans- and interdisciplinary manner. And soon after the start of the project we knew from different fieldtrips of the students that the region was well known for its 'I do it my own way' attitude. As you can imagine, the project took several interesting turns that allowed us to reflect on and learn about the options for regional development. As the project evolved, it went through the following series of steps:

A. Regional commitment	October - November 2002
B. Students need extra coaching	January - June 2003
C. A kick-off day	February 2003
D. Creating a learning community; by monthly meetings	March 2003 - December 2003

E. Dealing with role expectations	April 2003
F. Who owns the problem?	continuously
G. The first regional day	June 2003

In the following section we provide examples (one for each of the above steps) of boundary work that demonstrate our collaboration with societal stakeholders. In the next section, we reflect on each of the above steps, and, if applicable, we highlight whether or not shifts in roles occurred, and to what extent role expectations and requirements led to friction.

## **2.3 Process and implementation**

### **2.3.1 Changing roles of supervisors, students and regional stakeholders**

In the research plan, we included a student visit of a couple of weeks to the area, to connect, interact and understand the language, perceptions, culture and values of the regional stakeholders. The plan included several opportunities for the students to meet the stakeholders, and we instructed the students, as a group, to plan these few weeks of fieldwork in the area.

#### **A. Regional commitment**

Before attracting and enrolling students for the project, the project team (supervisors and project leader) paid a visit to the region and talked with the two of the most engaged stakeholders. One farmer, representing a large nature organisation of farmers, faced the dilemma of agricultural development versus nature (vs. integrating them). The local state forestry manager was looking for ways to both improve nature and work with farmers. These two actors started bridging their regional values and interests, which made them interesting for the research project. Both actors were also quite powerful in the area in the sense that they could attract many others to form a regional network. Furthermore, they were in rather good negotiating position with their constituencies. Also, these two regional actors were very willing and committed to start an experiential learning process with students on these issues. They realised that agricultural and landscape issues needed a new and more integrated approach, which meant that a collaborative research approach appealed to them.

#### **B. Students face uncertainty**

As the action research was to be conducted by the students, they would be guided by their supervisors on a weekly basis and to a lesser extent (monthly) by the regional actors. However, the role and the tasks of students were very unclear in the first weeks

of the project (before the kick-off, see below). What were they expected to do; could they just formulate their own research agenda (as they were used to doing) or not? The students had no experience, training or education with any form of community-based action research, transdisciplinary work or the process of co-creating knowledge. In other words, they were ill-prepared for their role and expressed several uncertainties. Therefore, they needed support in developing a 'learning-by-doing' attitude. As the project team was not experienced in guiding students in collaborative research, they called in help from a professional process coach. This enabled the students to organise workshops and engage with regional actors, or in other words, to work in a transdisciplinary fashion, and cope with complexity and uncertainty.

### **C. A kick-off day**

Early in the project we decided that several regional stakeholders were to be invited for a kick-off day. Together with their coach, the students organised this day in order to gain insight into the complexity of issues on declining agricultural incomes, questions about scale, landscape deterioration or preservation and viability in different aspects in several villages. The aim of the kick-off day was to formulate a shared regional problem statement. Indeed we succeeded in that; the shared problem statement was: how can we simultaneously maintain the landscape as it is, keep farming economically viable and improve the region's vitality? The shared problem statement provided a focus for the students' projects, while the regional actors also recognised it as their own issue. Furthermore, the kick-off day resulted in contacts between all actors involved. It increased trust from the regional stakeholders in the regional development project as a whole and acted as a stepping stone for further committed actions.

### **D. Developing a learning community**

Participatory approaches hold that knowledge is socially constructed, and call for methods to stimulate collective awareness and knowledge creation towards a learning community. With this in mind, we established monthly meetings with a selection of the regional stakeholders. The resulting network operated as the steering group for the students' research. In these meetings the students would present their research plans and their ongoing insights and doubts. Furthermore, the students, the project team members and the regional stakeholders (farmer, forestry-manager, administrator, cultural heritage preserver, tourism entrepreneur and others) exchanged views and experiences in relation to the students' research. The discussions which took place were experienced as a rich learning process, from which every actor could learn.

## E. Dealing with role expectations

After a while the first results from the students' projects started to come in. The project team wondered what role the different regional stakeholders would take. Would they expect 'bite-sized chunks' of knowledge, in answer to their questions? Or would they prefer to work collaboratively on the creation of new knowledge? At one of the monthly meetings, halfway through the students' fieldwork, the project team discussed possible roles with the regional stakeholders. This yielded an interesting perspective on coaching the students. Attention had shifted towards providing students with a network and contact persons in the field. After that meeting, the regional stakeholders asked several times what they could do to better guide the students. This is illustrative of the responsibility they came to show for the wellbeing of the students and the process of knowledge co-creation. Apparently, the regional stakeholders were prepared for a shift in their role: from being a passive receiver of external knowledge to being an active coach and partner.

## F. Who owns the problem?

An important issue in the relationship between scientists and stakeholders was ownership and power. Who was taking ownership of the issues surrounding farming, landscape and vitality (Derkzen, 2009)? Was it the emerging community of learners (the informal new owners so to speak) or should it be the formal owners such as the municipality and the province? Here, the ambivalent attitude of formal representatives from the municipality and the province proved problematic. They showed up many times, but did not take a formal hold on the problem statement, preferring to wait and see. This created a power inequality considering commitment. The grassroots representatives (farmers and state forestry and historic preservation committee) were fully committed but did not have any formal power, whereas the formal representatives, with decisive power over time, money, and other resources, were only moderately committed. They took an ambiguous role, by representing themselves in person, but not as a committed organisation. This created tension within the stakeholder network and made it hard to empower the learning community. It also frustrated the project as a whole, because it limited much of the action-oriented part of the research to be carried out. So, the informal stakeholder network, in which the municipality participated, wanted to get going, but formally, the municipality did not endorse the new research.

It took the municipality and the province several years to adopt the recommendations of the new regional platform, called 'Regional Initiative Westerkwartier' (WSI)<sup>2</sup>. The municipality and the province never explained their previous ambivalence, but it was clear that it had occurred to them that they could get up to speed with

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<sup>2</sup> WSI is a rural regional platform foundation, consisting of a broad range of regional stakeholders.

regional policies, and quickly get results within the LAG<sup>3</sup>, because the bottom-up process had already taken care of co-creating shared knowledge.

### **G. The first regional day**

The first regional day was intended to inspire the region by 'giving back the stories, experiences and advices' from the fieldwork in a series of interactive and creative workshops. The regional day attracted 60 people from all levels, sectors, and from both formal and informal positions, meaning that the research process was not only connecting science and society, but connected also regional actors themselves. Evaluation showed that the regional day was inspiring, with plenty of networking and talking, through which all kinds of processes in the region became interwoven. The formula of a regional day has since then been repeated year after year, attracting more people, more actors every time. It became a success formula -both for the project, for sharing knowledge from the platform with a wider audience in the region- and for the region, because it became 'the place to be' for artists, farmers, officials, students, teachers, NGOs and other regional organisations.

### **2.3.2 Concrete results and outcomes of the 'Bridge to the Future' project**

After a period of shared experiences, feelings of respect and friendship among stakeholders involved in the project grew and the learning network developed into a learning community. The students learned that they were regarded as relatively neutral agents; they were allowed to make mistakes and ask many 'stupid' questions. They were perceived as unthreatening, curious and interested in local affairs, as demonstrated by the fact that the students stayed in the area for several weeks. The students learned that action research requires an open learning-by-doing attitude and that they were able to act as such, with the support of many others. This provided them with experience, connections and information. As such, the students became more aware of the nature of action-oriented research, its connective power, and the associated uncertainties. Furthermore, they became more confident in their role as boundary workers. This provided them with stepping stones for their careers in rural research, policy and development. One student, for example, was appointed as secretary of the WSI foundation and later became a provincial civil servant. The supervisors experienced the project as a scientific adventure and concluded that it is possible to contribute to societal development when really engaging – as a scientist – and coaching one's students well.

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<sup>3</sup> LAG=Local Action Group, consisting of max 50% formal representation, and at least 50% informal local representation. The LAG formulates policy advice considering rural regional policy and is financed for 50% by EU rural LEADER policy.

The students' fieldwork stimulated the regional actors to be more aware of, and reflective about, their surroundings and 'their landscape'. What was its beauty? Were there more possibilities than they ever dreamed of or did they just have to accept the state of the art? During the monthly meetings these questions and issues would also be topics for discussion, through which the regional actors became more aware of their power and identity.

The experiment turned out to be a catalyst for rural development. As a result, the region established a stronger administrative capacity. By the end of the first year of the project the 'Working group regional initiative Westerkwartier' (WSI) was founded, which was a direct effect of the experiment. The WSI represented (and still represents) a wide range of regional actors and their interests. It provided a base and network to share ideas and to develop plans collaboratively. As such it empowered the people from the area and provided a stronger sense of power and identity. Many wishes and ideas were discussed, such as a landscape fund, the appointment of a regional co-ordinator or the promotion of tourism in the area. At that stage it was hard to implement them because of a lack of resources and political commitment. Although the first year did not yield very concrete results, it did generate funding from Wageningen University for three more years, which paved the way for the further development of the WSI. Several integrated projects with a natural-cultural- historical-educational character have begun since then. Regional stakeholder collaboration became stronger and more institutionalised both in the WSI and the LAG. The increased awareness of regional identity is apparent from a number of regional initiatives. Examples are:

- Theatre on location about local politics and regional identity.
- The 'Abel Tasman route': a walk through the local museum of the village Lutjegast, its landscape and heritage.
- The 'Baak' (see Figure 6.1): a cultural-educational meeting point, marking the historic landscape and future land use.
- A country house and a country café where local actors can meet and exchange ideas.
- The development of biomass as a way of turning dry and wet 'waste' from hedges and farms into energy, and using it to for example heat the local swimming pool and the local home for the elderly.
- The creation of sustainable co-operation between knowledge institutes and regional initiatives is being shaped by 'a Working Place Westerkwartier' (Werkplaats Westerkwartier) where rural and scientific actors can meet and – very importantly –, where students can learn to play a professional role as boundary workers.

The bottom-up empowerment and the different initiatives and projects that resulted from it slowly impressed and engaged the regional government. This led a few years later, to the establishment of a Local Action Group (LAG group in the context of the European LEADER network) with support from the WSI foundation. The creation of the LAG is an expression of regional development, with a monetary commitment of seven million euros. This LAG in turn gave way to a broad range of projects on biomass, tourism and cultural heritage preservation activities, of which landscape and farming were central aspects.



*Figure 2: 'The Baak'. The placing of this artistic landscape monument was initiated by the WSI, in order to signify old and new landscape markers.*

International exchange followed within the ENLDT network<sup>4</sup>, with visits to Ireland and Finland and the organisation of a countryside exchange, with five countries visiting the Westerkwartier for mutual learning and exchange.

In summary, all the above-illustrated initiatives are the practical impact of the original research question, which shows that this transdisciplinary research provides tangible results and concrete sustainable regional development.

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<sup>4</sup> ENLDT: European Network for Local Development Teams.



## **2.4 Lessons learned**

### **2.4.1 Further development and concepts for collaborative landscape research**

In our project, regional stakeholders were invited and challenged to articulate their own wishes during the collaborative research process. By posing questions and talking with them at the kick-off day, at the monthly meetings and during the interviews carried out by the students, regional actors were reflectively questioned about diverse aspects of their lives. This caused a certain degree of awareness, or consciousness (Cornwall and Gaventa, 2001). They emphasised the importance of a democratic dialogue for the development of new categories of knowledge. This view is useful since power-inequalities can be hidden or invisible in the collaborative process. Stepping stones for the further development of collaborative landscape research can be found in the notion of research as a partner in coalition where partners meet in democratic dialogue (Kibwika, 2006), the creating of new platforms for new modes of learning (Friedman, 2001), where different actors learn to cope with uncertainty in the process of social learning (Wals, 2009), for building new relationships between science and society (Reason and Bradbury, 2008) and where single individuals play key boundary roles (Cash et al., 2003).

### **2.4.2 Practice, roles and positions of students, their supervisors and stakeholders**

The kick-off meeting demanded new roles from all actors involved, but new roles develop over time, as a result of action and reflection. Through multi-actor interaction boundaries between life worlds may become visible or may become fuzzy. Boundary objects can be helpful when traditional roles (e.g. 'mode 1' researcher, university lecturer) do not provide connections for overcoming the boundaries. In our project, the kick-off meeting and the integrated research question provided stepping stones for the creation of new roles. For example, it legitimised the students to participate and plunge into the regional complexity with openness and real interest.

During the communication events and especially during the reflection (in April 2003) with the stakeholders, participants became more aware of their possible roles. Regional actors were not expecting to be 'passive consumers' of new knowledge brought in by scientists, they were willing to become active informants and maybe even change agents. Several regional stakeholders also indicated that they would like to play a role in guiding the students. This led to the appointment of a few regional contact people, to whom students could go for information, networks and daily issues. The roles of supervisors changed in the sense that in university/college they were lecturers, in the collaborative research they became more of a process coach for the students concerning social competences and coping with insecurity. This indicates that in collaboration and

learning roles change and that all actors should be made aware of this by reflection on action (Van Mierlo, 2010).

At several workshops and meetings during the project, supervisors also acted as facilitators, in order to guide the learning and searching process of all actors involved. Although students could have behaved as objective, distanced researchers, they instead developed a participatory attitude, by really engaging and listening and actively contributing to the regional development process in interviewing, organising workshops and participating in the monthly meetings. They learned to translate regional complexity into research, which became valuable for the area. They also learned to cope with uncertainty and anticipate unexpected events (Derkzen, 2009). They gained a deeper understanding of regional complexity, power issues and empowerment. By working as a team and connecting with real-life issues in the region students and supervisors became more aware of the possible roles of science, that is, not only the production and dissemination of knowledge, but also being a partner, co-learner and boundary worker in co-creating knowledge and facilitating collaborative processes (Dillon and Wals, 2006). In fact, students had 'key boundary spanning' roles (Cash et al., 2003) in the research and in the area.

The main lesson is that it is necessary to facilitate collaborative action research processes on the spot, for bridging differences in (role) expectations, language, knowledge and beliefs. This is important for regional stakeholders, but even more so for the students involved, since they sometimes felt insecure and anxious with the many goals and uncertainties in the action research process. Furthermore, it appears that training the students' social skills helped them to deal with these uncertainties and shifting roles. The multi-stakeholder evaluation at the end of the first year revealed that the students were very enthusiastic about this way of learning-by-doing; they indicated that they had learned more than ever before, especially new social competences such as being flexible, open and communicative – competences they needed for their new role as boundary workers.

Although the regional stakeholders were positive about the project, they had some mixed feelings after the first year of the project. The farmers, for example, had wanted more 'practical farm-level advice.' However, they too were very satisfied with the regional process results, such as having a regional platform, regional awareness and a stronger negotiating position with higher authorities. The farmers had become aware of the long-term advantages of these regional collaboration and empowerment processes. The role of the governments (municipalities and province) may have been a new role, but its ambivalent character frustrated the further development of, for example, a landscape fund, the appointment of a regional coordinator or the promotion of tourism in the area (Derkzen, 2009).

The lesson for the supervisors was that by engaging students in collaborative research, they spend relatively more time on the process, means and methods than on analysing, reading literature and writing their thesis. This is a point of attention for the future role of higher education in action research. Also in judging the students on their competences as future scientists, the scientific curriculum might provide credits for process competences and boundary work as such.

Another lesson has to do with power inequalities, differences in problem-ownership and commitment. Regional stakeholders from public organisations such as municipality and province saw the collaborative research and its democratic dialogue at first more as a thread to regional plans than as a contribution, for the outcomes of the research could bring new and unexpected knowledge and action. This caused an ambivalence which only ended a few years later, when outcomes turned out to support the regional alignment process between actors and speeded up the regional policy. When such situations arise, it might be better to ask or demand formal problem ownership from all actors involved in some sort of contract or intention in which – if possible – expectations about roles and output are made explicit. In this case boundary objects did not directly empower actors in dealing with their constituencies and department superiors. Therefore boundary objects seem not to negotiate power differences as such, they merely provide the option to make differences more transparent and as a result perhaps negotiable. This gives us the impression that boundary objects are valuable in a multi-actor setting, but maybe to a lesser extent in a governance setting in which powerful actors can ‘stay within their boundaries’ and are not willing or able to develop new roles.

To summarise, collaborative landscape research can be valuable if actors are able to define and take on new roles, are supported in creating boundary objects, are stimulated to reflect on action and know how to engage constituencies, in order to construct new integrated applicable knowledge, for sustainable development.

#### **2.4.3 Valuable methodologies, methods and tools: the research question as a boundary object**

The integrated research question formulated at the kick-off day became a boundary object (Regeer, 2009), which created possibilities for communication, interaction, and reflection on the interrelated issues at stake.

The impact of the research question was threefold. First, it generated an umbrella under which several disciplinary research questions of the students could fit and develop. As such the research question supported the ‘crossing of disciplinary boundaries’ (Tress et al., 2003). Second, it created a central point of focus for the regional actors involved, and as such provided an aligning effect between the regional actors; they discovered

there were several historical, cultural and economic reasons for co-operating and collaborating. The research question turned out to be a sort of 'social glue' in the area. Third, the question generated a new consciousness and unexpected new insights (Tress et al., 2003) for all actors involved; they could no longer defend their own sectoral or disciplinary interests or viewpoints; they were challenged to integrate perceptions and values into some new joint point of stake, into a system analysis. The impact was a broadening concept of landscape as an element of culture and identity which became anchored.

Students with their open and explorative attitude are nearly boundary objects; with key boundary spanning roles (Cash et al., 2003). People are more open to students, because they are regarded as more neutral, less powerful and still in a learning position with relatively less influence. Students have no interest except for learning and knowing, they are not in a position of regional decision-making and they hardly ever have hidden agendas. This makes them attractive to talk too. Stakeholders in the area could learn from the questions posed by students because they had to explain their obvious knowledge to relative outsiders. By doing so they became more aware of their own viewpoints and values. During the monthly meetings these viewpoints could be exchanged and discussed in a multi-stakeholder setting, through which perceptions sometimes merged and shifted or got reframed in the process of social learning. As such students have a lubricating role in connecting and exchanging the views and values of various stakeholders in an open and therefore approachable manner.

The monthly meetings and the regional day provided bridges for all actors involved, for exchanging views and experiences. In that sense these 'interactive moments' were effective as platforms on which new modes of learning (Kibwika, 2006; Friedman, 2001) could evolve, as if they were boundary objects in the sense that actors were stimulated to take on new roles (as coaches and participative students). As a boundary object these meetings provided stepping stones for learning to cope with uncertainty (Wals, 2009) and the cautious trying out of new roles in the research process to come. As such boundary objects might support and speed up the development of new roles needed in action-oriented research.

The first year of the project featured relatively little in the way of natural sciences-social sciences interaction, because the students predominantly chose social sciences topics, despite their mixed disciplinary backgrounds (animal sciences and social sciences). However, in the subsequent years other students chose more natural sciences research for their thesis<sup>5</sup>, which meant that the transdisciplinary character of the research question provided room for the students to choose their (social sciences or natural sciences) research.

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<sup>5</sup> For example, research on the small-scale water storage in the area, and other water management issues.

Our conclusion is that boundary objects are valuable and necessary for action research because they lubricate the bridging points, between the diverse values, languages, expectations, interests and viewpoints of the different actors involved. They create opportunities for building new relations between science and society (Reason and Bradbury, 2008) with mutual commitment (Friedman, 2001), for understanding, alignment and collaboration in the multi-actor network. This empowers the actors and their new and shifting roles in the network. Therefore it stimulates the social learning process and the network as a new emerging community of learners with new ideas (Kibwika, 2006).

## **2.5 Conclusions and recommendations**

This chapter describes about one year's worth of action research. In reality the whole project took 5 years. The yield of this ongoing interaction is larger than anyone dared to dream of in the first year. Approximately 50 students conducted their thesis in the whole period on a diverse range of regional issues. The regional platform used the research reports and the regional workshops to acquire a stronger position in relation to the provincial authorities and increased its trust with the regional actors. A special effect of the attention given by all the students to the region was a greater self-awareness about regional culture, identity and qualities. This self-awareness helped to forge bonds between different regional actors. Establishing the LAG was one of the highlights, for it generated various powerful and meaningful projects that helped the community to generate welfare and income. Through these projects, farming, nature and viable villages created sustainable connections for the future of their region. The use of biomass for regional energy needs is only one of the results. We conclude that the action research set-up yielded very important and tangible results for the regional stakeholders, which they perceived as useful, credible, and legitimate.

Of course, this process was a bumpy road with many uncertainties for all actors involved; 'Action research is not what a person already knows and tells that sharpens the countenance of a friend, but what that person and friend together do not know – it is recognising ignorance and programmed knowledge that is the key to action learning' (Kibwika, 2006). The question is how to create the circumstances to make participants comfortable in new and challenging situations, in which 'not-knowing' seems to be the default. When new relations emerge between academics, students and regional actors, when interaction takes different forms, and when struggles are shared, it becomes easier to deal with uncertainty (Bockbank and McGill, 2006). Not by reducing uncertainty, but by giving it a place in the collaborative process.

For action research in a regional multi-actor setting it is important to be clear about expectations on the one hand and to be flexible on the other hand, because the interaction is marked by unpredictable dynamics and shifting roles. The boundaries between actors' perceptions, between formal and informal, between traditional roles and new roles are fuzzy. Therefore the roles of students, teachers and regional stakeholders change over time and expectations about these roles need to be managed. The learning process between the actors involved can be particularly vulnerable when power inequalities between actors are at stake. This happens when people do not feel safe or respected in their (un)defined role. Expectation management and reflection on action might help to sort out different formal and informal roles and expectations about the input for, and the output of, the research process.

The value of action-oriented research for science is threefold. First, it contributes through collaboration, shifting roles and crossing boundaries to more alignment with societal issues through which research impact becomes more valuable, sustainable and legitimate. Second, it gives more insight into reflective learning methods, and the use of them for landscape- oriented science. Third, through its participative and learning nature it offers future scientific boundary workers real and safe learning circumstances to experiment in.

Students have a special position in action-oriented research because they are not perceived merely as instruments for knowledge transfer. Society knows that they are still learning and therefore they are allowed to experiment and make mistakes. Society will expect much higher knowledge input from researchers. This means that students fit the role of action researcher particularly well; as boundary workers they are 'the lubricants' of multi-actor learning networks.

In closing, we give a few recommendations to reconnect universities to the field of regional development and landscape planning through action research, and to contribute to more valued, equitable and sustainable landscape management. The following recommendations are relevant for action researchers in regional contexts:

- Re-examine the meaning of knowledge and learning, allow room for failure and ignorance.
- Put a strong emphasis on reflecting upon the learning process.
- Manage expectations about the project, the process and roles at an early stage.
- Organise the role of an independent facilitator, who takes care of uncertainty, new roles and the creation and use of boundary objects.
- Work together with students in transdisciplinary landscape research, and assess, coach and train them in the competences they need for boundary work.

### **2.5.1 Future research**

It is very interesting to make a closer study of how processes of social learning in multi-actor networks can be organised and facilitated. What is the role of power inequalities, trust and commitment in the ongoing learning process? How do they influence the emerging communities of practice? How can these social learning processes be facilitated from the perspective of action-oriented research? Can reflective learning contribute to this? What is needed from the different actors? When these questions are better addressed and understood then we can better anticipate how action research can contribute to learning and knowledge in regional development for scientists, students and regional stakeholders alike.

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## Chapter 3: Social learning in regional innovation networks: trust, commitment and reframing as emergent properties of interaction

### **Abstract**

Social learning in multi-actor innovation networks is increasingly considered an important precondition for addressing sustainability in regional development contexts. Social learning is seen as a means for enabling stakeholders to take advantage of the diversity in perspectives, interests and values for generating more sustainable practices and policies. Although more and more research is done on the meaning and manifestations of social learning, particularly in the context of natural resource management, little is known about the social dynamics in the process of social learning. In this contribution an integrated hypothetical framework that provides a better understanding of social learning as a generative process with outcomes is presented. This hypothetical framework is grounded theoretically in emergent social learning theory and empirically in a retrospective case study around multi-stakeholder sustainability-oriented regional learning in the North of The Netherlands. Our findings indicate that trust, commitment and reframing are interrelated aspects and emergent properties of interaction in the process of social learning. Hence, the framework presented reflects social learning as a dynamic process, in which trust, commitment and reframing are continuously produced and reproduced through the (inter)actions of the individual actors.

### **Keywords**

Social learning, Multi-actor innovation networks, Rural and regional development, Sustainable development

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### 3.1 Introduction

*I'll let you be in my dream if I can be in yours - Bob Dylan*

Society faces a multitude of intricately intertwined sustainability issues related to energy use, loss of biodiversity, natural resource management, climate change, food security and food safety and so on. These issues have increasingly received attention from the perspective of ecological, economic and regional development because sustainability issues often have specific characteristics (e.g. Pike et al., 2007; Quétier et al., 2010; Valkering et al., 2011). Examples include:

- Climate change impacts on a river-basin (Valkering et al., 2011);
- Changing roles of rural areas as metropolitan pressures on the countryside increase and become more varied (Hermans et al., 2010; Quétier et al., 2010);
- The interface between indigenous local knowledge and universal knowledge systems in organic food production (Eernstman and Wals, 2009);
- Rethinking personal mobility systems at local, regional and national levels (Vergragt and Brown, 2007).

In many sustainability studies, including the ones listed above, researchers consider the regional scale level as a crucial level for dealing with sustainability management issues, because this is the level at which ecological processes and human activities most intensely interact (Bohunovsky et al., 2010; Graymore et al., 2010; Cundill, 2010).

It is thought that the regional level holds a specific capacity for the generation of new knowledge created in multi-actor innovation networks (Pekkarinen and Harmaakorpi, 2006) in which, for instance, farmers, scientists, students, NGO's and policy makers together can find new answers to existing social, economic and ecological problems. Indeed, such diverse groups of actors representing a range of perspectives, values and interests are seen as a prerequisite for dealing with sustainability issues (Van Asselt, 2000; Wals, 2007a,b). However, creating pathways towards sustainability does not occur through the mere combination of existing knowledge, but requires on-going interaction between multiple actors willing and able to lay their own values and interests on the table (Koutsouris, 2008). Sustainability problems are best addressed when multiple actors with diverse interests and perspectives develop a shared frame on a jointly perceived problem or challenge, which enables joint action (Pahl-Wostl, 2006; Sriskandarajah et al., 2010). This process is increasingly referred to as social learning. Social learning, as we will elaborate later on, has been shown to facilitate innovation and possibly foster the pathway for positive transitions in social-ecological systems (Cundill, 2010; Stephens and Graham, 2010; Tukker and Butter, 2007).

Many accounts of social learning (e.g. Pahl-Wostl and Hare, 2004; Schusler et al., 2003; Bouwen and Taillieu, 2004; Woodhill, 2003) provide rich images of the various factors and processes involved in social learning and its needs for facilitation. However, the dynamics of social learning have not received such attention from scientists (Bouwen and Taillieu, 2004; Reed et al., 2010). The challenge of a successful social learning process underscores the need for theories about social learning that can help us understand social learning not only in terms of the interaction taking place between the stakeholders but also in terms of the dynamics, in terms of knowledge and social relations, produced by this interaction (Beers et al., 2010).

The main research questions we will address here are:

- What factors drive social learning in a context of diverse and conflicting interests?
- What is the role of trust, commitment and reframing in social learning?
- How can we foster the dynamics of social learning?

First we will introduce regional sustainable development as a suitable context for investigating social learning challenges. Then we discuss several theories on social learning and knowledge co-creation, after which we present our research methods and the empirical case in which our research questions are addressed: a multi-actor innovation project in the province of Groningen, situated in the North of The Netherlands. This leads us to our key findings.

### **3.1.1 Regional development as a social learning context**

A region can be seen as an area smaller than a nation that has an identity demarcated by boundaries (possibly as an administrative entity) or that can be identified by relatively homogeneous economic, social, cultural or landscape characteristics (Van Zeijl-Rozema and Martens, 2010). In regional development processes, different (groups of) actors often have different ideals and images of what a region is and what it should be (Quétier et al., 2010). Pekkarinen et al. note: "The real competitive advantage of regional innovation networks is based on their ability to create knowledge in a collective and interactive learning process" (2006 p. 410). An important question then becomes: to what extent are the different actors involved able to find future trajectories for the benefit of all?

A regional approach to sustainable development has several advantages. First, regional actors often have somewhat unique localised knowledge that is not available outside the region and that can help in identifying promising directions for sustainable development (Bohunovsky et al., 2010). Furthermore, at the regional level it is often possible to involve the actors that are in power and that have the capabilities to

implement possible solutions that emerge from a social learning process (Bohunovsky et al., 2010). However, this does not make it easier to deal with clashes in interests of different actors (Pike et al., 2007).

An example of a collaborative eco-system management problem is: "How can we combine agriculture, nature and tourism in the area in a mutually beneficial way?" This is the kind of complex management problem that is at the heart of our empirical case in the "Westerkwartier" (The Western Quarter) region in the Netherlands, where a range of societal pressures is threatening the sustainability of the region. For instance, farmers are facing strong global market developments, which force them to either intensify their operations or to change to completely different business models. At the same time, nature conservationists are finding it increasingly difficult to preserve existing natural resources. Furthermore, rural and urban citizens again have different needs and desires regarding the region's livelihood and service level but they share the perception that the Westerkwartier is a rather poor regional backwater.

The challenges of social learning processes are closely related to the complexity of multi-actor networks (see also: Persson et al., 2011; Leys and Vanday, 2011). In regional development processes the actors involved often represent different societal sectors, such as; education, government, research, trade, NGO's and primary production, and generally include researchers, entrepreneurs, educators, government workers, and NGO representatives. Each actor tends to be (semi)organized in some kind of stakeholder group or constituency and represents specific interests and goals, which influence their commitment of knowledge, creativity, resources and talents to regional development (Lebel et al., 2010). This situation is illustrated in Fig. 1.

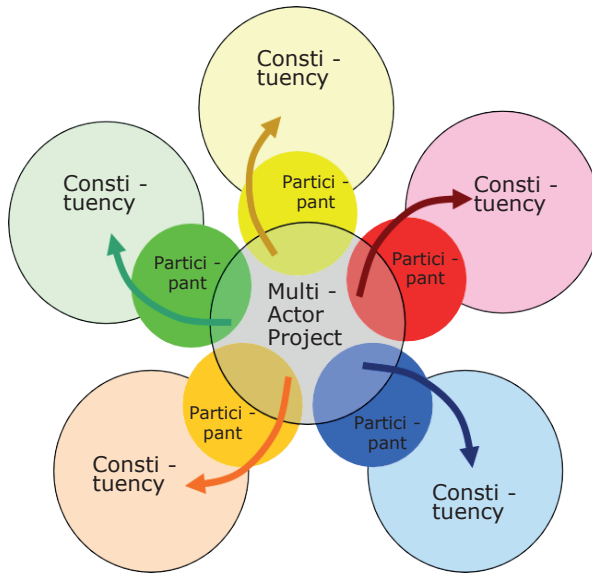
Seen from the perspective of a shared multi-actor project, each of the members is also a representative of a constituency. A multi-actor network results from multiple multi-actor projects (and other activities) that form links between many more project participants and their constituencies. Social learning in a multi-actor network is influenced by interactions between project members and their constituencies. However, in this contribution we focus on the behaviours and interactions between the actors in the network.

### **3.1.2 Multi-actor learning**

The concept of social learning explicitly includes the concept of learning. Therefore we first elaborate shortly on some concepts on learning from a social constructivist background, drawing on educational and organisational learning theories, before we focus on to the concept of social learning itself.

Several scholars have pointed out the social, interactive nature of learning in general. Wenger (1998) poses that learning is the ability to negotiate new meaning and

is fundamentally experiential and social in nature. Vygotsky, writing about individual development, states: “Every function in the child’s cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)” (1978). These approaches emphasise that learning is a social, interactive process, regardless of whether it is individual or social.



*Figure 3: Multi-actor innovation project form network links via project members and their constituencies.*

Alexander et al. (2009) define learning as “a multidimensional process, that results in a relatively enduring change in a person or persons, and consequently how that person or persons will perceive the world and reciprocally respond to its affordances physically, psychologically, and socially” (p. 186). This definition emphasises the result of learning, that is, learning can be seen as change, first in perception and then in behaviour. And again, this definition can apply to individuals as well as groups.

Following on this, and echoing educational thinkers like Piaget (1964), Berlyne (1965) and Festinger (1957), we define learning as an interactive process that leads to some form of dissonance as a result to being exposed to alternative ways of seeing, knowing and understanding, coupled with a desire to overcome such dissonance by changing one’s own thinking in sometimes subtle and sometimes more radical ways. As such, learning can result in a change in perception, knowledge and behaviour of individuals, organisations and/or groups.

We can now define social learning as an interactive and dynamic process in a multi-actor setting where knowledge is exchanged and where actors learn by interaction and co-create new knowledge in on-going interaction. By using the adjective 'dynamic' we want to stress that there are internal changes in social interaction between actors that affect both the quality and effectiveness of such learning. Although external dynamics such as power, hierarchy, trends, issues, money, time etcetera might play an important role in the way actors behave in a multi-stakeholder setting, we do not take these factors into account here. Instead we only deal here with the behaviour of the actors involved.

By using the term 'multi-actor setting' we want to stress the importance of diversity. Multi-actor networks in regional development consist of people who represent themselves and/or an organisation and/or a network. The multi-actor approach stems from the participatory perspective in environmental management, where it is argued that not one party such as science, but all relevant stakeholders have to become the main drivers of change (Groot, 2002). Actor diversity is often regarded as an important source for social learning, because it enables a broader and more integrated understanding about the issues at stake, and a greater capacity for joint action and learning (Gaventa and Cornwall, 2001).

But diversity can also turn out to be barrier. The heterogeneous composition of a multi-actor innovation network, with different values and interests, combined with the very "messy" character of the complex problems involved, often is reflected in large differences of perception (Pahl-Wostl, 2006; Fadeeva, 2005). An individual's institutional affiliation or constituency may have a strategic agenda that may or may not be in-line with his/her personal agenda. In that regard, some scholars wonder what state is more common in a multi-actor network, one of learning or one of conflict (Leeuwis, 2000).

Furthermore, individual and organisational scale differences can further complicate social learning, because organisational interests and values often limit the freedom to act of the people that represent them. With regard to this interplay Wenger et al. (2002) states that communities are themselves instruments of the transformation they require by transforming an organisation's culture through their collective influence on its members and the teams and units with whom they interact.

In sum, the complexity of multi-actor innovation networks is characterised by differences in goals and interests, and the interplay between the personal, the network or community level and organisational levels. Moreover, the process of social learning is embedded in a web of power- and trust-relationships (Leeuwis, 2000; Barnaud and Van Paassen, 2010; Wildemeersch, 2007; Hildén, 2011; Avelino and Rotmans, 2011). In the optimal case, a multi-actor innovation network comes to develop a unique problem perspective, creating innovative solutions to shared problems (cf. Wenger, 1998). In the

worst case, mutually exclusive perspectives divide the participants, who cease listening to each other (Van Eeten, 1999).

### **3.1.3 Theories about social learning**

So, what supports the process and outcome of social learning in a multi-actor innovation network? For answers, we turn to existing theories about social learning. When a group is successful at social learning, it learns about and reframes shared issues and actively engages different groups in society in a process from understanding conflicts and dilemmas towards implementing strategies together for dealing with them (Woodhill, 2003). Schön and Rein (1994) define 'frame' as "a taken for granted assumptional structure, mostly based on values and judgements" (Schön and Rein, 1994). This means that specific frames lead to specific perceptions of an issue at stake and that these perceptions are tinted by the values and judgements of the actor who holds them. (Re)-framing here refers to the emergence of new, shared perceptions on the issues faced by a relatively heterogeneous group exploring a mutually perceived but somewhat ill-defined challenge such as regional sustainable development (Groot, 2002; Wals and Heymann, 2004).

Having different frames can be detrimental to social learning when actors are unable to deal with their differences. Doing so requires being open to each other and willing to understand the issue from the other's point of view (McGregor, 2007). In this regard, trust can make it easier to deal with mutual differences. Various scholars have identified trust as an enabling factor that makes it easier to share knowledge and experience in multi-actor networks (Paul and McDaniel, 2004). In particular, trust may facilitate learning and innovation in the face of the ambiguity and unstructured nature of wicked decision problems (Paul and McDaniel, 2004). For the matter of dealing with different frames, trust can make it easier to be vulnerable towards acts of others. Here, we define trust as the expectation that others will act in a way that is agreeable for you without the possibility of you intervening (based on Peeman, 2009).

#### **3.1.3.1 Social learning as double-loop learning**

First order learning usually refers to the optimization of existing routines, practices and systems. As such, first order learning does not require a deeper reflection on the underlying assumptions of those routines, practices and systems as they tend to be accepted and uncontested. First order learning is appropriate when a system's sustainability is not questioned. It is less useful when trying to create new systems based on different values and assumptions than the old one (Sterling, 2007). Working towards sustainable development often requires system innovation and calls a status quo into question. It requires learning aimed at innovation, based on new ways of perceiving

ourselves and others, and the issues at stake (Brockbank and McGill, 2006). Such learning towards innovation is called second order or double-loop learning (Argyris and Schön, 1978).

Double-loop learning is akin to reframing because both concepts include the notion of radical changes in underlying beliefs and values (Pahl-Wostl, 2007), and both imply social action, social reflection, social analysis and social planning (joint decision making). This process “often involves resistance, for it poses challenges to existing beliefs and ideas, reconstruction of meaning, discomfort and difficulty but also sometimes excitement” (Sterling, 2007 p. 72).

### **3.1.3.2 Social learning as a dynamic social process**

The process of social learning is often described as an iterative and on-going process that comprises several learning loops with phases of action, reflection, analysis, and planning (Kolb, 1984; Pahl-Wostl, 2006; Wildemeersch, 2007). As a consequence, the dynamics of a social learning process are unpredictable and indeterminate: longer periods of relatively stable learning can be interspersed with sudden breakdowns or sudden take-offs. These dynamics can be registered as sudden drops, shifts or increases in terms of mutual trust, shared frame and/or commitment among the associated actors, which in turn affect how these actors interact (Beers et al., 2010). Therefore the dynamics in the process of social learning affect not only the process itself but also the outcomes of the social learning (Koutsouris, 2008). As people and organisations collaborate, a social learning process can produce intangible outcomes in the form of improving mutual relations and increasing mutual trust (cf. Hermans, 2011). The associated challenge is how to establish such trust, how to orchestrate the interaction so that it fosters reframing and, in the end, (commitment to) concerted action (Roux et al., 2011).

In sum, theories about social learning suggest that processes of reframing and double-loop learning are major features of social learning. They also indicate that the complex context of societal problems creates a very dynamic arena of actors and social interactions with the possibility of changes in levels of trust, commitment and reframing.



## 3.2 Research context and framework

### 3.2.1 Case: the Westerkwartier, province of Groningen

As stated earlier, the rural region of interest was the “Westerkwartier” in the province of Groningen, the Netherlands. To address the rising regional tensions between state forestry, citizens and agriculture, a project called “Bridge to the Future” was initiated by Wageningen University with key community members. The intention was to start up a new learning network, in which societal actors, students and supervisors could learn, share, transform and co-create knowledge and innovative solutions in an open and explorative way, by creating sustainable relationships in equality. A large challenge was to overcome boundaries and build bridges between different sectoral interests and between top-down and bottom-up representation. With ‘top-down’ we refer to decisions made by regional policy makers. With ‘bottom-up’ we refer to all regional stakeholders without formal decision-making power, such as citizens’ initiatives. The “Bridge to the Future” project featured a “bottom-up” integrated action research approach to initiate a multi-actor network of local stakeholders (farmers, forestry- manager, administrators, cultural heritage preservers, tourism entrepreneurs and others) with the aim to get them actively involved in regional policy development and implementation.

Another aim of the project was to provide students with a learning experience in the context of a real-world complex regional development process. The project team consisted of three Wageningen University researchers/teachers and an independent project leader (the lead author of this manuscript). The student group consisted of eight students from different disciplines in higher education. The students were guided by the project team.

The project lasted about five years and during this period numbers of participating regional stakeholders fluctuated. During the start-up year around one hundred people participated in workshops, meetings, interviews and a regional public event. At the kick-off meeting fifteen regional stakeholders participated (Table 1).

In this contribution we have opted to focus on the first year of the project as this period proved to be especially rich with regard to social learning dynamics, in part because this period featured the uncertain and indeterminate inception of a multi-actor innovation network.

### 3.2.2 Action-oriented education and research

The project “Bridge to the Future” invited the students to work in an action-oriented, learning-by-doing mode, by regarding their co-operative inquiry as an essentially emergent process. The action-oriented approach implied that the students would work in a transdisciplinary fashion (Regeer, 2010), meaning that they would interact with the

complexity of society and would integrate different disciplines in their research. They would stay for several weeks in the area to get to know the relevant actors, the issues at stake and the region itself.

An action-research approach was chosen in order to treat complex regional issues in a collaborative mode. In action research, a cyclical process of planning, action, reflection and analysis results in the development of new or revised plans (Zuber-Skerritt, 1993; Wals, 1994). An important assumption underlying such approaches is that participants come to own the issue at stake and feel responsible and accountable for working on it through teamwork. This also means that "truths become products of a process in which people come together to share experiences through a dynamic process of action, reflection and collective investigation" (Gaventa and Cornwall, 2001, p. 75). Thus, a certain level of equality is necessary in action research, "where a researcher is one of the actors and not a supreme authority" (Gustavsen, 2006, p. 25).

The student-researchers and the project team had to be aware of and sensitive to the political agenda of the governments involved, who tended to downplay the bottom-up process. A methodological path was followed that resembles the transition management model (Kemp et al., 2007) which included: 1) establishing a non-official working group for regional development, 2) facilitating the development of a shared problem perception by both regional stakeholders and students, 3) supporting learning and knowledge sharing throughout the process employing an experimental, learning-by-doing mode, and, finally: 4) employing periodic monitoring and evaluation, particularly of critical events.

**Table 1: Regional stakeholders; number of persons and stakes at the kick-off meeting.**

Regional stakeholders	Number of actively involved persons	Stake
Agrarian Nature Organisation A	2	How to keep farming viable with nature
Agrarian Nature Organisation B	2	How to develop more nature on farms
Rural Tourism Entrepreneur (Bed & Breakfast)	1	How to get more tourists
State Forestry	2	How to develop nature with farmers
Municipality of Grootegast	3	How to keep the region viable at municipal level (What can we do with abandoned farmhouses?)
Province of Groningen	2	How to support the region in development and match this with the policy agenda
Foundation For Regional History "The Tasman Cabinet"	1	How to put the region Westerkwartier "on the map"
Organisation for Rural Cultural Consciousness "The Kwartiermakers"	2	To spread knowledge and awareness about Regional Culture and Nature

At the start of the project the project team and the participating students did not know much of the area and the issues at stake. The regional stakeholders were not organised around issues, the existing network was rather loose and open. The project team hoped that the regional actors would accept the participation of the researchers and the students and that the students would be committed to the participative process. The project team therefore decided to organise several opportunities for interaction between regional stakeholders and students to invest in social relations, knowledge exchange and co-creation. The following three consecutive activities were decided upon:

1. A formal kick-off, followed by monthly meetings with selected regional stakeholders.
2. Several weeks' worth of field work by students staying in the area.
3. Organising a region day; an event at which existing views and new knowledge could be presented and discussed between 55 stakeholders involved.

These three activities were then complemented by three additional activities:

4. A regional day, at which results of the students were discussed
5. Reflective meeting
6. A go/no go meeting.

At the kick-off event, fifteen regional stakeholders, all eight students and the three project team members exchanged concerns, desires and key interests.

The students - together with their supervisors - used the proceedings of this event to formulate the following shared problem statement: "How can we simultaneously maintain the landscape as it is, keep farming economically viable and improve the region's vitality?" The regional actors could easily recognise their own stakes in the shared problem statement, which fostered initial trust and commitment for their participation. This question also provided an interdisciplinary starting point for identifying student Master's thesis topics.

### **3.2.3 Methodological considerations and methods**

The lead author acted as the project leader in this "Bridge to the Future" project. The lead author documented her experiences during the project as well as the history of the project itself. During the project many notes were taken. These notes were discussed within the project team, which consisted of three researchers and the project leader. Besides that an external researcher was asked to document the process over the years in retrospect (Derkzen, 2008). In addition reflective filmed interviews were held with some regional key- stakeholders, which resulted in a DVD (Smarter Together, 2010). These interviews were transcribed. Then, at last three scientists and the authors of this article

(including the lead author/project leader) reflected on all materials, in reconstructing the social learning history. From these experiences, the main events that occurred with the project in the period 2003-2008 were identified.

The researchers took the written descriptions of the key events from the first year of the project as a basis for reflection and interpretation in retrospect. This means that the methodology applied is not an evaluation, but an ex-post analysis. This approach can serve as a reflexive inquiry during which the research team tries to (re)describe and (re)interpret data, ideas and concepts. The aim is to bring together past experiences in order to highlight 'lessons learned' with specific interest in those aspects that are seen as key elements for social learning (Rodela et al., 2012; Dillon and Wals, 2006).

The analytical focus was on the relatively stable periods of social learning and the sudden changes in between. For each event, the social learning dynamics were explored using four reflective questions:

1. How did you perceive the situation? What was happening?
2. What did you decide to do, why? How did you intervene?
3. What were the effects of this intervention?
4. What did you learn from that? What would you do different a next time?

The answers to these reflective questions were then used to enrich the event descriptions. For instance, by discussing the reflections on an event, the second author would ask the first author to elaborate and specify as many aspects of the event as possible. Several project reports (Derkzen, 2008) and minutes of meetings, reflective video-interviews (DVD "Smarter Together" 2010) with key-stakeholders and participant observations provided additional empirical evidence for the event descriptions, and served as additional data sources. Our reflective approach fits Grin and Van der Graaf's (1996) description of an iterative process of continuing inquiry.

The interview notes and transcripts were analysed and compared qualitatively with the intention to discover some structure and coherency. Several aspects of regional stakeholders' ideas and experiences tended to repeat themselves with some variation, and after several rounds of interpreting, some patterns emerged in relation to trust, commitment and reframing. This approach resembles the 'grounded theory' which is a qualitative research methodology for developing theory that is grounded in empirical data which are systematically gathered and analysed, by looking for patterns, similarities and differences in events that are compared with each other (Groot, 2002).

The aim is to gather a deeper understanding of the dynamic learning process in relation to its outcomes. Of course we realize the risk of 'double hermeneutics', in this case where the lead author engages in the interpretation of her own interpretations and experiences. In order to reduce this risk and to reach some form of inter-subjectivity and

consensus about both the patterns and the way they related to the framework, multiple researchers participated in the analysis and interpretation of the data.

### **3.3 Findings**

#### **3.3.1 Trust and commitment**

Over the first three months, in which several meetings between regional stakeholders and students were organised, the number of shared experiences grew and feelings of respect and friendship - among stakeholders involved in the project - increased. During these meetings the students, the project team members (lecturers and project leader) and the regional stakeholders exchanged views and experiences in relation to the research questions. The regional stakeholders were organised as a steering committee, including farmers, the forestry-manager, public administrators from two municipalities and the province, a historic association and tourism entrepreneurs.

In these meetings, the regional stakeholders learned that the project team took their interest and values seriously. This fostered mutual feelings of trust. Arguably, as the network developed, starting from a relatively loose multi-actor innovation network with diverse frames, it increasingly took on characteristics of a community, with shared practice and shared meaning (cf. Wenger, 1998). It appeared that the kick-off event had acted as a 'stepping stone' for the creation of trust and further commitment from the regional stakeholders towards the university (the project team and the students). This trust was expressed in commitment to joining meetings, to giving students plenty of time and honestly answering their questions. Trust was also shown by leaving room for mistakes. Students could experiment with different techniques and be creative in their field work. During their six weeks of field work, students regularly talked with regional stakeholders. The open, participative and neutral attitude of the students made them easy to trust and easy to talk to.

Furthermore, the students' questions made the regional actors rethink their own perceptions about the region, the landscape, its identity and its values. The Westerkwartier landscape is characterised by many small scale green grass plots, alongside long hedgerows with a maze of parallel narrow ditches. Initially, the regional actors saw their region as somewhat backward and remote. In contrast, the students thought the region to be beautiful, with plenty of silence and space. Through interacting with the students, regional actors started to see their region in a different light and to regard it with renewed interest. The regional actors reframed the region. In the words of a local citizen: "The typical Westerkwartier landscape is something of which I think that every inhabitant of this region is proud of. Both the landscape and the language are and

always have been part of people's identity here. And now, because of all the questions of the students, people are more aware and proud of this identity."

### **3.3.2 A sudden decline of trust and commitment**

Issues of ownership, power and commitment started to surface as the project evolved. Although the overall research question covered the diverse interests at stake, it was not entirely clear who was taking commitment and responsibility for the problem solving in farming, landscape and vitality (Derkzen, 2008). Especially the ambivalent attitude of the government representatives was a problem. They participated in the network and in monthly meetings, but they did not take a formal hold in the problem statement as government. Instead, their attitude was to 'wait and see'. One local citizen and participant in the project suggested that "The municipality and the province don't really know how to act in these issues". This created an inequality regarding commitment and power; the ones who represented a more bottom-up approach (farmers, state forestry and historic association) were fully committed, but out of formal power, whereas the ones who represented the province and municipality were loosely committed, but in power to decide about resources such as time and money. This created tension within the network and made progress towards empowerment of the regional stakeholders in non-governmental positions increasingly hard. As a consequence, the interaction stalled, and a sudden decline in mutual trust and commitment occurred. In the words of one of the local informal leaders of the Westerkwartier Regional Initiative (WRI) network: "We just continued to give respect. I call it 'the art of empathy'. It doesn't happen when I walk around in my uniform [interviewee works as a state forestry-manager], it happens when you feel how somebody else feels and thinks. So: get to know their agenda and respect it. That is the path towards trust, in my experience".

### **3.3.3 Restoring trust and commitment**

During the go/no go meeting all actors involved (e.g. university students and staff, government representatives, farmers, representatives of nature organisations and the state forestry) could express their future ambitions for the area, and articulate (new) research questions. The project leader wanted to find out whether a shared frame about the area still existed, despite the apparent breakdown, and if so, whether there was still sufficient common ground to continue the project.

At the meeting the participants exhibited a large variety of short-term and long-term ambitions for the region, varying from agricultural ambitions to water management and tourism ambitions. Many participants voiced a strong wish to continue in a bottom-up fashion, and if necessary, without formal government support. This plea for continued bottom-up change processes had important consequences for the social learning process.

First of all, events at the go/no go meeting restored much of the mutual trust, because sharing the wish for proceeding with the project reaffirmed the shared frame that had emerged throughout the previous months. Furthermore, they reaffirmed the shared commitment, and also provided a way out of the issue of power and ownership. Events at the go/no go meeting provided opportunities for joint learning and meaning making, which sharpened the project's aim for joint action. Enthusiastically, the actors thought up a name for this new initiative: Werkgroep Streek Initiatief (WSI), (the Working Group Regional Initiative).

The mutual trust and the commitment for further development spoken out that day created a strong basis for the (difficult) years to come. The working group had the ambition to integrate several issues in agriculture, landscape, cultural heritage, water, energy and tourism, to collaborate on a regional base and to engage both government and regional initiatives. Some years later this ambition led to the installation of a local action group within the EU-LEADER framework in which both regional actors and government actors were represented equally. The EU-LEADER framework provided a powerful tool and incentive for continued integrated regional development activities. Furthermore, the WRI developed - together with the local action group and many other regional actors - , a meeting point, a number of rural café's (organised as three-monthly meetings) and a European Country Side Exchange (a three-day learning visit from the European Network for Local Development consisting of researchers, farmers, NGO's and consultants from Ireland, Finland, Sweden and Germany). All these activities contributed to a simultaneous increase of trust and commitment, a growth of social learning and concerted action for regional development.

### **3.3.4 An emergent framework**

Our reflection on the events during the first year of the project shed light on the interrelation between trust, commitment and (re) framing. From the start, a high level of trust between the farmer and the state forestry-manager could be observed. They were strongly committed to the integrated problem statement formulated at the kick-off event, probably because their different interests were represented. They seemed to trust that their interests were taken care of by the students. The province and municipality appeared less committed because they could not see how a bottom-up initiative could represent their interests at that moment. This lack of commitment in fact indicated a lack of trust. Instead of welcoming it, they regarded the informal network as somewhat threatening. Nevertheless, both the municipal and provincial representative attended almost all the monthly meetings. A local farmer and chairman of the agricultural-nature organisation states: "The civil servants from municipality and province that participate in our meetings tell their colleagues stories about here, and I bet their colleagues know

what is happening here! Of course, [the municipality and province] don't know right away how to handle us. But for sure it is easier now to walk and talk with the province". This quote is indicative of both some distrust in the civil servants attitude and in the longer term trust in the outcome of the interaction process.

The process of reframing could take place because the people from the region trusted the attitude and the questions of the students. Because of this mutual trust, students gained access to local stakeholders and could start interacting with them. The interaction, in turn, resulted in a new, more positive frame of the region from several regional actors. The resulting regional "pride" created an impulse for new regional cultural networks and initiatives. Furthermore, the monthly meetings helped to reinforce the trust relation between regional actors and researchers.

It is interesting to understand how the difference in commitment between regional stakeholders and government representatives works. For the regional actors (farmers, state forestry, culture foundation, tourism entrepreneur) the ambiguity of the government slowed down the whole learning process. For example, simple questions remained unanswered and resources such as 'seed money' did not come easily. This resulted in pressures on regional stakeholders' time and commitment. Consequently, the project stalled, which led to a sudden decline of trust and commitment. The alderman of one of the participating municipalities notes: "I thought at that time, they (the Working Group Regional Initiative) should be more concrete and should act faster. But now I realise that patience is the most important. And look now; a huge network of regional actors full of energy and plans".

These examples seem to support the notion that trust, commitment and reframing are influenced by interaction, and also that they can result from interaction. Furthermore, the results suggest an interrelatedness of trust, commitment and framing, in the sense that changes in the one may herald changes in the other. However, it might also be possible that high levels of trust yield unintended consequences, when people blindly follow a leader without having a stable point of reference.

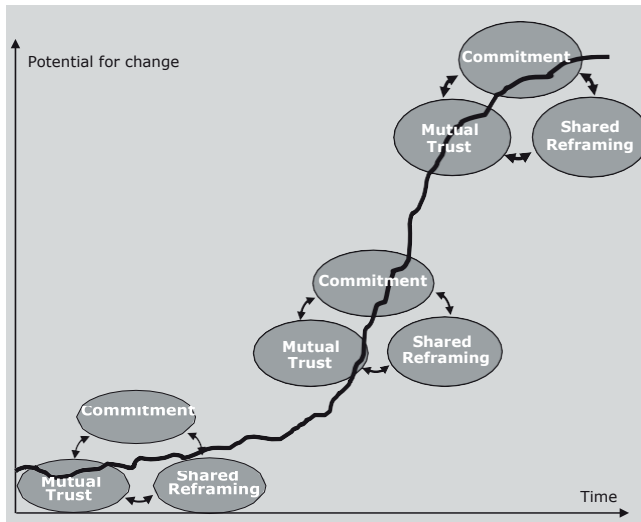
A key outcome of the retrospective analysis of the Westerkwartier case, is that social learning can be regarded as the dynamic interrelation of trust, commitment and reframing (see Fig. 2). When properly managed, social learning can spiral over time towards an increased potential change towards a more sustainable region.

We posit on the basis of the case that generative social learning is a dynamic process, in which trust, commitment and reframing are continuously produced through the actions of the individual actors. Vice versa, frame changes and changes in mutual trust and commitment influence the actions of the actors involved. As such, trust, commitment and reframing can be seen as emergent properties of social learning. The social learning process then can be seen as the continuous iteration of communicative



actions by the project partners, including their contribution to new local knowledge and their questioning of each other's claims and values.

The constituent elements of this hypothetical framework are not new. The novelty of this hypothetical framework rather resides in the combination of commitment, mutual trust, and (re)framing as equally important aspects of social learning, and treating them as dynamic and emergent properties of social learning. The importance of this notion is that it takes the attitude, values, behaviour and actions of the project partners as the basic building blocks of the social learning process.



*Figure 4: Social learning as the dynamic interplay of shared reframing, mutual trust and commitment. Successful social learning can generate an increased potential for change.*

### 3.4 Conclusions and discussion

In this article we have explored social learning processes in regional sustainable development processes in the Dutch Westerkwartier region. The associated analyses have resulted in hypothesising a framework that integrates notions of trust, commitment and reframing and treats them as emergent properties of interaction. It is our intention to test this framework in further research. In this closing section we reflect on our results in the light of existing theoretical notions of (re)framing, mutual trust, and commitment.

Our analysis shows that trust, commitment and reframing are different, but interrelated aspects of the process of social learning. Different, because they can independently change over time, but interrelated, because changes in one of these aspects were shown to provoke changes in other aspects. Our case study showed that a

slow decline of commitment resulted in a sudden decline in mutual trust later on. Furthermore, our analysis indeed suggests that trust, commitment and reframing can be seen as emergent properties of social learning. In another example from our case, a high initial level of trust from the regional stakeholders towards the researchers opened up possibilities for interaction with students. As a consequence of this interaction, reframing started: the students' outsider perspective led regional stakeholders to revise their own perspective on the region. At this point, we would not want to go so far as to suggest that our results confirm that trust, commitment and reframing are the only emergent properties in question but they do surface in a growing body of literature about social learning (e.g. Pahl-Wostl, 2006; Bouwen and Taillieu, 2004).

Grin and Hoppe (1995) emphasise that an atmosphere of trust and commitment to reciprocity is essential. Or, as Loeber et al. (2007, p. 89) puts it: "I'll let you in on my private considerations, if you let me in on yours". In order to break prevalent 'wait and see' attitudes, it often is necessary that participants are able and willing to go first. Possible relations in the development of trust and commitment and reframing are illustrated by Hoverman et al. (2011, p. 14), who state, that frequent and meaningful communication interaction nurtures trust and develops commitment to action.

Commitment is the third aspect of social learning, and refers to how and the extent to which participants and their organisational backgrounds expend their resources on the goals of the project. Commitment can concern passion, motivation, but also resources like time and money. Commitment originates from strong interests and values with regard to the problem at hand and the goals of the innovation project, and results in high willingness to contribute, both in thought and in action. We found that a distinction can be drawn from the personal commitment of a participant in social learning process, and the organizational commitment of the organization she or he represents. The representative does not necessarily have the same type and level of commitment as his/her constituency. In our analysis, we focused on the personal commitment of the participant.

Several social learning scholars stress the importance of facilitation in strengthening social learning processes (Muro and Jeffrey, 2008). Facilitation of social learning is particularly important when feelings of mutual insecurity and uncertainty emerge, for instance when people keep changing their minds in the phase of decision making (Wals et al., 2009; Wals and Schwarzin, 2012). Social learning requires that a certain level of trust is maintained, and facilitation can help doing this. A stronger emphasis on facilitating social learning and establishing social relationships are seen as essential preconditions for effective sustainability management (Roux et al., 2011). Facilitation can offer a place where people feel secure, are not afraid to make mistakes,

and can mediate between the different frames and interests actors and their constituencies have. Such interventions can foster the development of trusting relations.

Our analysis only enables us to draw very general hypotheses about the role of the facilitator. One of such hypothesis is that the facilitator should monitor both slow and sudden changes in trust, commitment and framing (the emergent properties of social learning), and to react to these changes by intervening in the interaction processes. One such intervention can be the facilitation of reflexivity, as a way to make personal experiences, perceptions and wishes more explicit. Reflexivity, in turn, might lead the actors to develop more self-awareness and more insight in their own and others' levels of trust, commitment and reframing.

In closing; this research resulted in an empirically grounded framework as a tool/heuristic for understanding and facilitating social learning in complex change processes involving multiple actors. To further test the hypothetical framework more research on changing levels of trust, commitment and reframing and their indicators in social learning processes has to be done. Second, more research should be done on the relation between internal dynamics and external context dynamics of social learning. Especially the effects of social learning in multi-actor networks on the organization that the people represent could be an interesting field of research.

In its current form, the framework may serve several specific purposes. First, it may help researchers to understand the emergent properties of social learning in relation to the learning processes and learning conditions in regional networks. Second, such an understanding may be used to improve the quality of social learning because it may provide facilitators with a heuristic that they can use as a tool for analysis and subsequent intervention. Third, the framework might contribute to more effective social learning and improved regional sustainability and eco-system management.

### **Acknowledgments**

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## Chapter 4: Strengthening ecological mindfulness through hybrid learning in vital coalitions

### **Abstract**

In this contribution a key policy 'tool' used in the Dutch Environmental Education and Learning for Sustainability Policy framework is introduced as a means to develop a sense of place and associated ecological mindfulness. The key elements of this tool, called the vital coalition, are described while an example of its use in practice, is analysed using a form of reflexive monitoring and evaluation. The example focuses on a multi-stakeholder learning process around the transformation of a somewhat sterile pre-school playground into an intergenerational green place suitable for play, discovery and engagement. Our analysis of the policy framework and the case leads us to pointing out the importance of critical interventions at so-called tipping points within the transformation process and a discussion of the potential of hybrid learning in vital coalitions in strengthening ecological mindfulness. This paper does not focus on establishing an evidence base for the causality between this type of learning and a change in behaviour or mindfulness among participants (with as a result contributing to a vital coalition). It rather focusses on the conditions, processes and interventions that allow for such learning to take place in the first place.

### **Keywords**

Ecological mindfulness, Vital coalitions, Hybrid learning, Place-based Education, Reflexivity

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## 4.1 Introduction

In recent years place-based education—which we consider a form of science education as a cultural, cross-age, cross-class, and cross-disciplinary phenomenon—has been receiving increased attention from educators and policy-makers as a means to help people, young and old, re-connect with the physical, material and socio-ecological world they inhabit. There is a whole body of scholarly work emerging that suggests that (re)discovering and (re)connecting with place can be:

- restorative (therapeutic, healing, etc.) (see for example: van den Berg and van den Berg, 2011; Townsend and Weerasuriya, 2010);
- generative (leading to new ways of seeing, sensing, experiencing and learning) (for examples see: Stanley, 2010; Wells, 2000);
- empowering by enabling people to shape and care for a place (for example see: Tidball, and Krasny, 2010).

Not surprisingly a number of psychological, sociological and pedagogical benefits can be associated with place-based education (see: Sobel, 2008; Gruenewald and Smith, 2008).

A key question for environmental educators and policy-makers alike is how we can engage people, young and old, meaningfully in the local and contextual while being mindful of the global and the universal. This is not a new question, but there are a number of global developments that make this question more important than ever.

Firstly, worldwide people are spending more and more time behind electronic screens both indoors and outdoors making the places they move through a decor for digital activity at best (Zaradic and Pergams, 2007).

Secondly, schools are increasingly expected to prepare students for a highly competitive and volatile world-of-work rather than for life (Nussbaum, 2010). This results in schools focusing on what is considered 'basic' knowledge and competencies that will increase the likelihood of getting a job. The connected push for excellence in these areas is also leading to a narrow focus on scoring high in the rankings. The spaces for learning domains such as the arts and the humanities as well as for forms of learning that require discovery, reflexivity and engagement are further marginalized (Nussbaum, 2010).

Thirdly, the environmental and sustainability challenges humanity is facing are greater and more complicated than ever before. Issues related to climate change, energy, micro-toxins, food security, water management, biodiversity loss, are highly complex and contested in both science and society, but do demand an urgent response (Wals and Corcoran, 2012). Increasingly sustainability scientists are arguing that we live in a 'systemic world' characterized by multiple causation, interactions, complex feedback loops and inevitable uncertainty, and unpredictability (Lang et al., 2012). Old mechanisms, coordination points, problem solving strategies, modes of scientific inquiry

and forms of teaching and learning, seem inadequate in addressing the present global sustainability challenge.

A key policy tool identified in the Dutch Environmental Education and Learning for Sustainability Policy (EE/LfSD) framework will be introduced as a means to address these challenges. The tool, vital coalitions, is meant to create spaces for blended or hybrid forms of learning between different societal actors who are often times in each other's vicinity and share common concerns but rarely find a way to collaborate. First, we will present sustainability as a learning challenge and introduce the policy framework and tool. We will then zoom in on a case focusing on greening pre-school playgrounds where the tool has been used. In the concluding section we will discuss the implications of vital coalitions and hybrid learning for engaging people in transitions towards sustainability and ecological mindfulness and offer a prospect for educators.

## 4.2 Sustainability as a learning challenge

In light of the emergent risk society (Beck, 2008), some environmental and sustainability educators and indeed, policy-makers, are emphasizing that people will need to develop capacities and qualities that will allow them to contribute to alternative behaviours, lifestyles and systems both individually and collectively. In addition to appropriate forms of governance, legislation and regulation, alternative forms of education and learning that can help develop these capacities and qualities, will be needed as well. Learning in a risk society requires 'hybridity' and synergy between multiple actors and the blurring of formal and informal education (Wals et al., 2013). Opportunities for this type of learning expand with an increased permeability between units, disciplines, generations, cultures, institutions and sectors.

Through this hybridity and synergy, new spaces might open up that will allow for transformative learning to take place. Such space includes: space for alternative paths of development, space for new ways of thinking, valuing and doing, space for participation, space for pluralism, diversity and minority perspectives, space for deep consensus, but also for respectful disagreement and differences (Wals and Dillon, 2013, p. 257). 'Transformative' here refers to a shift or a switch to a new way of being and seeing. John Mezirow describes transformative learning as a process of "becoming critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation" (Mezirow and Taylor, 2009, p. 4) which "enables us to recognize, reassess, and modify the structures of assumptions and expectations that frame our tacit points of view and influence our thinking, beliefs, attitudes and actions" (Mezirow and Taylor 2009, p. 18). This process entails what Argyris (1990) refers to as second order or 'double loop' learning, which, in line with Mezirow's ideas, calls for reflection and deliberation on the relevance and tenability of underlying background theories and normative considerations.

A key assumption of both social and transformative learning is that pluralism and heterogeneity offer more promise in finding creative solutions to stubborn issues, than 'singularism' and homogeneity (see also Page, 2007): people learn more from each other when they are different from one another than when they are like-minded but only when there is "chemistry" or social cohesion in the group. Should the latter be lacking the differences between them might just as well become barriers for mutual learning (Sol, et al., 2013).

#### **4.3 The Dutch environmental education and learning policy as sustainability framework**

The Dutch EE/LfSD policy-framework appears to be one of the few policy-frameworks in the world that tries to encourage pluralism and reflexivity in order to break with stubborn unsustainable routines (Tilbury, 2011). The notion of sustainability as a learning challenge is central in the Dutch LfSD policy framework in that it considers a sustainable society one that in its essence is a 'reflexive society' in which creativity, flexibility and diversity are encouraged, one that has the capacity to lay existing routines, norms and values on the table, but also one that has the ability to correct itself (Wals et al, 2009). Such a society cannot exist without reflexive citizens who critically review and alter everyday systems that we live by and that we often take for granted. Furthermore, a leading principle of the LfSD policy framework is that individuals, government, civil organizations and corporate institutions must develop competences in order to integrate sustainable development in all actions and decisions (van der Waal, 2011).

Consistent with the underlying philosophy of 'sustainability as learning' the LfSD's goals are rather process-oriented: focusing on things like capacity-building, connectivity, emergence and reflexivity. Traditional policy programs focusing on environment and sustainability seek to change specific behaviours and look for "evidence" that such change indeed occurred. In a way these different orientations to policy-making reflect the government's dilemma of wanting to create a more sustainable society but having no definitive answers or prescriptions for how to act in order to be sustainable. Instead the LfSD-program seeks to be a catalyst for capacity-building and the creation of so-called vital coalitions to enable citizens, young and old, to determine for themselves what it takes to move from the current situation/ practice to a more sustainable one. The 'vital coalitions' refer to (temporary) configurations or arrangements between different groups in society that are in each other's vicinity but until they were challenged by a common sustainability issue saw no immediate reason to work together. A hybrid learning configuration then comprises a vital coalition of multiple stakeholders engaged in a



common challenge using a blend of learning processes in a rich context where the whole is more than the sum of its parts.

The policy program specifically mentions multi-stakeholder social learning as a vehicle for taking advantage of each other's qualities and the sometimes divergent perspectives they bring to the sustainability table. Social learning here is defined as a collaborative, emergent learning process that hinges on the simultaneous cultivation of 'difference' and social cohesion in order to create joint ownership, unleash creativity and the kind of dynamic and energy needed to break with existing patterns, routines or systems (Wals et al., 2009). In order to assure that a vital coalition consists of groups representing different vantage points and perspectives but also holds some key areas of expertise (e.g., topical, local and process-related) a coalition of actors can only get government funding when four kinds of parties are represented:

- members of (local) government & governance (e.g., local water board, food and health board, etc.);
- providers of facilitation and tools that can improve the quality of the interaction (e.g., consultants, community-organizers, EE-center's);
- societal actors who actually wish to address a local sustainability challenge (e.g., schools, local businesses, NGOs);
- people representing relevant societal and educational trends (e.g., cradle-to-cradle and closed cycle design experts, environmental app designers, after school program managers).

Figure 5 shows the model used in the Dutch EE/LfSD policy-framework.

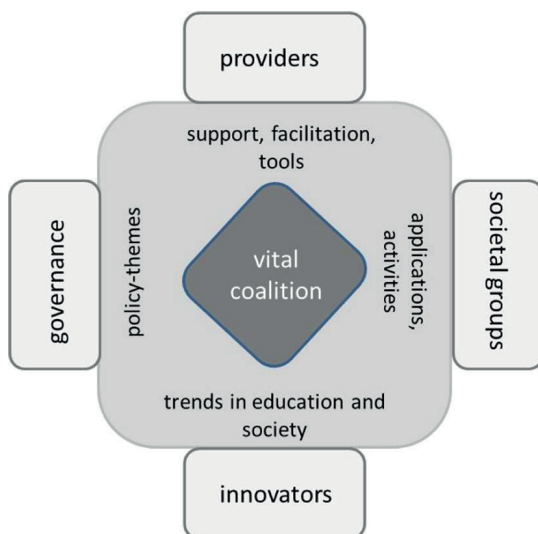


Figure 5: The Dutch 'vital coalition' model (source: Remmerswaal et al., 2012).

One underlying assumption of the policy program is that with an increase in public-private partnerships new spaces emerge for vital coalitions that are both energizing and generative in engaging citizens, including children and youth within meaningful sustainability issues. In parallel, a blurring of the boundaries between formal, non-formal and informal learning, both virtual and real, is taking place, which is also considered conducive for the formation of such coalitions.

In the next section we will report some of the key findings of a 2 year evaluation of the implementation of the framework. Bearing in mind the focus of this journal and the special issue, we specifically look at a vital coalition that was created to link (young) people with places.

#### **4.4 Evaluating vital coalitions-in-action**

Recently we completed an evaluation of a number of projects or cases that in their design fit well in the national policy program (Sol et al., 2013; Remmerswaal, et al. 2012). As a part of the evaluation, a number of case studies that represent vital coalitions were closely followed to see what kind of learning took place among the stakeholders, what kind of capacities and competencies participants developed, but also to assess whether such coalitions are adequate for encouraging transformative and transboundary learning.

Learning configurations can be seen as the inter-connected components that influence learning varying from the physical space in which learning takes place to the nature of the learning tasks and the goals pursued, the kind of support provided both materially and non- materially, the actors participating in the configuration and the prior qualities they possess, and so on. The evaluative questions shift accordingly from: "What kind of changes occurred in the learners as a result of an educational intervention?" to: "Did the configuration in which the learning took place allow for such changes to occur in the first place?" In other words, more attention is paid to the quality of the learning configuration to make sure that the "mix" is such that it may lead to worthwhile outcomes, while acknowledging that we may not know what the outcomes are beforehand. A hybrid learning configuration then refers to a cross-boundary learning environment in which actors representing different vantage point interact dialogically and reflexively around an existentially relevant issue in an environment that is conducive to transformative learning.

Here we will analyse the reflexive monitoring and evaluation of one of the cases: Biodiversity Colors Your Life-ChildCity (Sol et al., 2013). The applied methodology in the monitoring of this case was reflexive monitoring in action (RMA) based on van Mierlo, et al., (2010) and Guyt (2008). The key premise of RMA is that transitions and innovations

require joint construction and negotiation of meaning as well as period, if not continuous, reflection on: how (inter)actions lead to change, what those changes constitute, and what keeps things from changing. Techniques used to generate data included: multi-actor 'reflect or think shops' with the involved stakeholders, personal interviews and the creation of so-called 'learning histories' (Kleiner and Roth, 1997). In parallel some literature on social learning and reflexivity was selectively reviewed.

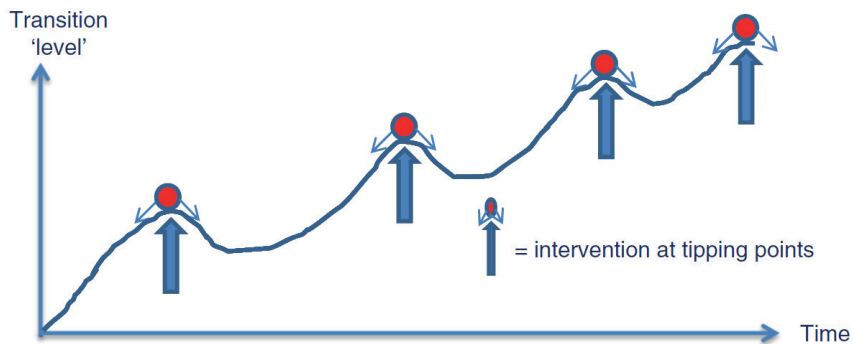
#### **4.5 The case: biodiversity colors your life-ChildCity, Tilburg**

We will now take a closer look at ChildCity -a day care centre located in Tilburg- a city in the South of The Netherlands, which we followed for 3 years while the centre was trying to re-design its playground. In The Netherlands there is a growing need for natural, challenging and nurturing nursery playgrounds. Innovative developments in these playgrounds encounter resistance from governmental rules on safety, hygiene, and design. In this case a number of stakeholders jointly explored the possibility of converting existing playgrounds, which are considered safe and hygienic but also described as somewhat dull and uninviting, into green playgrounds that meet the need described above while not compromising too much on health and safety requirements. A key assumption underlying the case is that such a conversion requires joint learning among all stakeholders. The 'intervening organization' facilitating this conversion, the Foundation for Real Well-being (*Stichting Echte Welvaart*), specializes in creating vital coalitions between different sectors of society. One of those sectors is the nursery, day-care school, and kindergarten sector. On the basis of RMA (Reflexive Monitoring in Action), several interventions by this foundation have been re-evaluated in order to distil lessons for creating a vital coalition that allows for hybrid learning towards, among other things, ecological mindfulness.

During the 3 year transformation or transition process we were particularly interested in 'interventions' and 'tipping points' that accelerated the change process. Malcolm Gladwell (2000) defines a tipping point as the moment of critical mass, the threshold or the boiling point. A tipping point is a point in time when a group-or a large number of group member-rapidly and dramatically changes its behaviour by widely adopting a new practice. Martin Scheffer (2010) sees tipping points as critical transitions in complex systems. He argues that once a tipping point is reached it can lead to remarkably abrupt changes be it in natural or social systems or combinations thereof (Scheffer 2010). In analysing this case we used the tipping point concept as a means of identifying critical events in the transformation process of designing new hybrid learning environments, in this case a re-designed nursery play-ground. During a critical event, threats and opportunities keep each other in balance. Our attention is on the specific

interventions by the innovation agent Real Well-being at these points with an eye for the specific competences and transition 'levels' and the specific effects and lessons learned from these interventions.

We regard a tipping point as a moment of a fragile balance where small interventions have a potential large impact. A small push to a little ball at the top of a hill will have a huge effect. In other words, the potential impact of an action or intervention can be quite significant either in a positive (towards a desired state) or a negative (towards an undesirable state). This is shown in Figure 6.



*Figure 6: Tipping points (based on Scheffer, 2010).*

We will describe five different phases in the transition process where the innovator agent 'Real Well-being' identified challenges and needs for interventions and decided to act. The reasons and effects of these interventions were made explicit through reflexive monitoring with the innovation agent and a selection of actors from ChildCity. In the ChildCity case several actors participated in the vital coalition including: the board of Child Town, the children, the teachers, the innovator agent Real Well-being, the nature guides (Figure. 7).

In 2008 the facilitating agent Real Well-being invites ChildCity to participate in the Biodiversity Programme. The management of ChildCity is to decide whether to participate or not. After careful deliberation the management commits to support the process. Five phases can be distinguished in the transition process, which altogether took place over a year time period:

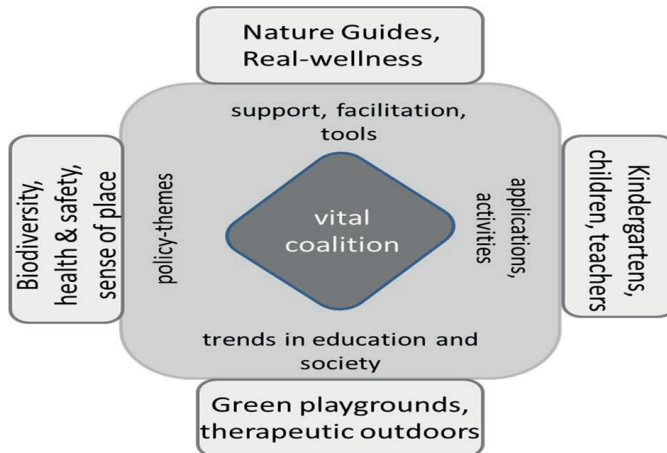


Figure 7: The vital coalition ChildCity.

### Phase 1: stakeholder meeting: 'creating trust and commitment'

Four types of actors are invited to share visions and ideas in a new stakeholder network: the board and management of ChildCity, parents, GGD (public health authority), Real Well-being and Nursery Teachers. Key in this phase is information sharing, investigation, feedback and dialoguing to find out what project possibilities and limitations there are for nursery teachers and young children for playing in and with nature. A key lesson here is that trust and commitment between the stakeholders is built up early on to create possibilities for an energetic start.

4

### Phase 2: brainstorm with nursery teachers: 'a provocative and mobilising atmosphere'

The innovation agent organises a brainstorm with the nursery teachers who take care of children at ChildCity. Many wild ideas of planting fruit and building huts come to the surface. Real Well-being supports an open atmosphere and actively involves the teachers. There are also some set-backs: the report of a meeting gets lost and some of the teachers feel neglected and become discouraged. There is a growing resistance to the pilot. A key lesson is that the innovator, here Real Well-being, should not expect and promise too much, but rather should leave ample space for the participants to work together and develop social cohesion.

### Phase 3: baseline assessment: 'roles become clear step by step'

The aim of a baseline assessment is to find out what everybody within ChildCity itself really wants. Real Well-being needs to cope with resistance. Executing such an assessment requires some expertise. The baseline assessment shows that almost all

people are longing for concrete activities, but everybody is waiting for someone else to take the lead, resulting in non-action. Here the roles of the board, the management, the teachers and the innovation agent become clearer and negotiable, step by step. A key lesson here is that these roles and expectations should become clear early on in the initial stages.

#### **Phase 4: use of nature guides: 'nature is not scary but fun'**

The experts (nature guides) invited by Real Well-being know how to explore and experience nature. They take groups of children and their teachers out into the green spaces in and around ChildCity. Using Cornell's Flow-learning (Cornell, 1988/89) as a guiding framework the children engage in activities like a blinded walk holding a rope. It's inviting, new, adventurous and exciting. They experience nature without seeing, but they feel, hear and sense more than they are used to. Feeling sticks, plants and leaves, sensing mud and stones with their hands, smelling traces of flowers, finding watercress and adding it to their lunch, are experiences which all help in developing some connection with appreciation of nature. Children and teachers learn to trust this type of activity. A key lesson here is that nature does not have to be feared but can be fun to be in.

#### **Phase 5: planting the willow huts: 'just plant them, no matter what!'**

This activity is basically the dream of the nursery teachers. It seems easy, but it is not because the building department of ChildCity had decided that the planting of 'willow huts' does not fit current building plans and codes. One staff member feels particularly responsible for this activity due to her large commitment from the start and the effect the inspiring stories from other teachers and the representative of Real Well-being. She decides, with some support and encouragement from Real Well-being, to plant during the upcoming spring 'no matter what'. That same spring the youngest group of children is able to play in the emerging willow tree huts. A key lesson here is that innovators can give that little push that is needed to move forward.

Figure 8 is a re-creation of Figure 3, but this time we have included the five tipping points that contributed to the overall transition. In each of the tipping points the threat of a breakdown and the emergence of a 'go-no-go' are present. If such a breakdown or collapse of the process had occurred it may have led to the conclusion that this type of hybrid learning was impossible due to institutional blockages. The interventions and actions from the innovation agent seem to be crucial in facilitating the formation of a hybrid learning configuration that could lead to a transition or transformation (here towards a biodiverse, green, pedagogically sound playground that might provide a basis for ecological mindfulness).

Shortly after the planting of the willow tree huts (Figure 9) there seemed to be a ripple effect: not only in ChildCity but also in 30 surrounding locations. Initiatives like the ones in ChildCity were taken up with the Foundation of Real Well-being acting as the facilitating organization (Figure 7).

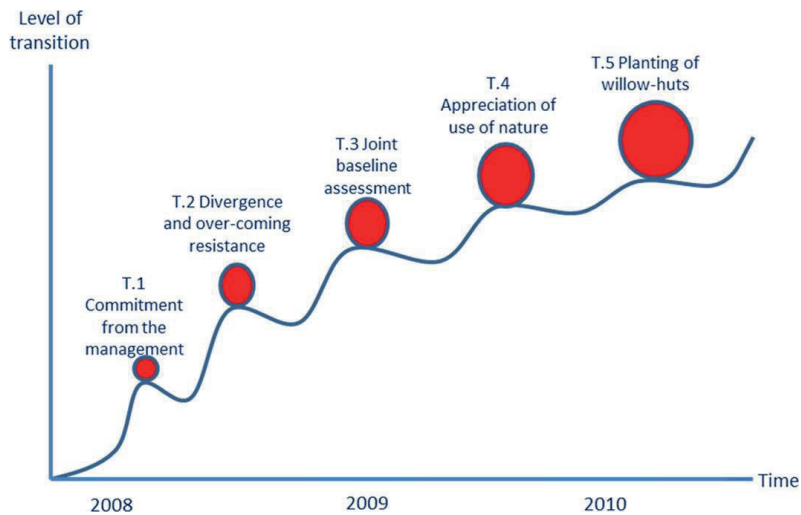


Figure 8: Interventions at tipping points.



Figure 9: Children playing in willow tree huts at ChildCity.  
fotograaf Miranda Boland

#### 4.6 Conditions for hybrid learning in vital coalitions

Although hybrid learning among multiple actors representing different vantage points and interests is seen as a way of opening up new spaces that allow for transformative learning, this study makes clear that the potential of such learning is greatest when certain conditions are met and crucial interventions at tipping points are made. The interventions as performed by the innovation agent 'Real Well-being' are an example of how boundaries sometimes need to be blurred in order to evoke a reflexive attitude. Reflexivity enhances the emergence of social learning processes and its outcomes. Therefore we come to the conclusion that reflexivity in itself is both a condition and an outcome of ecological mindfulness. Fritjof Capra suggests that one essence of sustainability can be found in resilience or the manner in which eco-systems are organised and can deal with disruptions (Capra, 1994). It is not about the individual principles and elements, but rather about the system as a whole that is constantly in motion and developing and that, as a whole, makes up more than the sum of its parts. 'Healthy' eco-systems are actually learning systems, Capra argues (2007). A question is whether people, as a part of nature, are capable of forming a learning system that can cope with the challenges that we face in a risk society. As Wals and Dillon write: "Learning in the context of environment and sustainability then becomes a means for working towards a 'learning system' [...]and where people collectively become more capable of withstanding setbacks and dealing with insecurity, complexity and risks" (2013, p. 258).

We can draw some lessons from the ChildCity Case for the development of ecological mindfulness. The development of ecological mindfulness through hybrid learning configurations depends on several conditions, such as:

- The availability and support of so-called free actors within organisations such as the staff members within schools or as change agents outside organisations, such as the foundation for Real Well-being; who sense the tipping points and know how to intervene when needed;
- Commitment and trust from active and performing groups, such as the nursery teachers and the board of ChildCity;
- Challenging and inviting activities for the primary focus groups, in this case the children, to do daring and adventurous things, such as walking blinded in wild nature, but also being able to play in willow-huts.

Therefore it seems wise to anticipate institutional possibilities, conditions and constraints during the development of hybrid learning configurations and associated vital coalitions.

George Siemens speaks of a "learning ecology" to emphasize that connectivity between people is influenced and can be strengthened by a number of inter-related



factors that together form a learning configuration (2005). He uses the concept of 'connectivism' to refer to the need for the integration of principles explored by chaos, network, and complexity and self-organization theories. Siemens, who has a computer science background, does not make the link with place and ecological mindfulness but it does not take much to expand the metaphorical ecological to the ecological as referred to by, for instance, ecologists and environmental educators. A key challenge for environmental and sustainability educators is to establish connections with places in which learning occurs with the aim of improving those places ecologically, socio-culturally, environmentally and ethically, while simultaneously improving the wellbeing of those involved.

The example of ChildCity deals with pre-schools but there are other examples that extend beyond pre-schools. Around the globe, 'whole school approaches' to sustainability and the creation of eco-schools exemplify emerging hybrid practices that blend education, the use of new information technologies, citizen-science, research, and community engagement (Hargreaves, 2008; Bell and Dymont, 2008). Some initiatives involve redesigning school grounds to give them a more central place in teaching about health, food and ecology but which also provide opportunities to learn about collaboration, dealing with conflicting perspectives, planning processes and making decisions. By creating 'edible school gardens' with the involvement of wide range of societal actors (for example, a local garden centre, a local restaurant, a community organization, young people, senior people with time and knowledge of gardening, teachers, school administrators and the local government) the relationship between school, community and place can be transformed.

Planning, maintaining and harvesting require basic knowledge and understanding that connects with the curriculum as well as affording other benefits far beyond the curriculum, such as community engagement, learner empowerment, and an improved connection with food and place. Educators in vital coalitions become skilled in engaging their students in place-based sustainability challenges, linking them with a range of societal actors while distilling teachable moments and making connections with the curriculum. In a vital coalition every participant is a co-learner and a co-teacher at the same time. As such one might speak of distributed teaching and learning.

This study shows that such initiatives -most occurring against the grain of accountability and measurement- do not follow a fixed pattern or some kind of blueprint for change. What appears to be crucial is the building of trust, commitment and social cohesion among all involved but also reflexivity and the ability to 'read' the tipping points and to come up with the right interventions at the right time. At the same time the active presence of an 'innovation broker' such as Real Well-being should not be underestimated.



## Chapter 5: Reframing the future: the role of reflexivity in governance networks in sustainability transitions

### **Abstract**

Regional sustainability networks in the Netherlands are rooted in regional culture and have an emphasis on social learning and effective collaboration between multiple actors. The national '*Duurzaam Door*' (Moving Forward Sustainably) Policy Programme regards these networks as generative governance arrangements where new knowledge, actions and relations can co-evolve together with new insights in governance and learning within sustainability transitions. In order to understand the dynamics of the learning in these networks we have monitored emergent properties of social learning between 2014 and 2016. Our focus is particularly on the interrelated role of trust, commitment, reframing and reflexivity. Our aim is to better understand the role and the dynamics of these emergent properties and to see which actors and roles can foster the effectiveness of social learning in regional transitions towards more sustainable ways of living. We used a retrospective analysis with Reflexive Monitoring in Action (RMA), which we combined with the Most Significant Change approach. We found that reflexivity in particular is a critical property at moments that can make or break the process.

### **Keywords**

Sustainability, Transitions, Regional governance networks, Social learning, Trust, Commitment, Reframing, Reflexivity

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## 5.1 Introduction

In The Netherlands, a new policy on 'Learning for Sustainability' became active in the year 2000, as a follow up to earlier national programs on Environmental Education (EE). The Learning for Sustainability Policy can be linked to the 1992 Earth Summit and Agenda 21 in that it promotes boundary crossing between different societal actors. This policy focussed on themes that went beyond the traditional EE themes (e.g. issues related to health, economy and social equity were also included, not just the usual, water, waste, air, energy and nature). Also, novel in the policy was the move away from outcomes to processes. The facilitation of learning processes and the brokering of interaction between actors (from the world of civil society, education, research, business and government) and levels (individual, organisation, community, region, country) was considered a core mechanism for transitions to sustainability.

The successor policy of this program, the '*Duurzaam Door*' (Moving Forward Sustainably) Policy (2014–2017) focuses even stronger on the capacity building for organisational and societal learning in and through local and regional networks. The programme anticipates on 'the creation of new societal tissue, new value communities and responsible citizenship, a 'silent revolution' that eventually opens windows of opportunity for sustainable solutions for energy, raw material resources and the quality of food' (Duurzaam Door, 3, 2015a). One aim of *Duurzaam Door* is that those regional networks develop as equal partnerships, towards, for example, local/regional energy cooperatives. As such, the programme is intended to strengthen the societal social basis in regional/local networks for working towards sustainability. The programme therefore connects with the dreams of the people in place based sustainability networks, working for circular economy and new value streams (e.g. chains that create value other than material or monetary ones). An interesting notion is that the programme also aims to 'redefine its role and learns on the basis of equal participation in those networks' (Duurzaam Door, 7, 2015a). In other words: the policy's success does not so much depend on the realization of hard predetermined measurable socio-ecological outcomes – in fact none were identified of that nature – but rather on the extent to which the policy successfully facilitated interaction and dialogue and to which the program itself could learn from successes and failures in the interaction. As such, the policy can be considered as one of the first 'reflexive' policy programs in The Netherlands that reflects, what we might call, a shift from governing sustainability to sustainability governance.

On paper, these ambitions might sound great, but how are they enacted in practice? What are the actual social learning processes taking place in these place-based governance networks that are supposed to have high levels of autonomy, self-determination and interaction?

In order to understand these social learning processes within these new governance dynamics we have studied three regional 'Duurzaam Door' policy supported networks in the Netherlands. These networks can be regarded as social transition arenas where uncertainty is faced and challenged. The monitoring of the processes in the three cases is focused on: (a) initial network visions and expectations, (b) the diversity of actors, (c) social learning dynamics and the perceived levels of trust, commitment and reframing (Sol et al., 2013), and (d) how reflexivity and change agency is applied in concrete local/regional sustainability aims, in the nexus of nature, energy and food.

First, we will introduce the theoretical framework (Section 2), followed by methodological aspects and methods used (Section 3) and the empirical findings in the three regions (Section 4). In Section 5, the findings are discussed through the lens of new trends in governance networks and some overall conclusions are drawn.

We should preface the theoretical section by declaring what might be seen as a bias towards Dutch transition and social learning scholars which we justify by our own familiarity with these scholars, their international status (they are often cited in these areas internationally) and the focus of this special issue which in a sense invites such a bias. This is not to suggest that there are no others outside of The Netherlands (we inevitably do refer to some already) who have something to say about these emergent areas. On the contrary, there is a growing group of transition scholars around the world whom we could have brought into this article as well, but chose not to.

## 5.2 Theory

### 5.2.1 A sustainability transition perspective

Current societal problems such as environmental degradation, failing educational systems and economic crises are regarded as wicked problems (Rittel and Webber 1973) in that they are complex, contested and ambiguous with respect to their underlying values and causes. All these characteristics make them essentially unsolvable; at best, attempts can be made to improve the situation and to learn from the attempt. In order to meaningfully engage with wicked problems and to adapt to changing situations, a so-called transition perspective is advocated by activist scholars. One of the key transition scientists and -advocates in The Netherlands, Jan Rotmans, describes a transition as entangled non-linear processes of social change by which a societal system is structurally transformed (Rotmans and Loorbach, 2006). A transition perspective suggests that rather than optimizing existing systems, practices and routines (continue doing the things we do, but only better), we need to radically reconsider the assumptions and values upon we have built these systems, practices and routines in the first place (doing better things altogether). A transition perspective implies new ways of policy (e.g. a shift from

'governmentality' to reflexive governance; (Beck, 2006; Grin, 2006), behaviour (e.g. a shift from individual learning, personal development and competition to joint learning, community building and solidarity), new relationship building (trust) and radical new ways of knowledge creation and learning.

Capra (1996) writes that a more diversified and complex network enables many different relationships and approaches to problem solving and learning, which can lead to the enrichment of both the individual and the whole community. It appears that sustainability transitions evolve from a stage of self-perpetuating and self-replicating unsustainability towards one that is more sustainable. This requires that, among other things, we need to make better use of diversity by inviting voices that represent different ways of viewing and knowing the world or, put more academically, by inviting epistemological and ontological pluralism.

### **5.2.2 Governance networks**

Governance networks are networks where many actors are involved (e.g. municipalities, entrepreneurs, educational institutes, NGO's, citizens and other actors), with a relatively stable character where solutions proposed for (wicked) problems and challenges are contested. The different actors are engaged in relationships with a high degree of interdependency (Klijn et al, 2010). Governance networks are regarded as a sort of platform 'where a multitude of actors are involved in multilateral negotiations' (van Kersbergen and van Waarden 2004, p.150). These networks can help communities respond to wicked problems, as they consist of a plurality of actors in society and aim to co-create new knowledge, new relations and new policy. Governance networks (Hajer and Versteeg, 2005; Newig et al., 2010; Termeer and Dewulf, 2012) seek to invite this pluralism in situations where old routines no longer suffice in light of wicked sustainability challenges. As such, governance networks can be regarded as multi-level networked forms of governance (in contrast to mono-centric forms, with state hierarchy), and are considered to self-organize, resist government steering, to develop their own policies and to exchange resources.

Many governance networks are guided by governments, using subsidies and/or different types of coordination and facilitation (Beers and Geerling-Eiff 2013). As such, they can be regarded as facilitated governance networks. The regional networks of *Duurzaam Door*, which are studied in this contribution, can be considered facilitated governance networks because the national government creates and facilitates them with subsidies and some coordination through provincial support. Without facilitation these networks would either not exist or would purely function as grassroots networks that are empowered from within (van den Heiligenberg et al., 2017).

In terms of goal formulation, problem definition and equity (Rittel and Webber, 1973) such networks act in a flexible, place-based and contemporary way, because each network can represent local/regional identities and culture by bringing together relevant actors from both state and society, creating issue-specific constituencies (Termeer and Dewulf, 2012). A network becomes, so to say, tailor-made. This gives a governance network an advantage over more 'top-down' forms of government as governance networks are de facto 'rooted in trust and regulated by rules of the game negotiated and agreed by network participants' (van Kersbergen and van Waarden, 2004, p.148). It seems that especially trust in and within governance networks is important for achieving better outcomes (Klijn et al., 2010).

Governance networks can be used to trigger a transition as stated before: a structural change of the result of developments that interact, influence and enforce each other (Rotmans and Loorbach, 2006). Moreover, governance networks can be seen as a potentially reflexive since they provide room for experimenting and developing the means for transforming information to new interpretation and action (Sotarauta and Srinivas, 2006). In this study, we are particularly preoccupied with the social learning dynamics and the role of reflexivity in governance networks.

### 5.2.3 Social learning

Before we will elaborate on different concepts of (social) learning, we will first explain that we look from a social-constructivist background, mixed with educational and organisational learning theories. We see learning basically as a social interactive process (Wenger, 1998) where boundaries (Akkerman and Bakker, 2011) and zones of development (Vygotsky, 1978) are playing a role in the making and changing of meaning. Argued by Vygotsky is, that interpersonal communication is transformed during development into intrapersonal communication (talking to the self). In this, learning supposes a specific social nature (Piaget, 1964) in which the learning actor or learner learns from its own practice (Friedman, 1987).

Because social learning in turn presupposes individual learning, and it is as well more than the sum of its parts -of individual learning- (Wildemeersch 2009, p. 4), we like to explain the definition of learning first. A quite general definition of learning is 'change in behaviour' (including conscious thought), or a change in practical activity (Friedman, 1987; De Houwer et al., 2013, p.631). Learning can be understood as 'the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience as a guide for future action' (Alexander et al., 2009), which is mostly induced by an disorienting dilemma (Mezirow and associates, 2000). This definition can be applied on both an individual and social level. The concept of learning can also be understood with the opposed features of non-learning: 'when processes are self-sealing,

compulsively repetitive, non-interruptible and non-changeable by the very people' (Argyris 2003, p.1178).

Learning encompasses the ability to detect and correct errors and when this happens without changing the underlying values this is called single loop learning. Learning is called double loop learning (Argyris, 2003), when the underlying values and other features of the status quo are changed first. Double loop learning is seen as transformational in nature, rather than transactional and occurs when understandings, insights and explanations are connected with action and effectiveness (Argyris, 2003). Double loop learning is akin with the concept of transformative learning because it basically implies changes in the identity of the learner(s). Transformative learning refers to the process by which we transform our taken-for-granted frames of reference (meaning perspective, habits of mind, mindsets) to make them more inclusive, open and involves participating in constructive discourse. Transformative learning has both individual and social dimensions and implications (Mezirow and associates, 2000). It is accommodative in the sense that the learning actor changes its meaning, perspectives or ways of behaviour in certain situations. In this, the learning involves overcoming barriers in the form of defence or resistance (Illeris, 2014). Although both Argyris, Illeris and Mezirow seem to speak about an individual learner, we would like to propose that these definitions of learning equally apply to any actor, either an individual or a group, team, organisation or network. What matters is the learning process and its outcomes.

Transition scholars (Kemp et al., 2009; Loorbach, 2010) argue that learning processes are at the core of transitions (see also Beers et al., 2016, Beers et al., 2014). However, they have offered little on the way of conceptualising these learning processes, which makes it difficult to study and foster those (Beers et al., 2016). The concept of social learning is promising in this context (e.g. Wals 2007; Ison et al., 2013; Vinke-de Kruijf and Pahl-Wostl, 2016), because it takes the diversity of actors, knowledge, perspectives, languages and interests, which is inherent in transitions, as a starting point (Wals 2007; Sol et al, 2013) for the creation of new shared knowledge (van der Wal, 2015).

The concept of social learning has been developed to understand processes of social transformation as learning processes (Wildemeersch, 2009) as being a form of tacit and informal learning (Friedman, 1987). Through this lense, social learning can be seen as a double-edged process: where individual learning and interactive learning take simultaneously place 'in a process of social change with effects on wider social-ecological systems'(Reed et al. 2010, p.2). Social learning as defined by Reed et al. (2010, p.6) is 'a change in understanding that goes beyond the individual to become situated in wider social units or communities of practice through social interactions between actors in social networks'. Social learning manifests itself by changes in attitude, behaviour,



norms, trust and respect. Based on a review of social learning discourses (Rodela, 2011) it appeared that scholars tend to see the mechanism or the emergence of social learning. Secondly, it appeared in this same review that scholars approach social learning as either individual-centric or network-centric. As there are quite many different definitions and approaches of social learning altogether, we define social learning as 'an interactive and dynamic process in a multi-actor setting where knowledge is exchanged and where actors learn by interaction and co-create new knowledge through on-going interaction' (Pesch, 2015). In this sense, it is a process that can contribute to system innovation by providing a basis for action (Beers and van Mierlo, 2017). Moreover, we believe in dealing with wicked problems, that there is a way out -exactly through reflexive social learning- in governance networks, because in social learning we can make effective use of the diversity of actors for looking at possible root causes and possible solutions.

Due to the diversity of actors (research institutes, firms, government, NGO's, societal initiatives, educational institutes etc.) engaged in social learning and therefore the implicit or explicit differences in perspectives, interests, values, cultures and languages, social learning can either lead to surprising processes of knowledge co-creation and/or towards deep conflicts. Moreover, social learning cannot be seen in a vacuum: 'it is a vulnerable activity, which can be greatly influenced by the context in which it takes place. Especially when these contexts are turbulent or discordant there is a great chance that these characteristics will affect the inner dynamics of social learning within the system involved (Pesch, 2015). Apparently double loop learning takes place in more or less protected zones or discursive spaces (Wildemeersch 2009, p.113 ). This means that social learning entails both opportunities and risks. Effective or successful social learning processes can be recognised by high information sharing, improved communication, relation building leading towards new knowledge, new relations and new actions (Beers and van Mierlo, 2017). Ineffective or weak and unsuccessful social learning can be recognised by lack of engagement, lack of accountability, ambiguous decision-making and deficient coordination (Reed et al., 2010).

Although there is some evidence of effective and ineffective social learning (Leys and Vanclay, 2011), it is not clear which properties play a role in the dynamics of the social learning processes. And although in some cases social learning has been proven to foster innovation and to create avenues for sustainability transitions (Keen et al, 2005; Wals, 2007), the challenge of understanding the interactions and the dynamics in knowledge and relations remains (Sol et al., 2013).

These dynamics are for example manifested in a sudden increase or drop in trust and commitment. We hypothesize that a better understanding of these dynamics can help improve the facilitation and support of social learning in complex change processes involving multiple actors. Our assumption on successful social learning is, that changes in

reflexivity, trust, commitment and reframing foster the effective use of the diversity of actors.

Social learning outcomes emerge from communicative interactions among learning partners when they are giving meaning to problems, new technology, social innovations and societal developments. Learning processes and outcomes that contribute to system innovation are assumed to include knowledge, actions and relation (Beers and van Mierlo, 2017, p.244). Knowledge is considered as new insights, ideas, views and visions. Actions is considered as new agreements and decisions that will possibly be followed by real world actions. And new relations are seen as new roles and identities between (new) actors (Beers and van Mierlo, 2017). Social learning outcomes are regarded as emergent too and could be distinguished as rather 'soft and invisible': such as empathy, involvement and trust or rather 'hard and visible' such as knowledge, decisions, new relations and actions.

The learning outcomes arguably include change agency (Grin et al., 2011) and the new surprising ways of looking, deciding and developing new knowledge, policy and action (Guijt, 2008). So social learning can be regarded both as a process for achieving change and as an outcome of an ongoing emergent process of reflexivity in interaction, relationship building and generative conflict. Investing and or engaging in social learning is thought to potentially transform complex situations when the social learning persists over time (Ison et al., 2013).

Within networks social learning takes place within a discursive space (Pesch, 2015) where different meanings, perceptions and behaviours interact, take place and shape new meaning, new knowledge, new worlds and actions in the making (Chaves, 2016). This space can also be regarded as a reflexive space, where opportunity for dialogue, negotiation, and learning is available. If not, the space can become an arena, where new ideas are slaughtered and lack of trust creates inflexibility and ineffectiveness (Thompson and Pascal, 2012) which might lead to an inability to deviate from the path taken even in light of clear signs that it's the wrong path to take, a phenomenon sometimes referred to as lock-in (Barnes et al., 2004; Klitkou et al., 2015). The challenge might be to find the right balance between open curiosity and fixed standpoints within an arena with enough courage and safety, to 'freely engage in conflictive social practices, with unpredictable outcomes' (Castells, 2000, p.5).

#### **5.2.4 Reflexivity, trust, commitment and reframing in transformation dynamics**

Trust, commitment and reframing are regarded as emergent and dynamic properties (Sol et al., 2013), lubricating the permeability of existing actor's frames and essential in triggering trans-formational change. Emergent means that they gradually evolve, sometimes dissolve and pop up at unexpected moments, in a rather unplanned way.

Trust we define as the expectation that others will act in a way that is agreeable for you without the possibility of you intervening (Sol et al, 2013; based on Peeman, 2009). Commitment refers to how and the extent to which participants and their organisational backgrounds expend their resources on the goals of the project. Resources can be motivation and passion, but also time and money. Reframing here refers to 'the emergence of new, shared perceptions on the issues faced by a relatively heterogeneous group exploring a mutually perceived but somewhat ill-defined challenge such as regional sustainable development' (Sol et al, 2013). Trust, commitment and reframing are different, but interrelated aspects of the process of social learning. For example, a slow decline in commitment from specific actors in a network can result in sudden decline of mutual trust later on. Or, when trust is high in a network, a process of reframing can start when actors are willing to drop old beliefs and exchange them for new beliefs about for example a regional identity (Sol et al., 2013).

The scholarly literature offers some variation in how reflexivity is defined. Reflexivity concerns the ability to recognize our own influence on the type of knowledge we create and the way we create it (Fook, 1999). Reflexivity also refers to the ability to consciously understand one's place in the social structure and to shift this (Malthouse et al., 2014). This is also called agency, the capacity to position oneself within the broader social and organisational context and create change or exert power. Through reflexivity an experience becomes transformative, in that it involves an expansion of one's perception of the world, which can be noticed when actors attach new significance and meaning to an aspect of the world (Pugh, 2011). So some expansive activity is needed. In addition to this view of understanding, Mezirow describes reflexivity as a strategy of dealing with complexity: 'the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action' (Mezirow, 1991, p.162) by mulling over, evaluating, recapturing experiences, and re-orienting on actions. As such, being reflexive gives options to handle situations where frictions, misunderstandings and conflicts are rising. In a similar manner, 'reflexive monitoring-in action' (van Mierlo et al., 2010) enhances the process of making the implicit explicit, especially in relatively unplanned innovation processes (Regeer, 2010).

For the use of the concept reflexivity in this article we decided to combine the definitions of Pugh (2011), Malthouse (2014) and Mezirow (1991) as follows: Reflexivity is reorienting and making the meaning of one's beliefs and experiences explicit by assessing and articulating the new significance and meaning of this. As such, reflexivity includes the willingness to explore underlying frames and create unpredictable new frames. We consider reflexivity to be an active notion. It is a more expansive way of learning, leading to a change in perception and behaviour.

Reflexivity can occur at an individual level, but also as social reflexivity (Archer, 2010), which refers to the sharing of individual findings and the shared act of defining new explicit beliefs, intentions and acts. It is believed that a reflexive society, where creativity, flexibility and diversity are encouraged (Wals et al., 2009) has the capacity to make existing routines, norms and values more explicit and has the power to reframe and reorient beliefs and actions. Even so, a 'reflexive turn' has been emphasized, to be seen as a reflexive change being related to a change in learning outcomes (Beers and van Mierlo, 2017). Reflexivity is seen as important for system innovation, learning and sustainable transitions, it is an approach 'that systematically raises doubt about its own assumptions and practices and seeks to find an enlightened alternative' (Perez, 2014). It can unlock the tacit knowledge and understanding that actors have of their experience and use this to generate knowledge for future practice (Malthouse et al., 2014). These acts of critical reflexivity belong to a social learning process (Groot, 2008) because social learning requires reflection and reflexivity throughout the entire process, if only to improve the quality of the process itself and to monitor change progress throughout (Wals 2007, p.41).

### **5.2.5 Agency, change agents and free actors**

As indicated before, social learning dynamics and outcomes can create a certain change agency (Chreim et al., 2010) which may contribute to transitions. Agency here refers to as 'The making of independent choices by actors' (Grin et al., 2010, p.78). Grin (2006) suggests that agency influences whether, how and how fast a particular transition will develop. A network consists both of change agency and change agents. A 'free actor' (Wielinga and Geerling-Eiff, 2009) is a change agent with the ability of exercising discretion in choosing to act, who acts as a network manager, identifying which actors that are crucial in the network, and then activating and connecting these actors in the network. Such an actor must have 'connective ability' (Klijn et al., 2010). We will use the above concept of change agent in the sense of a free actor. Free actors behave as change agents, because their intervention might lead to more trust, commitment or reframing and/or new knowledge, decisions and behaviour. This can be regarded as free actors fostering the social learning process. If they would not do this, the dynamics and development of the network eventually might crash (Zaalmink et al., 2007).

### **5.2.6 Aim of research and research question**

The aim of the research is to find out what fosters (un)successful social learning in governance networks dealing with sustainability transitions. Our focus is on social learning processes aimed at transformative change. Specifically, we want to know

whether there is a relation between the social learning dynamics and the outcomes of social learning in governance networks.

In this article, we explore the role of reflexivity, trust, commitment and reframing in social learning processes. Second we will focus on the role of change agents in social learning. In education for sustainability, understanding these dynamics is relevant in the current development of living labs and other hybrid learning contexts (Malthouse et al., 2014, Cremers et al., 2016; Oonk, 2016).

In (Sol et al., 2013) we have assumed that emergent properties such as trust, commitment and reframing play a significant role in social learning, based on a descriptive case in the North of the Netherlands. In Sol and Wals (2015) we have explored and experienced the concept of reflexivity within a Dutch Policy Framework on Biodiversity and found it to be a condition in enhancing the emergence of social learning processes and its outcomes. In this article, we assume that reflexivity fosters the reorientation of ideas, values, aims, others, roles, visions etc. Reflexivity in this way may lead to more relational trust, more commitment and more willingness to reframe.

The hypothetical model on trust, commitment and reframing (in Sol et al., 2013) has been combined with the notion of reflexivity in this article. Also, we position reflexivity as rather central. Assumed is that reflexivity fosters the possibility to reorient ideas, values, aims, others, roles, visions and their relation with the current situation. When engaged actors share this reflexive process, more relational trust, more commitment and more willingness to reframe may emerge. If so, then social learning can reshape emerging knowledge and relations within governance networks leading to new actions. In and between these phases we might witness and foster sustainability transitions in the different niches and/or regime or landscape levels. Furthermore, we assume that a change agent can influence these processes in all phases with different interventions. The different concepts can be modelled as being related as following (see Figure 10).

This analytical framework has been applied in three Dutch regions in 2014 and 2016, in order to find empirical evidence about the relation between social learning dynamics and social learning outcomes. We will turn to the empirical cases studies to explore whether reflexive attitudes, together with trust, commitment and reframing lubricate processes of social learning through which the effectiveness and speed of innovation for regional sustainability and reflexive governance grow. Secondly, we explore the roles of change agents in inducing reflexivity, connecting actors, and creating opportunities for social- and system learning towards sustainability transitions. In short we ask:

1. What is the role of reflexivity, trust, commitment and reframing in social learning dynamics and how are they interrelated.

2. What are roles of change agents in fostering the emerging properties of reflexivity and trust, commitment and reframing in social learning.

### 5.3 Research methodology

#### 5.3.1 The Duurzaam Door programme

Duurzaam Door's regional network approach is comprised of 12 provincial programmes, organised in 12 regional networks. The core activity of *Duurzaam Door* is to supply visions and social tools to support social innovation for a green economy at (mainly) a regional level.

Concrete network cooperation is emphasized between, ideally, five types of societal actors (Governments, Entrepreneurs, Schools, Research Institutes and NGO's) per region. As a guiding principle, the programme upholds 'the three c's: coalitions, co-creation and co-financing. This principle is intended to include a certain level of personal commitment and inspiration (Yearly Report Duurzaam Door, 2015b).

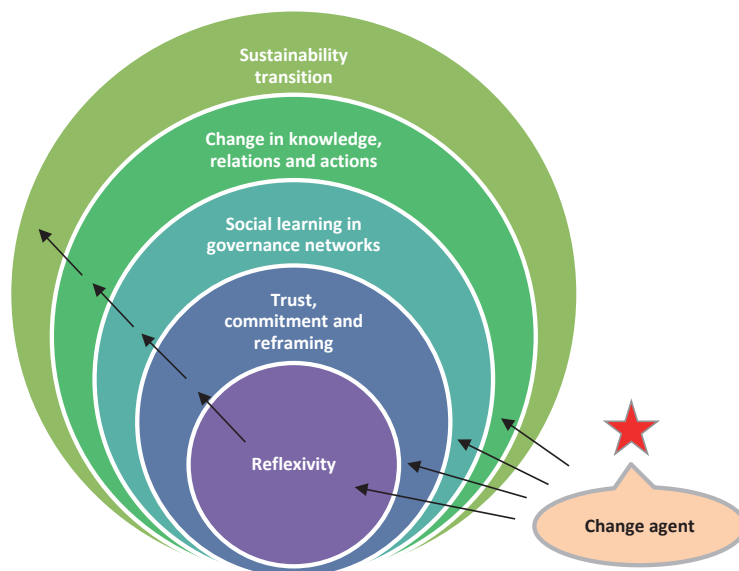


Figure 10: Analytical framework: relations between the concepts.

In deliberation with the *Duurzaam Door* coordination platform, it was decided in 2014 to select the three most promising networks for this study. Promising was regarded as: being able to produce results (network projects with sustainability outcomes), have good network collaboration and realise a stable self-supported network without government interventions.

Some networks can be recognised by 'people with a common drive who really want to realise something, if needed right through existing structures' (Public Thought, 2016). The research started in 2014 and ended in 2016.

### 5.3.2 Methods

Our research aims at contribution at two levels: (a) understanding the dynamics of the learning processes in governance networks and (b) contributing to dealing with sustainability problems. Our methodological approach is part of a broader trend of sustainability research on governance networks (Klijn, 2010); that experience social learning processes (Wals, 2007) in relatively protected discursive spaces (Pesch, 2015). Examples of such research approaches can be found in a broad range of urban sustainability labs, real world laboratories, etc. (Schnäpke et al., 2015).

Given that the start of the *Duurzaam Door* networks preceded the start of our research, we faced the challenge of retrospectively assessing part of the network dynamics. In order to grasp past perceptions of actors' behaviours and interactions between the actors in sustainability networks, between 2014 and 2016, we used three divergent but complementary methods.

1. Reflexive Monitoring in Action (RMA) (van Mierlo et al., 2010) techniques were combined with the Most Significant Change approach (Davies and Dart, 2015) and were applied in all three networks in both 2014 and 2016. RMA is a monitoring approach that is used when heterogeneous (governance) networks have (shared) ambitions for system innovation. RMA helps to reflect on relations between ambitions, and practical developments and is action oriented. RMA techniques were applied at both personal and network level on perceptions of experiences and in discovering new perceptions for actions.

The Most Significant Change (MSC) approach consisted of asking participants -during for example a RMA workshop- to reflect on the most significant changes in time and to reflexively look at underlying values and assumptions in them. How we did this: all the network participants in the facilitated meeting were asked to remember at least three significant network moments since 2014. They were asked to shortly note these on post-its, which were stuck on a big wall with a time line until 2016. In little groups, people would talk deeper about a few selected moments, about changes in perceptions, attitudes and actions. After that, a plenary discussion followed in order to summarize the learning insights and the new future plans for action. All was written down in a small report, which they all received.

This led to specific personal and network eye-openers about roles, barriers and new opportunities in each of the networks. We regard these significant moments of change as crucial moments. The insights gained from the workshops in 2014 were representing how the actors perceived themselves at that moment. The reflexive workshops in 2016 provided more data than the workshops in 2014, because the reflection covered a period of two years with several significant changes per network and also led to new windows of opportunity. The analysis in both 2014 and 2016 was done with a group of researchers from different institutes and resulted in a deeper understanding of the social learning dynamics in the networks.

2. Surveys with active network partners were conducted in 2014 and in 2016.

Network partners were considered active by the coordinators if they participated in meetings and were taking responsibility for the development of the network and/or specific tasks such as leading projects. The surveys consisted of questions about networks actors, network dynamics and network learning with for example: 'What do you consider to be a successful learning network'. The survey asked about network ambitions and perceptions on trust, commitment and reframing in 2014 and 2016. In 2016, ten statements were added referring to levels of trust, commitment and reframing. These statements were answered on a Likert Scale ranging from totally not agree (1) to totally agree (7), with room to comment in Utrecht and Flevoland. In Limburg, a mini-survey was used, because this network did not yet have enough history.

3. Learning histories were obtained through face-to-face interviews with three active network partners per regional network in 2016, in order to gain deeper understanding of interventions done. The selection of these actors was based on communications with the regional network coordinators. The interviews focused on changes in perceptions, actions and effects of change agents. All interviews were transcribed and coded using reflexivity, trust, commitment, reframing, learning and change as categories. Based on the analysis a learning history for each network was constructed. Each learning history was validated and, if necessary, adjusted by the respondents.

### **5.3.3 Planning of the research**

The research took place in 2014 with surveys and learning workshops in all three networks. The follow-up research took place in 2016, with mostly the same questions in the same way. Added were interviews with three key actors per network, in order to



obtain individual learning histories of the period between 2014 and 2016. An overview of methods used is listed in Table 1.

#### **5.3.4 Mixed methods**

Combining different approaches within one research is referred to as the 'mixed method research', which refers to a 'combination of research methods designed to balance out the strengths and weaknesses of any one method to produce a richer set of evidence' (Pearce, 2012, p.844). Reflexive monitoring is considered to be the most suitable for the monitoring of system innovation and transition (Arkensteijn et al., 2007; Groot., 2008). By using RMA in combination with survey data and interviews with network partners, we aim to create a representation of the partners' perception of (learning) dynamics in the network, while working with the practical limitations of authentic case studies.

The data from the survey in 2016 made it possible to better understand different levels of trust, commitment and reframing. The analytic coding was based on the following definitions. Reframing: the emergence of new views, new problem orientations, new solutions and visions. Trust: Stakeholders actions and utterances that suggest (daring to be) vulnerable to others' actions. Commitment: stakeholder's actions that commit time, money, and other resources to shared goals, values and interests. In treating trust, commitment and reframing as emergent properties of social learning (Sol et al., 2013) we also tried to characterise the underlying (inter)active processes for each of the regional networks. Rather than identifying every action and every discursive space (to which the data give limited access), we opted to rather give 'thick descriptions', combined with the visual toolbox (Vicente, 2016) based on the data. This was combined with interpretations on 'levels of trust, commitment and reframing' from the interviews, the learning workshops, and the observations in both 2014 and 2016. The triangulation of data from these different methods made it possible to construct several figures (see Section 4), visualising the emergent properties of the social learning dynamics in time. This methodological data triangulation refers to the finding of similarities between results from different research methods (Joslin and Müller, 2016). Remarks and data on trust, commitment and reframing from the survey were taken as a starting point for constructing the values 'low, moderate, high'. The results therefore are not necessarily generally applicable mechanisms, but provide additional insight in how social learning dynamics become manifest in governance networks.

**Table 2: An overview of methods used for each network in 2014–2016.**

	Utrecht	Flevoland	Limburg
rma2014	network meeting: workshop	network meeting: workshop	network meeting: workshop
rma2016	network meeting: workshop	learning history with coördinator	observing meetings and learning history with coordinator
survey 2014	8 actors	8 actors	6 actors
survey 2016	7 actors	8 actors	10 actors (minisurvey)
interviews 2016	3 change agents	3 change agents	3 change agents

## 5.4 Results

In this section, the three regional networks are evaluated separately: first, we describe the Utrecht network, second the Flevoland network and third the Limburg network. For each network, we describe the situation as perceived by the network partners in 2014, with attention on the network structure, indications of trust, commitment and reframing and the main network ambitions. Then we describe the situation and the concrete network results in 2016, followed by a retrospective view on social learning dynamics regarding the emergence of reflexivity, trust, commitment and reframing. The data are used to construct several figures (2, 3 and 4) visualising the emergent properties of the social learning dynamics in time; trust, commitment, reframing and reflexivity as they changed over the course of the network (horizontal axis). These properties of the learning dynamics are understood to vary from low (l) to moderate (m) to high (h) (vertical axis). Finally, conclusions will be drawn about the (self-)governance and change capacity of the regional network.

### 5.4.1 Utrecht regional sustainability network

#### 5.4.1.1 The situation in 2014

The network partners indicate that they do not regard the network as a network, also because the status and role of this network is not (yet) clear. They rather regard it as a programme, a temporary formation for the time being. The ambition of the network is to accelerate sustainability through grassroots collaboration, sharing of knowledge and connecting. The network partners each bring in their own projects to work on in collaboration with the network partners. As illustrated by a statement from one of the network actors: 'I don't have the feeling that the common interest is very important'. We conclude that there is some tension concerning the long-term abilities of the network; actors do not yet see or experience the benefit of the network and give priority to their own projects. Network trust and network commitment are present, but perceived as moderate.

5.4.1.2 Network roles and results 2014–2016

By working on projects in thematic ‘sub-networks’, the *Duurzaam Door* network is realising initiatives as for example ‘Energy Explore Lab’, and ‘Change Lab’. In these initiatives, different stakeholders such as high schools and entrepreneurs collaborate, see Matrix 1: Three project examples of the Utrecht network.

The coordination is delegated to an NGO (NMU). The partners are asked to sign a formal agreement to commit to the network, but none of the partners really feels committed. This undermined the trust, the social learning and network development. One of the network partners mentioned: ‘We did not know what kind of collective we really were and what it meant to sign an agreement’. However when network successes became visible, a network partner stated: ‘These are the highlights I need to embrace in order to have confidence in the future [of our network]’. This partner demonstrated how output relates to trust in the network.

During 2016, the provincial government constituted additional requirements for subsidies, which again put pressure on the partners’ trust in the network.

Matrix 1: Three project examples of the Utrecht network.

Theme	Title	Output
Social entrepreneurship	Change Lab	Increased the involvement of youth in tangible sustainability issues and creating future leaders
Energetic Society	The Great Transition	The stimulation of participation of citizens in projects
Energy saving in the construction of buildings	Energy Explore Lab	Supported high school students to advise companies and private owners to co-design energy saving buildings

5.4.1.3 Social learning dynamics

From the survey and the interviews in 2016, it became clear that network partners experienced a breach of trust in 2015. The signing of the agreement in 2014, where all actors promised to commit to the timely reporting of activities, was at risk at the end of the programme in 2016. This failure to comply was sanctioned by withholding subsidies in 2015 by the provincial government. This seriously brought the network trust under pressure. One of the network partners indicated there is a real lesson on trust: ‘Only sign an agreement when there are really explicit and binding terms, including the right mandates to make decisions’.

Also during 2015 (the second year of the programme) the coordinator realised that all local subnetworks are performing well, but connecting and learning at regional network level is still weak. At this point, a significant change was created by the coordinator, who decided to organise ‘Learn & Knowledge meetings’ in order to collect the different subnetwork actors towards a more joint vision and self-awareness of the

network. Critical issues such as 'what can we do to create a shared identity, how can we prevent dismemberment, how can we anticipate on agendas outside the network?' were addressed. This meeting enhanced reflexivity and provided possibility to reframe on existing patterns and created more relational trust.

The meetings helped to discover a sense of shared network identity leading to a joint decision about skipping several small projects. Such a decision is considered as taking a risk, in becoming vulnerable for the actions of others. This indicates that trust was emerging and that the network was committed to make a change, and that for this a process of joint reframing must have been taking place.

#### 5.4.1.4 Governance and change agency

In 2016 (the third and last year of the programme), the network coordinator negotiated with the provincial government that the administrative process needed to be more flexible, because the network was experiencing an administrative burden, considering the conditions for funding. This can be regarded as a significant change, however, beyond the timeframe of the research.

#### 5.4.1.5 Conclusions Utrecht

We can learn from the Utrecht network, that the dynamics of trust, commitment and reframing show a start in 2014 with medium-low trust and commitment (see Figure 11).

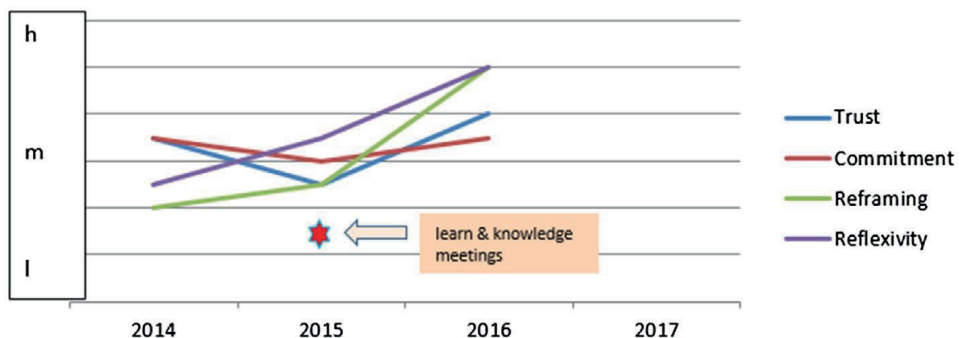


Figure 11: Dynamics of reflexivity, trust, commitment and reframing in the Utrecht network (*h* = high, *m* = medium, *l* = low, ★ = significant change).

Due to unclear criteria, top down regulations, lack of experience and lack of mutual learning; trust, commitment and reframing decrease even further in the year to come. This is sensed in 2015 by the coordinator (of NMU) and action is taken. We can regard this as a reflexive capacity and leadership of a change agent, who also creates an intervention by inviting the whole network for a 'Learn and Knowledge' event. This event

demarcates a significant change in the social learning process, because the dynamics show that after this event trust, commitment and reframing within the regional network increase. A joint decision about skipping several small projects altogether, expresses a shared reframed decision based on social learning. In retrospect, this is regarded as a valuable learning process by the whole network. A growth in ambition is sensed in 2016, which is expressed in the future plans for 2017–2020. However, the survey also indicates that flexibility, self-steering capacity and network vigour are quite low. This can possibly be explained by the relatively low rates of trust, commitment and reframing. Fact is, that the partners in the network still tend to focus on their own projects instead of network projects.

## **5.4.2 Flevoland regional sustainability network**

### **5.4.2.1 *The situation in 2014***

The Flevoland network partners regard the network as strong, in 2014, because it is synoptic; partners know each other quite well from preceding years. There is ambition and a feeling of possibilities; respondent: 'I want Flevoland to be a sustainable testbed and I expect this is possible through cooperation'. The central focus in this region is on social innovation: 'to develop knowledge and create connections between persons, organisations, initiatives and networks' (Flevoland 2015, p.1). The partners realize that coming into action is important, but difficult when priority is given to the successful development of projects for only the own organisation. Some respondents in the survey note this point of competition. Many respondents regard all features trust, commitment and reframing as moderate/high, but not all respondents share this view. Some even regard all properties as low; which is illustrated by the comment: 'we like to talk about our successes but we are not really willing to experiment and learn'. This is an indication of low reflexivity. Remarks on expectations about the leading role of the provincial government are made several times. In sum, the atmosphere seems positive, but there are some points of concern considering partners, roles and learning.

### **5.4.2.2 *Network roles and results 2014–2016***

The network composition changed a bit during 2015 by the addition of the Higher Education Institute (CAH) in Almere and the Water Board Flevoland. The three main themes are: energy (local and sustainable), food (city farming, regional products, healthy food and connections in the food chains) and resources (bio based economy, energy from biomass). Between 2014 and 2016, approximately eight different projects have been realised within the themes, such as: 'Students looking for value', 'Sustainable Energy', 'Social Innovation for a sustainable food landscape' (see Matrix 2). Network partners in the survey confirm this high output of projects.

Most participants experience a better network collaboration in 2016 as the result of the *Duurzaam Door* programme: 'The benefit for all is that we know each other better and know how to find each other on joint themes'.

**Matrix 2: Three project examples of the Flevoland network.**

Theme	Title	Output
Food Sovereignty	Social Innovation for a sustainable foodscape	New connections between educational institutes and entrepreneurs
Sustainable Energy	Learning and stimulating about energy	A service point on energy for citizens and a symposium
Learning Young	Student looking for value in residual flows	Sustainability is more integrated in the school curriculum

**5.4.2.3 Social learning dynamics 2014–2016**

Short after the start of *Duurzaam Door* Flevoland, relational network trust declined due to unclear procedures in project funding. The provincial government was expected to provide this as well as the management of the network, but hesitated to do so. Commitment towards the programme activities and the network project became low too, because the risk of investing time without acquiring subsidies in return was realistic. A solution was to create networks around themes, such as an energy network, a circular economy network and a food network. Within these themes, projects were formulated. The consequence was that this divided the whole provincial network into subnetworks that did not feel connected as a whole. In a particular project on sustainable food reflexive monitoring was applied, which yielded effective social learning and change agency. The reflexive questions in this specific project reframed people's perception about participation, after which they started to include neglected partners, such as schools and municipalities. This process implies a relation between learning, reframing and change agency. The reflexive monitoring meeting in 2015 is here regarded as a significant change, on the level of a subnetwork. Figure 12 illustrates the development of the emergent properties of these social learning dynamics.

A second significant change is experienced halfway 2016, when a facilitated reflexive monitoring atelier is held with the whole network. This reflexive meeting is experienced as a social learning process and results in higher network commitment and trust in the different roles and ambitions of the partners and the network.

**5.4.2.4 Governance and change agency**

Because of the pragmatic division in subnetworks, the network as a whole was still highly dependent on thematic subsidies. For 2017 and onward more investments would need to

be done in the collaborative learning (i.e. reflexive) capacity of the network as a whole, in order to become self-supportive and self-organising.

#### 5.4.2.5 Conclusions Flevoland

Because of the thematic approach, the network developed thematic sub-networks with relatively high trust, high commitment and high willingness for reframing. Respondent (in 2016): 'Our cooperation is good; this is illustrated in the openness in our conversations'. At the level of the regional network however, relatively low trust and commitment was developed because actors did not really need each other there. For the future of the network agency and the social learning capacity, this might have had some consequences.

Considering reflexivity we saw two significant moments: in 2015 and in 2016, both in and around a reflexive social learning activity (a reflexive monitoring in action meeting), and its effects. Core of both these discursive RMA practices was to reflect as a network on reflexive questions such as: 'Are we doing the right things? Are there possibilities for doing things differently?' By exchanging ideas about these questions, the discursive space became accessible and reflexive for all actors through which possibilities for reframing, trust building and new commitment grew.

An unintended effect is the governance effect: this network makes itself dependent from a regime actor (for coordination) and makes itself dependent from learning interventions (from facilitators). The social learning effect is that the network creates discursive space: by demanding the provincial government into a coordinating role, network learning and negotiation can take place. Meanwhile the facilitated interventions make the discursive space accessible and reflexive for all actors through which possibilities for reframing, trust building and new commitment grow.

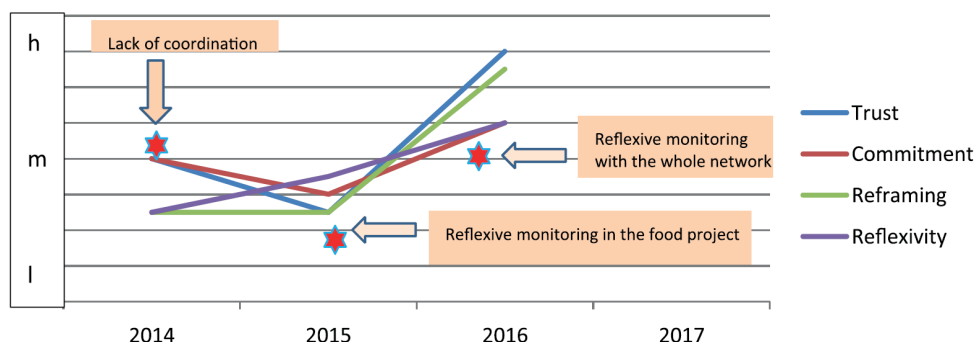


Figure 12. Dynamics of reflexivity, trust, commitment and reframing and in the Flevoland network (h = high, m = medium, l = low, ★ = significant change)

### **5.4.3 Limburg regional sustainability network**

#### **5.4.3.1 The situation in 2014**

In Limburg, three actors create the central network that aims at social innovation in the region. However, the three actors experience little support from the provincial government, which does not give priority to the *Duurzaam Door* programme. The three actors feel that the provincial government is operating at a different speed. The provincial government on the other hand, experiences the three partners as too 'aggressive'. The impression in 2014 is, that the high ambition is not really supported by trust between all actors and commitment for the plans.

#### **5.4.3.2 Network roles and results 2014–2016**

The output of the network is not very high until the end of 2015. In the spring of 2016, the Limburg network got new inspiring leadership in the form of three individual actors (of whom two are new to the network) who cooperate closely and trust each other. They represent respectively a NGO, the *Duurzaam Door* programme (RVO) and a facilitating agency. Together they work as a trusting nucleus for social innovation. They agree on the strategy to create a committed network for sustainability. Several projects are started of which we show three examples in Matrix 3.

#### **5.4.3.3 Social learning dynamics**

Due to different characters and different interests, relational trust became really low in 2014 and 2015. Halfway the year 2015 the network collaboration between the three organisations was suddenly breached. This is the first significant change, where the RVO actor became aware that process knowledge was lacking. In order to secure this competence, RVO connected in 2015 with a facilitating agency, and ensured sufficient 'process money' for this consultancy from the provincial government. Furthermore, an independent regional actor, an NGO, was asked to take a coordinating role. In this collaboration of three persons, high trust and commitment existed as well as high willingness to reframe. The three persons worked intensely together from spring 2016 onward in order to create a vital network of networks. They felt free space for manoeuvre and mainly fostered the growth of trust, commitment and reframing in the network.

Their jointly reframed philosophy is to work from the bottom up, in connection with people's initiatives. For the first meeting in June 2016, they invited about twenty representatives of different bottom up initiatives on energy, citizenship and food production for an exchange on values and wishes. From then on, a preliminary network was created from educational institutes, citizens, NGO's, entrepreneurs and government officials. The encompassing theme is regional energy. This meeting created trust and can be regarded as a second significant change: the facilitator realised that reflexivity is



needed and should be organised. The second meeting was also more analytic in character. This resulted in reframing of mindsets and knowledge in the network. The third meeting created commitment because specific fields of actions became manifest. See Figure 4 for the significant moments of change. Participants pointed out to which topic and which action they would provide energy, time and resources. The fourth meeting is still to come; the anticipated agenda is to create a joint vision of the network.

**Matrix 3: Three project examples of the Limburg network.**

Theme	Title	Output
Energy	GLOEI	A regional energy cooperative of engaged citizens and entrepreneurs
Circular Economy	ZERegIO	Getting maximum value from products that reached the end of their life- or user cycles
Economic Energy	Nuth on the way to sustainability	Making energy saving a simple money saving activity

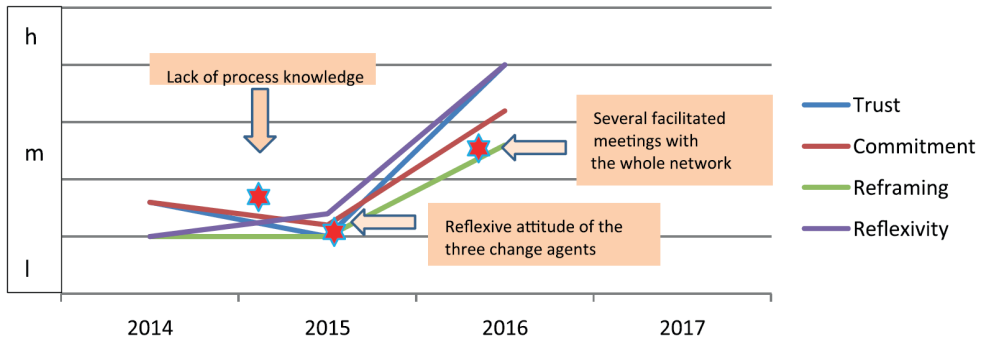


Figure 13: Dynamics of reflexivity, trust, commitment and reframing in the Limburg network (h = high, m = medium, l = low, ★ = significant change).

### 5.4.3.4 Governance and change agency

A network actor realised how important reframing is: ‘More difficult than realising a sustainability project is to change the mind-set. We need more knowledge of processes. That is not sufficiently seen yet’.

The RVO approach includes on three levels of learning; first the local network level, second the thematic level (which can be inter-local) and third the regional level. On this third level, we see change agency, realising sustainable output.

### 5.4.3.5 Conclusions Limburg

Lack of trust, a hard confrontation and the breach that followed, brought about a deep learning insight: what comes first in collaboration, high ambitions and money, or shared

values and honesty? The RVO coordinator took this lesson to heart in 2015. From then on, a bottom up reflexive path was developed from a small trusting core network that engaged approx. 20 others. The attitude in this whole network has been open, curious and reflexive. There has not been sufficient time to experience the concrete results of this practice. Although the social learning process is regarded as viable and trust and commitment in the network are very high; paradoxically there is no outcome yet. Change agency seems to come from the cooperation of three collaborative change agents, who engage others in the network to become trustful, reflexive and committed. This seems to be a very promising approach.

## **5.5 Conclusions**

In this study, we have empirically examined two issues. First, we explored the role of reflexivity, trust, commitment and reframing as interrelated and emergent properties in social learning. Second, we have investigated the role of change agents in social learning processes.

Based on three retrospective case studies of new, Dutch regional governance networks for sustainability transition, we found that reflexivity fosters to the emergence of trust, commitment and reframing. In turn, the case studies also suggested that reflexivity can be an outcome of social learning, suggesting that this can be seen as an emergent condition for social learning. Additionally, we found that trust, commitment and reframing evolved together as they seemingly interact and influence each other. Higher trust was found together with higher commitment and higher reframing activity in all three regional networks. As such, these emergent properties both appear to foster social learning and result from social learning. These findings are in line with earlier research (Sol et al., 2013). In the following paragraphs we will substantiate these main conclusions.

We have seen that taking up reflexive attitudes and performing reflexive activities helps to reorient on better and other practices (Utrecht meeting in 2015). The reflexivity here induced the social learning dynamics and double-loop learning processes (Argyris, 2003) with impact on levels of trust, commitment and reframing, leading to high network ambitions in 2016. In the Flevoland region, where reflexivity was facilitated in a monitoring meeting in 2015, insights about roles and possible engagement patterns of various partners were created. In Limburg, the reflexive attitude of three cooperative central actors fostered the growth of trust, commitment and reframing in the network; reflexivity induced trust in social learning processes (Klijn, 2008). We conclude here, that reflexivity (Mezirow, 1991; Pugh, 2011; Malthouse, 2014) works as a sort of lubricant in

the dynamics of social learning: it fosters the emergence of trust, commitment and reframing in the social learning process.

We additionally explored a possible relation between social learning dynamics and social learning outcomes. As indicated before, in our theoretical paragraph; effective or successful social learning processes (Leys and Vanclay, 2011) can be recognised by high information sharing, improved communication, relation building leading towards new knowledge, new relations and new actions (Beers and van Mierlo, 2017). This, in turn, feeds into the notion that, to an important extent, effective learning comes from the experience of changing reality (Friedman 1987, p. 216). The present study suggests that the same holds for the three regional networks, which we studied. For example, in Flevoland the new insight in the food project was, that new and different partners are needed. Including schools and municipalities in the project can be regarded as relation building. In Utrecht, improved communication resulted in a stronger regional network identity and the joint decision to skip some smaller projects. In Limburg, new knowledge is demonstrated by the insight that a more bottom up approach is needed. The three leading actors put this understanding into effect by asking twenty local initiatives to meet and to share values and wishes. Social learning appeared to be a valuable contribution to emerging network relations (cf. Beers and van Mierlo, 2017) on sustainable energy in Limburg region. The three cases suggest that taking up reflexive attitudes and performing reflexive activities helps to reorient on better and other practices. This in turn is indicative of a relation between social learning dynamics and outcomes.

The second research issue concerned the role of change agents in social learning dynamics. It is interesting to see that some change agents (Zaalmink et al., 2007; Grin, 2011), be it in a coordinating role (Utrecht), a project-leading role (Flevoland) or a 'free actor' (Wielinga and Geerling-Eiff, 2009) role (Limburg) can influence the development of a the network. Change agents became active at significant moments, when trust and commitment were low and social learning became difficult, and when the change agency of the whole network was under pressure. The reflexive interventions these agents did at these moments had important impacts on awareness, knowledge creation, relational trust and new orientations on action in the three networks. Through this, moments of significant change were created and experienced (cf. Davies and Dart, 2005). In the Utrecht region, the intervention was to organise a 'collaborative learning event', which created a reflexive social learning moment, after which the network members knew each other better and trusted others more. This led to more collaboration and joint network ambitions than before. In the Limburg region, we saw three change agents collaborating in a very flexible and reflexive style, constantly reorienting what to do next, without fear. This attitude inspired the network members to create trust and collaboration for a next step in creating a shared vision. This indicates that even a small number of change

agents can make an important difference, in the 'free actor' role. In addition, we saw that change agents can free up the space for reflexivity, for example, when there is a threat of internal competition within the network (Utrecht region) or a programme to be unsuccessful (Limburg region).

Overall, we found that change agents can (often) foster spontaneous or facilitated reflexive practice in governance networks, which induces changes in different emergent properties such as reflexivity, trust, commitment, reframing, knowledge, relations and action in the three Dutch sustainability networks. With that, we saw an important role of change agents in social learning processes.

### **5.5.1 Discussion**

In all three networks, which operate independent of each other, we have witnessed reflexive turns (Beers and van Mierlo, 2017). Reflexive turns involve a certain change in network perception or action, which can become clear in meetings. Reflexive turns can be a reaction to a threat, such as the falling apart of the network, or the missing of funding possibilities. On the one hand, the results showed that there was a trigger to become reflexive. On the other hand, we found reasoning and tendencies to be non-reflexive, such as possible attachments to the past, tendencies 'to fight for what we have' (Friedman, 1987).

Ideally, according to Zaalmink et al., (2007); reflexivity is fostered either by neutral coordinators or by free actors who can facilitate the network from time to time. The challenge remains in creating a reflexive governance network that is able to adjust, reorient and change in a flexible and surprising way (Guijt, 2013). The facilitation of learning processes and the brokering of interaction between actors (from the world of civil society, education, research, business and government) and levels (individual, organisation, community, region and country) are considered core mechanisms for sustainability transitions. However, reflexivity, and the explicit sharing of ideas, interests and visions may be so challenging, that it leads to new lock-in situations (Klitkou et al., 2015) where actors step out of the discursive space and withdraw within safe boundaries. This indicates that reflexive turns can result as a resilient (implicit) reaction by a network to a threat (as we saw in Limburg and Utrecht region) or from a planned and facilitated intervention (as was the case in Flevoland). However, it is always possible that other influences play a role in this mechanism. If for example funding had stopped in 2015, what would have happened in the three networks? Maybe some networks would have become extremely reflexive and would have proceeded successfully. This raises another concern: is it desirable, if possible, to direct and structure reflexivity?

A partial answer to this concern could be our perspective about the role of reflexivity in the development of agency. Reflexivity as part of social learning dynamics

can be regarded as taking place in a discursive space (Wals, 2007; Pesch, 2015): a challenging arena with potential for sustainability transitions. These spaces possibly need reflexive practice and seem promising for further development of governance networks (Termeer and Dewulf, 2012). The regional experimental projects in our study can be regarded as niche experiments or testbeds for social learning. In fact, the emergent properties of trust and commitment combined with the tangible outcomes of the social learning process such as new knowledge, relations and actions can be regarded as change agency. Change agency is an emerging result of experimenting and social learning and visible in new, shared knowledge, different behaviour and different roles of actors (Grin et al., 2010). This change is based on reflection, interaction, reflexivity and co-creation; all based on relational trust of network actors (Klijn, 2008). Change of behaviour becomes visible in more openness, more flexibility and the (courage of) taking new roles, in all three regions. Change agency can be witnessed in more self-steering initiatives of for example the Limburg network and by a less controlling approach from a government actor.

In perceiving governance networks as test-beds for reflexive governance (Marsden, 2013) we like to discuss here, that monitoring new governance roles in these networks might foster this. Although facilitated governance networks (Beers and Geerling-Eiff, 2013) such as the *Duurzaam Door* networks have a reflexive attitude, and are aware of their experimental role in the sustainability transition (Loorbach and Rotmans, 2010), still the social learning can be regarded as less democratic (Johansson, 2004; Biesta et al., 2014) than expected. Also, we can see here that social learning cannot be seen in a vacuum, and therefore is a vulnerable activity (Pesch, 2015; Wildemeersch, 2009). The networks are being affected by implicit beliefs about governmental roles: in for example a coordinating role in the Flevoland network and about unexpected hierarchy and control in the Utrecht network. In addition, there is a neglected role of the province in Limburg. All this indicates a quest for new government roles and new actors' roles in governance networks, and most of all, the need for free actor roles for fostering learning processes. This might lead to more equal, flexible and open attitudes of actors, by which the discursive space becomes inviting to be reflexive. It seems interesting to keep a close eye on programmes like '*Duurzaam Door*' in the coming years as it can be regarded as a living laboratory for reflexive governance (Marsden, 2013) and sustainability transitions. From the point of view of transitions and social learning, it would be worthwhile to foster and monitor the reflexivity of these experimental governance networks.

As trust, commitment and reframing are regarded as emergent properties of social learning, we might consider these properties also as indicators of progress. In light of our findings, we would like to suggest here that new knowledge, new relations and

new actions together with increases in reflexivity, trust, commitment and reframing could be indicators for effective social learning processes (Friedman, 1987; Leys and Vanclay, 2011). An in-effective social learning process would be regarded as the situation of lock-in (Barnes et al., 2004; Klitkou et al., 2015), a situation of inflexibility (Thompson and Pascal, 2012) where changes and learning are hard or impossible. These findings need to be approached with some caution; whether effective social learning contributes to effective governance networks with agency (Grin et al., 2010) let alone sustainability transitions (Rotmans and Loorbach, 2006), are relations we consider as possible topics for further research.

The present study suggests that knowledge, relations and actions, as outcomes of social learning processes in a governance network, can be seen as relatively more salient and explicit than trust, commitment and reframing. In other words, knowledge, relations and actions are more visible than the growth of trust, commitment and reframing and maybe even more salient than a reflexive culture. Only by trying to understand some of these rather invisible 'undercurrents' we can attempt to make them more explicit (Regeer, 2010). Through reflexive interventions, we might be able to witness dynamics in trust, commitment and reframing, and become aware of what is happening and what is needed to facilitate social learning processes.

Overall, we can say that we have contributed to the search for more insight in the emergent properties of social learning and their underlying dynamics. At this point, we might say that the analytical framework (Figure 10) is useful, because it allows us to see and discuss possible relations between reflexivity, trust, commitment and reframing, social learning, outcomes such as new knowledge, relations and actions within the context of governance networks and sustainability transitions. Further research could also elaborate on the roles, reasons and risks of reflexivity and the effects of reflexivity in order to create a more 'reflexive culture' within social learning processes.

For environmental and sustainability educators, but certainly for environmental and sustainability policy-makers and those working on curbing climate change, halting extinction, reducing inequity and poverty, and so on, one important question remains: does improved social learning lead to concrete social-ecological outcomes? This article did not attempt to prove that it does, but if environmental and sustainability education is to be supported in the future, then the contributions of (facilitated) social learning need to be shown in one way or another, for otherwise a return to instrumentalism is likely, as much in the Dutch context as in any other.

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## Chapter 6: Conclusions and Discussion

### 6.1 Introduction

Creating learning pathways towards sustainability, and responding to wicked problems in general, does not occur by simply combining existing knowledge. It requires on-going interaction between multiple actors who are willing and able to lay their own values and interests on the table (Koutsouris, 2008). Sustainability problems are best addressed when multiple actors with diverse interests and perspectives develop a shared frame on a jointly perceived problem or challenge, as this creates common ground for learning (Valkering et al., 2013) and enables joint action (Pahl-Wostl, 2006; Sriskandarajah et al., 2010). This process is often referred to as social learning. Social learning is defined here as *'an interactive and dynamic process in a multi-actor setting where participants learn through ongoing interaction as they co-create new knowledge'*

(Sol et al., 2013). Social learning has been shown to facilitate innovation and possibly foster a pathway for positive transitions towards healthier social-ecological systems (Cundill, 2010; Stephens and Graham, 2010; Tukker and Butter, 2007; De Kraker, 2017). This thesis favours localised regional approaches for addressing such challenges. A multi-level regional approach (Kaiser and Prange, 2004) to sustainable development has several advantages, one of which is that regional actors often have to some extent unique localised knowledge that is not available outside the region which can be helpful for identifying promising directions for sustainable development (Bohunovsky et al., 2011) and a capacity to act (Horlings, 2011). This agency presumably emerges from a social learning process (Wals, 2007; Friedman, 2001; Bohunovsky et al., 2011; Wildermeersch, 2008; Pahl-Wostl, 2006), which in turn fosters the ability to collectively create knowledge (Pekkarinen and Harmaakorpi, 2006). An important question then becomes: to what extent are the different actors that are involved able to find future trajectories that will benefit all?

The main research question of this thesis was: *What fosters social learning processes in regional governance networks for sustainability transitions?*

This main question was sub-divided in four sub-questions:

1. How can regional development be supported by action research conducted by students who act as boundary spanners?
2. What are the roles of trust, commitment and reframing in social learning in multi-actor innovation networks?
3. What is the role of change agents at tipping points in social learning?

4. What are the roles of reflexivity, trust, commitment and reframing in the relation between social learning processes and social learning outcomes in regional governance networks?

## **6.2 Main conclusions**

The main conclusions per chapter are given here first:

### **Main Conclusions**

1. Action research conducted by boundary spanners amplifies joint learning and co-creation of knowledge, and as such contributes to social learning (Chapter 2).
2. Trust, commitment and reframing are interrelated and emergent properties in social learning (Chapter 3).
3. Change agents have an important role in fostering reflexivity at tipping points in social learning processes (Chapter 4).
4. Reflexivity and the presence of change agents are important characteristics in social learning dynamics (Chapter 5).

By integrating the four different studies and the main conclusions, the following narrative can be constructed. In order to come to grips with wicked problems (Rittel and Webber, 1973) in the context of sustainability transitions (Rotmans, 2006) we consider the regional scale to be crucial because it is at this level that ecological processes and human activities interact most intensely (Bohunovsky et al., 2011; Graymore et al., 2010; Cundill, 2010). The regional level holds a specific capacity for the generation of new knowledge created in place-based (Horlings, 2011), multi-actor innovation networks (Pekkarinen and Harmaakorpi, 2006) or in governance networks (Termeer and Dewulf, 2012; Newig et al., 2010; Hajer and Versteeg, 2005; van Kersbergen and van Waarden, 2004), in which actors such as farmers, scientists, students, NGOs and policy-makers together can find new answers to existing social, economic and ecological problems. Indeed, the involvement of such diverse groups of actors, representing a range of perspectives, values and interests, is a prerequisite for dealing with sustainability issues (Van Asselt, 2000; Wals, 2007 a,b).

A transition perspective involves new ways of policy-making, in contrast to either policy making or co-creating, which imply a move from 'governmentality' to reflexive governance (Beck, 2006; Grin, 2006; Termeer and Dewulf, 2012; Klijn 2008; Marsden, 2013; Stirling, 2014). With this new form of governance a shift takes place from individual learning, personal development and competition, to joint and social learning, community building and new forms of relationship building (Paul and Mc Daniel, 2004; Peeman, 2009; Hermans, 2011). Such a shift also invites new ways of knowledge



creation and action-taking. When different actors share these aims, they may come together to collaborate on shared ambitions and new decisions for collective action (Cundill and Rodela, 2012). In developing this commonality of focus they address the underlying diversity in knowledge and ways of knowing (De Vries et al., 2017). As sustainability problems are wicked, the multiplicity of values and perspectives in play may create an additional barrier to collective action. However, as is shown in Chapters 2, 3 and 5, actor diversity is often regarded as an important source of social learning, because it can lead to a broader and more integrated understanding of the issues at stake, and a greater capacity for joint action and learning (Gaventa and Cornwall, 2001).

Based on the studies covered in Chapters 2, 3, 4 and 5, it can be concluded that the concept of social learning is indeed promising in this context. Others have also found this to be the case (e.g., Wals, 2007; Vinke-de Cruijf and Pahl-Wostl, 2016; Ison, et al., 2013), precisely because social learning takes the diversity (of actors, knowledge, perspectives, languages and interests) inherent in transitions as its starting point. This discursive space (Pesch, 2015) is found to be a stepping-stone (see Chapters 2, 3 and 5) for the creation of new shared knowledge (see Chapters 2, 4 and 5 and van der Wal, 2015) and collective action (see Chapters 2 and 5 and Cundill and Rodela 2012). These findings match the argument often made by transition scholars (Loorbach, 2010; Kemp et al., 2007), who maintain that learning processes are at the core of transitions (see also Beers et al., 2016).

The concept of social learning has, arguably, been developed to understand processes of social transformation as learning processes (Wildemeersch, 2009). Through this lens, social learning can be seen as a double-edged process where individual learning and interactive learning take place simultaneously 'in a process of social change with effects on wider social-ecological systems' (Reed, 2010, p.2). Given the diversity of definitions and approaches of social learning, I define social learning in this thesis as 'an interactive and dynamic process in a multi-actor setting where participants learn through ongoing interaction as they co-create new knowledge' (Chapter 3). Understood in this way, social learning is a process that can contribute to system innovation by providing a learning base that operates as a starting point for action (Beers and Van Mierlo, 2017).

In the context of regional sustainability issues, the capacities and challenges of social learning processes are closely related to the complexity of multi-actor networks (see also: Persson et al., 2011; Leys and Vandcley, 2011). This may be because social learning takes place within a dynamic field of social interactions where changes can occur in levels of trust, commitment and reframing (Chapter 3). The level of trust may be low among actors in governance networks who only have a short history together (De Vries et al., 2017). On the other hand, trust levels may start out high, due to the high expectations that participants have about each other. The research carried out for this

thesis found that trust, commitment and reframing are different, but interrelated and emergent aspects of the process of social learning (Chapters 3, 4 and 5). They are different, because they signify different emergent properties of interaction and they can change independently over time, but they are also interrelated because changes in one of these aspects were shown to provoke changes in other aspects. See for example Chapter 3, where a slow decline in commitment resulted in a sudden decline in mutual trust later on.

Social learning within governance networks takes place within a discursive space (Pesch, 2015; Feindt, 2014) where different meanings, perceptions and behaviours interact, take place and lead to the emergence of new meanings, new knowledge and actions. As is shown in Chapters 4 and 5, this discursive space turns into a reflexive space when the opportunity for dialogue, negotiation and learning is available. If it is not, the space can become a battleground where new ideas are crushed and lack of trust creates inflexibility and ineffectiveness (Thompson and Pascal, 2012), which in turn might undermine the ability to deviate from an established development path. This is a phenomenon often associated with lock-in and path dependency (Klitkou et al., 2015; Barnes et al., 2004). The lock-in situation can be regarded as the significant moment where development and transformative learning grind to a halt. In Chapter 5 we saw some evidence of this when, due to low trust, network interactions diminished and competition between actors increased. When this happens, it can take a lot of time, money, goodwill and effort to rebuild such networks. Therefore the lock-in moment can be regarded as a possible tipping point (Scheffer, 2010), where the participating actors' responsibility for being reflexive and for creating reflexive turns can become crucial. This occurred when trust and commitment were restored and reframing were restored in the three networks (Chapter 5). The challenge for participants then is to find the right balance between open curiosity and fixed standpoints - to be able to stand on a battlefield with enough courage and feeling of safety - to 'freely engage in conflictive social practices, with unpredictable outcomes' (Castells, 2000, p.5).

A decline in trust, commitment and reframing seems to lead to a lock-in situation, (see Chapter 5). These are the mechanisms or processes through which a network stops learning and starts falling apart, or becomes very competitive. A lock-in situation can be regarded as a significant moment where social learning dynamics can bring about change. The case studies in this thesis followed different social learning processes in different regions of the Netherlands, in different governance networks, and in different domains. All the studies in this thesis suggest that social learning processes are not naturally effective and successful but quite often face the risk of lock-in, i.e. the mere repetition and reconstruction of entrenched patterns of thinking and behaviour. For example, actor diversity in governance processes may challenge conventionally

established roles, because actors need to change their behaviour and routines, need to understand others and need to cross boundaries of their own roles and expand the boundaries of their own knowledge (Chapter 2, 4 and 5). This can create insecurity and uncertainty, and puts strain on the interrelated levels of trust, commitment and reframing.

The last study (Chapter 5) in particular illustrates the potential of reflexivity for overcoming lock-in situations. Reflexivity concerns the ability to recognise one's own influence on the type of knowledge one creates and the way it is created (Fook, 1999). Reflexivity also refers to the ability to consciously understand one's place in the social structure and to change one's role or one's perception of it (Malthouse et al., 2014). Reflexivity can render an experience transformative because it involves an expansion of one's perception of the world, which can be noticed when actors attach new significance and meaning to an aspect of the world (Pugh, 2011). Based on the three retrospective case studies in newly formed regional governance networks for sustainability transition in the Netherlands, as analysed in Chapter 5, it was found that reflexivity worked as a sort of lubricant for the dynamics of social learning, since it fostered the emergence of trust, commitment and reframing in the social learning process. Especially reflexive turns (cf. Beers and Van Mierlo, 2017) which involve a certain change in perspective, vision or action, either at the level of the individual or at the level of the network, were found to be crucial for change. These turns were found to be reactions to a threat, such as the falling apart of the network, or the missing of funding opportunities.

Reflexivity appears to support the search for possible root causes of complex problems and for possible solutions beyond routine approaches. The challenge remains to create a reflexive governance network which is able to adjust, reorient and change in a flexible and sometimes even a surprising way (Guijt, 2008; Sotarauta and Srinivas, 2006). The aim of fostering reflexivity is that the network becomes more responsive and responsible as well as more courageous (Perez, 2014) and anticipatory (Macnaghten et al., 2014; Stilgoe et al., 2013).

When actors in governance networks become reflexive they have the courage and the willingness to reframe the issues at hand, as well as the trust and commitment to reframe (Chapter 4 and 5). As a consequence, actors are more willing and able to accept the validity of a new concept and to change their preconceived frames: implicit and not fully articulated assumptions can often be reframed. It is possible that the social learning process triggers actors to explore the boundaries (Akkerman and Bakker, 2011) of their knowledge, their roles, their comfort zones and perceptions of the possible and the impossible (Termeer and Dewulf, 2012). Social learning requires the learning actors – as individuals and as collectives within a network – to deconstruct prior assumptions (Tsao, et al., 2006) through reflexivity. This implies that engaged actors might need some

support to feel safe and protected, to be able to explore their wishes, needs, beliefs and feelings in a discursive space shared with diverse others (Pesch, 2015). This support can be organised and professionally facilitated by internal or external change agents (Grin, 2011). These agents are also referred to as social or policy entrepreneurs (De Kraker, 2017), because they may play a key role in bridging learning processes within and between levels of governance. Based on the four studies in this thesis, I now conclude that in dealing with wicked sustainability problems, reflexive social learning can provide a way out of lock-in situations in governance networks, because it enables effective use of the diversity of actors.

### **6.3 Discussion of key findings**

Based on the conclusions, the following key findings will be discussed:

1. Reflexivity can be seen as a conditional factor in social learning dynamics.
2. Trust, commitment and reframing are emergent properties of social learning in governance networks.
3. Lock-in situations impede social learning processes and need to be recognised and guided.
4. Effective social learning creates outcomes, such as knowledge, relations and actions that have agency.
5. Change agents are important at tipping points as they function as boundary spanners.

I will discuss these findings in more detail below.

#### **6.3.1 Conditional reflexivity**

I will briefly explain the concept and role of reflexivity in social learning processes before elaborating on the way my findings suggest that reflexivity plays a role in the different studies. Subsequently, I will discuss this topic.

Reflexivity as an attitude, and/or as a research approach or even as a design principle for governance processes, is an important component of system innovation, transformative learning and sustainable transitions (Naber et al., 2017). The concept indicates that actors systematically have doubts about their own assumptions and practices and seek to find an enlightened alternative (Perez, 2014). An attitude of reflexivity can unlock the tacit knowledge and understanding that actors have of their experience and thus help them to utilise this knowledge in future practices (Malthouse et al., 2014). These acts of critical reflexivity belong to a social learning process (Groot, 2008), if only to improve the quality of the process itself and to monitor change progress

throughout (Wals, 2007, p.41). In this thesis, the following definition of reflexivity has been used: 'Reflexivity is the process of making the meaning of one's beliefs and experiences explicit and by reorienting on this' (Pugh, 2011; Malthouse et al., 2014; Mezirow, 2000). As such, reflexivity includes the willingness to explore underlying frames and create unpredictable new ones. In this thesis, reflexivity is regarded both as an individual attitude and individual practice/behaviour, and as a shared practice in networks.

Reflexivity in networks is so-called social reflexivity (Archer, 2010), which refers to the sharing of individual findings and the shared act of defining new explicit beliefs, intentions and acts. Furthermore, a 'reflexive turn' (Feindt, 2014) has been conceptualised as a change in learning outcomes, such as changes in knowledge, relations and actions (Beers and van Mierlo, 2017).

Reflexivity works as a sort of lubricant in the dynamics of social learning, in that it fosters the emergence of trust, commitment and reframing in the social learning process (Chapters 3 and 5). Empirical studies illustrate that adopting reflexive attitudes and undertaking reflexive activities enable dialogical practices to take place in discursive spaces (Pesch, 2015) and, as such, can further the development of governance networks (Termeer and de Wulf, 2012). In the case study in the Groningen region (see Chapter 2), for example, reflexive monthly meetings created a space for connecting and learning, after the network members had adopted the perspective that knowledge is socially constructed. Different viewpoints could be openly exchanged and discussed in a multi-stakeholder setting. In this process of social learning, perceptions sometimes merged and shifted or were reframed. In the ChildCity case (see Chapter 4), we observed a reflexive process during which several tipping points occurred. These were commonly sensed to encompass the possibility of a breakdown and the emergence of a 'go/no-go' or 'make or break' moment for the experiment. If such a breakdown or collapse of the process had occurred, it may have led to the conclusion that this type of hybrid learning was impossible due to several institutional barriers. The reflexive interventions from the change agent were likely crucial in facilitating the formation of a hybrid learning configuration. This enabled a transformation of the social system under discussion, in this case towards a biodiverse, green, pedagogically sound playground, which might provide children and teachers with a basis for the development of ecological mindfulness.

In the three '*Duurzaam Door*' networks in Limburg, Utrecht and Flevoland, reflexive turns (Feindt, 2014; Beers and van Mierlo, 2017) were detected by carrying out methodologically guided observations (Chapter 5). These reflexive turns were articulated and organised in learning meetings by coordinators, behaving as change agents. The meetings increased trust, commitment and reframing, thereby creating space for social learning, and this combination led to social learning outcomes such as changes in

knowledge, relations and actions. The examples in these regional networks have in common that adopting reflexive attitudes and performing reflexive activities helped the participants rethink prevailing practices and reorient towards alternative ones. It is likely that this is a valid insight for other multi-actor networks that address sustainability concerns.

The retrospective studies of the five different regional governance networks in sustainability transitions in the Netherlands (Chapters 2, 3, 4 and 5) confirm that reflexivity is an important property of a network (Wals, 2007; Mezirow, 1991; Perez, 2014) that can lead to effective social learning and associated sustainability outcomes. Effectiveness here is seen as either avoiding or overcoming lock-in situations, and being able to proceed in the interactive and dynamic social learning process where knowledge is exchanged and where actors learn by interaction and co-create new knowledge, relations and actions.

Considering the potentially important role of reflexivity in governance networks for sustainability transitions, the question arises as to why reflexivity seems so weakly addressed and organised.

In 'the *Duurzaam Door*' networks (Chapter 5), for example, threats to the dynamics of the network (lack of success, feelings of competition, lack of participation) induced reflexive interventions and reflexive turns (Beers and van Mierlo, 2017). When people face a confusing situation, and cannot solve it, they may turn to simple explanations, conspiracy theories, prejudice or start to ask critical questions about their own situation (Isopahkala-Bouret, 2008). In this thesis, it appears that reflexivity in governance networks is induced by threats. It could be, however, that networks react differently to a threat. For instance, external threats might lead to a reduction in reflexivity if people panic or some actors exploit a threatening situation for their own purposes. If a lack of awareness about the added value of reflexivity prevents reflexivity altogether, then reflexivity can be fostered by free actors (Zaalmink et al., 2007) or change agents who can facilitate the network.

However, should we really wait for these threats to become so strong that the risk of 'lock-in' (Klitkou et al., 2015; Barnes et al., 2004) becomes almost inevitable? Signs of lock-in were observed as a lack of interaction, a lack of progress and a lack of decision-making (Chapter 5).

We should also consider that there are factors that impede reflexivity. Reflexivity can be seen as challenging the status quo (van Mierlo et al., 2010) when things become more explicit and confronting, or when reflexivity is seen as a potential trigger for sudden changes. These sudden changes may be desired or undesired, depending on the expectations of the network and its diverse participants. It could be that reflexivity

challenges existing non-transparent power relations that are at work in governance networks (Avelino, 2009).

There are indications from the current practice of facilitators and coaches that reflexivity and the making explicit of implicit ideas, beliefs and knowledge (Regeer, 2010) can open up the hidden tensions in a governance network. Some authors, however (e.g. Tosey et al., 2011), emphasise that reflexive learning cannot be actively planned and may not necessarily have beneficial outcomes. This points to the need for anticipation and facilitation, which will be discussed in the next paragraph.

### **6.3.2 Space for emergence**

In this section it is emphasised that social learning is a dynamic process consisting of emergent properties, which should be both anticipated and facilitated. Working towards sustainable development often requires system innovation and calls a status quo into question (van Mierlo et al., 2010). It requires learning aimed at innovation, based on new ways of perceiving ourselves and others, and the issues at stake (Brockbank and McGill, 2006). Social learning in multi-actor governance networks seems to be promising for sustainability transitions (Beers et al., 2016; Vinke-de Cruijf and Pahl-Wostl, 2016; Ison et al., 2013; Wals, 2007; Friedman 1987) because in an optimal situation it leads to changes in knowledge, relations and actions which may enable the creation of innovative solutions to shared problems.

The term 'multi-actor networks' suggests social plurality and the importance of diversity in creating change. Multi-actor networks in regional development consist of people who represent themselves and/or an organisation and/or a network. The heterogeneous composition of a multi-actor governance network, comprising different values and interests, is often reflected in large differences in frames of perception (see Chapter 3). This actor diversity may lead to conflict and lock-in situations. Actor diversity is often regarded as an important source of social learning, because it enables a broader and more integrated understanding of the issues at stake, and a greater capacity for joint action, learning and change (Gaventa and Cornwall, 2001; Groot, 2002). In this thesis, social learning is regarded an interactive and dynamic process. The use of the adjective 'dynamic' places emphasis on the fact that there are internal changes in social interaction between actors that affect both the quality and effectiveness of such learning. This process often involves resistance, for it poses challenges to existing beliefs and ideas, reconstruction of meaning.

Because of this, we need to better understand the dynamics and undercurrents of social learning in sustainability-oriented networks and make them more visible (Chapter 5). To do so we can look in more depth at the emergent properties of trust, commitment and reframing as interrelated and affected by reflexivity in a multi-actor setting.

In this thesis trust is defined as 'the expectation that others will act in a way that is agreeable for you without the possibility of you intervening' (Chapter 3). Commitment refers to how and the extent to which participants and their organisational backgrounds expend their resources on the goals of the project. Resources can be motivation and passion, but also time and money. Reframing here refers to 'the emergence of new, shared perceptions on the issues faced by a relatively heterogeneous group exploring a mutually perceived but somewhat ill-defined challenge such as regional sustainable development' (Chapter 3). Trust, commitment and reframing are different, but interrelated aspects of the process of social learning. For example, a slow decline in commitment from specific actors in a network can result in sudden decline of mutual trust later on. Or, when trust is high in a network, a process of reframing can start when actors are willing to become aware of their frames and perceptions, values and interests and are willing to reorient them. This can be a gradual process, or a sudden insight (Chapter 3). Having different frames or views on things can be detrimental to social learning when actors are unable to deal with their differences. Doing so requires being open to each other and willing to understand the issue from the other's point of view (McGregor, 2007). For the matter of dealing with different frames, trust can make it easier to be vulnerable towards acts of others. This is because trust is seen as a precondition for adopting a course of action that creates vulnerabilities to actions by others (Chapter 3). Where there are high collective levels of trust, commitment and reframing, actors will take risks in sharing new and valuable knowledge, which enhances social learning (Edmondson, 1999; Gubbins and Mac Curtain, 2008). Moreover, it seems that trust is both an antecedent and an outcome of social learning (Gubbins and Mac Curtain, 2008). In social learning processes challenges are experienced at the boundaries (Cremers et al., 2016; Akkerman and Bakker, 2011) of actors' frames and can trigger excitement and/or fear (Friedman, 1987). Trust, commitment and reframing are regarded as emergent and dynamic properties (Chapter 3), lubricating the permeability of existing frames of actors (Schön and Rein, 1994), and they are essential in triggering transformational change (Wals, 2007).

In the first study (Chapter 2), trust was seen as declining due to insecurity in a situation where the actors involved had to negotiate their knowledge and meaning and needed to reconsider their own position, perspective and role. This could indicate that all actors involved needed to reassess and redefine their roles and to develop a new common set of values, norms and language (Friedman, 2001) where there were tensions between system innovation ambitions and experiences of the actual situation. In the three regional studies, (Chapter 5), it was illustrated that social learning tends to slow down when trust and commitment and reframing are low. In the Limburg case three change agents witnessed a lack of trust and a hard confrontation between actors. The



relational break in the network that followed brought about a deep learning insight expressed in the answers to the following question: What comes first in collaboration? High ambitions and money, or shared values and honesty? The change agent guided a reflexive bottom-up process towards a small, trusting core network. The culture in this whole network eventually became open, curious and reflexive, but only after the change agent intervened. In Child City (Chapter 4) the development of new frames and attitudes in hybrid learning configurations depended on several conditions, including the availability and support of so-called change agents. These agents intervened at the tipping points and knew how to intervene, which created space for the growth of commitment and trust between the teachers and the board of Child City.

Therefore, based on the different studies (Chapters 2,3,4 and 5), I would conclude that the emergent and dynamic properties of social learning – observed in changes in the interrelated configurations of trust, commitment and reframing – influence the dynamics and therefore the outcomes of effective social learning in governance networks. Moreover, as trust, commitment and reframing were found to be interrelated in all studies in this thesis, it appears that the growth of one of these emergent properties of social learning induces changes in the other properties. By increasing just one factor – for example, trust – we might expect the other properties to increase as well. If this is true, then a self-reinforcing dynamic may develop. So, trust, commitment and reframing can be regarded as both an antecedent and an outcome of social learning, which points once again to the emergent character of social learning.

However, it is not yet clear how external factors, such as the regional culture, the history of the network, the amount of policy around the network and the financial support structure, influence social learning. These external factors might differ across constituencies as well. If that is the case, then participating actors in a governance network might experience a tension between their commitment to the network and their commitment to their constituencies. Although these tensions do come through, they are not taken into account in a specific way in this research, as the research mainly focused on internal social learning dynamics within the network.

### **6.3.3 Risk of lock-in**

This thesis shows that lock-in situations impede social learning processes due to lack of reflexivity, and lack of trust, commitment and reframing. There are some indications that role changes within governance networks can help overcome such lock-in. Within governance networks social learning takes place within a discursive space (Pesch, 2015; Feindt, 2014) where different meanings, perceptions and behaviours interact and where these interactions shape new knowledge, new worlds and incipient actions. This space can also be regarded as a reflexive space, where the opportunity for dialogue, re-

orientation and learning is available. If not, this space can become a battleground where new ideas might be crushed and where lack of trust creates inflexibility and ineffectiveness (Thompson and Pascal, 2012). This might lead to an inability to deviate from the path taken even in light of clear signs that it is the wrong path to take, which essentially is a form of 'lock-in' (Klitkou et al., 2015; Barnes et al., 2004). As social learning may create knowledge that is greater than the sum of the individual members' knowledge (Wildemeersch, 2009; Senge 1990), it seems important to overcome such lock-in situations.

The challenge then is: how can these typical and possible 'lock-in' situations be overcome? As governance networks consist of a multitude of actors, the actors may need flexibility in mind and behaviour. For example, 'role flexibility' could be needed when the network interactions demand that the actors involved shift roles. It might be helpful to 'freely engage in conflictive social practices, with unpredictable outcomes' (Castells, 2000, p.5), because in the collaborative process individual actions add up to patterns at the collective level (Coleman, 1990 in Rip, 2006, p.87).

In all empirical studies in this thesis, changes were noticed in the roles, perceptions and attitudes of the actors engaged in the governance networks. These changes were induced in different ways. In Child City (Chapter 4), attitudes changed due to interventions by professional facilitators. In the last study (Chapter 5), change was induced by interventions from change agents. Especially in the Groningen study (Chapter 2), it was significant that role changes were conducive to social learning processes and outcomes. The kick-off meeting and the integrated research question provided stepping-stones for the creation of new roles. This provided legitimation for the students to participate in the regional complexity with openness and real interest. The students were allowed to make mistakes and ask many 'stupid' questions. This way they learned that they were regarded as relatively neutral actors, being perceived as unthreatening, yet curious and interested in local affairs. From there, they became more confident in their role as boundary spanners.

These examples show that lock-in situations can represent a significant moment where old roles and orientations no longer fit and where, with or without the help of some professional facilitation, new perspectives may show up. In addition, interventions by change agents can trigger the networks to develop alternative attitudes towards the available knowledge and towards others.

This might indicate that in social learning processes roles change and develop over time, and that actors can be made aware of this by reflection on action (Van Mierlo, 2010). Moreover, by working as a team and connecting with real-life issues and real persons in the region, students and supervisors became more aware of their new role as scientists, and as partners, co-learners and boundary workers in co-creating knowledge

and facilitating collaborative co-evolutionary processes (Dillon and Wals, 2006; Rip, 2006). In fact, students had 'key boundary-spanning' roles (Cash et al., 2003) in the research and in the area. Boundary spanners can perform key boundary-spanning roles (Akkerman and Bakker, 2011; Cremers et al, 2016; Oonk, 2016; De Kraker, 2017). Boundary spanners (objects, artefacts, people etc.) are valuable and necessary in social learning in governance networks because they provide bridging points between the diverse values, languages, expectations, interests and viewpoints of the different actors involved. In the context of the Groningen case, they also create opportunities for building new relations between science and society (see also: Reason and Bradbury, 2008). As such, the presence of boundary spanners stimulates the social learning process and the network as a newly emerging community of learners with new ideas (Kibwika, 2006). Boundary spanners can be helpful when traditional roles (e.g. 'mode 1' researcher, university lecturer) (Regeer, 2010) do not provide connections for overcoming the boundaries. Professional change agents can mediate and facilitate as brokers between different life worlds, which enhances trust building and conflict resolution (Klerkx and Aarts, 2013).

Overall, it can be concluded that lock-in situations are risky, in that they can slow down or lock in social learning. However, at the same time, the interventions to overcome them by using boundary spanners, change agents and facilitators can create and support ways forward: as new roles, knowledge, actions and relations are formed in the process of social learning.

#### **6.3.4 Agentic governance**

As stated at various stages throughout this dissertation, effective social learning can lead to generative outcomes, such as new knowledge, new relations and new actions that, when combined, contribute to agency. Two related questions here are: what is agency is and why do governance processes need agency? As indicated previously (Chapter 5), social learning dynamics and outcomes can create a certain change agency (Chreim et al., 2010), which may contribute to transitions. As stated in Chapter 5, outcomes are seen as new knowledge (including values), new relations and new actions (including decisions). Learning can be seen as a way of keeping knowledge up to date with continuously changing situations and conditions (Termeer and Dewulf, 2012). Agency here refers to 'the making of independent choices by actors' (Grin et al., 2011, p, 78), incorporating a wider variety of knowledge and values and better acceptance of decisions taken by the core actors (Newig et al., 2010). This process of creative governance decision-making might indicate a certain effectiveness. Grin (2011) suggests that agency influences whether, how and how fast a particular transition will develop. As social learning outcomes can combine into agency as a valuable spin-off, we will take a closer

look into the different outcomes in the different studies and discuss whether these outcomes can be regarded as agency.

In the first study (Chapter 2), we saw a regional development network that gradually attracted more and more engaged actors, resources and (public and scientific) attention. The increase in new knowledge, coming from the input of interactive research and knowledge of students, was significant. Cultural groups, on art, language and the preservation of old buildings, found their way to the existing network of farmers and nature organisations, municipalities, the province and research institutes. The experiment turned out to be a catalyst for rural development. As a result, the region established a stronger administrative capacity and created a new regional identity: 'a beautiful region with lots to offer'. This new identity fostered and empowered the region to participate in European Union-supported programmes and exchange projects. This can be regarded as agency, in the sense that the regional network developed a shared identity, a sense of pride and power, which originated in regional development and further induced and influenced regional development. This illustrates the capability of a network and the potential of social learning processes enriched by boundary-spanners, such as research questions, reflexive meetings and buzzing, interactive students.

A second example of agency can be found in Chapter 4, where the emergence of decision-making on a challenging topic (ecological mindfulness) in small incremental steps can be seen. It is a process, where more types of actors gradually become engaged: manager, teachers, the board of directors, the nature guides, who interact and negotiate, but almost clash. Actors are faced with the boundaries of their knowledge, roles and interests. In these critical moments, reflexive interventions – inducing social learning – made it explicit that the Dutch health regime and the internal board were afraid of creating an 'unhygienic' playground for children. The reflexive interventions of the change agent Real Well Being were very much appreciated and led to more open interaction, where stakeholders were invited to share visions about safe playgrounds. This led – step by step – to more trust in relations and supported the exchange of ideas between teachers. The decision to plant willow huts for the children represented a celebratory moment of innovation and an expression of agency of the evolving network. It can be seen as a transgressive decision and an action against the regime of the school and the public health system; one based on collaborative learning, which may contribute to more ecological mindfulness. Indeed, small but important (infant) steps towards sustainability transitions.

I regard these two examples as agency building, because they contribute to change that was induced by actor engagement from governance networks. We also know by now that this engagement can be impeded by lack of trust and lack of facilitation at crucial moments. When engaged actors feel betrayed in such networks, where no fixed

rules and sanctions exist, trust can be a very special glue (Äm, 2011). So, it would be too easy to say, 'yes the network had agency so we do not need to intervene or support.' Instead it might be better to say, that agency needs to be fostered by creating a reflexive culture that feeds sustainable transitions through the building of trust and the possibility of social learning. In this, it seems that reflexivity is quite a central concept, as long as its value is acknowledged. If its value is not recognised, reflexivity will not be fostered, which might lead to a lack of learning in governance networks and, essentially, to a waste of time, money and relational trust. This can be regarded as a true dilemma. A future direction for research would be to compare facilitated and unfacilitated networks in their levels of reflexivity, trust, commitment and reframing and in their outcomes and agency based on social learning. In this research, types of interventions and their effects could be monitored as well.

### **6.3.5 Change agents at tipping points**

Change agents are important in transitions because they play a significant role in initiating, managing and/or implementing change (Caldwell in van Poeck et al., 2017). Actors within the network may spontaneously take on the role of change agent, but this role can be played more freely by an agent who is invited and requested to function as a 'free actor'. A free actor (Wielinga and Geerling-Eiff, 2009) is a change agent with the ability to exercise discretion in choosing when to act to activate and connect the actors in a network. A non-free actor is more or less constrained in his or her role by a constituency, and is often connected to specific interests and behaviours. A free actor must have 'connective ability' (Klijn et al., 2010), because creating better linkages and interactively managing knowledge creation (Driessen, Mareeuw et al., 2015) requires actors that are capable of playing an intermediary role. Free actors can have a change agent role, because their intervention might lead to more trust, commitment or reframing and/or new knowledge, decisions and behaviour. When this happens free actors are fostering the social learning process. Where they do not do this, a situation of non-learning, distrust and lock-in is more likely to occur, and relations within the network could easily break down (Zaalmink et al., 2007). Change agents are usually regarded as individuals but they can also be groups or teams.

I have shown the roles that the change agents played in the different cases. In the Limburg, Flevoland and Utrecht regions (Chapter 5) change agents intervened at significant moments when network trust and commitment had become low. They created reflexive turns by inviting the networks to come together and share and explicate experiences and expectations. The reflexive interventions that the agents did at those moments had a large positive impact in all three networks on awareness of the importance of the network and the importance of collaboration for realising impact, and

inducing social learning, knowledge creation, relational trust and new orientations on action. In this sense, change agents can be regarded as boundary spanners (De Kraker, 2017), because they support the exchange of different views and interests between actors. Also in the ChildCity study (Chapter 4), the availability and support of so-called free actors, such as the people from the foundation for Real Well-Being, made a difference.

At critical moments change agents sense the need for interventions, and these moments can be regarded as tipping points. This indicates the possible role for change agents as boundary-spanners at tipping points in social learning processes. In the Groningen study (Chapter 2), students showed their ability to create connections as boundary objects or change agents in specific ways and at specific moments in the regional development process, and this induced more communication and awareness in the regional connections and led to a change in regional self-perceptions.

Change agents, therefore, seem to play a crucial role at tipping points where the social learning process may proceed or not proceed due to lock-in situations, characterised by low reflexivity, low trust, low commitment and low reframing. This could indicate that only a few actors are able to make a difference, and these are likely to be those in the free actor role (Zaalmink, et al., 2007). Furthermore, we observed that change agents could literally free up the space for reflexivity, which can help a network or programme to be (more) successful. Reflexive intervention can also be planned and facilitated (Chapter 5). For reflexivity to work, change agents need to monitor and create interventions. Change agents can also be regarded as boundary spanners, because they have a connective boundary-crossing role that requires them to foster and mediate the exchange of the different views, visions and interests.

Although some scholars (Lindblom in Rip, 2006) advocate that all citizens could be reflexive governance agents to advance intelligent democracy, I believe a modest start would be to make available a few change agents, and to develop this role over time in specific educational settings, in (governance) networks and in (on the job) trainings.

Concluding, change agents, as free actors, can become boundary-spanners at tipping points in the social learning process by inducing reflexivity and reflexive turns and increasing trust, commitment and reframing. The outcomes and impact can be noticed in new knowledge, values, relations, decisions, actions and agency of the governance networks, all of which might contribute to sustainability transitions.

## **6.4 Extending the analytical framework**

The above meta-analysis of the four different studies in this thesis illustrates the critical role of reflexivity, trust, commitment and reframing in social learning dynamics. These

social learning dynamics and outcomes can be seen in the context of governance networks whose aim is to contribute to sustainability transitions. Against this background, the possible roles of change agents as boundary-spanners at tipping points in the processes of the different governance networks are illustrated. These conceptual relations have been captured in an analytical framework (Figure 1), which was introduced in the general introduction of this thesis (Chapter 1).

This analytical framework can also be viewed from a reversed perspective, by following the red arrows in Figure 14. The studies in chapter 2,3,4 and 5 show that ongoing sustainability transitions influence the dynamics and outcomes of social learning processes. This is especially the case where there are divergent multi-level-perspectives (Voß et al., 2006) and where broader societal changes are unfolding independently from any social learning (e.g. driven by resource scarcity). The related changes in patterns of action, relationships and knowledge can also trigger social learning processes which in turn affect levels of trust, commitment and reframing. Likewise, these dynamic and emergent properties of social learning seemingly influence levels of reflexivity (see Chapter 5).

Based on this observation, I propose that the original hypothetical Figure 1 in the introductory chapter be extended as in Figure 14, thus showing the interrelatedness of the theoretical concepts used in this thesis more clearly.

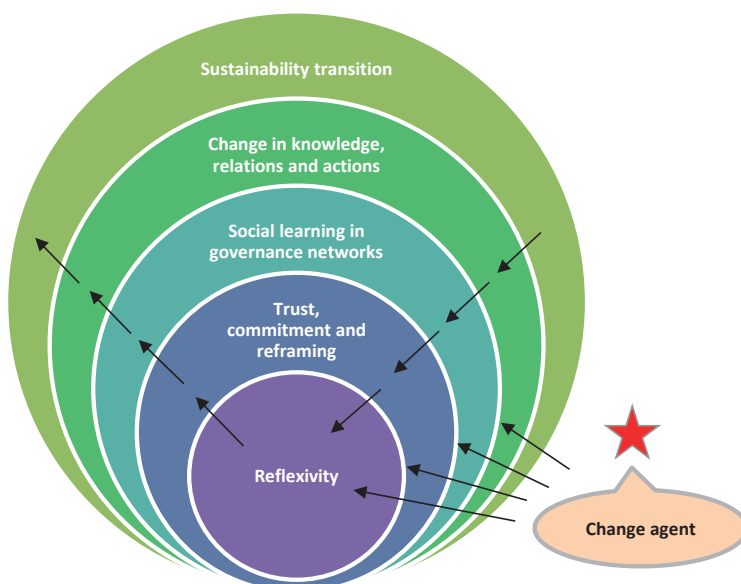


Figure 14: Extended analytical framework showing the relations between the concepts.

Compared to the initial framework there are a few new elements and connections. I will briefly elaborate on each of them.

First, at the level of sustainability transitions, the change processes may be slow or fast changes within niche experiments, regime changes, or even cultural changes in the way people relate, decide and come into action with respect to sustainability. As we know that transitions tend to take a long time, it is challenging to find snapshots of a transition. I assume here that research on sustainability transitions can provide a few of these snapshots. When combined with the assumption that there is progress in specific transition indicators, such as improved knowledge, relationships and concerted actions, between  $t-1$  and  $t-2$ , then it could be that the impact of these small transition steps influences the way social learning dynamics evolve. For instance, it could be very encouraging for participants in citizens' initiatives concerning sustainable food production or renewable energy to see that government roles are changing from bureaucratic and formal behaviour towards more participative and cooperative attitudes. Unfortunately, there are no signs of this being the case in this particular thesis. However, in Chapter 2, university lecturers changed their roles towards a more coaching role, in guiding the students and the regional network. This change was induced by a transdisciplinary research setting, which is regarded as a transitioning way of working. In other words, by organising transformative contexts, participating actors may start to become transition-oriented in ways that are conducive to social learning and vice versa.

Second, in this thesis it can be seen that interventions by change agents influenced the social learning process, in the sense that they created relations for sharing knowledge (Chapter 5) or supported board members in exchanging ideas with nursery teachers (Chapter 4). So change agents influenced the social learning process in that the interactive and dynamic process in the multi-actor setting induced knowledge exchange and the co-creation of new knowledge and action.

Third, where a social learning process is interactive as opposed to lock-in, it could lead to more relational trust, more commitment to a network's ambitions, and changing frames of knowledge. This is illustrated in Chapter 2, where the regional initiative started to create an EU Leader network, for which high commitment from all participating actors was a prerequisite. Or, in Chapter 4 where the decision to plant willow huts on the playing ground gained the board's trust and commitment due to a reframed perception of how to manage hygiene rules.

Finally, the impact of changing levels of trust, commitment and reframing on reflexivity could work in the following way: when a network develops trust over time, this can provide a safe space for networks and network actors to become reflexive and help them reorient their shared values and visions. Moreover, if they are committed to some shared ambition and willing to reframe their ambitions, they could become reflexive. This research has not been able to clearly illustrate this however. Nevertheless, I suggest that



the reconfiguration as depicted in Figure 14 gives more space for the interpretation of social learning dynamics in governance networks in regional transition contexts.

## 6.5 Reflection on the research approach

Looking back on this multi-year research journey, which at time went smoothly, and at other times was more like a roller coaster and occasionally a jump into the dark, there are a number of potential shortcomings and possible points of criticism. In the reflexive vein of this thesis, I will use this space to highlight a few of them.

This type of research is of a qualitative nature, which directs us to data that are less easy to substantiate and to draw conclusions from. However, the reason for not making use of percentages and numbers is twofold. First, the number of engaged network actors was low, varying from 6 to about 30 members. The average number of network partners in this research was around 10 actors in Flevoland and Utrecht, and in Limburg the core network consisted of three people with a network of approximately 30 persons around them. To derive percentages from these numbers is neither really possible nor advisable, since it would suggest a false sense of accuracy.

Second, this research takes a retrospective focus on the development of network dynamics. These dynamics are hard to see, let alone to measure. A more qualitative research method provides more personal insights into the perceptions of the different actors. These perceptions, captured through interviews, are highly individual, they are framed from their view on the network. Experiences and perceptions can be captured in stories, for example through learning histories. Alternatively, interactive reflexive workshops provide a space where actors can freely express their mindset to others. In these interactions, words, pictures and sentences can be captured and become data. Given the limited time and resources, the data collected proved useful enough for this thesis. Low quantitative numbers are not necessarily a weakness unless one is tied to the quantitative-positivist research paradigm.

Those adhering to a positivist research paradigm might argue that a thesis like this does not prove anything or furnish any evidence that can be used to provide legitimacy for transferring the evidence of the findings to other contexts or to help shape policy. However, providing evidence and creating a blueprint for practices elsewhere was not what this dissertation set out to do. Rather, the research intended to make visible, and therefore plausible, phenomena that are occurring and thus provide a mirror for others in policy, practice and research that can lead to deeper understanding, better questions and, ultimately, reflexive transitions towards sustainability.

Arguably, this research failed to use tried-and-tested sets of measurement tools on trust, commitment and reframing. It would have been great to make use of existing

tools for measuring levels of reflexivity, trust, commitment and reframing, but as these tools do not really exist, or are not applicable in the context of this research, I had to develop them myself. As a result, the set-up of the research questions and the operationalisation of them in surveys, workshops and interview questions remained largely explorative. Therefore, I could not really pre-test or post-test the value of these types of questions and still cannot say whether they were highly suitable or effective for the intended purposes. An analysis of the utility of the methods and tools used to support this research would constitute interesting follow-up research.

The analytical framework created initially, and refined later on, is helpful for seeing how the different concepts relate to each other. However, the framework has not really been 'tested'; rather it was used as an evolving framework. It might iteratively progress into something potentially more robust. The framework could be refined by testing the different interactions to find out whether the model is logically configured. And how can this model contribute to better understanding of, better interventions in and better research on social learning for sustainability transitions? These questions would be interesting for follow-up research as well.

The relation between social learning, governance networks and sustainability transition may seem intuitively obvious, but as long as this relation is unclear and unproven, the value of social learning for sustainability transitions remains unclear. And as long as this is the case, the value of reflexivity in social learning will remain unclear as well. More importantly, the space for reflexivity is already marginal and the lack of proof of its value might result in it becoming even more marginalised. This thesis reveals some indications of the relation between social learning in governance networks and sustainability transition. An example would be where social learning outcomes have delivered impact in the form of citizens' initiatives to invest in renewable energy cooperatives, which are expected to lead to CO<sub>2</sub> reduction. Still, these impacts might have been affected by something other than social learning dynamics. Therefore, the challenge of finding proof of a clear relation between social learning and sustainability transition remains prominent and requires a solution.

In this light it may be helpful to adopt a more philosophical perspective on science. According to Gadamer (in Sullivan, 1989), who contributed to the development of hermeneutic ('the art of interpretation') philosophy, people are embedded in the particular history and culture that shaped them. Gadamer emphasises that finding truth using scientific methods may exert pressure on everyday experiential truth, which can lead to a possible clash of these different truths. With regard to this PhD research, it can be said that findings on the quality of social learning are not exactly proof of the hypothesis, but merely indicate the possibility of a relation.

## 6.6 Recommendations

Although the degree to which actors can intervene and can be in control of change is usually limited (Termeer and Dewulf, 2012), it seems critical to periodically monitor and/or self-assess the quality of social learning processes. Furthermore, interventions aimed at increasing levels of trust, commitment and reframing and facilitating other emergent properties can be monitored and guided. Good timing of reflexive interventions in sustainability networks has an anticipatory element, as it might prevent lock-in situations (Stilgoe et al., 2013; Magnaghten et al., 2014).

Stronger emphasis on facilitating social learning and establishing social relationships and trust are essential preconditions for effective sustainability management (Roux et al., 2011). A facilitator can create a place where people feel secure, are less afraid to make mistakes, and can mediate between the different frames and interests that actors and their constituencies might have (Klerkx and Aarts, 2013). When effective social learning in a place-based complex problem (Horlings, 2011) leads to the creation of new knowledge, new relations and new actions, we may expect an increase in network agency (Grin et al., 2011; see Chapter 5), which, in turn, is considered essential in contributing to spiralling towards sustainability.

Social learning in governance networks is a challenging process, due to the emergent and dynamic properties such as trust, commitment and reframing, and often faces the risk of lock-in, due to lack of reflexivity. Therefore, it seems to be important that the discursive space (Pesch, 2015) is facilitated by change agents (Friedmann, 1987; Caldwell, 2003; McCormack et al., 2013; De Kraker, 2017), because this greatly improves conditions for social learning. Meanwhile, it should be recognised that such facilitation does not always guarantee reflexivity and social learning, for example where some actors are unwilling or unable to change their position.

Through interventions by change agents, engaged actors are encouraged and stimulated to reflect on action and are enabled to become reflexive and flexible. These interventions – which may include monitoring developments, opening space for dreams, sharing ideas, getting to know better each other's experiences and expectations, reflecting on shared experiences, designing new collective actions – need to be tailor-made. The aim of these types of interventions is to create more understanding of, equality in, and energy and motivation for co-creation and learning in a multi-actor governance network. When these networks become able to develop a reflexive governance culture, they may come to construct new vital relations, integrated applicable knowledge and concerted actions, at different stages of urgently needed sustainability transitions.



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## Summary

Current sustainability challenges are regarded as very complex and even wicked in that they are contested and ambiguous with respect to their underlying knowledge, values and causes, as well as with respect to the pathways that might help in addressing them. In order to meaningfully engage with such challenges, a so-called transition perspective is increasingly advocated in both science and society. Transition here is seen as a delicate composition of entangled non-linear processes of social change by which a societal system is structurally transformed towards a state that is deemed more desirable, here more sustainable, than the current one. A transition perspective suggests that, rather than optimizing existing systems, practices and routines (continue doing the things we do, but only better), there seems to be a need to radically reconsider the assumptions and values upon which these systems have been build (doing better things altogether). A transition perspective implies new ways of 'doing' policy, new behaviour, new relationship building (trust) and new ways of knowledge creation and learning. Here a shift from 'governmentality' to reflexive governance and a shift from individual learning, personal development and competition to joint learning, community building and solidarity, is emphasized.

These proposed new ways and shifts call for the active seeking or inviting of pluralism in situations where old routines no longer suffice in light of complex sustainability challenges. Governance networks are networks where many actors are involved, such as municipalities, entrepreneurs, educational institutes, NGO's, citizens and other actors. These networks have a relatively stable character and provide so-called discursive spaces where analyses, diagnoses, and solutions can be debated, negotiated and, under certain circumstance, even be co-created. . Within such networks there is a high degree of interaction and interdependency. Reflexive governance networks can help communities respond to complex problems, when they aim to co-create new knowledge, new relations and new policy. For this, a process of collaborative learning is seen as core to the transition process.

The concept of social learning is promising in this context, because it takes the diversity of actors, knowledge, perspectives, languages and interests, as a starting point for the creation of new-shared knowledge. The concept of social learning has also been developed to understand processes of social transformation as learning processes. Through this lens, social learning can be seen as a double-edged process: where individual learning and interactive learning take place simultaneously in a process of social change with effects on wider social-ecological systems. As there are many different definitions and approaches of social learning social learning is defined in this thesis as 'an interactive and dynamic process in a multi-actor setting where knowledge is exchanged and where actors learn through dialogue and the co-creation of new knowledge through

on-going interaction'. In this sense, a social learning process can contribute to system innovation by providing a collective knowledge basis for action. Assumed in this thesis is that through social learning effective use of the diversity of actors can be made, by looking at possible root causes and possible solutions for complex and wicked problems. However, although social learning provides a powerful theoretical, in practice it faces some challenges, in part due to the diversity of actors. This thesis represents a journey to better understand these challenges in the context of localised and/or regional development in which multiple stakeholder jointly seek to become more sustainable in one way or another. The overarching research question is: *What fosters social learning processes in regional governance networks for sustainability transitions?*

By applying a constructivist actionable methodological approach and using a mix of methods (e.g. retrospective analysis, reflexive monitoring, semi-structured surveys, open interviews and learning histories), the research was able to reveal that in the hybrid and discursive space where actors interact, they may encounter lack of trust, and/or a lack of commitment and/or lack of willingness to reframe underlying assumptions about both the root causes and possible solutions to sustainability challenges. When this happens, the social learning process can come to a hold, which is also referred to as lock-in. The interactions become less open, or even stop and become hostile, as if the discursive space becomes a battleground. This moment can be regarded as a significant moment or a tipping point, from where the social learning process can revitalise and start up again, or where the network starts to fall apart (a make-or-break moment). When governance networks are self-governing in social learning, they can manage the lock-in situation by becoming reflexive. Reflexivity is an expansive way of learning, by making underlying assumptions and frames explicit and reorienting them by asking: are we doing the right things or should we do something completely different? Reflexivity has the power to change perceptions and intentions - in order to do better things.

When the networks are facilitated networks, which is often the case, they might need some skilled facilitation from change agents in order to become reflexive. Other actors or objects can behave as change agents or boundary spanners, between the different perceptions, interests and cultures contributing to the governance networks. The interventions from the change agents support the reflexivity of the actors and the network. The actors become able and willing to reorient their current values, knowledge, roles and actions. When these so-called 'reflexive turns' take place, an increase in trust, commitment and reframing can be seen as emergent properties of social learning. These properties are interrelated; changes in one property will likely induce changes in the others. For example, when trust increases, also the commitment seems to grow and vice versa. When these dynamics take place during the social learning process, indicators of effective learning are the changes in knowledge, relations (including roles), values and

assumption, and, indeed, actions (including decisions). These changes are seen to contribute to sustainability transitions in regional development, such as the creation of local food initiatives, local energy cooperatives and new participative policy on these issues.

Four studies were carried out in this thesis. They will be described here in brief.

### **Study 1. Action research in a regional development setting: students as boundary workers in a learning multi-actor network.**

The aim of this first study (Chapter 2) is to investigate whether regional development can be supported with action-oriented research. The sub question is to find out more about the role of boundary spanners in this process. The hypothesis is that action oriented research might foster social learning and the co-creation of knowledge, for regional development. The area under research is the Western Quarter region in the province of Groningen, where issues about maintaining the landscape and economic vitality of the region bring many actors together in new regional networks. Methods used are an action oriented research approach, and a retrospective analysis of the first year of this process. The action-oriented approach is expected to contribute to better interactions, better collaboration and more shifting roles in order to bring about more valuable and legitimate impact of research. The retrospective analysis supported the understanding of the dynamics in the process, and proceeded insights in the changing roles of all actors and especially the roles of boundary spanners in this. It is found that boundary spanners are valuable and necessary for action-oriented research, because they provide bridges between divergent values, languages, interests, and viewpoints of the actors engaged. Boundary spanners seemingly create opportunities for building new relations between different actors. This in turn seems to stimulate the interactive character of social learning and to support the expansion of new shared knowledge, which is needed for regional and sustainable development.

### **Study 2. Social learning in regional innovation networks: trust, commitment and reframing as emergent properties of interaction.**

The second study (Chapter 3) is a deeper reflection on the social learning process that took place in the first study. There were some interesting changes in behaviours of actors that could be interpreted as dynamics in trust, commitment and reframing. The research question therefore was: what is the role of trust, commitment and reframing in social learning dynamics in multi-actor innovation networks? The sub question here was whether trust, commitment and reframing are interrelated. Main methods used were; a retrospective analysis and an ex-post analysis. The retrospective analysis delivered a learning history of the network's social learning dynamics, the interactions between the

actors at significant moments and the behaviours of the actors according to trust, commitment and reframing. Findings are, that in social learning processes trust, commitment and reframing can be regarded as emergent and interrelated properties of social learning. In these dynamics, the fostering of the social learning process seems important. These findings have been integrated in a hypothetical framework, which is grounded theoretically in grounded theory and empirically in the case study.

### **Study 3. Strengthening ecological mindfulness through hybrid learning in vital coalitions.**

In this third study (Chapter 4) the concept of reflexivity within a Dutch Policy Framework on Biodiversity is explored. Child city, a day care system, explores the possibilities of developing ecological mindfulness for young children, by offering them challenging playgrounds in natural environments. A small and active hybrid actor network of board members, nursery teachers and NGO-actors, was closely followed during one year through reflexive monitoring, and interviews, to see what kind of learning took place among the stakeholders and what kind of involvement in social learning and decision making took place. The main conclusion of this study is that understanding the social learning dynamics enhances the anticipation of tipping points as significant moments where the social learning needs to be fostered. In this study change agents are important at these moments because they are able to foster reflexivity using specific interventions. The increase of trust, commitment and reframing is seen as the effect of these interventions.

### **Study 4. Reframing the future: the role of reflexivity in governance networks in sustainability transitions.**

Study 4 (in chapter 5) is oriented on the relation between social learning dynamics and outcomes and a better understanding of the role of reflexivity in governance networks. The sub-question here is: which actors and roles can foster the effectiveness of social learning processes in regional transitions? The Dutch national '*Duurzaam Door*' (Moving Sustainably Forward) Policy Programme regards these regional sustainability networks on circular energy, food and economy as generative governance arrangements where new knowledge, actions and relations can co-evolve towards sustainability transitions. In order to understand the dynamics of social learning, three Dutch regional networks have been monitored on emergent properties of social learning between the years 2014 and 2016. Methods used were surveys, reflexive monitoring in action (RMA) workshops and learning histories with key actors. The focus in this study is particularly on the interrelated role of trust, commitment, reframing and reflexivity. Reflexivity and reflexive turns of the network are found to be a critical property at lock-in moments that can make



or break the process of social learning. The study shows that change agents can support and facilitate reflexivity which in turn can lead to an increase of trust, commitment and reframing, and, ultimately, improved social learning in regional governance networks.

All studies in this thesis point to the role of reflexivity in social learning dynamics, and the relation with emergent properties such as trust, commitment and reframing. Moreover, the role of change agents in lock-in situations seems to be important for the occurrence of reflexive turns, which foster the effectivity and outcomes social learning process towards new knowledge, relations and actions (including decisions) in governance networks. These types of change and agency are expected to contribute to sustainability transitions at the regional level considering energy, economy and food systems.

The theoretical contribution of this thesis in the field of social learning can be seen as supplying the ongoing debate with deeper insights about the dynamics of social learning, the role of reflexivity, trust, commitment and reframing; and the possible interventions in them. The empirical contribution of this thesis is the increased effectivity of social learning processes in different Dutch regions, and the tangible outcomes in new relations, knowledge and actions.



## Samenvatting

We leven in een tijdperk van grote duurzaamheidsvraagstukken, die niet eenduidig, maar complex van karakter zijn omdat de oorzaken niet helder zijn, de onderliggende waarden veelal onbesproken blijven en men het er niet over eens is wat de oplossingen kunnen zijn. Om betekenisvol aan de slag te gaan met deze vraagstukken, wordt in dit proefschrift gebruik gemaakt van een transitieperspectief, een perspectief dat in toenemende mate gebruikt wordt in wetenschap en samenleving in de zoektocht naar een duurzamere wereld. Transitie wordt gezien als een kwetsbaar niet-lineair proces van sociale verandering waarbij een maatschappelijk systeem structureel verandert in een toestand die meer wenselijk en duurzaam is dan het huidige systeem.

Een transitieperspectief betekent dat we - in plaats van het optimaliseren van bepaalde systemen, praktijken en routines (doorgaan met de dingen die we doen, maar dan een beetje beter) - gaan zoeken en kijken naar de aannames en waarden die ten grondslag liggen onze systemen en ons handelen (betere dingen doen). Uitgaand van een transitieperspectief kunnen nieuw beleid, nieuw gedrag en nieuwe relaties groeien waarin vertrouwen, leerprocessen en nieuwe kennis kunnen ontstaan. Het betreft een verschuiving van directieve beleidsaansturing naar reflexieve beleidsvorming (governance): een verschuiving van individueel belang en competitie, naar gezamenlijk leren, netwerkopbouw en solidariteit. Deze voorgestelde verschuivingen en nieuwe manieren van kennis- en besluitvorming vragen om een actieve stimulering van diversiteit, met name in situaties waar oude routines niet een oplossing bieden voor complexe duurzaamheidsproblemen.

Deze diversiteit kan gecreëerd en gevonden worden in zogeheten governance netwerken. Dat zijn netwerken waarin vele actoren betrokken zijn, zoals overheden, ondernemers, scholen, NGO's, burgerorganisaties en andere actoren. In deze governance netwerken wordt gewerkt aan het realiseren van een gezamenlijk doel, vanuit een gedeelde ambitie. Tegelijkertijd zijn er (flinke) verschillen in taal, cultuur, waarden en percepties. Governance netwerken bestaan tijdelijk, maar zijn relatief stabiel van karakter. De lopende dialoog vindt feitelijk plaats in discursieve ruimtes, waar analyse, diagnose en oplossingen worden besproken en onderhandeld, wat onder bepaalde omstandigheden leidt tot een co-creatieproces. Om complexe regionale duurzaamheidsproblemen aan te pakken hebben governance netwerken het doel om nieuwe kennis, nieuwe relaties en nieuw beleid te ontwikkelen.

Om deze gezamenlijke doelen te realiseren wordt een gezamenlijk leerproces (sociaal leren) doorlopen, wat als kern van het transitieproces wordt gezien. Voor een sociaal leerproces is een hoog niveau van wederzijdse afhankelijkheid en dialogische interactie nodig. Het concept van sociaal leren is veelbelovend in deze context, omdat het de

diversiteit van de actoren: de verschillen in kennis, percepties, talen en belangen als een uitgangspunt neemt voor de ontwikkeling van nieuwe gedeelde kennis. Het concept sociaal leren is ook ontwikkeld om transformatieprocessen te kunnen begrijpen als leerprocessen. Door de bril van sociaal leren kunnen we processen zien als aan tweesporen verhaal, waar individueel leren en gezamenlijk leren tegelijkertijd plaatsvinden in een proces van sociale verandering met impact op de bredere sociaalecologische omgeving. Aangezien er veel definities en benaderingen van sociaal leren zijn, is sociaal leren in dit proefschrift gedefinieerd als: 'Een interactief en dynamisch proces in een multi-actor omgeving waar kennis wordt uitgewisseld en waar de actoren leren door dialoog en de co-creatie van nieuw kennis in doorlopende interactie'.

Vanuit dit perspectief gezien kan sociaal leren bijdragen aan systeem innovatie omdat er een collectieve basis voor actie ontstaat in het netwerk. De aanname hierbij is dat dit kan omdat er in het proces van sociaal leren effectief gebruik is gemaakt van de aanwezige diversiteit, door gezamenlijk te reflecteren op grondoorzaken en mogelijke oplossingen voor complexe problemen. Tot zover lijkt sociaal leren als theoretisch notie een mooi middel richting een duurzame toekomst. Er zit echter een risico binnen sociale leerprocessen: de groep of het netwerk kan in een conflict verzeild raken, over richting, over keuzes, eigenlijk over van alles. Het effectief benutten van zo'n conflict kan gezien worden als de grote uitdaging van sociaal leren. Dit proefschrift is een weergave van een reis langs diverse regionale governance netwerken in Nederland, om beter te begrijpen hoe de problemen en uitdagingen van sociale leerprocessen zich tonen, en welke randvoorwaarden en oplossingen zich aandienen. De overkoepelende onderzoeksvraag is: Wat bevordert sociale leerprocessen in regionale governance netwerken die werken aan een transitie richting duurzaamheid?

Door het gebruik van een constructivistische actiegerichte onderzoeksmethode en de combinatie van verschillende onderzoekstechnieken (zoals retrospectieve analyse, reflexieve monitoring in actie, semigestructureerde surveys, open interviews en leergeschiedenissen) ontstonden inzichten over de hybride en discursieve ruimtes waar de actoren interacteren: er is soms een gebrek aan vertrouwen, en/of een gebrek aan commitment en/of een gebrek aan bereidheid om een gezichtspunt over oorzaken, gedrag of mogelijke oplossingen te herzien (*reframen*). Als er een gebrek aan zowel vertrouwen, commitment en reframen ontstaat in de samenwerking, kan er een stagnatie ontstaan, waarin het sociale leerproces tot stilstand komt. Dan worden de interacties minder open, komen ze tot stilstand of worden ze zelfs vijandig, waardoor de discursieve ruimte een strijdtoneel kan worden. Op dat moment kan gesproken worden van een significant moment, een tipping point, vanwaar een leerproces zich ten goede of ten kwade keert. De samenwerking in een netwerk kan daar ophouden, een netwerk kan uit

elkaar vallen. Of er vindt een heroriëntatie plaats op uitgangspunten, doelen, waarden, relaties et cetera. Als dat gebeurt, wordt het netwerk reflexief van karakter. Reflexiviteit is een concept dat gaat over een manier van leren waarbij onderliggende impliciete aannames en gedachten expliciet worden gemaakt, door te vragen: zijn we de goede dingen aan het doen, of zouden we beter iets (heel) anders kunnen doen? Reflexiviteit heeft de kracht om als individu, groep of netwerk anders naar een situatie of kwestie te kijken, waardoor percepties, kennis en relaties flexibel worden en kunnen veranderen.

Als de regionale duurzaamheidsnetwerken begeleid worden, door bijvoorbeeld een procesbegeleider/change agent, kan deze interventies plegen met specifieke instrumenten om het reflexieve gehalte van het netwerk en haar participerende deelnemers te vergroten. De deelnemers worden ondersteund om te heroriënteren op hun waarden, kennis, rollen en acties. Dat levert dikwijls verrassende inzichten op. Dit kan een reflexieve wending ('*reflexive turn*') opleveren, waardoor de deelnemers elkaar meer gaan vertrouwen, zich meer verbinden aan de doelen van de groep (commitment) en meer reframe. Dat zijn allemaal eigenschappen van een gezond en effectief sociaal leerproces. Sterker nog, als één van de emergente eigenschappen verandert, verandert de andere eigenschap vaak ook. Daarmee ontstaat een zichzelf versterkend dynamisch proces, wat leidt tot nieuwe kennis (waaronder waarden en aannames), nieuwe relaties (waaronder rollen) en nieuwe acties (waaronder besluiten).

Deze soort veranderingen in kennis, rollen en besluiten kunnen regionale duurzaamheidstransities versterken en versnellen. Ze worden concreet zichtbaar in het ontstaan en groeien van bijvoorbeeld nieuwe regionale energiecoöperaties die anders energie opwekken en delen, en burgerinitiatieven die minder voedsel verspillen, wat uiteindelijk leidt tot minder CO<sub>2</sub>-uitstoot.

In dit proefschrift zijn vier studies opgenomen die hieronder kort worden besproken.

### **Studie 1. Actie-onderzoek in een regionale ontwikkelings context: studenten als bruggenbouwers in een lerend multi-actor netwerk.**

Het doel van de eerste studie (Hoofdstuk 2) was te verkennen of actie-onderzoek kan bijdragen aan regionale ontwikkeling en of bruggenbouwers daarin belangrijk zijn. De achterliggende hypothese was, dat actie-onderzoek het sociale leerproces kan stimuleren en daarmee de benodigde nieuwe kennis helpt te ontwikkelen die nodig is voor duurzame regionale ontwikkeling. Het onderzoeksgebied was het Westerkwartier in de provincie Groningen, waar kwesties speelden over het onderhoud van het landschap & natuur, behoud van boeren en de economische vitaliteit van het gebied. Deze kwesties brachten veel mensen met elkaar in contact. Gebruikte methoden van onderzoek waren

actie-onderzoek en een retrospectieve analyse van het eerste jaar van samenwerking tussen kennisinstelling en het gebied. Het actieonderzoek stimuleerde de interacties en de samenwerking tussen de betrokkenen, omdat meer werd uitgewisseld over de betekenis van het gebied. Ook bracht het actieonderzoek mensen in beweging, om bijeen te komen en zich te beraden op hun mogelijke rol in het gebied. Hiermee kreeg het onderzoek meer waarde en impact. De retrospectieve analyse bevorderde het begrip van de onderzoekers over de dynamiek in het proces, en gaf inzicht in bijvoorbeeld de rol van studenten als bruggenbouwers. Ook werd steeds duidelijker dat bruggenbouwers van belang zijn in actieonderzoek omdat ze de uitwisseling van meningen, ideeën en waarden versoepelen. Bruggenbouwers blijken ook mogelijkheden te kunnen creëren voor nieuwe relatiepatronen tussen de deelnemers aan een netwerk. Dit geeft meer ruimte voor het sociale leerproces, wat meer kansen op het uitwisselen en ontwikkelen van kennis geeft, wat potentieel bijdraagt aan regionale ontwikkeling.

### **Studie 2. Sociaal leren in een regionaal innovatienetwerk; vertrouwen, commitment en reframen als emergente eigenschappen van interactie.**

De tweede studie (Hoofdstuk 3) is een diepere reflectie op het sociale leerproces, wat plaatsvond in de eerste studie. Er waren interessante dynamieken tussen de actoren te zien en deze leken toegeschreven te kunnen worden aan veranderingen in vertrouwen, commitment en reframing. De onderzoeksvraag was daarom: wat is de rol van vertrouwen, commitment en reframen in sociale leerprocessen in multi-actor innovatie netwerken? Een deelvraag daarbij was of vertrouwen, commitment en reframen elkaar beïnvloeden, ofwel intergerelateerd zijn? Gebruikte onderzoeksmethoden waren: een retrospectieve analyse en een ex-post-analyse. De retrospectieve analyse leverde een leergeschiedenis op waarin de sociale interactie- leerdynamiek zichtbaar werd op significante momenten. Ook leverde het inzicht over het gedrag van de actoren ten aanzien van vertrouwen, commitment en reframen in deze momenten. De conclusies van deze tweede studie zijn, dat vertrouwen, commitment en reframen beschouwd kunnen worden als emergente eigenschappen én als elkaar beïnvloedende eigenschappen van een sociaal leerproces. Ook geeft deze studie aanwijzingen dat het begeleiden van een sociaal leerproces belangrijk is. De resultaten zijn bij elkaar gevoegd in een integraal hypothetisch model, dat gebaseerd is op de interpretatie van de empirische gegevens.

### **Studie 3. Versterken van ecologisch bewustzijn door middel van hybride leren in vitale coalities**

In de derde studie (Hoofdstuk 4) wordt het concept van reflexiviteit verder onderzocht in de context van een overheidsprogramma gericht op Biodiversiteit. Binnen dit programma loopt een project in KinderStad. KinderStad is een kinderdagverblijf dat tracht het

ecologische bewustzijn van kinderen te vergroten, door ze uitdagende en natuurlijke speelomgevingen te bieden. Hierin werkt een klein maar zeer actief netwerk samen: bestuursleden, kinderleidsters, en ngo-medewerkers. Door de onderzoekers werden hun overleggen en activiteiten met kinderen gedurende een jaar gemonitord en geanalyseerd door middel van reflexieve monitoring en interviews. Hierdoor werd duidelijk welke vormen van sociaal leren, besluitvorming en bewustwording zich ontwikkelden in dit proces. De conclusie van dit onderzoek is dat het begrijpen van de dynamiek van sociaal leren inzicht biedt over de significante momenten, de zogeheten tipping points, waar een verandering zichtbaar wordt. Dit lijkt precies het moment waarop een sociaal leerproces dynamisch is en bijgestuurd en gefaciliteerd kan worden. Ook lijkt hierbij een rol van veranderagenten (change agents) van belang, omdat ze de reflexiviteit van de deelnemers kunnen verhogen.

#### **Studie 4. Reframen van de toekomst: de rol van reflexiviteit in governance netwerken in duurzaamheidstransities.**

De vierde studie (Hoofdstuk 5) richt zich op de relatie tussen de sociaal leren dynamiek, de uitkomsten van sociaal leren en de rol van reflexiviteit daarin. Deelvraag hierbij is: welke soort actoren kunnen het sociale leerproces versterken? Het Nederlandse Beleidsprogramma DuurzaamDoor ziet regionale duurzaamheidsnetwerken als potentieel belangrijke beleidsinstrumenten in het bevorderen van versnellingen in voedings-, energie- en economietransities. Besloten werd drie regionale duurzaamheidsnetwerken te monitoren in de dynamiek van emergente eigenschappen van het sociale leerproces tussen 2014 en 2016. Gebruikte methoden waren surveys, reflexieve monitoring in actie (RMA) in workshops en leergeschiedenissen op basis van interviews met sleutelactoren. De focus in dit onderzoek ligt op de rol van vertrouwen, commitment reframen en reflexiviteit. Het bleek dat '*reflexive turns*' (reflexieve keerpunten) de belangrijke momenten vormden voor een omslag in het sociale leerproces: op en door die momenten kon een netwerk weer verder ontwikkelen en leren. Het zijn ook momenten waarop het netwerk uit elkaar had kunnen vallen. Dat dit niet gebeurde in deze netwerken, leek samen te hangen met een bepaalde mate van reflexiviteit; die door sleutelactoren werd gefaciliteerd. Deze vrije actoren (change agents) bleken in staat om het netwerk te helpen bewuster te worden van hun gezamenlijke doelen en waarden, waardoor een herstel van vertrouwen, commitment en reframen kon ontstaan. Dit leidde tot een gezonder sociaal leerproces met effecten op de ontwikkeling van kennis, relaties en acties in het regionale duurzaamheidsnetwerk.

Alle studies in dit proefschrift wijzen op de essentiële rol van reflexiviteit in het realiseren van een optimale sociale leerdynamiek die deelnemers steeds in staat stelt te

werken aan vertrouwen, commitment en het reframe van de uitdagingen waar zij voor staan.

Ook blijken veranderagenten (*change agents*), hetzij als ongedwongen vragen stellende studenten, hetzij als een ingehuurde professionele NGO, hetzij als coördinator, een belangrijke rol te kunnen spelen in het faciliteren en versterken van de reflexiviteit in het sociale leerproces. Met name op sleutelmomenten (*tipping points*), als een sociaal leerproces dreigt te verzanden, kan een reflexieve interventie van belang zijn om door te kunnen werken aan de ontwikkeling van nieuwe kennis (waaronder besluiten), relaties en acties. Het gezamenlijk leren verder helpen naar impact lijkt nodig voor regionale duurzaamheidstransities op het terrein van voeding, economie en energie.

De wetenschappelijk-theoretische bijdrage van dit proefschrift wordt gezien als het beter begrijpen van de dynamiek van sociaal leren en de rol van met name vertrouwen, commitment, reframe en reflexiviteit daarin. Ten tweede is meer zicht ontstaan op de waarde van *change agents* en hun interventies en invloed in het sociale leerproces. De empirische waarde van dit proefschrift is de verhoogde impact die sociale leerprocessen in duurzaamheidsnetwerken in regio's hebben, gezien de waarneembare resultaten in nieuwe kennis, relaties en acties.



## About the author

Anne Jifke Sol was born June 20, 1961 in The Hague, the Netherlands. She studied Rural Development Sociology at Wageningen University. Her master's thesis focused on the changing (self) perceptions of migrants from Ghana in the Netherlands. After graduation in 1993, she worked for different consultancy organizations such as Nieuwland Advies and NICE and the Nyenrode Institute for Cooperative Entrepreneurship as a project leader. Here she developed knowledge about rural development, new cooperatives and marketing of regional products. In addition, this induced her motivation and curiosity about the success factors of regional vitality and collaboration between different stakeholders on issues of nature, farming and food. In 2002, she managed an innovative educational project in the province of Groningen, where many actors got involved and many exciting events emerged. This made her aware of the role of external independent process facilitators. In 2005, she started her own consultancy company, called Samenwerking op Landelijk gebied (SOL). From this position, she worked as an external partner and reflector and was able to monitor and facilitate dynamic social interactions and social learning processes in different regions and domains in the Netherlands. This made her wonder what the deeper conditions for effective collaboration and learning would be. This was the start of her part-time PhD journey at Education & Competence Studies (ECS) at Wageningen University, which she combined with her part-time consultancy work. In the meantime, she took several courses in becoming trainer and coach of network dynamics and personal development, in order to be able to guide complex regional innovation processes. Nowadays, she is monitoring, analyzing and coaching new governance networks where civil servants, teachers, researchers, citizens and entrepreneurs interact and co-create new sustainable knowledge and actions. Moreover, she loves it.



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There must be peace in the nations.  
If there is to be peace in the nations,  
There must be peace in the cities.  
If there is to be peace in the cities,  
There must be peace between neighbours.  
If there is to be peace between neighbours,  
There must be peace in the home.  
If there is to be peace in the home,  
There must be peace in the heart.*

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