Sharing lifeworlds and creating collaborative cultures

Challenges for the advisory system in order to contribute to a sustainable farm development

Jenny Höckert
Faculty of Natural Resources and Agricultural Sciences
Department of Urban and Rural Development
Uppsala

Doctoral thesis
Swedish University of Agricultural Sciences
Uppsala 2017

Acta Universitatis agriculturae Sueciae
2017:106

ISSN 1652-6880
ISBN (print version) 978-91-7760-102-9
ISBN (electronic version) 978-91-7760-103-6

Print: SLU Service/Repro, Uppsala 2017

Sharing lifeworlds and creating collaborative cultures. Challenges for the advisory system in order to contribute to a sustainable farm development

Abstract

Today's agricultural advisory system in Sweden is poorly adapted both to supporting farmers in issues concerning long-term strategies and to contributing to sustainable farm development. This thesis claims that two interrelated reasons for this are the reductionist knowledge possessed by the advisors and the structural arrangements of the advisory system. While the challenges facing agriculture are systemic, the contemporary advisory services are built on compartmentalised knowledge and non-systemic models. Though different measures to change perceived shortcomings have been attempted, the desired changes have not materialised. The thesis reports a multi-method study of projects and change processes that have occurred in the advisory system over the past two decades. Data has been gathered through case studies, semi-structured interviews, literature reviews and discourse analysis. Based on eight cases analysed through the theoretical lenses of systems thinking, systems boundaries, loops of learning, orders of change, organisational culture and epistemology, this thesis has sought to explain why the desired changes have not materialised. To understand the context in which the cases have occurred, the thesis provides a historic narrative of the evolution of the system. The analysis examines the advisory system at three different levels–the advisory system at large, the advisory organisations, and the advisory services as they are delivered–and then discusses these in relation to sustainability challenges faced by agriculture. One reason shown here for the change processes not having the desired effect is the failure to make thorough problem descriptions and system boundaries around the problematiques. Moreover, the system is shown to have suffered from an unreflected idea of what is needed to change a culture from individual to collaborative. The thesis highlights the lack of spaces for reflection corresponding to higher loops of learning at all system levels as an obstruction to development within the system. To address issues of a long-term character such as sustainability in advisory services, this thesis advocates the need for broadening of the epistemology underpinning today's advisory system from one based on explicit knowledge possessed by individuals to one that also includes the knower and the knowing. Such development would both demand and create the collaborative cultures needed to address the systemic issues faced by agriculture.

Keywords: agricultural extension, advisory service, organisational culture, learning, systems thinking, epistemology, lifeworld, Sweden

Author's address: Jenny Höckert, SLU, Department of Urban and Rural Development, P.O. Box 7012, SE-750 07 Uppsala, Sweden

Sharing lifeworlds and creating collaborative cultures. Challenges for the advisory system in order to contribute to a sustainable farm development

Sammanfattning

Dagens lantbruksrådgivningssystem i Sverige är dåligt anpassat för att stödja lantbrukare i frågor som rör långsiktiga strategier samt med att bidra till en hållbar utveckling på gårdsnivå. Avhandlingen hävdar att två sammanhängande orsaker till detta dels är den reduktionistiska kunskap som rådgivarna besitter, dels rådgivningssystemets strukturella uppbyggnad. Medan lantbrukets utmaningar är systemiska, bygger dagens rådgivningstjänster på ämnesuppdelade kunskaper och icke-systemiska modeller. Även om olika åtgärder för att förändra upplevda brister har vidtagits, har önskade förändringar inte förverkligats. Avhandlingen är en multi-metodologisk studie av projekt och förändringsprocesser som ägt rum i rådgivningssystemet de senaste två decennierna. Data har insamlats genom fallstudier, semi-strukturerade intervjuer, litteraturstudier och diskursanalys. Baserat på åtta fall och med hjälp av ett teoretiskt ramverk bestående av systemtänkande, systemgränser, lärandeloopar, förändringsordningar, organisationskultur och epistemologi, har avhandlingen försökt förklara varför önskade förändringar inte har förverkligats. För att förstå det sammanhang i vilket fallen har ägt rum, ger avhandlingen en historisk skildring över systemets utveckling. Analysen granskar rådgivningssystemet på tre olika nivåer–rådgivningssystemet i stort, rådgivningsorganisationerna och rådgivningstjänsterna–och diskuterar dessa i förhållande till de hållbarhetsutmaningar som lantbruket står inför. En anledning som framförs till varför förändringsprocesserna inte har haft önskad effekt, är att man misslyckats med att göra noggranna problembeskrivningar och sätta relevanta systemgränser kring problemen. Systemet har även visat sig lida av en oreflekterad uppfattning om vad som krävs för att förändra en organisationskultur från individualistisk till en som präglas av samverkan. Avhandlingen framhåller avsaknaden av arenor för reflektion, motsvarande de högre lärandelooparna på alla systemnivåer, som hinder för utveckling av rådgivningssystemet. För att rådgivningstjänsterna ska kunna hantera frågor av långsiktig karaktär, såsom hållbarhet, förespråkar avhandlingen behovet av en breddning av epistemologin som ligger till grund för dagens rådgivningssystem–från en som bygger på enskilda personers explicita kunskap, till en som också innefattar kunskapsbäraren och kunskapandet. En sådan utveckling skulle både kräva och skapa de samverkanskulturer som behövs för att kunna hantera de systemiska utmaningar som lantbruket står inför.

Nyckelord: lantbruksrådgivning, rådgivningstjänster, organisationskultur, lärande, systemtänkande, epistemologi, livsvärld, Sverige

Författarens adress: Jenny Höckert, SLU, institutionen för stad och land,
Box 7012, 750 07 Uppsala

Dedication

To all who are struggling to challenge and change prevailing structures

I am only one,
but still I am one.
I cannot do everything,
but still I can do something.
And because I cannot do everything
I will not refuse to do the something I can do.
Edward Everett Hale

In the middle of the forest there's an unexpected clearing that can only be found by those who have gotten lost.
Tomas Tranströmer

Acknowledgements

‘When are you finished?’ I don’t know how many times I have heard that question from different people. I find it a really tricky question to answer. How do you know when a thesis is good enough? When is it time to put a full stop? All I know is that this is what the thesis looks like right now. And that this version differs from yesterday’s. In the poem *Romanesque Arches*, the Swedish poet Tomas Tranströmer wrote: “You’ll never be complete, and that’s as it should be”. There is always more to learn about a phenomenon–more aspects to highlight or new theoretical lenses to look through. I look forward to doing it in other forms than within the framework of an academic dissertation. However, I am happy and proud of myself that I have completed this academic trip, despite moments of despair and the feeling that I have sometimes been at the limits of my own capacity. In these moments, I have repeated following two mantras: “A ship in harbor is safe, but that is not what ships are built for” and “This too, shall pass”. I have never been closer.

Writing a thesis is in many parts a lonely pursuit. On the other hand, it is the result of the efforts of several people. Although I have been the one in front of the computer writing the very words, my underlying thoughts are a result of numerous talks with many people. Without these, the dissertation would have looked very different. I would like to thank the people who in different ways have helped me reach this longed-for full stop.

I am most indebted to the people who enabled me to collect my empirical data. Thank you to all the farmers, advisors and others in the Swedish advisory system whom I have met in the different cases, for inviting me to your homes and workplaces and giving me your time to conduct my interviews. It has been a privilege and a pleasure to become acquainted with your thoughts in different agricultural-related issues. You have taught me so much about the Swedish agri-food system. As mentioned above, this thesis is the product of many other

people's engagement. To some of you, I would like to express my gratitude here and now.

Sri–the greatest cosmopolitan I know. Thank you for letting me go on this trip and for never losing hope in me as a PhD student. Thank you also for pushing me through this last year and for introducing me to literature that I would not have come across without your help.

Magnus–for being so much more than a supervisor. Thank you for our numerous talks, which always span over large and often unexpected topics. I admire your knowledge in widely different subject areas. Talking with you is never boring. You have an amazing ability to make me stretch my mind and for making me feel smarter than I am…

In the beginning of my PhD study, my supervisor group also consisted of Cecilia Waldenström and Carl-Anders Helander. Thank you for your helpful tips.

I would like to thank my opponent at the 50% and seminar, Egon Noe, for constructive comments. Further on, a sincere and warm thank you to Marianne Cerf, who did not only was my opponent at the 90% seminar, but who also read my manuscript once more a couple of months later and who gave me constructive and insightful comments and recommendations to help me finish my thesis. Thanks also to Steffen Böhm, who read and gave me comments and suggestions for improvements on a late version of the cover piece. Besides these persons, also Annette Löf and Hanna Bergeå gave me valuable and useful comments on the final seminar. Mark Cruickshank has edited by English with great patience and humorous comments.

From an administrative point of view, I have been a part of the Department of Urban of Rural Development, belonging to the Division of Environmental Communication. Thank you for letting me be a PhD student in exile, and for always making me feel welcomed when I popped up at the department. For many years Hanna was my boss, and a brilliant one at that. Thank you for everything that you have done for me in that role. More than that, I am happy to have you as a friend. Thank you for never ceasing to believe in my ability to finish my thesis. Thank you also to David for always being friendly and service-minded in computer-related issues, and to Anni for helping me get the thesis into a publishable state.

For a couple of years I had an office at SLU in Skara, where I got to know Anna-Karin and Therese, and who became good friends. Thanks for your hugs, your curious questions and for your encouragements. Thanks also to Margareta, not least for helping me with practical arrangements in connection with my public defence, and to Ylva, who inspired me to write my story.

I have the privilege to be surrounded by family and friends, who in different ways have contributed to the finalising of this thesis. Although I hope you know who you are and what you mean to me, there are some of you that I would like to mention here. Per and Linda, you are two of the most beautiful people I know. Thank you for being my fellow travellers in life and for sharing my laughter and drying my tears. Mia, for the very same reasons. Åke, for good dinners, good wine and nice company. Maria, for your numerous phone calls and supportive words and because you have taught me that life is striped, even when it is hard. Roland−the father of my children. For giving me them and for continuously teaching me a lot about what it is like to be a farmer. I admire your creative brain and entrepreneurship. Emma, Björn, Anders, Bodil, Maria, Sofia, Johan, Marie, Anna, Pontus, Anna, Svante, Fredrik, Andreas, Jenny, Albin and Hans−for being caring and beautiful friends. Karin−for your concern and for keeping my colds in check. Gunvor and Tore−for always being helpful and the world's best grandmother and grandfather to my children. My sisters in Ladies Circle Skara and co-chorists in Järpåskören for offering nice moments full of energy and love.

Dad and my angel mum−for teaching me to never give up and to believe in myself.

Linda and Sofia−my beloved and beautiful sisters and their respective families. You are the best and most helpful fan club one could ever wish for. I love you guys!

Sonja and Astrid−my beautiful and strong daughters. When I am with you, I know where I belong. You make me complete. To quote my niece Agnes: Jag älskar er från cykeln och tillbaka!

'How do you end a thesis?', I asked my dear friend Maria a couple of weeks ago. Her answer was immediate: 'By quoting Churchill', she said. And so, I will: "Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

Contents

List of publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text:

I Ahnström*, J., Höckert, J., Bergeå, H. L., Francis, C. A., Skelton, P. and Hallgren, L. (2008). Farmers and nature conservation: What is known about attitudes, context factors and actions affecting conservation? *Renewable Agriculture and Food Systems*, 24(1), pp. 38-47.

II Höckert*, J., Ljung, M. and Sriskandarajah, N. From collaborative heroes to collaboration as a culture: The importance of internal collaborative skills for sustained collective action. *Manuscript*.

III Höckert*, J. & Ljung, M. (2013). Advisory Encounters towards a Sustainable Farm Development—Interactions between Systems and Shared Lifeworlds. *Journal of Agricultural Education and Extension.* Vol. 19. No 2, pp. 291-309.

IV Höckert*, J. & Ljung, M. Conducive environments for Collaborative cultures. What role for leadership in Swedish advisory organisations? *Manuscript*.

Papers I & III are reprinted with permission of the publishers.

The main findings of Paper II have been presented at the 9th European IFSA Symposium in Vienna in 2010.

* Corresponding author.

My contribution to the papers included in this thesis was as follows:

I In paper I, I took an active role in the development of the ideas, the planning and the accomplishment of the study. Ahnström and I made the data collection (in this case literature) and together with Bergeå we performed the majority of the analysis. I participated in the structuring and the processing of the material and took an active part in the different phases of the writing process.

II In paper II, I developed the idea together with Ljung. I planned the interviews, and Ljung and I conducted them together. I did the transcriptions and the main part of the analysis and writing. Ljung and Sriskandarajah were active discussants during the writing process.

III In paper III, I developed the idea together with Ljung. I planned and conducted the majority of the data collection. The analysis and writing were performed by both authors, but I did the major part of the writing.

IV In paper IV, I developed the idea together with Ljung. The interviews and transcriptions were planned and accomplished by me. Ljung was an active discussant during the entire process. Both authors were active in the analysis and theory development. The major part of the writing was carried out by me.

List of tables

List of figures

Abbreviations

AIS	Agricultural Innovation System
AKIS	Agricultural Knowledge and Information/Innovation System
CAP	Common Agricultural Policy
COM	Communication from the Commission
COST	European Cooperation in Science & Technology
Dir.	Directive (from the Government to a Committee)
EC	European Commission
EIP-AGRI	The European Innovation Partnership for Agricultural productivity and Sustainability
ESEE	European Seminar on Extension (and) Education
EU	European Union
EU-AGRI MAPPING	Mapping and foresight of agricultural and food research capacity in the new member states and in the candidate countries
FAO	Food and Agricultural Organisation of the United Nations
HS	The Rural Economy and Agricultural Society
IFSA	International Farming Systems Association
LRF	The Federation of Swedish Farmers
NGO	Non-Governmental Organisation
NPM	New Public Management
PLA	Participatory Learning and Action
PRO-AKIS	Prospects for Farmers' Support: Advisory Services in European AKIS
Prop.	Government Bill
R&D	Research and Development
SCAR	Standing Committee on Agricultural Research
SCB	Statistics Sweden
SFS	Swedish Statue Book
Skr.	Message from the Swedish Government to the Parliament

SLU	Swedish University of Agricultural Sciences
SOLINSA	Support of Learning and Innovation Networks for Sustainable Development
SOU	Official Reports of the Swedish Government
ToT	Transfer of Technology
UN	United Nations
UNCED	United Nations Conference on Environment and Development (also known as the Rio de Janeiro Earth Summit)
WCED	World Commission on Environment and Development
WWI	World War I
WWII	World War II

1 Introduction

1.1 The scene

1.1.1 The politics that is framing Swedish agriculture

Sustainable development has been a part of the political agenda since 1987, when the Brundtland report *Our common future* launched the expression worldwide. In that report, sustainable development is defined as "development that meets the needs of the present without comprising the ability of future generations to meet their own needs" (WCED, 1987). That report formed the basis of the decisions taken at the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro. The UNCED conference came to give international recognition to the principle that all development should be sustainable. According to most people using the concept, sustainable development consists of three interdependent parts: ecological sustainability, social sustainability and economic sustainability (Redclift, 2000; Olsson, 2005). These parts are to be coherent, mutually support each other and balanced when making decisions. FAO has defined sustainable agricultural development as:

> The management and conservation of the natural resource base, and the orientation of technical change in such manner as to ensure the attainment of continued satisfaction of human needs for present and future generations. Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. (FAO, 1988)

In the European Union, sustainable development has been one of the fundamental objectives since it was included in the Treaty of Amsterdam as an overarching objective of EU policies (EU, 1997), and in Sweden sustainable development is an overall objective of government policy (Skr. 2003/04:129).

Since Sweden joined the EU in 1995, however, it has lacked a national agricultural policy. Instead, agriculture ever since has been controlled by the Common Agricultural Policy (CAP) in the EU and national environmental objectives (Prop. 1997/98:145; Prop. 2000/01:130; Prop. 2004/05: 150; Prop. 2009/2010:155). The overall goal of this environmental policy is to hand over to the next generation a society in which the major environmental problems in Sweden have been solved, without increasing environmental and health problems outside Swedish borders. According to the Swedish strategy for sustainable development (Skr. 2003/04:129), the starting point for the policy direction connected to agriculture and food is that the production should be governed by consumer demand. In 2013, the Swedish government appointed a commission to investigate the possibilities for future viable agricultural and horticultural production, however not primarily in the form of financial support (Dir. 2013:20). Based on two official reports of the Swedish government (SOU 2014:38; SOU 2015:15), the Government proposed a bill featuring a strategy for a sustainable and competitive food chain in January 2017 (Prop. 2016/17:104). That strategy is to be seen as a platform from which the politics will be developed until 2030. The overall aim of the strategy is proposed to be "a competitive food chain where the total food production is increasing, while relevant national environmental objectives are reached, in order to create growth and employment and contribute to a sustainable development in the whole country" (Prop 2016/17:104).

The overarching objectives in the present Rural Development Programme for Sweden 2014-2020, which is the policy most evidently affecting Swedish agriculture right now, are threefold: i) to promote agricultural competitiveness, ii) to ensure sustainable management of natural resources and climate actions, and iii) to achieve balanced territorial development of economies and communities in rural areas (Jordbruksverket, 2016). The ambition is that these objectives, in turn, will contribute to the EU common strategy *Europe 2020: A strategy for smart, sustainable and inclusive growth* (COM, 2010). One part of that strategy, which involves agriculture to a large extent, is the fostering of a bio-based economy (COM, 2011a, 2011b). For agriculture, such transition implies both benefits and risks (COM 2011a, 2011b). Since June 2016, the transition towards a circular and bio-based economy is one of five strategic innovation partnership programmes developed by the Swedish government that will help to meet a range of societal challenges faced by Sweden (Regeringen, 2016).

Despite the policy focus on sustainability during the past few decades, the most obvious keyword in Swedish agricultural discourse during this time is *competitiveness* (Prop. 2016/17:104; Jordbruksverket, 2015a; SOU 2015:15; SOU 2014:38; Jordbruksverket 2014:26; Jordbruksverket *et al*., 2014; Lundell,

2014; Ekman and Gullstrand, 2006; Motion 2000/01: MJ233; EC, 1997; Prop. 1997/98:142). Focus within this discourse is the importance of creating more equal conditions for agricultural production in the EU in terms of legislation, taxes and availability of comparable inputs. For the past 20 years, policymakers have responded at many levels, from changing the preconditions for farming, to introducing market-based initiatives to stimulate farmers' entrepreneurial skills and innovative capacity. The competitiveness discourse and focus on the economy can be clearly traced in advisory efforts during the past few decades, which is not as clear when it comes to the sustainability discourse.

1.1.2 Development within Swedish agriculture

Just as in other countries with an industrial agriculture, Swedish agriculture is undergoing an extensive structural rationalisation (EC, 2011; Hazell and Wood, 2008; Statistics Sweden *et al*., 2012). Increased international competition, changes in consumer preferences, and a focus on cost reduction and economy of scale have had consequences at many levels of farming and the farming system (Statistics Sweden *et al*., 2012; Edenbrandt, 2012; Lundell, 2014; Jordbruksverket, 2015b). Perhaps the most obvious of these in Sweden is the trend towards fewer but bigger farms (SCB, 2012; Lundell, 2014). Between 1990 and 2013, the numbers of Swedish farm holdings and annual working units have decreased by approximately 30% (Table 1).

Table 1. *Development trends in Swedish agriculture (Statistics Sweden, 2016).*

	1990	1999	2007	2010	2013	Development 1990-2013
No. of farm holdings	96 945	80 345	72 609	71 091	67 146	-31%
No. of persons employed (permanent and temporary)	196 440	177 068	177 615	178 928	172 689	-12%
No. of working hours, AWU (annual working units)	87 674	74 242	65 458	60 785	59 294	-32%

According to recent research at SLU, however, the transformation in agriculture is far more dramatic than what is seen in the official statistics (Lundell, 2015). The reason for this, Wästfelt claims, is that an agricultural property in the statistics is not the same as one in reality (Lundell, 2015). Wästfelt's research shows that in the plains, as many as 9 out of 10 farms have closed down during the last 25 years (Ingvarsson, 2014; Lundell, 2015).

After Sweden joined the European Union in 1995, the value of the Swedish food market had increased by 2% each year until 2011, while the value of Swedish food production had decreased by the same percentage (LRF, 2011a). It is not only the value of Swedish food production that is decreasing, but also the

volume (LRF, 2011a). While meat consumption has increased, several branches in livestock production have decreased since 1995, for example pork (-24%), milk (-10%) and beef (-7%) (Prop. 2016/17:104). According to LRF, the simple explanation for this development is imports. On the one hand, they claim, consumers with lower quality requirements or a limited budget select cheaper imported goods. On the other hand, consumers with high willingness to pay prefer more exclusive products, which are also to a large extent imported. At a deeper level, LRF claims that it is the lack of competitiveness in Swedish food production for both these market segments that is the real problem (LRF, 2011a). In this context it is worth noting that the Swedish self-sufficiency in food is one of the lowest in Europe. This negative trend has been apparent since 1990, when Swedish agriculture was deregulated and thus gave up its goal of food self-sufficiency. Since then, no governmental agency has had the overall responsibility for Swedish food security (Livsmedelsverket, 2017).

Recently, however, Sweden's low level of food self-sufficiency has become an issue on the political agenda. For the first time since 1990, the Swedish government has developed a national food strategy (Prop 2016/17:104), and the issue has also become a subject for discussion connected to civil defence and crisis preparedness (Almedalsveckan, 2016; Åström, 2017). Over the years, hundreds of thousands of hectares of arable land have been taken out of use and the share of self-produced food has dropped from 85 to just below 50 percent (Lundell, 2014). There is, however, a considerable variation of the Swedish market share between different food products: from 94% for egg production to 28% for lamb production (Jordbruksverket, 2017). There are thus good opportunities to increase the market share for Swedish farmers within the food sector.

The reasons for a farmer choosing to close down his/her farming business may of course vary, and indeed it is often for a combination of reasons (Nordström Källström, 2002, 2008). Nordström Källström (2002, 2008) has identified loneliness, vulnerability, non-equality and the lack of profitability as four key recurring factors that affect farmers adversely. According to market analyses, the profitability of Swedish farms lies below the long-term sustainable level needed to sustain employment and create growth (LRF Konsult, 2011). In 2012, almost 75% of Swedish farms made no profit or experienced negative results (LRF Konsult, 2013). According to LRF Consulting, this development has been the trend for the last 15 years. Although farm companies can cope with profitability pressure for a shorter time, a declining profitability over a longer period results in a closure (LRF Konsult, 2013).

1.1.3 The Swedish agricultural advisory system

This thesis unfolds in the Swedish agricultural advisory system. The development of this system and a presentation of its present structure will be described in Chapter 5. However, in order to understand the challenges faced by the Swedish advisory system, it is necessary to have a brief understanding of its structure from the beginning. As in every other country, the Swedish agricultural advisory system is part of a larger system—the Swedish AKIS (Agricultural Knowledge and Information/Innovation System). The definition of what an AKIS is and which different sub-systems together constitute an AKIS has been developing through the years (for a review, see for example EU SCAR, 2012). In the original formulations, an AKIS was described as:

> A set of agricultural organizations and/or persons, and the links and interactions between them, engaged in the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge and information, with the purpose of working synergistically to support decision making, problem solving and innovation in agriculture. (Röling and Engel, 1991)

More recently, the AKIS concept has evolved as it has acquired a second meaning (innovation), opening up AKIS to more public tasks and to the support of innovation (Klerkx and Leeuwis, 2009). In the recently completed European PRO-AKIS-project, an AKIS was defined as:

> A system that links people and organizations to promote mutual learning, to generate, share and utilize agriculture-related technology, knowledge and information. (Knierim and Prager, 2015)

The AKIS is thus an open system, which changes continuously. Rivera *et al*. (2005) distinguished the subsystems forming agricultural knowledge and the information system as agricultural producers, research, extension, education and support system. EU SCAR (2012), in turn, presents the system as agricultural knowledge and an innovation system in which, in addition to farmers, extension, education and research also comprise input suppliers, food processors, retailers, consumers and various supporting services such as accountants, banks, media, and so on. However, this thesis focuses on the advisory system part of the Swedish AKIS—in the definitions above referred to as ‘extension’.

Essentially, the Swedish agricultural advisory system can be divided into three categories (Yngwe, 2014); the commercial advisory service, the selling advisory service and the free advisory service. The actors within the commercial advisory service, who sell services as a product, deal with production-related issues for which the farmers themselves have to pay market

price. This group consists of three main national actors, which employ between 700-1,500 employees. Besides these, there are 60-70 minor, local advisory organisations (Yngwe, 2014). The selling advisory service is provided by the industry and is connected to either the products/supplies sold by the respective company or to different kinds of contract farming. The free advisory service is related to questions concerning 'public goods' and is mainly funded by the government. These services, which are often a part of the Rural Development Programme or connected to the national environmental objectives, can be provided both by the actors within the commercial advisory services and by advisors employed by the County Administrations. Besides these three categories, the Federation of Swedish Farmers (LRF) sometimes offers free advisory services to their members in different matters. Since the establishment of the first private advisory organisation in the 1980s, the Swedish advisory system has become diverse and now consists of many actors that provide and/or sell services to farmers. This trend is seen also at international level. According to Rivera and Alex (2005), efforts to revitalise agricultural advisory services during the past decade have resulted in a variety of institutional reforms, such as decentralisation, contracting/outsourcing, public-private partnerships and privatisation. The term 'pluralistic' has been coined to capture the emerging diversity of institutional options in providing and financing agricultural advisory services (Birner *et al*., 2009). The Swedish advisory actors are often divided by subject discipline/expertise, with a relatively low degree of mutual collaboration.

1.2 Learning that promotes sustainability in agriculture

The consequences of the ongoing change processes for the agricultural system are not easy to overlook, and depending on which aspect studied, there will be success stories and failures as well as winners and losers. No matter what one thinks of the ongoing trend, there are several reasons to limit the progress of the rationalisation process as well as keep a certain number of farmers in a given area. From a sustainability perspective, the knowledge needed to promote more sustainable forms of agriculture is described as *complex*, *diverse* and *local* (Leeuwis, 2000). Röling and Jiggins (1994) characterise sustainable practices as complex and knowledge-intensive, as also acknowledged by others (Ingram, 2008; Laurent *et al*., 2006). In order to end up with an ecologically sound agriculture, Röling and Jiggins (1998) emphasise the importance of focusing on the whole farm and also taking even higher system levels into account. Additionally, Wästfelt claims that the efficiency in agriculture is a bit paradoxical, as we are dealing with two

different kinds of efficiency (Lundell, 2015). In a smaller area with more control, timing and effort, higher yields per unit area can often be obtained, while in a larger area with large machines, a higher yield per working hour can be achieved. Wästfelt states: "Farmers who strive towards larger units are labour efficient, but from a global food security perspective, we should strive towards smaller units and not greater" (Lundell, 2015). The farmers themselves do also benefit from being active in an area with other farmers. According to Ekman and Gullstrand (2006), farms that are situated in a cluster are expected to have a positive impact on each other and thus on the business' chance for survival and growth. A farm that lies in a cluster of other similar farms can take advantage of the available skills and labour in the region. Also, personal contacts between farmers can be an advantage for information exchange and cooperation (Ekman and Gullstrand, 2006).

Many Swedish farmers have realised that in order to run a farm enterprise that is economically viable, ecologically sound and socially acceptable, the different branches of the farm business must ensure that the output of the whole farming system does not become sub-optimal. In order to be successful, one must be both flexible and capable of developing a long-term farm strategy. The challenge for farm management is thus to achieve a balance between long-term adaptability and short-term efficiency (Lev and Campbell, 1987; Giampietro, 1997). Darnhofer *et al*. (2010) have shown that learning, flexibility and diversity, in their various forms, play a key role in the strategies of farm households to cope with change. They claim that learning to live with change and uncertainty requires a fundamental conceptual shift, from assuming that the world is in a steady state to recognising that unexpected change is the rule (Darnhofer *et al*., 2010). The goal of these strategies is both to recognise the opportunities offered by change and to implement them by initiating transition processes (Darnhofer *et al*., 2010).

1.3 Challenges for farmers and advisory organisations

Given the scene and what is known about the knowledge needed to promote sustainability in agriculture, it becomes obvious that the Swedish agricultural system faces many challenges. Depending on which system level or actor is in focus, the challenges may differ (EU SCAR, 2012). For the agricultural system at large, the main challenge in Sweden is to reverse the negative trend described earlier and instead contribute to a sustainable agricultural development. According to Röling and Jiggins (1998) and EU SCAR (2012), today's AKIS does not meet the criteria for a sustainable development of

agriculture. EU SCAR (2012) even describes the current state of agricultural knowledge systems in Europe as:

> Currently unable to absorb and internalise the fundamental structural and systemic shifts that have occurred. The remaining publicly funded AKIS appear to be locked into old paradigms based on linear approaches and conventional assumptions.

In order to meet this main challenge, the actors within the Swedish AKIS will need to engage in collaborative learning processes on different levels (Pretty, 1995; Röling and Jiggins, 1998; Ljung, 2001). However, there are of course actions that could be taken on the advisory organisational (as well as individual) level as well.

The challenges faced by the farmers are also directly or indirectly affecting the agricultural advisors and their organisations. In order to meet the farmers' needs, the advisors have to relate to them in their services. One way to clarify the challenges that the farmers, and thereby also the advisors and their organisations, face on a daily basis, is to talk about the tensions they constantly have to deal with. These could be, for example: long-term goals/adaptability vs. short-time profitability/efficiency, conservation vs. production, business-as-usual vs. innovation, parts vs. the whole and farm production vs. the whole life situation. Besides this, they of course have to follow the regulations stipulated for agriculture and take the societal goals into account. The call for a whole-farm approach in extension has been one of the hallmarks of the Farming Systems movement since the 1980s (Collinson, 2000), and this was noted also in Sweden in the 1990s (Nitsch, 1994a). However, it was not until recent years that actors within the Swedish agricultural advisory system understood that the forms of advisory service have to change in order to better correspond to the demands of the farmers and of wider society.

As mentioned earlier, the Swedish advisory system is characterised by being rather diverse with many actors and with a relatively low degree of mutual collaboration, and likewise, the work within the organisations does not seem to be characterised by collaboration among the advisors to any significant extent. Because of the structural arrangement found in advisory organisations built around vertically positioned knowledge areas, the competence among advisors and how the services are packaged, and the individualistic culture that characterises the group of advisors, the advisors tend to focus on discussing issues concerning current decision-making of a here-and-now character (Lindblom and Lundström 2014) rather than strategic development and long-term sustainability. The lack of a holistic approach to service provision entails that the average farmer maintains several advisory contacts, and that the services

are seldom coordinated. With such a system, the farmers are left alone with the task of creating added value from the services paid for and with the struggle to search for coherence in their farming enterprise (c.f. Laurent *et al*., 2006). However, if the advisory organisations are to provide services that will not just help the farmer with limited here-and-now-questions, but that grasp the different dimensions of farming and develop them into a concerted and sustainable whole, then both organisational and individual change are needed. To succeed in this endeavour, the Swedish advisory organisations face at least a two-pronged challenge: i) to develop their services in such a way that these correspond better to the complex situation to be managed by the farmers, and ii) to find organisational structures that are conducive to the work they will accomplish.

1.4 This thesis—a thesis about the Swedish agricultural advisory system

1.4.1 Defining advisory services

Throughout history, there have existed different types of agricultural knowledge exchange. Defining agricultural advisory services has been a matter of academic discussions for a long time, and there is an extensive literature on the subject. For a thorough review of the development of the subject, see for instance Leeuwis (2004). The word *extension* has its roots in academia and its common use was first recorded in Britain in the 1840s in the context of 'university extension' or 'extension of the university'. The activity was developed into a well-established movement, in which the university extended its work beyond the campus. Influenced by the activities in Britain, the term 'extension education' has been used in the United States since the turn of the 20th century to indicate that the target group for university teaching was not to be restricted to students at the university, but was also to be extended to people living elsewhere in the state.

Even if the American term *extension* is well established in English-speaking countries, there is a plethora of words in other languages that describe similar phenomena. In 1981, Anne van den Ban wrote:

> The English language term, extension, like the French vulgarisation, suggests the popularization of knowledge. The German term Förderung means 'furthering' while the Koreans think of extension as rural guidance. Both imply stimulation of desirable agricultural developments. The Dutch voorlichting can be translated as 'lighting the way', and the Indonesian penyuluhan is a more poetic 'agricultural illumination', underscoring the insight and learning that extension brings. (van den Ban, 1981, p. 293)

Since the 1990s, however, there has been a change in the choice of words to describe agricultural knowledge exchange activity. In many countries, *agricultural (and/or) rural advisory service* is spoken of rather than *extension* (from *voorlichting* to *advise* in Dutch, from *extension* to *advice* in English, from *vulgarisation* to *conseil* in French, from *Förderung* to *Beratung* in German (Labarthe *et al*., 2013)). In Swedish, the word *rådgivning* is used, which means *giving advice.*

Just as there has been a change in the terminology used to label the advisory activity, there have also been a multitude of definitions that have tried to capture the phenomenon. Each of these definitions can be seen as a product of its time. The early definitions of extension are strongly influenced by the 'enlightenment thinking':

> Extension is a service or system which assists farm people, through educational procedures, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living and lifting educational standards. (Maunder, 1973, p. 3)

> Extension is an ongoing process of getting useful information to people (the communicative dimension) and then assisting those people to acquire the necessary knowledge, skills and attitudes to utilise effectively this information and technology (the educational dimension). (Swanson and Claar, 1984, p. 1)

These definitions mirror the belief in science-based innovations as the engine for modernisation and development, and the persuasion that if only the farmers adapted those findings, farmers and agriculture would benefit more or less automatically. Today, science has become much more contested, and the belief in science as an objective engine to progress has eroded significantly (Leeuwis, 2004). In line with the 'enlightenment thinking' and Rogers' (1995) ideas about the 'diffusion of innovations' but also an emerging understanding that farmers could also learn from others' knowledge and experience, extension scientists moved from the idea of regarding extension as 'education' to supporting decision making and/or problem solving (Leeuwis, 2004).

> Agricultural extension: Assistance to farmers to help them identify and analyse their production problems and to become aware of the opportunities for improvement. (Adams, 1982, p. xi)

> Extension involves the conscious use of communication of information to help people form sound opinions and make good decisions. (van den Ban and Hawkins, 1996, p. 9)

The definitions mentioned are normative definitions, as they express what the authors would like extension to be or to do: that is, to 'help' or 'assist' to

provide ‘good decisions’. During the 1980s, it was recognised that extension could not be regarded simply as ‘help’, as extensionists were also used to exert state control over farmers. It was then realised that extension was also an intervention that was undertaken and/or paid for by a party that wished to influence people in a particular manner, in line with certain policy objectives (Leeuwis, 2004). Thus, there could be tension between the interests of the extension organisation and the farmer. To capture these insights, new definitions of extension emerged.

> Extension is a professional communication intervention deployed by an institution to induce change in a voluntary behavior with a presumed public or collective utility. (Röling, 1988, p. 49)

This definition still contains normative elements, as it implicitly points out what extensionists should not be involved in—such as for instance advertising or political propaganda. Röling and Kuiper (in Leeuwis, 2004) even point out that it is impossible to avoid normative elements in a definition of extension if one’s purpose is not only to study extension as a societal phenomenon, but also to inform extension practitioners on how they can do better. The ‘intervention’ definitions of extension have limitations since they start from the premise that extension derives from a semi-state institution that is concerned with public interest or public policy (Leeuwis, 2004). In Sweden, as well as in other countries, that does not describe the reality very well, since NGOs, cooperatives and private firms are also involved in extension activities.

During the last two decades, authors within the field of extension have proclaimed the need to redefine the concept further to better adapt it to today’s situation (Sulaiman and Hall, 2002; Leuuwis, 2004). Some authors have chosen to abandon the notion of extension (e.g. Röling and Wagemakers, 1998; Ison and Russell, 2000) since they feel that the word has misleading connotations. In line with this, some universities have renamed the field of Extension Science (or Agricultural Extension) to Communication and Innovation Studies. Due to the dissemination that the extension term after all still has, Leeuwis (2004) suggests the following definition:

> A series of professional communicative interventions amid related interactions that is meant, among others, to develop and/or induce novel patterns of coordination and adjustment between people, technical devices and natural phenomena, in a direction that supposedly helps to resolve problematic situations, which may be defined differently by different actors involved. (Leeuwis, 2004, p. 27)

In the book *Communication for Rural Innovation* (Leeuwis, 2004) Leeuwis looks at extension as "communication for innovation" and minimises the use of the terms 'extensionists' and 'extension workers' in favour of 'communication specialists', 'communication workers' and 'change agents'. Within the EU research programme PRO-AKIS[1], Labarthe *et al*. (2013) defined agricultural advisory services as:

> The entire set of organizations that will enable the farmers to co-produce farm-level solutions by establishing service relationships with advisers so as to produce knowledge and enhance skills. (Labarthe *et al*., 2013, p. 10)

When talking about agricultural advisory services in this thesis, the definition proposed by Labarthe *et al*. (2013) is relevant. In a similar way, the people working within agricultural advisory services will be referred to as *advisors*.

1.4.2 The thesis' positioning and contribution

As noted already, this thesis unfolds within the Swedish agricultural advisory system. From a Swedish perspective, research on advisory services directed at farmers is a rather unusual phenomenon. As far as I know, only three Swedish dissertations have touched upon the subject during the past 20 years. These are: Anders W Johansson's *Att förstå rådgivning till småföretagare*[2] (1997) (which does not have agriculture as a case, but which has its roots in that field), Cecilia Waldenström's *Constructing the world in dialogue* (2001) and Hanna Bergeå's *Negotiating fences—Interaction in advisory encounters for nature conservation* (2007). The focus of Waldenström's and Bergeå's dissertations are both the interactional level between the advisor and the farmer.

My interest during the PhD study has essentially been on the structural arrangements of this system, how these organisational structures seem to affect the content and form of the actual services provided by advisory organisations, and the services' ability to contribute to a sustainable farm development – that is, a farm that is economically viable, ecologically sound and socially acceptable. According to Prager *et al*. (2017), evaluations of advisory services in developed countries and in Europe are rare (Faure *et al*., 2012; OECD, 2015) and tend to focus on the farm level and specific advisory methods. There are also several studies that focus on the different roles that advisors can assume in their work (see for instance Ingram, 2008; Leeuwis, 2004; Klerkx

[1] PRO-AKIS is an acronym for Prospects for Farmers' Support: Advisory Services in European AKIS.

[2] Johansson's (1997) dissertation is in Swedish. In English the title reads *Understanding advice to small business owners*.

and Jansen, 2010). In recent years, a number of studies have been conducted at EU level concerning learning and innovation in agriculture, including the role and development needs of the AKIS (see for example PRO-AKIS (proakis.eu); SOLINSA (i.e. Home and Rump, 2015); EU SCAR (2012, 2013, 2015); EU-AGRI MAPPING (Chartier, 2007)). Apparently there is a strong need for learning more about different countries' AKIS and their ability to contribute to addressing the challenges faced by the agricultural sector. This thesis contributes with knowledge in that sphere, with the Swedish advisory system as the case. However, as the trend of privatisation in advisory services is found in many other countries as well (Labarthe and Laurent, 2013; Rivera and Alex, 2005), there are reasons to believe that the Swedish case can also provide lessons to be learned for other countries. Further, this thesis takes a look at the advisory organisations and their cultures and discusses them in relation to the challenges that need to be addressed. According to my knowledge, this is an angle that has not received much attention in earlier studies.

Birner *et al*. (2009) have developed a conceptual framework for the analysis of agricultural advisory services (Figure 1). They claim that instead of importing standardised models of advisory services that have worked elsewhere and are viewed as 'best practice', it is important to build capacity among policy-planners, managers and researchers to identify modes of providing and financing advisory services that 'best fit' the specific conditions and development priorities of the country (Birner *et al*., 2009). The idea with the framework is that it can be applied as a way to analyse and identify options in this 'best fit' challenge. The logic of their framework is as follows (Birner *et al*., 2009): Boxes A-D describe the contextual factors that influence how agricultural advisory services should be structured and organised (Boxes E-H) in order to reach high levels of performance (Box I). The ultimate impact of agricultural advisory services (Box K), however, depends on the actual change at farm level (Box J).

This thesis does not provide a systematic analysis of the Swedish advisory system as a whole, as described in the framework. Here it is rather used as assistance to clarify to the reader in which boxes the thesis contributes with knowledge about the Swedish advisory system. Using the boxes of the framework, this thesis mainly unfolds in boxes E, G and H and their relation to box I. However, Chapters 1 and 5 will give a presentation of the context (boxes A-D) which has formed and created the advisory system as it looks today. As the thesis is also a longitudinal study of the advisory system, the thesis will also discuss developments of the system, which is a factor that is not represented in the Birner *et al*. (2009)-framework.

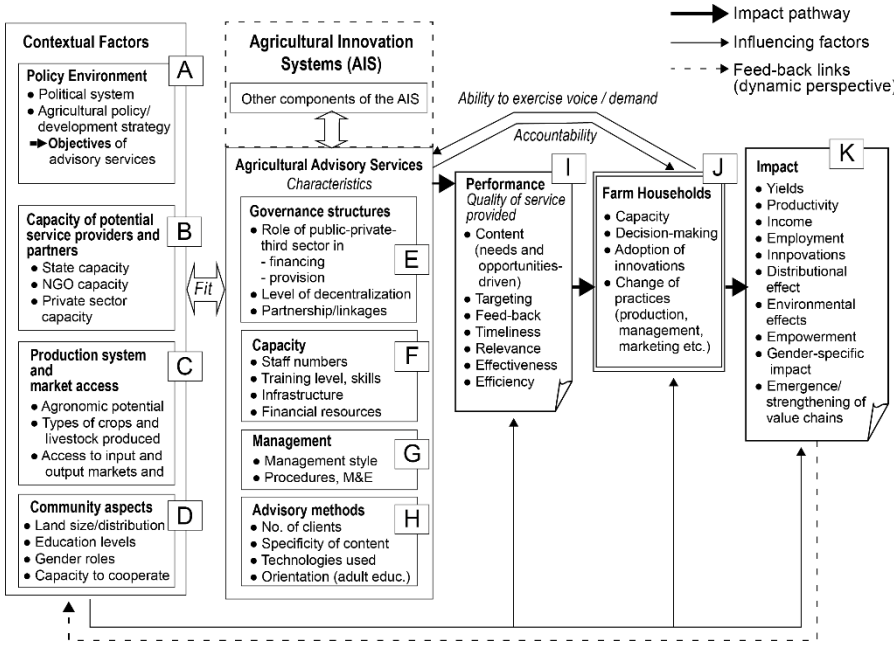

Figure 1. Conceptual framework for design and analysis of agricultural advisory services (from Birner *et al*., 2009).

1.4.3 The thesis' premises, aim, research questions and vision

Given the scene sketched in this chapter, the thesis can be said to be based on the following premises: As the body of farmers in Sweden become more and more educated, as the market and its forces remain more turbulent than ever and as new societal goals are put on agriculture, new demands will be (and are) placed on the advisors and their organisations. However, it seems as though the institutional arrangements inherited from history and the divide they have created between various advice-providing organisations, as well as the culture each of these organisations has developed, prevent the current development of relevant services to support a sustainable farm development.

The *aim* of the thesis is to assess the Swedish agricultural advisory system's ability to contribute to a sustainable farm development. The thesis will also discuss improvements of the system to enhance this ability.

Connected to the aim, the following research questions have been formulated:

- How has the Swedish advisory service progressed through history and responded to changes seen in agriculture?
- In what way has learning and communication in advisory organisations been adopted in practice?

- Why have advisory services not been developed that meet the challenges of sustainable farm development?

The *vision* of the research project is to contribute to the discourse concerning the role of advisory organisations, advisory service and the advisors and thus implicitly help to find sustainable pathways for Swedish agriculture.

1.4.4 Guide for the reader

This first chapter provides the context, or the scene, in which this thesis unfolds. It sketches the main features regarding the politics that is framing agriculture and presents the two main agricultural discourses: sustainability and competitiveness. The chapter also presents the development trends in Swedish agriculture and a brief presentation of the Swedish advisory system. After a review about what characterises learning that promotes sustainability in agriculture, a couple of challenges for the advisory system are formulated. The first chapter ends with a positioning of this thesis and presents the thesis' aim and research questions. In the following chapter I present my epistemological platform, which gives a background to the methodological platform that is presented in Chapter 3. The methodological platform consists of two parts; my methodological approach and a presentation of my research process, and the methods used for selection, data collection and analysis. In Chapter 4, I present the main theoretical concepts that have guided the analysis of the papers and the findings presented in Chapter 7. The main concepts are: systems thinking, system boundaries, loops of learning/orders of change and collaborative culture. I will also briefly mention power, as it has an impact on where boundaries are drawn and what kind of knowledge is perceived as valid. In Chapter 5, I give a presentation of the development of the Swedish advisory system and how it has been and still is connected to agricultural policies. Parallel to that, I present trends in extension from an international perspective in boxes. The chapter ends with a presentation of how the advisory system in Sweden looks today and its main actors. Chapter 6 presents a summary of the four papers while Chapter 7 presents the findings from the different cases and how those contribute to the thesis. In Chapter 8, I make a synthesis of the study as a whole, bringing Chapters 5, 6 and 7 together. The thesis ends with Chapter 9, in which I return to the research questions and discuss the findings through the conceptual framework presented in Chapter 4. In the discussion chapter, I also suggest some improvements to the advisory system. Chapter 9 ends with some conclusions and methodological reflections.

The relation between the papers and the cover piece is presented in Figure 2. While the four papers are based on parts of the empirical data, the cover piece includes findings from all cases. Through the conceptual framework presented in Chapter 4, both the findings and the papers are analysed, and these are then discussed in relation to the research questions. The papers thus both inform and serve as examples in the cover piece discussion.

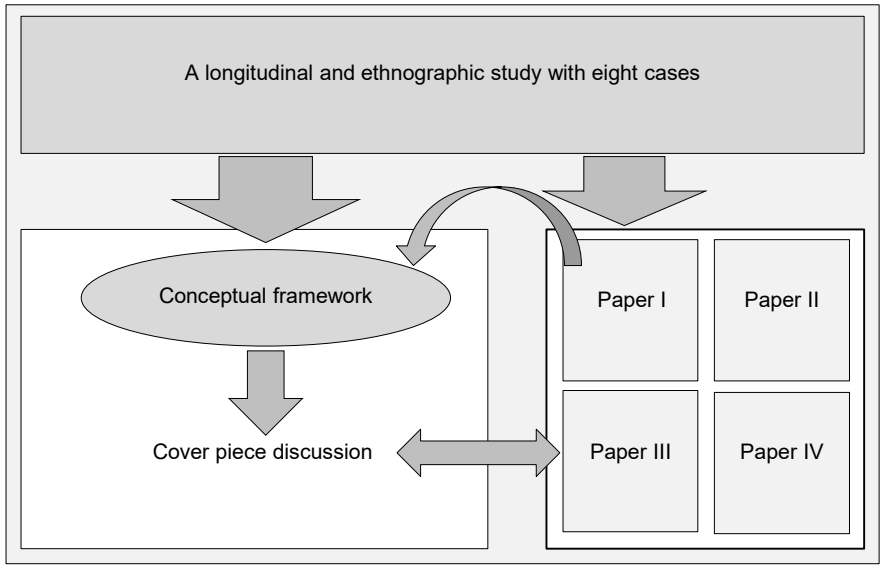

Figure 2. Relation between the cover piece and the four papers.

2 Epistemological platform

Epistemology is the branch of philosophy concerned with the theory of knowledge. The word epistemology is derived from the Greek words *epistēmē* meaning 'knowledge' and *logos* meaning 'discourse'. In this chapter I describe the epistemological platform on which this thesis is based. Being a PhD student in Environmental Communication and being part of the learning group networks within IFSA (International Farming Systems Association) and ESEE (European Seminar on Extension (and) Education), this section sketches the features that constitute the premises in our research. This platform provides in turn the rationale for the choice of methods and which theoretical concepts or analytical lenses I see as being relevant in my research.

2.1 The co-construction of the world through communicative actions

The point of departure of this thesis is that we, as actors in the world, co-construct and give meaning to the reality we live in through communicative actions (c.f. Berger and Luckmann, 1966). This perception within social sciences is called social constructivism, and its central issue is, just as the term says, that reality is socially constructed. The origin of social constructivism was a questioning of the existence of purely rational and objective knowledge. Early proponents (such as Marx, Nietzsche, Scheler and Mannheim) argued that knowledge is generated by other, more ideological interests or power emphasised processes (Alvesson and Sköldberg, 2008). This does not mean to say that constructivism denies the existence of external reality itself or that reality is a creation of the mind, but instead that the empirical world of reality can only be known though our cognitive structures (Delanty, 2005). Mannheim (1993), for example, argued that knowledge was always produced from a specific social and historical standpoint, reflecting the interest, culture and

political beliefs of the groups in question. Social constructionism is a broad and multifaceted perspective. The perspective described shares characteristics with critical realism, which strongly emphasises the differences between reality as such and our perceptions about it (Alvesson and Sköldberg, 2008).

According to Burr (2015), there is no single description of social constructionism. However, social constructionists tend to accept one or more of the following key assumptions (Burr, 2015): i) that we should take a critical stance towards taken-for granted knowledge. Social constructionism cautions us to be ever suspicious of our assumptions about how the world appears to be; ii) that how we understand the world is historically and culturally specific. Our understanding is historically and culturally relative and dependent upon the particular social and economic arrangement prevailing in that culture at that time; iii) that knowledge is sustained by social processes. It is through the daily interactions between people in the course of social life that our versions of knowledge become fabricated, and iv) that knowledge and social action go together. Each possible social construction brings with it a different kind of action. Consequently, constructions of the world sustain some patterns of social action and exclude others. This implies that our constructions are connected to power relations, as they have implications for what it is permitted for different people to do and how they may legitimately treat others (Burr, 2015).

As described above, the tradition of social constructionism has an anti-essentialist ontology; it assumes the existence of multiple, socially constructed realities instead of a single reality, governed by undisputable natural laws (Hajer and Versteeg, 2005). The approach thus takes a critical stance towards 'truths' and puts emphasises on the communications through which knowledge is exchanged and generated. The very word *communicate* has its origin in the Latin word *communicare*, which means 'doing common'. In the ever-ongoing endeavour to understand each other and co-construct a shared understanding, language is a necessary tool (Searle, 1995). Many social facts that we take for granted are facts only by human agreement, such as for instance money and marriage. They exist only because we believe them to exist. Examples of social facts relevant for this thesis are for example sustainable farm development and objectives of advisory services. Searle (1995) calls these facts *institutional facts* which thus exist as a result of a collective intentionality. A consequence of the key assumptions of social constructionism mentioned by Burr (2015) is that in every given situation where people meet to discuss or decide upon, for example, an institutional fact, they will enter such a discussion with different perspectives, systems of interest (Open University, 1997) or horizons of understanding (Gadamer, 1979). Depending on a person's history and culture, he or she will interpret and make meaning of every given situation more or less

differently. However, as we interact and communicate with each other, our perspective and how we make meaning of the world will be modified, as a result of a never-ending act of interpreting and re-interpreting as our personal history and culture are constantly changing.

In order for a meeting between cultures (social and/or epistemic) to be a cross-fertilising and creative process, learning about and respect for our own as well as the other's culture is demanded (Asplund, 2009; Leeuwis, 2004; Daniels and Walker, 2001). A prerequisite for getting to a point of agreement or reaching a collective action is that we, during the act of communication, strive to take the perspective of the other but also learn to remain critically reflective to our own perspective, pre-understanding and assumptions about the world as well as locally established truths. It is only when the farmer and the advisor have agreed on the vision and goals that the farmer has with regard to his/her farm that they can agree on which role the advisory service should have in that work. In Extension Science, the view of how to perform advisory communication has changed during history. This development is presented in the boxes in Chapter 5, which describes trends in extension. Since the focus of this thesis is not the communicative level of the advisory service, but rather the organisational level, I will not delve further into the act of communication. For a description and model of perspectivity in the act of communication, however, see for instance Ljung (2001).

The thesis' interest in a critical approach in advisory services and the meso-level of the advisory system implies that the epistemological platform is also influenced by critical theory. Critical theory is characterised by an interpretive approach combined with an interest in critical questioning of the social reality (Alvesson and Sköldberg, 2008). Sometimes critical theory is also disclosed as critical hermeneutics. Critical theory emphasises that social conditions are more or less historically created and influenced by power asymmetries and advocacies and that these may be the subject of radical change. Compared with social constructionists, critical theorists are less interested in the local construction processes and more in raising awareness of the taken-for-granted realities.

2.2 The interrelation between structure and agency

As this thesis, amongst other things, is interested in the relationship between the organisational structure of advisory services and the services provided in an advisory organisation, the interrelation between structure and agency is relevant. In social sciences, there is a standing debate over the primacy of structure or agency in shaping human behaviour. Besides the dualism of agency/structure, there are also other constructs that reflect this debate, such as

for instance self/other and individual/society. Structure is the recurrent patterned arrangements that influence or limit the choices and opportunities available, while agency is the capacity of individuals to act independently and to make their own free choices (Barker, 2005). The structure/agency debate may thus be understood as an issue of socialisation versus autonomy in determining whether an individual acts in a manner dictated by a social structure or as a free agent.

In his *Structuration theory*, Giddens (1984) moves beyond the dualism of structure and agency and argues for a *duality of structure*, by which structures are not only constraining but also enabling. The theory centres on the way agents produce and reproduce social structure through their own actions. Giddens (1979, p. 5) writes:

> By the duality of structure, I mean the essential recursiveness of social life, as constituted in social practices: structure is both medium and outcome of the reproduction of practices. Structure enters simultaneously into the constitution of the agent and social practices, and 'exists' in the generating moments of this constitution.

Regularised human activity is not brought into being by individual actors as such, but is continually re-created by them via the very means whereby they express themselves as actors (Barker, 2005). That is, in and through their activities, agents reproduce the conditions that make those activities possible. With the concept of *structuration,* Giddens reconciles structure and agency. He writes (Giddens, 1979, p. 69):

> The concept of structuration involves that of the duality of structure, which relates to the fundamentally recursive character of social life, and the mutual dependence of structure and agency.

He further clarifies the relation between structure and structuration in the following table (Table 2).

Table 2. *Relation between structure, system and structuration (from Giddens, 1979, p. 66).*

Structure	Rules and resources, organized as properties of social systems. Structure only exists as "structural properties".
System	Reproduced relations between actors or collectives, organized as regular social practices.
Structuration	Conditions governing the continuity or transformation of structures, and therefore the reproduction of systems.

Social systems are systems of social interaction, and as such they involve the situated activities of human subjects. Systems, in this terminology, have structures, or structural properties. To study the structuration of a social system is then to study the ways in which that system, via the application of generative rules and resources, and in the context of unintended outcomes, is produced and reproduced in interaction. In the process of structuration, knowledge plays a key role, as it provides the basis on which agents both understand and transform the rules around them. Giddens calls this the *reflexive monitoring of actions* (Giddens, 1991), which refers to agents' ability to monitor their actions in their context. Through action, agents produce structures, while through reflexive monitoring and rationalisation, they transform them.

When I started my research, my view was that much of the advisory practice seemed to be culturally conditioned. Many advisors seemed to work as they had always done and as they had been taught to do. In my studies, this view has been strengthened. The act of structuration (in Paper IV referred to as socialisation) seems to be a common process, which tend to homogenise the group of advisors. This phenomenon explains the sense of cultural heritage in terms of working methods among advisors and the view of the advisory role, and thus constitutes one of the challenges for the advisory organisations in the endeavour towards more collaborative working methods.

3 Methodological platform

This chapter is divided into two parts. In the first part, I describe my methodological approach and my research process. This part ends with a confessional tale about me as a researcher and how I might have affected the research conducted. In the second part, I present the methods used for selection, data collection and analysis. In that part I also discuss the validity and reliability of my research.

3.1 Methodological approach

The underlying idea of this research project has been to study the Swedish agricultural advisory system *in situ* or in other words the organisation and performance *as it is*. That is to say, I wished to study initiatives and phenomena that have taken place and been initiated by actors within the advisory system *itself*. The reason for this choice is the belief that such 'naturally' initiated processes could be seen as expressions and manifestations of the time in which we are living, and as demonstrations of the challenges faced by the advisory system and how it was then responding to those challenges and changes. This means that the thesis has not followed a pre-designed case or a blue-print. However, this does not imply that the research followed a set of random phenomena. Eight different cases, all consciously chosen, constitute one portion of the data, since they were considered to be contributing valuable knowledge of the advisory system at a more overarching level. Four of these cases were conducted as evaluations or studies commissioned by different actors in the Swedish AKIS; one was a study initiated by a research colleague and the remaining three were initiated by me. While the cases commissioned by others served to open my eyes to certain qualities and practices of the advisory system, the other cases were conducted to capture and understand some of these phenomena further. In the thesis, the cases have been used to address the higher

order questions related to the aim of the thesis, particularly those connected to the constraints on the advisory system in relation to its mandated task of developing services that are contributing to sustainable farm development.

One consequence of my desire to study projects that have been initiated by actors in the advisory system itself is of course that there is a risk that the different cases I have been involved in during my time as a PhD student may appear unrelated or lacking coherence. An alternative approach could, for example, have been action research, where I could have followed and studied new approaches in advisory practice (probably initiated by me) and observed and interviewed the participants during that process. Although there is value in controlling a research process in such a way, I chose to take advantage of the benefits of studying 'naturally' initiated processes *in situ*. Together, I claim, the different cases give a rather rich picture of the endeavours and struggles that have been occurring in the Swedish advisory system.

In the subsection below I describe the background and interconnectedness of the eight cases mentioned above that constitute the main part of my empirical data. After that, I will describe how other parts of my research can be seen as ethnographic studies, as I have lived in and been part of the farming community during a large part of my time as a PhD student. In the following section, I describe my hermeneutical approach, both in terms of how the thesis evolved and how data was analysed. This is followed by two subsections that describe the abductive approach of the thesis and its relation to prescriptive research. The last section is devoted to some lines of reflection where I reflect on my role as a researcher and how I might have affected the research conducted.

3.1.1 A longitudinal study with eight cases

For several reasons, my PhD study has extended over twelve years, between the years 2005-2017. Before 2005, I worked as a research assistant (also at the Division of Environmental Communication at SLU) with several projects that in one way or another were connected to learning in agriculture in general and different development/extension projects in particular. Table 3 summarises the cases that I have been a part of and which have formed and contributed to my understanding of the Swedish advisory system. The different cases are also presented in the timeline in Figure 3. Aside from the different time-limited cases, which together constitute my empirical data, the PhD study as a whole can also be seen as a longitudinal study of the changes that have occurred in the Swedish agricultural advisory system during this time. Above all, it is the organisational changes, but also the difficulties of change, have emerged most clearly owing to the long duration of the thesis.

***Table 3**. A compilation of the cases included in the PhD research[3].*

No.	Year	Case	Type of case	Data	Publications
I	2003	Evaluation of documentations from individual advisory visits within the KULM-programme	Single-case study commissioned by Swedish Board of Agriculture	35 qualitative and semi-structured in-depth interviews 1 focus group interview Studies of documentations	Report 2003:9 published by Swedish Board of Agriculture. Ljung, M. & Höckert, J. (2003)
II	2005-2006	Farmers, chemicals and choices–a study of farmers' decision-making concerning chemical use	A qualitative study commissioned by Focus on Pesticide Use	25 qualitative and semi-structured in-depth interviews	Lönngren, M., Ljung, M. & Höckert, J. (2006)
III	2005-2008	Literature review on farmers' attitudes towards nature conservation	Literature review	Literature search based on the key words: attitudes, perception, feelings, farmers, nature and nature conservation in peer reviewed journals	Ahnström, J. Höckert, J., Bergeå, H.L. & Hallgren, L. (2005) Ahnström, J., *et al*. (2008) Paper I
IV	2005 2007-2008 2009	Formative evaluation of Team 20/20 Summative evaluation of Team 20/20 Paper for conference	Single-case study commissioned by Swedish Beet Research	2 sets of qualitative semi-structured in-depth interviews with 17 participants	Höckert, J. & Ljung. M. (2005) Höckert, J. & Ljung, M. (2008) Höckert, J. & Ljung, M. (2009)
V	2009-2010	Own case study: On development of change processes in advisory organisations	Multiple-case study with 3 cases	3 qualitative and semi-structured interviews	Höckert, J., Ljung, M. & Sriskandarajah, N. Manuscript Paper II
VI	2011-2012	BoT-A Platform	Single-case study with qualitative and quantitative approaches commissioned by the R&D project BoT-A	7 qualitative and semi-structured interviews Survey to all 30 participants	Höckert, J. & Ljung, M. (2012)
VII	2011-2012	Own study: On trends in advisory services in Sweden during the past 20 years	Multi-method study	Literature review and discourse analysis of public and internal documents Interviews as part of other research projects	Höckert, J. & Ljung, M. (2013) Paper III
VIII	2012-2017	Own case study: a following-up and deepening of study V	Multiple-case study with 4 cases but also a longitudinal study of change processes within the four cases	13 qualitative and semi-structured in-depth interviews	Höckert, J. & Ljung, M. Manuscript Paper IV

[3] The first case mentioned took place before my appointment as a PhD student, but has contributed to my understanding of the Swedish advisory system and their services.

According to Lorenzoni and Lipparini (1999), most definitions and theories in the field of strategic management are longitudinal (Mintzberg and Walters, 1985; Porter, 1991), and strategic moves or organisational structures can be better understood if they are tracked over time (Miller and Friesen, 1982; Schendel, 1996). A longitudinal method provides the opportunity to examine continuous processes in context and to draw in the significance of various interconnected levels of analysis (Pettigrew, 1990). In this study, time is captured through a combination of retrospective and real time analysis—both by me as a researcher and by the interviewees.

The first three cases had an environmental focus, while cases IV and VI are evaluations of two different participatory R&D projects—one with sugar beet and one with potato. Case V is a case study on change processes in advisory organisations and case VIII is a following-up and deepening of that. Case VII is a literature review and discourse analysis on trends in advisory services and projects. The background and rationale of the different cases are described below.

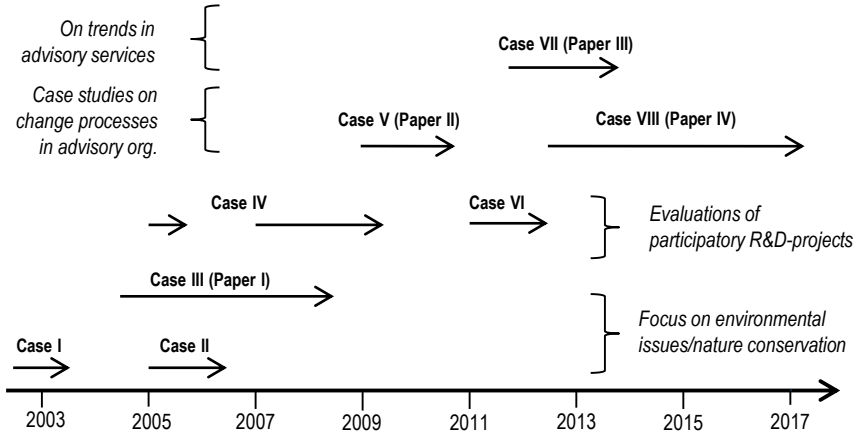

Figure 3. A timeline with the different cases.

Case I: Evaluation of documentations from individual advisory visits within the KULM–programme[4]

This study was commissioned by the Swedish Board of Agriculture. KULM was part of the Swedish Rural Development Programme in 2000-2006 with the purpose to motivate and educate farmers and other persons involved in agriculture to use production methods that are sustainable in the long term, both economically and ecologically. A major part of the activities carried out within KULM's competence areas 2 (concerning nutrients and pesticides) and 3 (concerning organic production) was individual advisory visits to farmers, funded by the public. Upon completion of the advisory activity, the advisor should compile a document of the visit and send it to the farmer. The purposes for and addressees of the documentations were multiple. First, the documentations were written for the farmers with the ambition that they should support the farmers in their environmental management. Secondly, they were written for the advisor and other KULM-advisors to facilitate additional advisory activities at farm level in the future. And thirdly, the documentations were written for the County Administrations and the Swedish Board of Agriculture, since it was on the basis of the documentations that the 'state' determined whether or not the advisory activity could be classified as belonging to KULM.

The aim of this evaluation was to obtain a clearer picture of how the documentations were perceived and used, how the advisory service within KULM seemed to work and if possible improve the advisory service within the programme and the use of the documentation. The evaluation and its findings are described in Höckert and Ljung (2003) and Ljung and Höckert (2003). The evaluation was based on 35 qualitative and semi-structured interviews of farmers, analyses of the written documentations coupled with the advisory visit on which the interview was focused and a focus group interview with advisors. The interviews were conducted by me and the focus group interview by Magnus Ljung and I.

Case II: Farmers, chemicals and choices – a study on farmers' decision-making concerning chemical use

This study was commissioned by the Swedish information campaign *Focus on Pesticide Use*[5]. The campaign is a cooperation between different authorities, interest organisations and companies with the aim of reducing pesticides in the

[4] KULM is an acronym in Swedish for KompetensUtveckling av Lantbrukare inom Miljöområdet (Competence development of farmers in the environmental field).

[5] In Swedish *Säkert Växtskydd*.

ground and surface waters and to improve the use of personal equipment when handling pesticides[6].

The background of the study was that *Focus on Pesticide Use* had received funding from The Swedish Board of Agriculture to investigate the following hypothesis: that the farmers know what to do, that they can afford it, that they are motivated but still do not do all that is necessary to reduce the risks associated with the use of chemical pesticides. The purpose of this study was to seek an explanation for the extent to which farmers act in a different way from that which they know they should and/or feel that they could and to identify which behavioural barriers seem to exist. The study was based on 25 in-depth interviews conducted by Magnus Ljung, Mats Lönngren and I and the study and its findings are described in Lönngren *et al*. (2006).

Case III: Literature review on farmers' attitudes towards nature conservation (Paper I)

Before I began work on this paper, I had completed the interviews and reports connected to cases I and II and made the formative evaluation of the Team 20/20 project (first part of case IV). The interviews forming the basis for those reports had clarified a number of issues within the Swedish agricultural advisory system. One of these was the division between the advisory service that focuses on production-related issues and for which farmers pay market price (the commercial advisory service following Yngwe's (2014) terminology), and the advisory service that focuses on environmental issues and which is financed by public funding (the free advisory service (Yngwe, 2014)). This division is in some ways unfortunate—both in terms of content and form. For farmers, the division between production and environmental concerns is a non-issue. They are intertwined and need to be taken into consideration simultaneously. To discuss and decontextualise the environmental issues from the production issues is thus an approach that is remote from the farmers' way of perceiving reality. Another issue is that the advisors that accomplish the free environmental advisory services are not working with a farm on a regular basis, which contributes to further distancing of the environmental aspects of farming.

When my PhD friend Johan Ahnström invited me to write a literature review paper on what was known about farmers and their attitudes to nature conservation together with him and others, I accepted his idea. Based on my experiences from the mentioned projects, I wished to increase my knowledge about farmers' perspective of nature and their view of joining agri-environmental schemes in order to better understand their horizon of

[6] For further information about the campaign, see their website: www.sakertvaxtskydd.se.

understanding concerning farming. In my thesis, this paper shows that farmers have an interest that goes beyond production issues—an interest that has not yet received much attention in the advisory services. The paper also provides a basis for discussion about the importance of engaging in the farmer's lifeworld and taking a whole farm approach in advisory services (as well as when developing agri-environmental schemes).

Case IV: Evaluations of Team 20/20

Team 20/20 was a participatory R&D project that was managed by Swedish Beet Research[7] (which was equally owned by Danisco Sugar and the growers themselves) that ran in Sweden between 2003 and 2006. The project started as a response to the reform of the EU's sugar politics. At that time, the reform was still developing, but one thing was for sure—on full implementation, the growers' income from sugar beet farming would have decreased considerably. To meet this challenge, Swedish Beet Research started the Team 20/20 project, aiming to "quantify which yield improvement can be obtained, by applying a field and farm adapted package of measures where the important factors influencing the yield have been taken into account" (Gunnarsson, 2002). Inspired by participatory learning and action and its methods, Swedish Beet Research gathered seven successful sugar beet farmers, their crop advisors and different researchers, who together formed the Team 20/20 group. The goal was to reduce the production costs by 33% per kilogram of extractable sugar in three years—something that could be achieved with an increase in yield of 20% and a reduction of the cost per hectare by 20%; hence the project's name. When it turned out to be difficult to achieve the objectives, the scope of the project was extended to include management issues as well. In brief, that meant that each farm's economy was mapped out and analysed, with the aim of finding new ways of making money, and hence maintaining the farms' profitability despite the reduced sugar beet prices.

Within the Team 20/20 project, I conducted two sets of qualitative semi-structured interviews with the members of the group—one as part of a formative evaluation made halfway through the project in 2005 and another as part of a summative evaluation in 2007. The main findings are described and discussed in Höckert and Ljung (2009).

[7] Since 1 January 2008, Swedish Beet Research has been part of the Nordic Beet Research Foundation, which is an R&D unit owned by sugar beet farmers in Sweden and Denmark on the one hand and Danisco Sugar on the other.

Case V: Own case study on development of change processes within advisory organisations (Paper II)

This paper was born from the growing demand from Swedish farmers for a whole-farm approach in advisory service. The farmers' desire that the advisors should look at the farm as a whole and treat it accordingly was, inter alia, one of the messages from case I. In that study, farmers expressed frustration that certain aspects of farming tend to fall through the cracks among different advisors. One typical example was for instance the insufficient collaboration between the animal husbandry advisors and the crop production advisors. Another request from the farmers in that study was to relate environmental extension (within the free advisory services) more strongly to the existing traditional and production-orientated advisory services. Another recommendation from cases II and III was using the existing networks with advisors who have insights into the farms' natural conditions (and often a relation built on trust with the farmer) to also include aspects that are of importance for the farmers' environmental concern. Hence, there is potential within the commercial advisory service that remains untapped.

This case was based on a case study of three different advisory organisations, selected because of their visionary ideas regarding the future of extension. The paper points out the difficulties experienced among advisory organisations concerning inter- and intra-organisational collaboration, despite their outspoken ambition to collaborate, and proposes ways in which a collaborative culture among advisors might be created.

Case VI: BoT-A Platform

BoT-A Platform was a subproject within a larger participatory R&D project called BoT-A (Biology and Technology for improved land use in potato production—A collaborative learning project for a sustainable knowledge development). The objective of BoT-A was to develop a long-term platform serving as cooperative participation concerning potato research between scientists, advisors, farmers and industry. The aim was to jointly develop a model for sustainable knowledge concerning efficient, profitable and competitive potato production. Methodologically, BoT-A combined traditional research methods with farmer's experiments that aimed for mutual participation.

The BoT-A Platform project was born partly out of concern about the low level of energy in the group and the lack of belonging among the participants, but also from an expectation to be able to give the participatory part of the project focus and energy. The purpose of the BoT-A Platform was to focus on

the participants' incentives to participate in the R&D project, the participants' view of BoT-A's targets and to explore the participants' commitment to start side projects and other activities within the BoT-A project. Methodologically, the BoT-A Platform consisted of three parts: qualitative and semi-structured interviews with seven persons in the core group, a survey of all 30 participants in the core group, and a subsequent discussion of the results of the study. The results of BoT-A Platform are presented in Höckert and Ljung (2012).

Case VII: Own study on trends in advisory services in Sweden during the past 20 years (Paper III)

The idea of this paper emerged after the evaluation of case IV and the conference paper that was written based on the lessons learnt from that project (Höckert and Ljung, 2009). In that paper, we introduced the concepts lifeworld, system boundaries and *Weltanschauung* as a way to describe and highlight the distance between the farmers' reality and the questions that are important for him/her and the unreflected system boundaries and unquestioned assumptions that the R&D project seemed to suffer from. The same tendencies can be found in other projects, such as cases I and II.

Within the Swedish agricultural advisory system, there are several examples of time-limited and interest-limited advisory efforts with different aims and agendas addressed to farmers. The purpose of this paper was to describe and critically analyse recent advisory efforts and the prevailing discourses that have affected the advisory service in Sweden over the past 15 years. The focus was on those efforts that have had a declared aim to support farmers to become more competitive and viable. The paper further analysed why the efforts do not seem to have been sufficiently effective, and gave recommendations for future initiatives.

Case VIII: Own study on change processes in advisory organisations (Paper IV)

The interview study that forms the basis of this paper arose as a consequence of all the earlier studies that I have been a part of during my PhD study. As shown in those, the Swedish agricultural advisory system suffers from a number of issues that affect not only the farmers and the advisory organisations in a negative manner, but also the ambition to develop Swedish agriculture in a sustainable direction. Some of these issues are: that the advisory system comprises many actors who do not collaborate to any significant extent; that in addition to the regular advisory services the system now and then consists of time-limited advisory efforts that more or less live their own lives and are linked to the ongoing development processes at farm

level in an unsatisfactory manner; and that farmers are often left with the work of implementing the ideas from different advisory activities at the farm level. The production advisors are often identified as suitable actors for joint learning processes towards sustainability, since they work together with farmers on a long-term basis. In Sweden, however, there is no tradition of production advisors assuming such a role.

This study was a continuation and a deepening of case V. This time, four advisory organisations with different organisational structures were chosen to see whether and how the organisational structure affects the advisory practice. The study was based on thirteen in-depth semi-structured interviews. The interviews revolved around the motives for the ongoing structural changes in the advisory system, the different organisations' view of their role and why it is so difficult to make advisors collaborate around common customers. The aim of this paper was to explore what is needed for collaborative cultures to be created in the Swedish agricultural advisory system.

3.1.2 An ethnographic study

This PhD study's relation to ethnography is that I have lived in and been part of the farming community during the majority of my research process. I have lived on a farm, together with a farmer, and I have many friends at various positions in the agri-food system with whom I have had numerous talks about a wide range of agricultural issues, including my own research. These talks may be seen as informal ethnographic interviews where I have questioned, tried to understand and grasp their view of, for example, today's agricultural advisory system. However, the talks have also provided an arena for me to continuously test and validate the findings of my different cases. Being a part of the farming community, whose perspective I have tried to capture and understand, I have also had access to and knowledge about the discourses that abound in the agricultural sphere—from everyday talks in the family to farmers' meetings and through readings of Swedish agricultural magazines.

Fetterman (2010) describes ethnography as "the art and science of describing a group or culture". Ethnography is often associated with anthropology and implies a prolonged stay in a local community (Alvesson and Sköldberg, 2008). Sometimes, however, even shorter strikes in empirics may be referred to as ethnography (Atkinson and Hammersley, 1994). Silverman (1985) takes it one step further and labels at ethnography all research that involves observations of events and actions in natural situations and which acknowledges the interdependence of theory and empirics. Fetterman (2010) writes that ethnographers are noted for their ability to keep an open mind, but

not an empty head, about the groups or cultures they are studying. A theory or frame of reference must, of course, guide the work, but it is intended to provide a direction and structure to the work rather than stand in the way of observation and analysis (Alvesson and Sköldberg, 2008). Fieldwork is the most characteristic aspect of any ethnographic research design, while the most important element of fieldwork is being there—to observe, to ask seemingly stupid but insightful questions and to write down what is seen and heard (Fetterman, 2010). Hence, the interview is the ethnographer's most important data-gathering technique. General interview types include structured, semi-structured, informal and retrospective interviews, where each interviewing approach has a role to play in soliciting information (Fetterman, 2010). Fetterman (2010) writes:

> Life histories of individuals can be particularly illuminating. One articulate individual may provide a wealth of valuable information. The ethnographer must then cross-check, compare, and triangulate this information before it becomes a foundation on which to build a knowledge base.

He continues:

> The ethnographer's task is not only to collect information from the emic, or insider's, perspective but also to make sense of all the data from an etic, or external social scientific, perspective. (Fetterman, 2010)

I claim that the combination of ethnographic interviews and the semi-structured research interviews conducted within the different cases meets Fetterman's (2010) recommendation of combining information both from an internal and external perspective.

3.1.3 A hermeneutical approach

The approach that best describes both my approach as a researcher and the way in which this research project as a whole has evolved is hermeneutics. The basis for hermeneutics was textual interpretation—originally analysis of the Bible. Today, however, the text that is to be interpreted can be both written and oral. Moreover, hermeneutics can also be used to interpret and understand purposeful actions of various degrees of complexity. In those cases, purposeful actions are studied with texts as a model (Alvesson and Sköldberg, 2008). The main idea of hermeneutics has always been that the meaning of a part can only be understood if it is related to the whole (Alvesson and Sköldberg, 2008). The opposite also applies—that the whole consists of parts that can only be understood from these. This connection is called the hermeneutic circle, or the

hermeneutic spiral, of objectivist hermeneutics (Alvesson and Sköldberg, 2008). By alternating between the parts and the whole, the researcher gradually obtains a deeper understanding of both. Another version of the circle/spiral is the circle of alethic hermeneutics (Alvesson and Sköldberg, 2008) which focuses on the relation between understanding and pre-understanding. These two versions of the hermeneutic circle/spiral are in no way contradictory to each other, but can be regarded as complementary (see Figure 4). Figure 4 also illustrates my on-going and never-ending learning process in the field of learning towards sustainability in the advisory system.

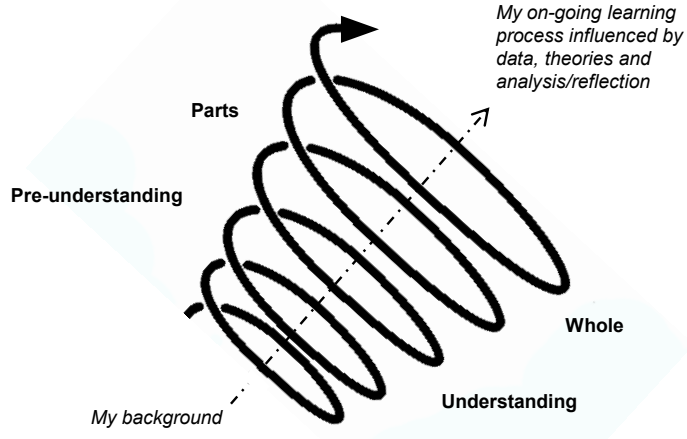

Figure 4. An illustration of my hermeneutic learning process.

In the interpretive process, the interpretation of the whole text (written, oral or purposeful actions) is developed successively through the interpretation of the parts—and conversely the whole brings light to the parts. The entities constituting the whole and the part may differ. They may, for example, be a sentence from an interview that needs to be related to the interview as a whole, or a purposeful action that has to be placed in its social context in order to be understood. A similar alternation takes place between understanding and pre-understanding in the interpretation process. Understanding of a new text demands a pre-understanding, but at the same time pre-understanding demands an understanding of the text, in order for a pre-understanding to be developed. Hence, the understanding must continuously refer back to earlier pre-understanding and the pre-understanding must be fertilised through new understanding.

The pre-understanding is in turn related to another phenomenon—our intentionality (Ödman, 2003). Intentionality can be defined as the structure that

provides meaning to the experience (May, 1974). We can be unconscious of the intentionality, but it will be reflected through our actions or experience, since it makes us strive for clarity and structure (Ödman, 2003). A hermeneutist acknowledges that there are several ways to understand the world or a particular phenomenon, and that we always look at these from certain aspects (Ödman, 2003). The hermeneutist further admits that we can never step out of ourselves when we study the reality. Consequently, there is no such thing as objective research. How we interpret and understand is always conditioned by the fact that we are historical beings (Ödman, 2003). A consciousness of the aspects that guide our interpretation is thus a prerequisite to make the interpretations less biased. Depending on the purpose of each individual case in my thesis, the intentionality has differed. However, the overall intentionality of the thesis has been to analyse how learning within the advisory system can be improved in order to better contribute to a sustainable farm development.

In my research project, the hermeneutic approach has influenced me on several levels. In the interview situation, I continuously veer between my pre-understanding of the topic in question and the evolving new understanding that emerges during the interview. This veering also occurs between the parts and the whole of the interview statements in order to avoid discrepancies. Accordingly, the interview situation is not just a moment of 'gathering data', but also an act of first-order analysis. This 'double veer' implies that every interview develops differently, albeit with a question guide as a support to ensure that all planned topics have been covered. The same kind of veer takes place at the end of each case, when a report or paper has been written. This applies also during the writing of the thesis as a whole.

3.1.4 An abductive approach

When it comes to explanatory models in research, we often distinguish between *induction* and *deduction* (Alvesson and Sköldberg, 2008) (see Figure 5). An inductive approach is based on a variety of individual cases and claims that a relationship observed in all of these is also generally valid. According to Alvesson and Sköldberg (2008), the approach implies a perilous leap from a collection of individual cases to a general truth. A deductive approach, on the other hand, is based on a general rule and argues that this explains a particular case of interest. This approach is, Alvesson and Sköldberg (2008) claim, less perilous—but at the price of appearing to presuppose what is to be explained; that is: that the general rule is always applicable and valid.

According to Sköldberg (1991), the method used in reality in many case studies is probably *abduction* (see Figure 5). The abductive approach implies that by using existing knowledge and frames of reference, one can find theoretical patterns or deep structures which, if they are valid, would make empirical inductive patterns or surface structures comprehensible. The surface structures are, in turn, a result of interpretations of individual cases. The use of theory is then not an act of mechanical application on a single case, but is rather to be seen as a source of inspiration to see patterns that bring understanding. The interpretation should subsequently be substantiated by new observations (new cases). During the process, the area of application is developed successively, while the theory is adjusted and refined. This implies that opposed to induction and deduction, abduction also includes understanding (Alvesson and Sköldberg, 2008). Hence, during the research process there is an alternation between theory and empirics which are successively reinterpreted in light of each other. A hermeneutist would say that deduction is some kind of hermeneutic spiral—an interpretation of data about which we already have some kind of pre-understanding. According to Alvesson and Sköldberg (2008), however, there is no direct connection between hermeneutics and abductive thinking.

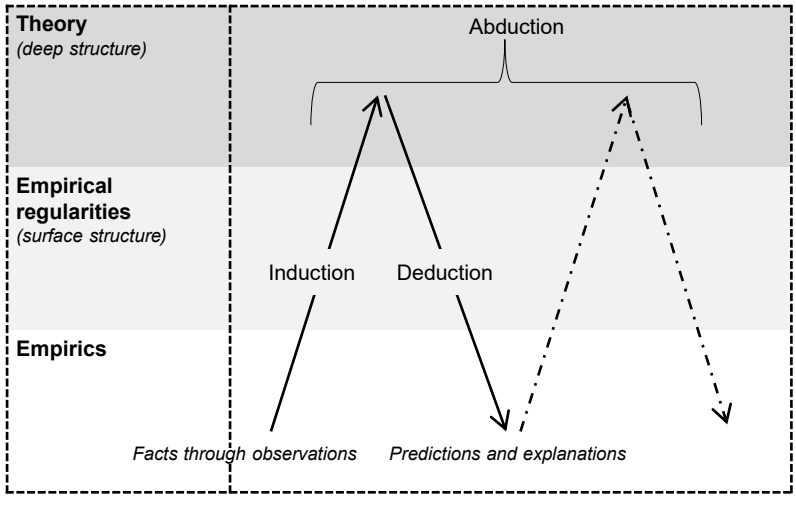

Figure 5. Illustration of induction, deduction and abduction.

Together with hermeneutics, abduction describes the evolution of this thesis. The evaluations I have conducted during my thesis work have provided me with comprehensive sets of data material. Depending on the number of interviews conducted within the framework of each evaluation, empirical regularities have emerged from the empirics. By applying appropriate theories, I have then attempted to explain the empirics in a relevant manner. The evaluations have often, in turn, given rise to new ideas or hypotheses related to perceived shortcomings within the Swedish advisory system, which I have later followed up in other cases. Cases V, VII and VIII have started from such ideas (or anticipated empirical regularities) whereby new empirics have been obtained through interviews and literature studies and the theory has been adjusted in order to give satisfying explanations of the observed regularities.

3.1.5 Prescriptive research—about the desire to somehow contribute to change

This is a thesis in Environmental Communication. The reason for this is simple—the Division of Environmental Communication at the Department of Urban and Rural Development at SLU originates from a former unit at the Department of Economics known as Agricultural Information, with Professor Emeritus Ulrich Nitsch as the head of the unit. Since then the subject has broadened. According to the division's website, research within Environmental Communication:

> […] investigate[s] the communicative processes that take place at the nature-culture interface, by seeing communication as inter-subjective meaning-making rather than transmission of information. (Division of Environmental Communication website, 2017)

The areas of theory that support research in Environmental Communication are, for example, communicative action, democracy, power relations, participation, systems thinking and social learning. This also applies to this thesis. It means that the thesis is based on theories that are to be considered as prescriptive, or normative. Prescriptive theories refer to theories that advocate one thing over another—theories that can be formulated as *one should do 'x'*. Of course, this does not imply that research based on normative theories is normative itself. This thesis, however, has clear features of normativity. Neither in the different cases, nor in the thesis as a whole, have I remained at being descriptive, exploratory or evaluative. As a consequence of my desire to somehow contribute to making the existing advisory practice better, I have also desired to come up with

recommendations and suggestions for improvements—hence, the normative features.

3.1.6 Some lines of confessions—my influence on the research project

Since I embarked on my PhD studies, I have worked in the borderland where natural sciences meet social sciences: agriculture has always constituted the background, while the research has been conducted on people working in the agricultural context. In the different studies I have been a part of during this time, the objectives have been to explore, for example, opinions about/reasons behind/attitudes towards different aspects connected to learning in agriculture. These studies have always had a qualitative approach. Since this implies high personal involvement as a researcher in all stages of the research process, I feel that it is appropriate to devote a few lines about my perspective and pre-understanding. This is also a tradition in interpretive and reflexive research (c.f. Alvesson and Sköldberg, 2008).

When I came to SLU in 1996 as an undergraduate, it was because I was interested in issues concerning sustainable management of natural resources and environmental issues. I opted for SLU since I perceived that they had a holistic approach between soil-plant-air in their biology studies, which I felt was missing in many other biologically-oriented educations. Hence, I started on the Natural Resource Programme. Many of the people that became my friends, however, were studying on the Agronomy Programme. When they discussed agricultural-related issues of different kinds—either concerning production issues or agricultural politics—I became both frustrated and curious; frustrated because my knowledge about farming and agriculture was more or less non-existent (my only experience was that I grew up in a rural area in the middle of Sweden with few active farmers), which meant that I often felt that I could not participate in their discussions; and curious both because their discussions interested me and because I felt that by becoming an agronomist I would give my interest in sustainability issues a clearer direction, which until then I had lacked. Consequently, in 1999 I switched to the Agronomy Programme. During my undergraduate studies, however, I realised that my interest was not so much in agriculture as a biological/technical system as it was in the role of agriculture in society. Likewise I was more interested in the actors in the agricultural system than in the agricultural system itself. When the opportunity came to start on this PhD journey, it felt like it fit perfectly with my interests.

During most of my doctoral studies, I have lived at my ex-husband's farm in a small village in the western part of Sweden. His work as an organic farmer

has of course taught me much of what it means to be a farmer and the conditions to which agriculture continuously has to relate. It applies also to the countless conversations with family and friends working in different parts of the agri-food sector. These experiences have gradually created a desire to somehow be involved in change processes related to, for instance, advisory services and thus contribute to creating better conditions for Swedish agriculture. These experiences and the evolving desire have of course affected my role as a researcher and my pre-understanding about the issues on which I have conducted research, which can imply both advantages and disadvantages for the research. There is a risk is that I, for instance, enter an interview or a project with a pre-understanding and a preconceived idea about what I expect to hear and find which might prevent me from seeing new perspectives. I believe, however, that the advantages have outweighed the disadvantages. To begin with, I really enjoy conducting interviews. I find it a privilege to be party to another person's thoughts. By being an agronomist and having experience of what it is like to live on a farm and being acquainted with the ongoing discourses in the agricultural sector, it has predominantly been easy to conduct interviews about the various issues that have been the focus of the various studies. Each interview has developed my understanding about the issue in focus, which in turn has implied that I have entered the next interview with a new pre-understanding. Consequently, my understanding of my research project has evolved continuously with the conversations I have had.

As a consequence of the fact that I live where I do, I have been somewhat of a PhD student in 'exile'. Being a PhD student in Environmental Communication at SLU means that I belong to a department that is situated in Uppsala (350 km from where I live). This has meant that I have not had the opportunity to participate in everyday academic conversations with my colleagues. I have tried to compensate for this through taking more courses than the minimum required for PhD students and by attending international academic conferences and presenting papers to test ideas and be inspired by others in the same field of research.

3.2 Methods

As regards the choice of methods, a distinction is generally made between the method of selection, the method of data collection and the method for analysis. In the cases, different methods have been used, depending on their purposes. As five of the eight cases have been conducted as case studies with qualitative semi-structured interviews as the main method of data collection, the following sections will present these methods further. Since Paper I and Chapter 5 are

based on literature reviews, the following section will be devoted to literature as data. After that follows a section about discourse analysis, as this is the basis of Paper III. The chapter ends with a reflection on the thesis' validity and reliability.

3.2.1 Case study research

As mentioned above, five of the eight cases in the thesis are conducted as case studies, although of different types (see Table 3 and Table 4). According to Yin (2003), case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context. Case study methodology thus fits well with my ambition to study the advisory services *in situ*, as it allows the investigator to retain the holistic and meaningful characteristics of real life, such as organisational processes. Yin (2003) argues that the case study's unique strength is its ability to deal with a variety of evidence such as documents, artefacts, interviews and observations. When it comes to the selection of cases, Stake (1995) and Flyvbjerg (2001) claim that we should choose the cases from which we can learn the most. Depending on the question in focus, one may therefore decide whether representative or atypical cases are preferable. A primary distinction in designing case studies is between single- and multiple-case designs (Yin, 2003). In comparison to single-case designs, multiple-case designs have both advantages and disadvantages. The evidence from multiple cases is often considered more compelling, which is why the overall study is regarded as being more robust (Herriott and Firestone, 1983). However, Yin (2003) points out that every case should serve a specific purpose within the overall scope of inquiry, and often the rationale for single-case designs cannot be satisfied by multiple cases. In a multiple-case study, the cases must be carefully selected so that they either predict similar results (a literal replication) or predict a contrasting result but for predictable reasons (a theoretical replication) (Yin, 2003).

Besides the distinction between single- and multiple-case studies, a distinction is also made between holistic and embedded case studies. While the holistic focuses on the global nature of an organisation or a programme, an embedded study includes more than one unit of analysis (Yin, 2003). The mode of generalisation that it is possible to draw from a case study is 'analytical generalisation', in which a previously developed theory is used as a template with which to compare the empirical results of the case study (Yin,

2003)[8]. Yin (2003) further claims that if two or more cases are shown to support the same theory, replication may be claimed[9].

By using the characteristics single-case, multiple-case, holistic and embedded, the five cases conducted as case studies can be labelled according to Table 4. Three of the cases (I, IV and VI) were conducted as evaluations and are hence single-case studies. In these cases, the frameworks were given by the respective constituents as to why the act of choosing a suitable case was a non-issue. Of those, cases I and IV are embedded case studies, since they claim not only to be able to comment on the projects as a whole, but also to account for different groups' views on the project. Cases V and VIII are holistic multiple-case studies. The purpose with those has been to explore and compare different advisory organisations' change processes and their view of the role of the advisory service and collaboration among advisors. In both these cases, the method for case and data selection has been strategic sampling. In case study V, three people that were seen as being visionary when it came to the demands for the future of advisory services were interviewed. Since these people had been thinking in terms of challenges for the advisory service, they qualified as cases from which it was possible to draw valuable lessons. In case study VIII, four different advisory organisations with different organisational structures were selected for a follow-up and deepening study. The reason for this was that I was interested to see whether or not the organisational structure influenced the advisory practice. Three of these cases belong to the same parent organisation, *HS*. *Lovanggruppen* is a smaller private business, which is well-respected within the Swedish agricultural advisory system and which has chosen a somewhat different way of working compared to the traditional commercial advisory service. All four organisations operate in four important agricultural regions, where the demands on the advisory services from the farmers' perspective may be perceived as being rather heavy. Thus, they should be regarded as precursors in the advisory system and also as cases from which it is possible to draw valuable lessons.

The working procedure during the different case studies has generally followed the case study method according to Yin (2003). The case studies have begun with a theoretical proposition that has both lead to the case study in question and helped to focus attention on and to ignore certain data. The most important data collection technique during the case studies has been the interviews (which is further presented and discussed in the following section),

[8] This can be compared with 'statistical generalisation', where an inference is made about a population (or universe) on the basis of empirical data collected about a sample (Yin, 2003).

[9] This replication logic is, however, not to be confused with the sampling logic commonly used in surveys (Yin, 2003).

although evidence has also been gathered from a number of other sources. Since various sources are complementary, Yin (2003) points out that a good case study will want to use as many sources as possible to end up being as robust as possible (triangulation). This has also been my endeavour during the different case studies. To ensure robust case studies, I have had continuously reflective discussions about the findings with key informants and my supervisors. In the evaluative case studies (I, IV and VI), the findings have been discussed further at group meetings and/or seminars, before the final report was written.

Table 4. *Presentation of the case studies in this thesis.*

Case no. (see Table 3)	Type of case study	Sources of evidence
I	Embedded single-case study	35 qualitative and semi-structured in-depth interviews. 1 focus group interview. Written documentations.
IV	Holistic single-case study	2 sets of qualitative semi-structured in-depth interviews with 17 participants. Written documentations. Continual contact with key-informant.
V	Holistic multiple-case study	3 qualitative and semi-structured in-depth interviews. Written documentations.
VI	Embedded single-case study	7 qualitative and semi-structured interviews Survey to all 30 participants. Written documentations. Participant-observation. Continual contact with key-informant.
VIII	Holistic multiple-case study	13 qualitative and semi-structured in-depth interviews. Written documentations.

3.2.2 Qualitative research interviews

As indicated above, the most important data collection technique during my case studies has been the interview. In six of the eight cases, qualitative semi-structured interviews have been the main method of data collection. According to Kvale (1997), the interview as a research method is a conversation with a meaning and a purpose—to learn about a phenomenon. It is an exchange of views between two persons who converse about a topic of common concern. The word interview itself describes the inter-relational characteristic of the act—something that takes place 'between two views'. However, unlike a causal conversation, the research interview is not a conversation between equal parts. It is the researcher who defines and controls the situation, presents the topics, decides which vocabulary is used and who critically follows up the

interviewee's answers. The qualitative research interview is thus neither an objective nor a subjective method—the core of the interview is the intersubjective interaction (Kvale, 1997).

During all the interviews that I have conducted, it has been important for me to create an atmosphere that should feel as natural as possible for the interviewee. My endeavour has been that the research interview should feel more like an everyday conversation than a hearing—and that the interviewee should speak as honestly and openly as possible. In order to create this sense of security and confidence in the interview situation, I have always met the interviewees in their homes or workplaces, either on their farms or in their offices. The first contact has always been made by a phone call. In two of the evaluative studies (IV and VI), the participants had been informed by the project leader that I would contact them. In other studies (I and II), I was the one who initiated the first contact and presented the purpose of the study in question. In these cases, I had been recommended 'suitable' persons to interview by, for example, the LRF, the County Administration or a local advisory organisation. By a 'suitable' person, I do not mean a person with certain opinions, but a person who is able to talk about their opinions. To ensure that I was not presented with a positive sample of respondents, the number of interviews in these cases was decided during the time of the data collections, when the so-called empirical saturation occurred, which is when new statements on the subjects are no longer received, and the subject/phenomenon in question can be considered to be sufficiently elucidated. During the first phone call, I described who I was and the reason for making contact. I also briefly described the purpose of the interview and presented some of the focal topics of the interview. None of the interviews required any particular preparation by the interviewees; except for perhaps putting forward certain documentations related to the study in question.

At the time of the interview, I was always careful to leave myself enough time so that I could be as flexible as possible during the visit and let it develop in such a way as was felt suitable. This meant that the visits to the interviewees were often longer than the time taken for the actual interview. For every interview-study, I developed a question guide. These were never strictly followed, but were rather used as support for me in the interview situation to ensure that all planned topics were sufficiently discussed.

Methodologically, the interviews were structurally similar. Kvale (1997) presents different types of interview question that inspired me on how to conduct an interview. The first part has been dedicated to questions of initial, overall and exploratory character, while the middle part has focused more on specific and direct questions of a clarifying nature. During the interviews I also

used indirect or projective questions where I have asked the interviewee about what or how he/she thinks that other persons perceive, for example, a certain phenomenon (it could be either other farmers in general or other participants in the same project). Towards the end of the interview I return to more open questions of summary and an interpretive nature to ensure that I have understood the interviewee adequately. The use of silence has also been an effective way of giving the interviewee time to reflect and then let him/her guide the conversation in a meaningful direction from their perspective. The average time for the interviews was approximately 2.5 hours.

All interviews, except those conducted within case I, were recorded. The recording part of the interview was never a problem, although the interviewee and I always had a conversation about the recording and how it was going to be used. Recording the interviews enables me as a researcher to establish a better contact and focus more on the interviewee's reasoning during the conversation. Even if the interviews were being recorded, I also took notes during the interviews. I see the recordings and the notes as complementary, and the notes often help me in the analysis.

As mentioned in Chapter 3.1.3, the first-order analysis occurred during the interview situation as a hermeneutic veer between my pre-understanding and the statements raised by the interviewees. When these analyses gave rise to questions, clarifying questions were asked. My quest when I leave an interview is that there should be as few dissonances as possible in the interview material—that is, I am trying to assure myself that I have understood the interviewee adequately (c.f. Kvale, 1997). This aligns with Alvesson and Sköldberg (2008), who claim that interpreting and reflecting are constantly important actions throughout the process of interviewing. If I, as a researcher, am critically alert during the conversation, I am able to accomplish a meaningful understanding of the interviewee and his/her social world (c.f. Alvesson, 1999). However, it is reasonable to assume that people wish to give a good impression of themselves and the organisations they represent (Alvesson, 1999). This applies both generally as well as in the interview situation. Thus, there may be reasons for the interviewees to portray themselves as rational or morally accountable in the interview setting (Alvesson, 1999). However, I have not experienced this as a major problem. The duration of the interview makes it possible to highlight a subject or phenomenon from several perspectives. To be conscious and aware of the risk of adjusted stories and to encourage critical reflection are other ways of dealing with and minimising the risk of this occurring. After the interviews, but in close connection to them, I wrote some lines of reflection as a brief summary and description of my feelings during the interview.

As described above, the analysis of the interviews started during the interviews themselves. The main analysis, however, occurred afterwards, from the writing of the transcriptions to the writing processes of the reports and/or papers. The method for analysis can be described as a combination of a hermeneutic and an abductive approach. By reading several times the extensive set of transcripts that each interview study gave rise to, empirical regularities developed from the empirics. The statements from the interviews could then be systematised in these regularities. The regularities have subsequently been analysed through the lenses of different theoretical concepts to give them further meaning and explanation. The choice of analytical lenses in the different cases can be seen both as an expression of what is assumed to create most meaning and understanding for each case, but also as a reflection of my emerging and constantly developing pre-understanding about which aspects seem to be important.

3.2.3 Literature as data

Case III (which is equivalent to Paper I in this thesis) is based on a literature review, as is Chapter 5. The aim of Paper I was to provide an overview and critical examination of the current knowledge about farmers' perceptions of nature conservation and other factors influencing their willingness to perform nature conservation actions. This paper was written together with two other PhD students (as well as three other researchers) interested in different aspects of nature conservation. My motive for taking part in this literature review is presented in Chapter 3.1.1.

As described in the paper, the authors made an extensive literature search, interpreted data and synthesised it into a model to show how attitudes of the farmer, the farming context and agri-environmental schemes interact and thus influence how the farming community affects nature and biodiversity. In order to make the selection of studies transparent and standardised, the search was restricted to easily accessible and peer-reviewed scientific journals available through WebSPIRS and the ISI Web of Knowledge. The key words used were *attitudes*, *perception*, *feelings*, *farmers*, *nature* and *nature conservation*. We also followed current literature in the field and searched the reference lists for relevant articles. The review included studies from Europe, North America and Oceania. The reason for this geographical restriction was an assumption that these regions would have internal similarities concerning, for example, structural and organisational preconditions. This would increase the possibility of finding parallels between the studies, but also of drawing lessons that would be relevant in Swedish settings.

The literature study underlying Chapter 5, the aim of which is to provide a description of the development of the Swedish advisory system and its relation to the agricultural politics and trends in extension, is of another type. This chapter is based on readings of different types of source material, from books about agrarian history descriptions, to background descriptions of governmental investigations and propositions, to publications written by, for instance, different Rural Economy and Agricultural Societies, the Royal Swedish Academy of Agriculture and Forestry, the LRF and the European Union Administration.

3.2.4 Discourse analysis

Case VII (which is equivalent to Paper III in this thesis) is based on discourse analysis. The aim of Paper III was to describe and critically analyse recent advisory efforts and the prevailing discourses that have affected the agricultural advisory services in Sweden over the past 15 years. The focus was on those efforts that have had the declared aim to support the farmers to become more competitive and viable. The article also sought to analyse why the many efforts do not seem to have been sufficiently effective and, based on this, give recommendations for future initiatives.

Hajer and Versteeg (2005) define discourse as:

> An ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices.

Hence, a discourse is produced through language, communication and other human interactions, but it is also practised and manifested through institutional arrangements and organisational structures (Hilding-Rydevik *et al*., 2011). These, in turn, form part of the reproduction of the discourse (Foucault, 1976, 1982; Dreyfus and Rabinow, 1982; Hajer, 1995; Hajer and Versteeg, 2005). Fairclough (1995) claims that the relationship between language, which is a socially and historically situated mode of action, and society/culture is to be seen dialectically. Accordingly, language is socio-culturally shaped but also constitutes society and culture in ways that may be transformative as well as reproductive (Fairclough, 1995). This entails that discourses establish and reproduce apprehensions of the world, and they are both constitutive and constituted (Winther Jørgensen and Phillips, 2000). In everyday speech, the terms discourse and discussion are often used interchangeably. Analytically, however, they should be distinguished. While discussion is the object of analysis, discourse analysis sets out to trace a particular linguistic regularity

that can be found in discussions or debates (Hajer and Versteeg, 2005). Discourse analysis, then, is the study of language-in-use (Wetherell *et al*., 2001). The analysis of discourse can be placed in the interpretative or social constructionist tradition in social sciences (Guba and Lincoln, 1989).

The discourse analysis in Paper III was based on a review of a wide range of written documentations, for example LRF reports of various kinds, internal documents, mail conversations, web material, and news articles in the Swedish agricultural press. Access to internal documents was possible thanks to the authors' involvements in other research projects and development processes within the Swedish agricultural advisory system over the past few years. The data covered the period from 1992 to 2012 and within the data, recurring themes were searched for. As described in Paper III, the data collection resulted in a timeline, to which events, debates, political decisions and initiatives were added to create a historical chronology. This chronology was then refined to highlight what we perceived as four more or less distinct discourses. Within each discourse we also looked for how these were manifested in practice—as advisory efforts aimed at farmers.

3.2.5 On validity and reliability

Validity and reliability are important criteria for assessing quality, particularly in quantitative surveys. Validity is concerned with the accuracy of the findings, i.e. whether the researcher measures what he/she intends to measure. Reliability, on the other hand, is concerned with the consistency and repeatability of the study, i.e. whether the results will be the same if the survey is conducted again. Even in qualitative research there are, of course, different ways of considering and assessing the validity, or credibility, of a study (see for instance Kvale, 1997; Merriam, 1998)[10]. Merriam (1998) recommends six strategies that researchers can apply to ensure validity in qualitative case studies: triangulation, member checks, long-term observation, peer examination, participatory or collaborative modes of research and researcher's bias. Below, I will briefly comment on these strategies.

- *Triangulation* means that the researcher uses different methods to gather information about the phenomenon in focus. The purpose with triangulation is to compensate for the weak sides of one method with the strength of other methods (Merriam, 1998). It is also about ending up with as robust study as possible (Yin, 2003). By using both research interviews and

[10] Besides validity there are other criteria used to assess the quality of the study. Guba and Lincoln (1994), for example, suggest *trustworthiness* and *authenticity* as two basic criteria for assessing a qualitative survey.

ethnographic conversations and having studied different types of written material (internal as well as published), I claim I have gained a rich understanding of the phenomena I have studied. However, I do not claim that I have covered all aspects that are important for understanding the challenges facing the advisory system and which it must deal with in order to better contribute to a sustainable farm development.

- Through *member checks,* the results and interpretations are taken back to the participants in order to be confirmed and validated. In the evaluations that I have conducted as part of this study, I have both had continuous contact with key informants and let participants comment on my material before the final reports have been written.
- According to Merriam (1998), *long-term observation* or repeated observations of the same phenomena increase the validity of the research results. As I have studied the advisory system for 12 years and also made repeated studies regarding the same phenomena, I claim that I have applied this strategy.
- In a *peer examination* process, the research data and findings are reviewed and commented on by nonparticipants in the field. In this regard, conversations with my supervisors, as well as key informants and other persons involved at various levels in the Swedish agri-food system, have been helpful. Participation in international seminars and conferences also helps me to see my findings and analyses from other perspectives.
- *Participatory or collaborative modes of research* mean that the researcher should try to involve most of the participants in all phases of inquiry. In the studies that are conducted within this thesis, I am the one who has made the transcriptions, interpretations and analysis and written the reports. As mentioned above, however, drafts have been presented and discussed with key informants, participants and supervisors as a way to involve others in the process and end up with final reports that are as robust as possible.

4 Conceptual framework

In this chapter, I describe the theoretical concepts that have guided me through my dissertation work, and which have provided the lenses through which I have analysed and tried to understand my empirical data. As this thesis revolves around sustainability in agriculture at farm-level and what is needed for the advisory system in order to contribute to such development, the theoretical concepts that have interested me are in one way or another related to handling such complex issues. As mentioned in Chapter 2, I was introduced early to two different research communities in my PhD studies—the IFSA and the ESEE. These two research communities have had a great impact on my view of how to regard and understand farming, learning and the advisory role and practice.

The first part of the chapter deals with *systems thinking*, *system boundaries* and the notion of *knowledge-power*. As mentioned in the introduction, the contemporary advisory services tend to focus on issues concerning current decision-making of a here-and-now character (Lindblom and Lundström, 2014). Nybom and Karlsson (2015) even claim that advisory organisations lack expertise in strategic development issues. This is despite Melin and Karlsson (2014) having shown that there are expressed needs of farmers who demand an upshift of today's advisory service. The narrow focus of the advisory services on delimited aspects of farming is reflected in the structural arrangement found in advisory organisations, which are built around vertically positioned knowledge areas. With this way of working and dividing a farm into different components, it is difficult to grasp higher-level questions concerning strategic as well as sustainable development. These are questions that demand another way of working, including the ability to treat the farm systemically. A change of system-level (from components being treated separately, to regarding the farm as a systemic whole) in the advisory service would include a negotiating process about where to draw the boundary of the system of interest. Such a

negotiating process will be affected by the knowledge-power asymmetries at the advisory organisation, and is hence related to the organisational culture. The culture, in turn, is sustained by the structuration processes within the organisation.

The first part ends with a section about *Habermas' system* as opposed to the *lifeworld*, as these distinctions offer an explanation model as to why the advisory system has come to develop services that are remote from the farmers' lived experience.

The second part presents *loops of learning* and *orders of change* to describe the kind of organisational learning that is needed in order to change the prevailing approach in advisory services. Today's focus on here-and-now questions tends to stay within the first learning loop, focussing on refining the farm sub-system stipulated by the advisory module in question. If the advisory organisations are to contribute also to processes towards sustainable farm development, at least second order change, where the existing agricultural system is seen from another perspective or level, is needed (c.f. Röling and Wagemakers, 1998; Ison and Russell, 2000). Such a changed approach in advisory services requires to be preceded by dialogues characterised by triple-loop learning, where the organisation has to engage in questions regarding their role and what type of knowledge they base their businesses on.

The last part is devoted to organisational cultures and what distinguishes the *individual culture* from the *collaborative culture*. While the former shares many characteristics with the prevailing situation at several advisory organisations, the latter is identified as a desirable culture in order for the advisory organisations to be able to better address the systemic questions that lie ahead. One part of the organisational challenges is thus to re-culture the organisations in order for collaborations to evolve.

4.1 Systems and systems thinking

4.1.1 On systems thinking and system boundaries

Systems thinking is a way of thinking about how the world is organised and of understanding the world's complexity (Checkland, 1981). While more traditional reductionist approaches to agricultural research focus on analysing separate parts of the system—which are conceptualised as an assemblage of fairly isolated mechanistic elements that are determined by linear cause-effect relationships—systems are rather about drawing attention to the relationship between elements (Darnhofer *et al*., 2012). Hence systems

concern interaction, entanglement, dependencies, exchange, connections, relationships and co-evolution (ibid).

One of the most widely known distinctions within systems approaches is that between 'hard' and 'soft' systems thinking first made by Checkland in 1981. For a more recent presentation of their respective characteristics, see for instance Ison (2010) and Darnhofer *et al*. (2012). In *hard systems thinking*, systems are treated as if they really exist, and their boundaries and goals are assumed to be given, evident or undisputable. Hard systems thus have an ontological status, as Bawden (1991) would argue. According to Checkland (1985), hard systems thinking takes off from the position that systems can be engineered and optimised in a rational manner towards a known and previously defined goal. In natural systems, such hard systems thinking is widely adopted in mathematical and bio-economic optimisation models and tends, as such, to be used to inform policy makers on different impacts that policy changes are expected to result in (Darnhofer *et al*., 2012). Hard systems models dealing with a farm as the system are based on farmers as individual decision-makers who behave according to the assumption of rational-choice theory (ibid). Due to these simplified assumptions of human behaviour underlying these models, they have been heavily critiqued by social scientists (ibid).

In *soft systems thinking*, on the other hand, systems are conceptualised and used as a strategy for analysing complex problematic situations and for identifying acceptable improvements that could be made to those situations (Checkland, 1981). These improvements are accomplished through a multistage process of information gathering, description, analyses and discussions. Soft systems thinking is thus adopted not only as a way of thinking, but also as a process to find desirable and feasible paths for action. Soft systems are therefore adopted as deliberate social constructs since they only exist if people agree on their goals, their boundaries, their membership and their usefulness (Röling and Wagemakers, 1998). The goal of such a system is therefore not taken as a given, but one that is contested, and system boundaries need to be negotiated (Checkland and Poulter, 2010). All this implies that in soft systems thinking, systems have an epistemological status, as they provide a sense-making way of looking at the world. The system is thus only a mental construct, or a heuristic, that is seen as being effective in describing, classifying and discussing, and thereby allowing the enhancement of understanding (Darnhofer *et al*., 2012). In this constructivist view, the agro-ecosystem is taken as a sub-system within a human activity system of interest (Röling and Wagemakers, 1998), and yet another way to describe a farm is as an interaction between the natural system and the human activity system. In soft systems thinking, how humans perceive their environment and their

options is put at the centre of attention (Darnhofer *et al*, 2012). The evolution of a farming system, for instance, is thus shaped by human interaction, learning, conflict resolution, agreements and collective action (ibid). Aligned with the ideas of soft systems thinking and practice, Packham and Sriskandarajah (2005) talk about systemic development when referring to a set of ideas that promotes thinking and acting that will ensure the continued development of, for example, an organisation (as a system) through participatory learning.

Depending on which system is in focus and where the system boundaries are drawn, the system (in the soft system sense) in question will obviously have different goals. The system can, in turn, be viewed as consisting of different constituent sub-systems, in the same way that the system itself is also a sub-system of yet another system at a higher aggregation level (Bawden, 1998). Hence, systems can be described as being part of hierarchies where parts make up entities/levels that in turn make up new entities/levels. One of the core ideas of systems thinking is that the complex entity that an observer, or group of observers, chooses to regard as a whole has so-called emergent properties, that is to say properties that make the whole entity more than the sum of the parts (Bawden, 1998; Checkland, 1999a).

Table 5. *Senge's (2006) five basic disciplines that are included in his concept of 'learning organisations'.*

Personal mastery	Personal mastery is the discipline of personal growth and learning. It is grounded in, but goes beyond, competence and skills and is to be seen as a life-long process.
Mental models	Mental models "are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action" (Senge, 2006, pp. 8).
Shared visions	At its simplest level a shared vision is the answer to the question "what do we want to create?" It is vital because it provides focus and energy for learning.
Team learning	Team learning is a collective discipline based on dialogue with the aim to achieve coordinated action amongst individuals. The desirable situation is a phenomenon that Senge calls alignment.
Systems thinking	Systems thinking is the conceptual cornerstone of Senge's approach, which both integrates the others and fuse them into a coherent body and practice. Systems thinking is about learning how to see situations from a holistic perspective.

Senge (2006) also talks about systems thinking, although from an organisational learning perspective. He claims that in situations of rapid change, only organisations that are flexible, adaptive and productive will excel. Senge calls these organisations *learning organisations* and claims that the dimension that distinguishes them from more traditional organisations is the

mastery of certain basic disciplines, which are presented in Table 5. Together they can be seen as a heuristic for organisations that would like to develop in such a direction. In this heuristic, systems thinking is the conceptual cornerstone and a discipline for seeing wholes and interrelationships rather than separate parts.

Both Senge and the soft system thinkers have however been criticised for their naïve expectations of what collective learning processes can achieve, for their failure to recognise that conditions for open debates are often lacking and for not paying enough attention to power structures (Garavan, 1997; Flood, 1998; Flood, 1999; Caldwell, 2012a, 2012b; Jackson, 1985; Ulrich, 1988). Grounded in soft systems thinking, *critical systems thinking* has therefore been developed (e.g. Flood, 1999; Jackson, 1985; Ulrich, 1988). To overcome the shortcomings perceived in soft systems methodology, the critical systems thinkers have embraced Habermas' idea of communicative action and 'power free' communication (Leuuwis, 2004). Midgley (1992) writes, that in critical systems research, two needs in particular are stressed: "first, the need to be critical about defining system boundaries and, second, the need to establish boundaries within which critique can be conducted".

Ulrich (1983) and Flood and Ulrich (1990) claim that the systems idea and the critical idea are inseparable. Ulrich (2001) also notes that boundary judgements are inevitable, as they are the result of our inability to consider "the whole system". Midgley (1992) continues:

> In order to make practical choices between boundaries we must be guided by a sense of truth (i.e., what can be said to exist, lying either within boundaries or marginal to them), rightness (i.e., which boundaries it is right to employ) and subjective understanding (i.e., that it is possible to see things in very different ways).

In an analogous way, Flood (1999) states that boundary judgement is a choice that determines who will be in the system and benefit and who will be out and not benefit. Where the boundaries of analyses are drawn affects the ethical stance taken and the values pursued (Ulrich, 1983). Ulrich (2001) distinguishes between self-critique (the critical turn) and boundary critique as two important competences needed to clarify the value judgements that underlie the decisions we make. He writes:

> Since in any case we cannot avoid justification deficits, we should seek to understand competence rather as an effort to deal self-critically with the limitations of our competence. The critical turn demands from the researcher a constant effort to be 'on the safe side' of what we can assume and claim in a critically tenable way; it demands a Socratic sense of modesty and self-limitation even where others may be willing to grant the researcher the role of expert or guarantor. (Ulrich, 2001)

To be critical of yourself means to understand your self-limitations and be aware of and question your pre-understanding, procedures and findings and the way in which you translate all this into practical recommendations (Ulrich, 2001). Aligned with the ideas of critical systems thinking, Bawden (2010a) talks about *critical social learning systems*. By this he means:

> A collection of individuals who agree to act together as a coherent group of people who are prepared to 'collectively learn their way through' an issue that they all agree is problematic in some way or another to them all. (Bawden, 2010a)

This, as a systems concept of practical relevance to the context of advisor-farmer relationships in this study, implies that the decision-makers themselves are hence included in the system as an embedded and inter-connected component of the whole and which as such is contributing to both the organisational form of that system as well as its functions (ibid). Furthermore, besides learning about the issue that has brought them together, the participants of such a learning system will also be critically reflecting on the learning process that they are bringing to bear (ibid). Just as in critical systems thinking, this critical reflection will include epistemic reflections about their different values and beliefs and how those affect how each individual perceives the issue at hand as well as the judgements on what is considered to be the appropriate thing to do.

An attempt to integrate approaches and methodologies ranging from holistic to reductionist was presented as a nested hierarchy, better known as the Hawkesbury spiral when it was first presented by Bawden *et al*. in 1985, and as an example of a research and problem solving paradigm within Farming Systems Research and Extension. According to this, the choice of approach from within this framework was left with the researcher or the student problem-solver contingent upon the situation or the stage in the change process. While the reductionist approaches are based on a systematic and linear cause-and-effect way of thinking applied to 'reduced' problems, the more holistic approaches, particularly at the soft systems level, were aimed at improving entire problematic situations and focused on debates about desirable and feasible changes for that improvement to be enacted.

The version of the spiral presented here (Figure 6), drawn from later work by Bawden and his colleagues at Hawkesbury, has a level beyond soft systems thinking, advocating for the need for a critical attitude in order to find and implement systems improvements that are deliberative, critical and ethically defensible.

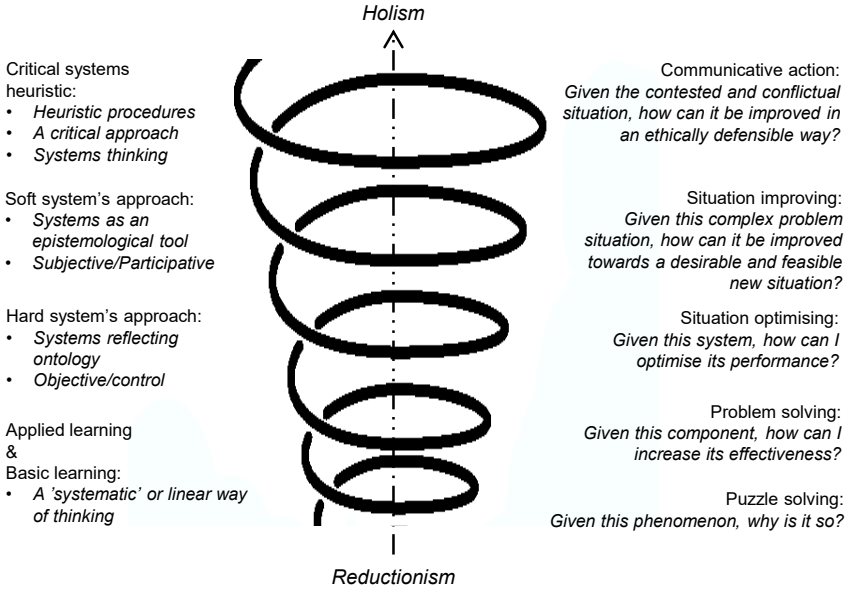

Figure 6. Model of a nested hierarchy of approaches inspired by the Hawkesbury Spiral and adapted from the work of Bawden and Packham (1993), Sriskandarajah *et al*. (1989) and Ulrich (2005).

4.1.2 System boundaries and the notion of knowledge-power

As indicated above, a system in the sense of the soft systems tradition and critical systems thinking lies in the eyes of the beholder and is conditioned by the person's knowledge and experiences but also by the person's mental models (Senge, 2006) of the world[11]. Consequently, when people talk about situations, it often happens that their views differ, simply because each of them frames situations differently (Ulrich and Reynolds, 2010). The different perspectives thus reflect different systems of interest with different constituent sub-systems (Open University, 1997). Accordingly, within for example an advisory organisation, where advisors with different skills and competences work, there will be several views on how to perceive a farm and where to draw the system boundary. As the setting of system boundaries is an act of negotiation, it is connected to the notion of knowledge-power (Ulrich

[11] The 'mental models' concept is further described by Craik (1943), and also aligns with, for example, the ideas of 'constructs' (Kelly, 1955), 'mental maps' (Argyris and Schön, 1974), 'schemata' (Bartunek and Moch, 1987) and 'weltanschauung' (e.g. Allen, 2008; Koltko-Rivera, 2004).

and Reynolds, 2010). Knowledge-power is the idea that people in positions of power determine what is considered to be valid knowledge and consequently also valid action (Flood, 1999). Moreover, many professionals have developed a way of speaking and thinking that both contains knowledge about an activity/business, which therefore facilitates the everyday work, and also contributes to distinguishing between those who belong to a group and those who do not (Säljö, 2006). This aligns with Foucault's view of power, as he claims that "power is everywhere"—it is diffused and embodied in discourse, knowledge and 'regimes of truth' (Foucault, 1991; Rabinow, 1991). As long as knowledge-power is not recognised and managed, decisions are likely to consolidate ideas of people in privileged positions (Flood, 1999). Awareness about knowledge-power is of course not only an issue of importance among advisors within an advisory organisation, but also in the contact with the farmer.

4.1.3 Systems thinking in advisory practice: A whole-farm approach

As mentioned in the introduction, the call for a whole-farm approach in extension has been one of the hallmarks within the farming systems movement since the 1980s (Collinson, 2000). In Sweden, Nitsch (1994a) introduced the idea of taking a whole-farm approach in advisory services in the 1990s. Although there is a discourse going on in the different advisory organisations in Sweden regarding the idea of providing some kind of holistic advisory service, the forms that such a service will take have still not been settled.

According to Darnhofer *et al*. (2012), taking a farming systems approach implies taking at least three sets of interacting factors into account; i) the farmer and his/her family with their preferences; ii) the farm with its resources and assets; and iii) the environment constituted by social networks, economic opportunities, political incentives and bio-physical context. Van der Ploeg (1991), in turn, talks about different 'domains of farming' (technical, economic and social-organisational relationship)—i.e. different aspects that need to be considered in order to arrive at a coherent farm. In addition, farmers need to co-ordinate practices with different time horizons in mind (Leeuwis, 2004). Management scientists differ between operational, tactical and strategic decisions, which are geared towards yielding short-term, medium-term or long-term consequences (Davis and Olson, 1985). No matter which description of the whole-farm approach is used, it becomes obvious that advisors will have to collaborate in one way or another to accomplish the holistic advisory idea vis-à-vis the farmer.

Ljung (2015) distinguishes between three core factors that the advisors need to take into consideration in order to be an interesting partner for the farmers. Depending on the target group's needs and preconditions, the advisors need to consider: i) the competence needed—related to explicit, implicit and deducible demands; ii) which methods and tools are necessary and appropriate at different times, and iii) how to best organise—both internally and externally — to create a learning situation. The idea aligns with Leeuwis (2013), who claims that effective or successful innovation "requires the emergence of a conducive coupling and balance between new '*hardware'*, '*software'* and '*orgware'* in societal networks of interaction". This is also in line with the ongoing discourse about the importance of both front-office and back-office activities in agricultural advisory services (Labarthe and Laurent, 2013). Front-office activities concerns the work performed in the beneficiary's presence and allows for the co-construction of the demand and/or the co-production of the response, while the back-office work takes place without the presence of the beneficiaries and allows for the standardisation of the service offer and for capitalising on existing knowledge (Labarthe and Laurent, 2013). As a consequence of the privatisation of the advisory services that has been going on in Europe since the 1990s, back-office activities, however, tend to have been left behind (Labarthe and Laurent, 2013).

4.1.4 The system that colonises the lifeworld

Habermas uses the concept system in another way, which in this context helps to understand the development of the advisory system and its relation to the farmers. Habermas argues that expert knowledge, supported by a narrow positivistic view of science, has come to be assigned the responsibility for the solution of more and more societal problems, while political and ethical debates have become less prominent. By setting *the system* in relation to the *lifeworld*, Habermas argues about the process of modernisation and how it affects us. By lifeworld, Habermas (1987) means the shared common understandings, including values that develop through face-to-face contact over time in various social groups, from families to communities. The lifeworld hence refers to the intimate sphere where we live as thinking subjects and it provides the context of meaning through which people interpret and understand their situation and surrounding. It is a "lived-in and largely taken-for-granted world" (Schutz and Luckmann, 1974). Lifeworlds are simultaneously products of past experiences and personal shared understandings, and they are reshaped by new encounters with people and things (Leeuwis, 2004). Even if the lifeworld has specific individual characteristics, a considerable part of a

person's lifeworld tends to be shared by others, i.e. with the members of a 'community' (Leeuwis, 2004). It is in this relational space that our communicative acts (Habermas, 1987) take place and it is this type of shared knowledge—which Giddens (1976) refers to as mutual knowledge—that provides opportunities for effective communication between people.

Against the lifeworld, Habermas (1987) puts the system, which is a rationalised and impersonal approach towards the experienced subjects. It thus relates to those aspects of society that have been disconnected from people's immediate cultural context and which follow a more independent and objectified logic (Alvesson and Sköldberg, 2008). While the lifeworld is governed and coordinated by values, norms and language, the system is governed by money and power according to Habermas (1984). A bureaucracy is an example of such a system, where relationships and approaches are regulated and impersonal and where phenomena are to be rationalised and made efficient, predictable and transparent. According to Habermas, the process of modernisation implies that the system colonises the lifeworld—that is, that parts and functions of the lifeworld are taken over by bureaucracy, the market and legislation. Instead of dialogue and interaction between people aimed at mutual understanding, money, formalised rights and obligations, monitoring responsibilities, documentations, power, and so on are intruding. As this is considered to be 'rational', we let the system and its rules guide rather than the understanding between subjects. Hence, people do not act on personal conviction, but because they perceive that they have to. The rules indicate what is correct, and if you do not follow those you are penalised. Habermas means that the lifeworld is the foundation of a society and that the modernisation process hence obstructs its cornerstones. His solution on how to work in a rational way, but still maintain focus on the lifeworld, is based on communicative rationality which in turn is based on the communicative act (Habermas, 1987).

4.2 Loops of learning and orders of change—learning at different levels

Given the presentation in the sections above concerning the differences in perceiving systems as hard (reflecting the ontology) or soft (where systems are used as a an epistemological tool), combined with the brief presentation in Chapter 1 of the strong disciplinary division of the Swedish advisory system, it becomes obvious that advisors as well as advisory organisations will have to work differently if they are going to be able to address the sustainability challenge.

There is an extensive literature about what enables individuals and organisations to learn; the latter within the area of organisational learning. Organisational learning is, however, not to be confused with Senge's (2006) expression 'learning organisation' mentioned earlier, although the two expressions tend to be used interchangeably. According to Örtenblad (2001), the most common ways to distinguish between organisational learning and learning organisation in the existing literature are that learning organisation is a form of organisation while organisational learning is the activity or processes (of learning) in organisations, and learning organisation requires effort while organisational learning exists without any effort.

One way to distinguish between different levels of learning and reflection is by using the terminology *loops of learning* (c.f. Argyris and Schön, 1974; Swieringa and Wierdsma, 1992; Flood and Romm, 1996). In a similar way, one can talk about different *orders of change* (c.f. Sterling, 2010-11; Ison and Russell, 2000; Bartunek and Moch, 1987; Watzlawick *et al*., 1974). Bartunek and Moch (1987) use the term *schemata* to illustrate these different orders. They see schemata as templates that, when pressed against experience, give form and meaning[12]. Hence, schemata guide and give meaning to behaviour, suggest implication of certain actions, make events meaningful and enable people to set goals and enact behaviours to achieve them (Bartunek and Moch, 1987). Even though schemata can be changed, they tend to endure once established. In organisations, members negotiate specifically organisational schemata, which then generate shared meanings or frames of reference for the organisation as a whole or for sub-groups within it. The characteristics of the three loops of learning/orders of change are summarised in Table 6.

[12] According to Bartunek and Moch (1987), the terms 'paradigm' (Kuhn, 1970), 'frame' (Goffman, 1974), 'theory-in-use' (Argyris and Schön, 1978) and 'cognitive map' (Bougon *et al*., 1977) are also used to refer to similar, if not identical, constructs.

Table 6. *Characteristics of different loops of learning and orders of change (Sterling, 2010-11; Billaud et al., 2004; Groot and Maarleveld, 2000; Bartunek and Moch, 1987).*

	Single-loop learning/ First order change	**Double-loop learning/ Second order change**	**Triple-loop learning/ Third order change**
Kind of learning	Adaptive/Conformative learning.	Generative/ Reformative learning.	Radical/Epistemic/ Transformative learning.
Purpose of learning	Incremental improvement: Learning how to do things the right way.	Reframing: Learning to do the right things.	Transforming: Finding out what are the right things to be doing.
What is learned	Learning how to correct errors in routine behaviours.	Correction of errors by examination of underlying values, assumptions and policies.	Understanding of others' understanding, perspectives and experiences.
How is it learned	Training and practice.	Action, observation, measurement, reflection, interpretation.	Learning about the learning process itself.
	The tacit reinforcement of present understanding.	The conscious modification of present schemata in a particular direction.	The training of organisational members to be aware of their present schemata and thereby more able to change these schemata as they see fit.
Expected outcome	Effectiveness/Improved performance of routine actions.	Examining and changing assumptions/Structural changes in the person (or group) that learns, and in its interaction with the environment.	Paradigm change/Design of norms and protocols that govern single and double loop learning.

Single-loop learning and first order change refers to routine learning, where detection and correction of identified errors are made by incremental modifications within an established framework. This hence implies the tacit reinforcement of present understandings. At this level, given or chosen goals, values, plans and rules are operationalised rather than questioned. The emphasis is on "techniques and making techniques more efficient" (Usher and Bryant, 1989) When the governing variables themselves are questioned and are a subject for critical scrutiny, this is referred to as double-loop learning/second order change. Learning at this level involves the conscious modification of present schemata in a particular direction, and is thus a more creative and reflexive process. Argyris (1974, 1982, 1990) argues that double-loop learning is necessary if practitioners and organisations are to make informed decisions in rapidly changing and often uncertain contexts.

When it comes to triple-loop learning, Tosey *et al*. (2011) claim that there is limited consensus amongst scholars about a definition. Swieringa and Wierdsma (1992) speak of triple-loop learning as occurring "when the essential principles on which the organisation is founded come into discussion" and involving "the development of new principles, with which an organisation can

proceed to a subsequent phase". Triple-loop learning/third order change often refers to a meta-learning process about how we learn in the first place. Bartunek and Moch (1987) argue that triple-order change attempts to help organisation members to develop the capacity to identify and change their own schemata as they see fit. Bartunek and Moch (1994) call first- and second-order organisational changes secular phenomena, since they do not transcend human cognitive capabilities. However, they claim that achieving the capacity for third-order change presumes experience that is trans-conceptual—that is not subsumed by individual or social cognitive structures. It is therefore in some sense analogous to mystical experience (Bartunek and Moch, 1994). These ideas align with Flood (1999). He claims that "seeking absolute mastery as reductionism and science do, misses the point of human being". He continues: "The point is that complexity emerges which the human mind is no master over". We thus have to learn to balance mastery with mystery and to know of and learn within the unknowable (Flood, 1999).

From an advisory perspective, learning about the loops of learning and orders of change concepts could probably be useful and fruitful both at an organisational level and in contact with the farmer, as it helps to elucidate and understand where today's efforts are concentrated and what potential there is by taking another perspective. According to Billaud *et al*. (2004), the three loops resonate with the different levels of mapping in planning processes as described by Ulrich (1988). Drawing on the work of Churchman (1979), Ulrich distinguishes between goal planning, objective planning and ideal planning. The goal planner takes the purpose of his/her mandate to be given, whereby the job is to define goals that will secure improvement in the terms of the given purpose. For the objective planner, purposes are not given. His/her job is then to determine the (planning) purpose so as to secure improvement toward some overall vision of improvement (which he/she assumes to be given). The task for the ideal planner, in turn, is to drop the feasible and the realistic and to challenge the soundness of the visions implied by 'realistic' purposes. It is worth noting, however, that no loop of learning is more important than another. However, in order for meaningful action leading to systemic change to occur, it is essential to achieve double-loop learning (Billaud *et al*., 2004).

For this to develop, Argyris *et al*. (1985) claim that the key actors in the organisation have to be able to create ongoing dialogues in which defensive reasoning and behaviours do not impede free and open inquiry. Although double-loop learning appears to facilitate the adaptive potential of an organisation, most organisations seem to have great difficulties in actually learning in a double-loop manner (Argyris, 1996). Also, third order change appears to be difficult to achieve in practice (Bartunek and Moch, 1994).

Marquardt Arévalo *et al*. (2010) claim that the reason for this is that there are no inbuilt organisational structures that promote this kind of learning nor would there be the necessary time allocated to such learning as a priority in tighter economic circumstances. According to Hjelm (1998), however, triple-loop learning is a necessary capacity in order to be competitive in a knowledge-intensive society.

4.3 On individualistic versus collaborative cultures

4.3.1 The need for a changed way of working

As mentioned in the introduction, the Swedish advisory system is characterised by being rather diverse, with many actors with a relatively low degree of mutual collaboration. By tradition, the structural arrangement found in advisory organisations is built around vertically positioned knowledge areas. Because of this, and how the advisory services are packaged, production advisors have historically more or less worked as their own entrepreneurs within the advisory organisation with their own accountability and customer responsibility. This way of working has fostered an individualistic organisational culture, and the focus of the services has mostly been on discussing rather delimited issues concerning current decision-making (Lindblom and Lundström, 2014). Using the terminology of loops of learning, this would be labelled as single-loop learning. As presented in the previous section, there are strong reasons to develop the way of working so that it also includes double- and triple-loop learning, both in the encounters with the farmer and in the internal development work within the advisory organisations.

EU SCAR (2013) claims that in order for the AKIS to be effective and efficient for the agricultural challenges that Europe is facing, they have to innovate and adopt new ways of working. To stimulate innovation within agriculture, they, among other things, suggest multi-actor operational groups that should work in a participatory manner; that knowledge change should be stimulated; that farmers' knowledge should be valued; and that cross-border interactions should be developed and supported (EU SCAR, 2013). In an application to the European framework COST, aimed at boosting the science and practice of sustainability transitions in agriculture, *systemic approach*, *transdisciplinary* and *entrepreneurship* are identified as three skills that need to be improved and developed among the actors in the AKIS (ISTANET, 2017). In many respects, these skills are synonymous with those that might facilitate double- and triple-loop learning.

As implied above, and also in other studies related to agricultural extension, there is a strong focus on skills, methods and ways of working connected to the

challenges that the advisory actors are facing. One aspect that, according to my knowledge, has not received much attention in studies about advisors and their organisations, however, is the impact that the prevailing culture has on the advisory services.

4.3.2 The potentials of a collaborative culture

Margaret Mead (1951) defines culture as "a body of learned behaviour, a collection of beliefs, habits and traditions shared by a group of people and successively learned by people who enter the society". An organisational culture refers to the 'shared meaning and manifestations' of organisational behaviour (Kopelman *et al*., 1990) and emphasises the common beliefs, values and assumptions of organisational members. The organisational culture is learned by individuals and groups as they encounter, work through, and resolve problems and challenges (Bates and Khasawneh, 2005). According to Bates and Khasawneh (2005), the literature on organisational innovation focuses heavily on the role of culture as a facilitator, largely because of the role that organisational culture plays in learning and change (c.f. Bluedorn and Lundgren, 1993).

As already mentioned, the Swedish advisory system is characterised by a rather individualistic culture (c.f. Papers II & IV). Hargreaves (1992) writes that the culture of individualism is characterised by a concentration on short-term planning, on avoidance of discussing or committing to more fundamental changes that could affect the context of the working situation and on preventing the possibility of questions being raised about what the profession is and how it should be performed. Individualism also results in a reluctance to collaborate with colleagues through fear of judgement and criticism (Hargreaves, 1992). Hargreaves (1992) refers to working in such an environment as a state of 'professional isolation', which not only protects from blame and criticism, but which also precludes sources of support and meaningful feedback on the person's value, worth and competence.

Kotter and Heskett (1992) identified an adaptive, learning culture as the optimal culture for organisations pursuing long-term innovation and performance in dynamic environments. Organisational learning culture is important since it enables an organisation to anticipate and adapt to the dynamics of a changing environment (Bates and Khasawneh, 2005). According to Edmonson *et al*. (2001), a collaborative culture is recognised as an effective platform for progress within the organisation. They claim that creating a collaborative culture requires group efforts by all members as well as a continued effort for maintenance. Hence, merely working to create a

culture is not sufficient. It needs to be evaluated and nurtured in order to thrive. This is also mentioned by Southern (2005) who emphasises the importance that the collaborative culture extends into a learning community. If it does not, she warns, there is a risk that people will revert to independent action if/when difficulties arise. The main responsibility for which kind of culture is allowed to develop belongs to the leadership (c.f. Adler *et al*., 2011; Schein, 2010; Popper and Lipshitz, 2000; Edmonson *et al*., 2001; Hjelm, 1998; Fullan and Hargreaves, 1992). Edmonson *et al*. (2001) list five factors that they see as important to create a collaborative culture, namely: physical proximity, deliberate communication, shared vision, selective hiring and effective leadership and empowerment. Adler *et al*. (2011), in turn, talk about four organisational efforts required for the creation of successful collaborative communities. These are: i) defining and building a shared purpose, ii) cultivating an ethic of contribution, iii) developing processes that enable people to work together in flexible but disciplined projects, and iv) creating an infrastructure in which collaboration is valued and rewarded.

Obviously, the individualistic culture as described above does not particularly suit the challenges faced by the advisory system. Hence, there are reasons for the advisory organisations to try to change the prevailing individualistic culture towards a learning, or collaborative, one. Within the advisory organisations, the individualistic culture has also been identified as an obstacle towards both internal collaboration and taking a whole-farm approach in the advisory services. The most common way that the organisations have tried to address the perceived shortcomings, is through changing the organisational structures. However, Fullan (1999, 2007) suggests that rather than restructuring the organisation, *re-culturing* is required in order for collaboration to develop. This opinion is consistent with Tyrstrup (2014) and his ideas about *organisational interstices*, which he uses to describe the field of possibilities, problems and potentials that many of us see, but cannot handle on our own. The interstices arise both as a consequence of administrative choices (i.e. how a business is organised) and routines and traditions, and the potentials for innovation are often found in these interstices. Tyrstrup emphasises that the solution of the interstice issue does not lie in a re-organisation of the organisation. Rather, he claims, it is about finding a suitable body to reach customer benefits, characterised by taking a holistic perspective from the customer's point of view (Tyrstrup, 2014).

4.4 The theoretical concepts fused in a model

Figure 7 is a model illustrating how the different theoretical concepts presented in this chapter have been used in the thesis. My entry point has been the advisory organisations and their struggle to find suitable structures that correspond to the external and internal challenges placed on them. These include, for example, the ability to take a whole-farm approach in advisory services and developing the internal organisational culture towards a more collaborative one. Despite the organisational changes attempted, however, the challenges persist as the changes made have not produced the intended effect. One point of departure in this regard for the present study has been the observation that the organisations were rather unconscious about the learning processes in which they were engaged. Exploring such organisational unconsciousness led me both to the concepts of loops of learning/orders of change and of system boundaries, as ways of better understanding the change processes that they had undertaken. In order to succeed in developing both the internal organisational culture and the advisory services, it is of crucial importance that the organisations reach the higher levels of learning—which would implicitly mean a questioning of prevailing structures. As the challenges ahead are unavoidable systemically, it is also necessary that all participants (depending on the issue in question) acknowledge and agree on the system of interest, its focus and its boundary. The range of perspectives on the above among the different actors would be a factor of the respective mental models (grounded in ontology) as well as epistemology. The learning processes involved need to raise awareness and be able to handle these differences, including the notion of knowledge-power. The model also shows that the advisory organisation is made up of advisors as individuals and as groups. How they behave as actors depends on the structures given, just as the structures are sustained by the individual's actions. This is the process that Giddens refers to as structuration. The model further shows the presence of the Habermasian system, which affects the advisory situation in at least two ways: first, which advisory services are performed, and how they are performed; second, through the knowledge possessed by the advisors as products of a system of education characterised by its dominant reductionist way of perceiving the world.

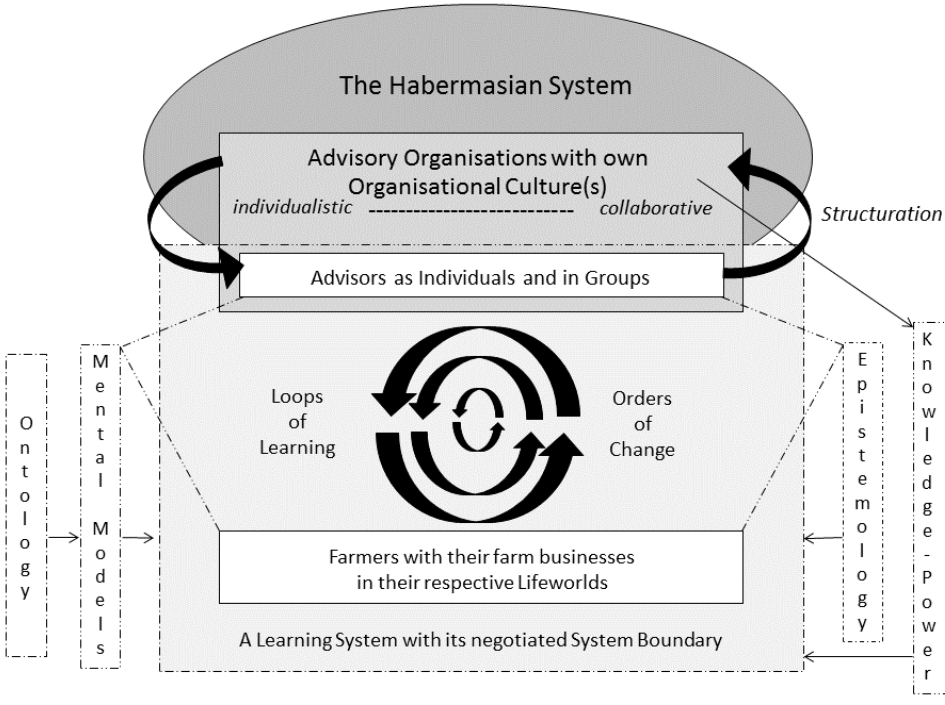

Figure 7. Operational model of the Conceptual Framework.

5 Perspective: Two hundred years of agricultural extension and agricultural politics in Sweden

In order to better understand why the Swedish agricultural advisory system looks like it does today, it is not only interesting but also necessary to take some steps back and look at the history that has formed and created it. Of course, the system has not emerged as a separated function, but as an expression and a response to the contemporary surrounding world. Sometimes the advisory system is formed and changed as a direct consequence of agricultural policy decisions. At other times, the advisory services are more diffusedly and indirectly influenced by trends at international level. In this chapter I sketch the characteristic features of the agricultural policies during different times through the history of Swedish agriculture. The agricultural policies have affected both the preconditions of being a farmer as well as the role of advisory service. Parallel to the Swedish odyssey, I also present trends in extension, in an attempt to place the Swedish development in a wider context. Clearly, Swedish agricultural extension and politics have evolved not as isolated phenomena, but as expressions of discourses, trends and methodology developments that have occurred elsewhere in the world.

The purpose of this chapter is thus to give a background to the statement formulated next to the aim of the thesis, namely that:

> It seems as though the institutional arrangements inherited from history and the divide they have created between various advice-providing organisations, as well as the culture each of these organisations has developed, prevent the current development of relevant services to support a sustainable farm development. (p. 36)

The historic data behind this chapter has been gathered and arranged in such a way as to contribute to a better understanding of and explanation for both the

fragmented nature of the Swedish advisory system and its seeming inability to develop discourses and practices that can support the espoused systemic approach for sustainable development at farm level. The ambition is also that the chapter will increase the understanding about the mismatch between the current service provision and farmers' requirements, which the development of the advisory system has led to. This implies that this chapter will revolve around the first research question, which will be further discussed in Chapter 9.

The historical presentation has been approached according to five distinct periods. The first covers the end of the 1700s until the interwar years. In this period, the advisory system and the foundations of the Swedish agricultural policy as we know them today take shape. The second period covers 1940 until 30th June 1967, and is characterised by policies of rationalisation. During this period, the agricultural policy's Magna Carta is formulated and new actors enter the advisory market as a consequence of the increased specialisations that followed the era of rationalisation. The third period covers 1st July 1967 until the 1980s. During this period, the Chambers of Agriculture assume the responsibility for the advisory services in order to control the creation of rational and effective farm companies. The fourth period covers the 1980s until 1995. During this period, the advisory services become increasingly privatised and take on a form more or less as today. This is also the period when environmental issues become prominent on the agricultural agenda. The fifth period covers 1995 until today. During this period, Sweden enters the European Union and the advisory services become deeply influenced by the CAP. It is also a period of mergers between advisory organisations and a period of advisory efforts with the ambition to strengthen farm management. The chapter ends with a section that presents the main actors in the Swedish advisory system and how the advisors' financial situation appears at present, as a consequence of where history has brought them. It is thus in the light of this chapter that the thesis' findings presented in Chapter 6 and 7 should be understood.

5.1 End of 1700s—Interwar Years: The Swedish advisory system and the foundations for the Swedish agricultural policy takes shape

5.1.1 The establishment of regional Rural Economy and Agricultural Societies

The origin of the agricultural advisory system that we have in Sweden today dates back to the late 1700s when The Rural Economy and Agricultural Societies[13] (henceforth referred to as HSs) began to establish themselves in Sweden. The first HS was founded in the county of Gotland in 1791, and during the first half of the 19th century, regional HSs were established in each county in Sweden (see Table 7). In 1811, The Royal Swedish Academy of Agriculture[14] was founded and became responsible for the mission to start regional HS, and also became their regulatory authority. Legally the HS is a public corporate institution, i.e. an organisation that operates in the boundary between private and public sectors. Each HS is in turn divided into local guilds. At the time of the establishment, the Governor of the County became the obvious chairman of the board of the HS and thus had a significant impact on agrarian development in the region.

The background for the establishment of regional HS was an increased interest in the development of agriculture. In the early 1800s, a vast majority of Sweden's population was employed in agriculture. It was thus in the interest of society to improve the rural conditions—both economically and socially. The issue of Sweden's self-sufficiency was precarious. In 1810, the state thus allocated special funds for agriculture in the state budget. This was probably the start of what came to become the HS's activities/business. During the 1800s, the focus of the agricultural development was threefold: i) to create more effective farm units, ii) to improve the methodology in crop production and animal husbandry, and iii) to reclaim land (Månsson, 1988). To achieve these goals, there was a great need for enlightenment and it became the HSs' primary task to disseminate such information. At the beginning of their history, the information was spread through written communications, public announcements and presentations by the HS's secretary at the local guilds.

[13] In Swedish *Hushållningssällskapen*.

[14] In 1956, the forest activities were expanded at the Academy and the name was changed to The Royal Swedish Academy of Agricultural and Forestry. In Swedish *Kungliga Skogs- och Lantbruksakademien (KSLA)*.

Table 7. *A compilation of the regional HS and the mergers that have occurred during the years.*

Counties with HS (Rural Economy and Agricultural Societies)	Established (year)	Advisory service organisations that stem from the HS in 2017	Established
Gotland	1791		
Örebro	1803	HS Konsult	2005-2007
Gefleborg	1814		
Södermanland	1814		
Uppsala	1815		
Stockholm	1847		
Kopparberg, later Dalarna	1850		
Västmanland	1815		
Värmland	1803		
Västernorrland	1805	No advisory service since 1967	
Kalmar	1811	HS Kalmar-Kronoberg-Blekinge	2004
Kronoberg	1814		
Blekinge	1814		
Halland	1812	Växa Halland (together with Hallands Husdjur)	2008
Skaraborg	1807	Enhanced collaboration	2016
Älvsborg (northen part)	1812	HS Väst	2003
Göteborg and Bohuslän	1814		
Älvsborg (southern part)	1812	Rådgivarna i Sjuhärad (together with Södra Älvsborgs Husdjur)	2010
Östergötland	1813	HS Rådgivning Agri	2007
Jönköping	1814		
Kristianstad	1814	HIR Skåne	2015
Malmöhus	1814		
Norrbotten	1814	HS Norrbotten-Västerbotten	2010
Västerbotten	1814		
Jämtland	1817	No advisory service since 1994	

From the mid-1800s, however, the HSs began to employ people with professional training to 'transmit' research findings in different aspects of agriculture. During the coming decades, HSs expanded their competence in the fields of pipe draining, beekeeping, peat cultivation, horticulture, fishing, handicraft, dairy, animal husbandry, breeding and forestry (Månsson, 1988). In addition to working with agricultural issues, the HSs were also involved in other societal matters connected to development of the countryside—i.e. they were involved in the building of railroads, began cooperatives, banks and agricultural schools and worked in health-care. From the 1860s, however, after the establishment of county councils, their activities were limited to those specifically related to agribusiness (Morell, 2001). During the first half of the 19th century, the business was quite restricted due to scarce financial means, but it accelerated in the 1850s when HSs was awarded a fifth of the state's income from liquor tax. After 1913, the tax money was replaced by direct grants from the state and the county councils (Rydén, 2006).

When the Agricultural Agency[15] was established in 1890, the Academy was deprived of its role as managing authority and turned into an independent body for research and discussions of agrarian issues (Edling, 2013). The management of the Agricultural Agency had a strong anchorage in the HSs, which increasingly assumed the role as an extension of the state in agricultural matters. Within the Agricultural Agency, the state-funded experimental work was gathered. The activities were partially outsourced locally in collaboration with the HSs. In that way the experimental farms could also be used on an advisory basis (Morell, 2001).

5.1.2 Agrarian education

The agricultural training took place at different levels with different principals. The two public agricultural institutes—Ultuna (established in 1848) and Alnarp (established in 1862)—provided higher education aimed at owners and managers of large farms. In 1932, an Agricultural University College was established at Ultuna whereupon it became possible to graduate as an agronomist. The lower agricultural education was provided by several actors. In every county, there were 'farm schools'[16] that received governmental grants and which were operated with HSs as principals. The 'farm schools' were often located at larger estates, with the owner/tenant as the head of the school. The

[15] The Agricultural Agency (in Swedish *Lantbruksstyrelsen*) was a Swedish central agency for agrarian issues operating between 1890 and 1991, when its functions were transferred to the Swedish Board of Agriculture (in Swedish *Jordbruksverket*).

[16] In Swedish *lantbruksskolor*.

education was dominated by practical work at the farm and the theoretical training was often weak and of poor quality (Morell, 2001). The 'farm schools' had their heyday during the 1880s. Besides these, there were also 'agricultural schools'[17], which were often associated with folk high schools and offered an education that combined theoretical courses with practical work. The 'agricultural schools' became popular and grew rapidly in number. In addition to these schools, the HSs offered courses of various kinds. At the end of the interwar period, a good third of the active farmers had some kind of formal education in agriculture (Morell, 2001). Most of the information dissemination was, however, informally between farmers.

5.1.3 Agrarian development

The expansion of the railroads in the late 1800s affected agriculture in various ways. An expanded domestic trade facilitated the contacts between surplus and deficit areas, which resulted in increased specialisation of agriculture. The cheap cereals from the US caused cereal prices to fall in Western Europe, which in Sweden was most noticeable during the 1880s. The fall in prices made cereal production unprofitable, which meant that Swedish land reclamation stalled at that time. The price fall also resulted in a conversion of agriculture towards animal production, which to some extent compensated for the price fall (Morell, 2011). In southern Sweden, one could also add an expansion of sugar beet production. The conversion was of course also a response to a change in consumer habits: at the turn of the century the urban population diet contained more fat, sugar and meat than the diet of rural residents. To protect Swedish agriculture, tariffs on various products were introduced in 1888. This, however, was not without protests from some groups, who considered it to distort prices of both agricultural products and land.

During 1867 and 1868, Sweden suffered a famine, which caused a huge emigration to North America. In order to halt emigration as a consequence of the tough economic situation, and thereby ensure the availability of labour, but also to promote national self-sufficiency, so-called home-croft loans[18] were introduced in the early 1900s. The idea was that these would help the formation of viable small farms. In the 1920s, a number of other loans had also been provided to small farmers who needed to improve their farms. Paradoxically, however, the home-croft policy also contributed to the formation of modern consolidated farms (Morell, 2001). As the home-croft loans increased the smallholders' demand for land, landlords were able to sell

[17] In Swedish *lantmannaskolor*.
[18] In Swedish *egnahemslån*.

marginal lands at high prices for a good profit. Hence, the bigger farms received money for rationalisations and mechanisations.

In 1914, there was a lack of preparedness for a long war. More and more farmers had become specialised in animal production and Sweden exported both butter and pork, whereas 30 percent of cereals were imported. In order to supply the (urban) population with food during the war years, the government regulated domestic trade by the imposition of maximum prices and rationing. The harvest in 1917 was disastrous, and before the last year of the war, measures to stimulate the production were introduced: favourable prices were set on cereals and potatoes, domestic fertiliser production was supported and government-funded land reclamation projects were launched (Morell, 2001). The food supply policy during WWI was regarded as a failure, and the experience of the war had a lasting effect on the formation of agricultural policy and its focus on preparedness. The increased prices during the end of the war were replaced by a fall in prices and wages in the 1920s. A global increase in cereal production, a stalled population growth and an increased consumption of more expensive foods resulted in enormous granaries and falling prices. The situation was exacerbated by the Great Depression of the 1930s, which in Sweden mainly became a crisis for the export industries as well as causing extensive unemployment.

5.1.4 A regulated agricultural policy

The modern agricultural politics in Sweden has its origin in the aftermath of the crisis of the 1930s. When investments and employment fell, the demand for food decreased, which in turn led to falling prices of cereals, butter and meat. In addition, exports decreased as a result of growing protectionism. The remedy for the crisis became to organise the agricultural sector—both production and processing—and to build a network of regulations. During this decade, different farmers' associations/unions established their positions within the industry. Their goal was among others to coordinate the cooperatives and to promote a general adherence to the cooperatives. The policy response to the agricultural crises was the construction of a regulation system with price support for farmers. As prices fell in various branches of production, regulations were introduced as compensation. The regulatory measures, however, caused equilibrium disturbances between the production branches, which resulted in calls for further regulations. The price regulations entailed no attempt to adapt agriculture to the demands of the domestic market. By stopping imports and subsidising exports, the farmers were guaranteed the provision of state-fixed prices, regardless of production volume. Thereby the agriculture became decoupled from both the domestic and the international

markets, resulting in overproduction (Morell, 2001). Due to the crisis policy and an improved economy, the profitability in agriculture recovered in 1933.

5.1.5 The early advisory service

Until the end of WWII, practically all agricultural extension activities were concentrated at the HSs. However, there were also other organisations who worked with agricultural development issues. For example, the *Swedish Moss Culture Association*[19] was founded in 1886 and the *Swedish Pasture and Grazing Association*[20] was founded in 1916 with the purpose of promoting rationalisations and higher yields through improved farming methods[21]. In the early 1900s, the Swedish Moss Culture Association employed three consultants, who during the summer months travelled around the country and disseminated knowledge among the farmers (Runefelt, 2010). During the war years, the advisory activities concerning pasture were intensified, since the import of concentrate was limited. Together with HSs, the Swedish Pasture and Grazing Association was commissioned by the government to conduct courses in meadow cultivation and to establish cultivated pastures (Isacson, 1988). In the initial stage, the majority of HSs' advisory activities were of an outreach character—they strove to spread knowledge about agriculture to its practitioners. The activities were both oral and written as well as individual and group-based—the latter often in the form of courses. While the individual counselling was often a non-planned activity of a short-term nature, the course activities were planned in advance (Månsson, 1988). The dominant form of advisory service in many counties was, however, the individual. Besides the advisors, the HSs also employed so-called 'travelling farm foremen'[22], who were placed outside the administrative location to work as local advisors in a limited area (Månsson, 1988). The HSs' popularity has seemingly always been linked to its objectivity and the fact that they have been free of political influence. Regarding funding, the state and the HSs both contributed 50% of the cost of the courses. At this time, the farmers' union and the financial associations were not yet involved in advisory activities, even though the farmers' organisation RLF[23] maintained close collaboration with HSs.

[19] In Swedish *Svenska mosskulturföreningen.*

[20] In Swedish *Svenska betes- och vallföreningen*.

[21] In 1939, the two associations merged and created the *Pasture and Moss Culture Association (Vall- och mosskulturföreningen)*, which in turn became the *Swedish Pasture Association (Svenska vallföeningen)* in 1962.

[22] In Swedish *vandringsrättare*.

[23] RLF is an acronym in Swedish for *Riksförbundet Landsbygdens folk*, which was an organisation for farmers' interests operating between 1929 and 1971.

Box 1. Outlook on trends in extension—Before 1960: Extension as Technology Transfer

The word *extension* has its roots in academia and its common use was first recorded in Britain in the 1840s in the context of 'university extension' or 'extension of the university'. Scientists at the University of Cambridge felt that their knowledge and the results of their research were not disseminated publically. Hence, they began to give public lectures. The activity was developed into a well-established movement, in which the universities extended their work beyond the campus.

The foundation of the model on which many parts of the western world have chosen to organise the supply of knowledge in agriculture has its roots in the United States. In the middle of the 1850s, there was a growing demand for agrarian education leading to the enactment of three laws signed by Abraham Lincoln in 1862. One of these was the *Morrill Act,* which resulted in the establishment of land-grant colleges in every state in the US. The purpose of these colleges was:

> Without excluding other scientific and classical studies and including military tactic, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life. (7 U.S.C. § 304)

In 1887, the *Hatch Act* was enacted, which gave federal funds to the land-grant colleges in order to create agricultural experiment stations and transmit new information, especially in the areas of soil minerals and plant growth. Many stations founded under the Hatch Act later became foundations for state Cooperative Extension Services under the *Smith-Lever Act* of 1914. This federal law established a system of state-funded extension connected to the land-grant colleges. Their mission was to inform people about current developments in agriculture and home economics in order to increase agricultural productivity and improve the quality of life in the countryside.

Through these three acts, a strong and logical connection was created between the knowledge developments that occurred at the universities, the experiment stations that were connected to them and the extentionists who were set to spread the knowledge to develop and improve the efficiency of agriculture.

This model has come to be called the *Transfer of Technology* model (ToT model), and is based on *a linear model of innovation* (Kline and Rosenberg, 1986) as it draws a straight and one-directional line from science to practice.

According to Chambers and Ghildyal (1985):

> The transfer-of-technology (TOT) model is deeply embedded in the thinking of many professions and disciplines around the world. It is part of the structure of centralised knowledge in which power, prestige and professional skills are concentration in well-informed 'cores' or centers. Theses cores or centers generate new technology which then spreads (or does not spread) to the peripheries.

From a communication perspective, the ToT model builds on Shannon and Weaver's classical communication model developed in the US during the 1940s. From an advisory perspective, this model entails that there is an advisor (sender) who has access to information—often originating from scientists—and who, through his/her knowledge, values and opinions as well as perceptions of the farmers (receivers) decides which information is relevant to spread. The model acknowledges that there is noise that can disturb the dissemination of information, but fundamentally it is based on the idea that innovation is a science-driven process and that it is the receivers who have something to learn.

5.2 The period from 1940 until 30th June 1967: The rationalisation era

5.2.1 Subsidies to both farmers and consumers

At the time of WWII, the supply situation was much better than at the outbreak of the previous war. To secure the food supply, the government had introduced export embargos and began to build contingency storages. Farmers were also given general subsidies related to their cereal production. For social reasons, the state did not allow the producer prices to affect the consumers. Therefore, the retail prices were reduced with subsidies, and discounts to certain target groups were introduced. During wartime, Swedish agriculture headed into new challenges. Due to the occlusion from abroad, food production also had to meet the population's need for fat and fibre. It became the HSs' responsibility to spread knowledge about the cultivation of new crops such as oilseeds and fibre plants to the farmers, but also to train substitutes for those farmers called in for military service (Månsson, 1988). To finance these efforts, the state allocated special funds to the HSs. The methodology used in extension was more or less the same during this period, with individual consultations and courses.

5.2.2 The agricultural policy's Magna Carta

After the war, the most extensive transformation process of Swedish agriculture began—slowly at first, but gradually accelerating until the slowdown at the end of the 1960s. The overriding political task was to secure the domestic food supply, and quantity was prioritised in favour of quality. In June 1947, the Swedish Parliament voted for a decision that became known as the 'agriculture policy's Magna Carta', and which affected Swedish agriculture for several decades (Lindberg, 2008; Flygare and Isacson, 2003; SOU 1946:42; SOU 1946:46). The decision represented a step away from the social policy-oriented politics from the 1930s with a focus on small-scale farmers and colonialisation. The decision was made up of three components; i) the income target (farmers would have economic development equivalent to other groups), ii) the efficiency target (small farms would be closed or merged into more viable units) and iii) the production target (domestic supply in case of war or blockade should be secured) (Flygare and Isacson, 2003). To execute these goals, regional *Chambers of Agriculture*[24] were established at county level in July 1948 as a part of the Agricultural Agency. Even if the rationalisation process should occur on a voluntary basis, it was the Chambers of Agriculture who were assigned responsibility for the process. The central government supported the transition via loans, subsidies and extension, but also more actively by purchasing farms in order to obtain more efficient farm units. Initially, the representatives of the Chambers were respected, but as the demands of rationalisation grew, the attitude changed and they became symbols of the ever-growing bureaucracy and its insensitivity to individual families' fates (ibid). At the end of the 1950s, the goal was no longer to create so-called 'base farms' with 10-20 hectares of land, but to create 'norm farms' consisting of 20-30 hectares of land. While the Chambers of Agriculture were responsible for the external rationalisation process, the HSs became responsible for the internal process. This included introduction of new technology, new cultivation techniques and new crops and animals. The advisors working for HSs were well-liked for their knowledge, and they spread information in the villages both individually and in groups.

Just as before, the most important tools in the rationalisation process were price regulations and border protections. The prices were set in annual negotiations between government representatives at the *State's Agricultural Committee*[25] and representatives from the *Farmers' negotiating delegation*[26].

[24] In Swedish *lantbruksnämnder*.

[25] In Swedish *Statens jordbruksnämnd*. The *State Agricultural Committee* was a Swedish state authority for price and market regulations in agriculture and fisheries. In 1991, it merged with the *Agricultural Agency* and formed the *Swedish Board of Agriculture*.

The negotiations were based on calculations of profitability and incomes from the so-called 'base farms', which were supposed to give a farming family a decent income. In 1956, a new and more complex calculation system was introduced, which also took the world market prices into account (ibid). From 1963, the consumers were also represented in the price negotiations.

5.2.3 New actors enter the advisory market

The agricultural policy accelerated the rationalisation process in order to increase production and free labour. New technology and science gave the impetus for a transfer from organic to mechanised and chemical-based agriculture. The number of farm companies and people employed in agriculture fell dramatically, while the size of the farm holdings and mechanisation increased, which in turn increased the need for advisory services. Because of the great need for extension in mechanisation and the economy, the establishment of regional *Boards of Agriculture* had a minor impact on the HSs' businesses in the beginning. Even before the state took over parts of the advisory service, other actors had also entered the advisory market. Following Danish and German models, market contacts and other services were organised on a cooperative basis starting in the late 1800s, often supported by the HSs. These included dairies, slaughterhouses, breeders' associations, control associations, purchasing and selling societies, insurance companies, rural credit societies, and so on (Morell, 2001). During the 1940s artificial insemination was introduced, for which a separate association was formed. Subsequently, the control associations and the artificial insemination associations merged and formed *Animal Husbandry Associations*. This development led farmers' own organisations offering an extensive advisory service to their members. This implied that the advisors in animal husbandry at HSs lost the immediate insight into the control and breeding work. In the 1960s, the *Slaughterhouse Associations* also began to provide a production-related advisory service, although often in collaboration with HSs (Månsson, 1988). When it came to advisory services concerning construction, the *Farmers' Building Association*[27] was founded in 1939 as an ideal association with the task of providing the agricultural community with technical services in building matters (Franzén, 2015). Regarding advice concerning economic matters, the *Agricultural Association's Operations Agency*[28] had been founded already in 1918 (Larsson,

[26] In Swedish *Lantbrukarnas förhandlingsdelegation*.

[27] In Swedish first *Lantmannens byggnadsförening* and later *Lantbruksförbundets byggnadsförening,* abbreviated as LBF. Since 1971 it has been known as *K-Konsult*.

[28] In Swedish *Lantbruksförbundets driftsbyrå*, since 1989 known as *LRF Konsult*.

2009). However, it was not until after WWII that their business increased substantially and the clientele expanded. Subsequently, they took over the accounting responsibility from HS. Altogether, this implied that HSs' position weakened and that the advisory services regarding different aspects of farm production were distributed between several actors.

Box 2. Outlook on trends in extension—1960s: Diffusion of Innovation

During the 1960s the ToT model of extension was accompanied by another model that has come to characterise much of the extension services ever since—the Diffusion of Innovation model (Rogers, 1995). One of the reasons that the simplified ToT model was abandoned was that many advisors felt that the farmers' adoption of new technologies was slower than hoped for. The Diffusion of Innovation model has been developed through the years from the first publication in 1962 to the fourth edition that was published in 1995. Essentially, the theory consists of three components (Rogers and Shoemaker, 1971):

i. The Adoption Process (in the fourth edition referred to as the Innovation-Decision Process (Rogers, 1995))
ii. Adopter Categories
iii. The Attributes of Innovation

The Innovation-Decision Process describes the mental process that an individual is going through, from obtaining knowledge of an innovation through to its adoption. According to Rogers (1995), the Innovation-Decision Process consists of five stages:

i. Knowledge occurs when an individual (or other decision-making unit) is exposed to an innovation's existence and gains some understanding of how it functions.
ii. Persuasion occurs when an individual (or some other decision-making unit) forms a favourable or unfavourable attitude toward the innovation.
iii. Decision occurs when an individual (or some other decision-making unit) engages in activities that lead to a choice to adopt or reject the innovation.
iv. Implementation occurs when an individual (or other decision-making unit) puts an innovation into use.
v. Confirmation occurs when an individual (or some other decision-making unit) seeks reinforcement of an already made innovation-decision, or reverses a previous decision to adopt or reject the innovation if exposed to conflicting messages about the innovation.

Whereas the mental activity at the knowledge stage is mainly cognitive, the main type of thinking at the persuasion function is affective (Rogers, 1995). How the Innovation-Decision Process will look at individual level is, according to the model, strongly linked to which adopter category the individual belongs to. The criterion for adopter categorisations is innovativeness—the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system (Rogers, 1995). Rogers (1995) distinguishes between five ideal types of adopters, which are distributed in a normal bell-shaped curve:

- *Innovators*—These persons are venturesome, often part of cosmopolite social relationships, able to cope with a high degree of uncertainty, and may not be respected by the other members of a local system but play a gatekeeping role in the flow of new ideas in the system.
- *Early adopters*—These persons are a more integrated part of the local social system. They are respected by their peers and serve as role models. They have the greatest degree of opinion leadership in most systems.
- *Early majority*—These persons follow with deliberate willingness in adopting innovations, but they seldom lead. Their innovation-decision period is relatively longer than that of the earlier categories. They interact frequently with peers and are an important link in the diffusion process.
- *Late majority*—These persons approach innovations with a sceptical and cautious air. The adoption may be both an economic necessity and the result of increasing network pressures from peers.
- *Laggards*—These persons are the last in a social system to adopt an innovation. They are the near isolates in the social networks of their system and their point of reference is the past.

There has been a lot of research carried out to describe what characterises the individuals within these different groups, based on their personality, attitudes and communication habits. From an extension perspective, the early adopters became an interesting target group to reach since they are positive towards education and science, have more contact with advisors, seek information, are more extrovert and have the greatest degree of opinion leadership within most systems. By identifying this group, the advisors were able to direct their targets towards them. These persons could then gain status as good examples, and through their status in the local social system, contribute to the diffusion of the new method or technology in the farming society.

The third part of the model describes perceived attributes of innovations which in turn decide how quickly an innovation will be accepted within a population. The five attributes of innovations used by Rogers (1995) are:

i. *Relative advantage*—the degree to which an innovation is perceived as being better than the idea it supersedes. It is often expressed as economic profitability, social prestige, or other benefits.
ii. *Compatibility*—the degree to which an innovation is perceived as being consistent with the existing values, past experience and needs of potential adopters.
iii. *Complexity*—the degree to which an innovation is perceived as being relatively difficult to understand and use.
iv. *Trialability*—the degree to which an innovation may be experimented with on a limited basis.
v. *Observability*—the degree to which the results of an innovation are visible to others.

According to the diffusion model, the content and form of the information needed to proceed in the adoption process should be adapted to the attributes of the innovation. In the earlier stages of the adoption process, observability and compatibility are claimed to play the most crucial roles in ensuring the information is considered relevant, while trialability and relative advantage are claimed to be of great importance in the decision-making stage (Nitsch, 1998). The role of the advisor (or change agent as Rogers refers to them) was mainly to shape a message in accordance with an analysis of where in the adoption process the receiver was, and then to choose media accordingly.

5.3 The period 1st July 1967 until the 1980s: The state assumes responsibility for advisory activities

5.3.1 The pursuit of rational and effective farm companies while the surplus grows

On 1st July 1967, the Swedish Parliament approved a new agricultural policy (SOU 1966:30-31). The background was based on disappointment regarding the 1947 policy: the objectives were only partially achieved, the farmers had not received the rise in standard that they had hoped for and the consumers claimed that food prices were too high. Hence, growth, specialisation and an intensified closure of smaller farms was decided on by a majority of the Swedish parliament (Flygare and Isacson, 2003). The new policy aimed to create rational and effective farm companies, where the income goal for farmers was de-emphasised. Production should reduce, which was considered to be beneficial for consumers. The beginning of the 1970s was characterised by angry farmers under pressure from declining profitability and angry consumers who demanded food price reductions (ibid). The LRF, which was established in 1971 by the merging of two farmers' unions, questioned the agricultural policy from 1967 and wondered whether the state even wanted Swedish agriculture. Over three years, food prices increased by 30 percent, which meant that they were significantly above world market prices. In January 1973, the government decided to introduce subsidies on food. This meant that henceforth the price rise on some basic foods was subsidised by the state budget and not by price increases in food stores. In the meantime, the surpluses grew.

In October 1977, it was time for a new, more farmer-friendly, agricultural policy. This time the state would help the farmers, not direct them. Once again the income goal took a centre stage, while production and rationalisation targets were toned down compared to the 1967 policy. According to the parliament, the family farm should continue to be the dominant form of agriculture whereby the state supported research and advisory services aimed at this group—a decision that was not shared by the conservative parties (Flygare and Isacson, 2003). Due to inflation and rising interest rates, however, the farmers ended up in difficult situations. The rise in food prices led to decreased consumption, especially of meat, while production continued to increase. The surplus was exported with increased export costs as a consequence.

5.3.2 The Chambers of Agriculture assumes the responsibility for the advisory services

In 1967's agricultural policy, extension was mentioned as one of the most important means to realise the rationalisation process that the state considered desirable (SOU 1966:31; SOU 1992:99). To support this development, the state took over responsibility for most of the advisory services. This implied that the power of the regional Chambers of Agriculture expanded at the expense of the HSs, which in turned entailed that HSs were more or less outmanoeuvred in the advisory market. Most of the field trials, however, stayed at the HSs. The holistic approach that had previously characterised HSs' mission and service supply was now distributed among several actors. For many of the advisors at the HSs, 1967's policy meant that they left their previous employer and instead became incorporated in the governmental chambers. This was probably one of the reasons why the chambers became well-accepted by the farmers. The Chambers of Agriculture had two main tasks (albeit in two different departments); to provide agricultural extension services and to implement structural rationalisation in the Swedish agriculture (Månsson, 1988). While the former mission had a good reputation and was considered to be objective and acceptable, the latter was often accused of being both subjective and politically-driven. In 1979, the parliament adopted new guidelines for the advisory services. Still, it was stated that extension was one of the most important means to promote agricultural rationalisation. In order for extension to have the desired effect, the advisory services would primarily focus on so-called developable enterprises (ibid).

Even though the advisory services offered by the Chambers of Agriculture were extensive, they were not comprehensive. For example, they did not include commercial production-oriented advisory services in agriculture and horticulture. Until then, practically all advisory services had been free of charge—both due to the state's financial contribution to the HSs, but also thanks to HSs' own assets. The re-organisation of the advisory system started a lively discussion among HSs and the cooperatives regarding the distinction between the advisory service offered by the state and the one that did not fall under their responsibility (Månsson, 1988). The LRF argued that extension was considered to be in the public interest, and that the costs should consequently be financed by the state. Their fear was that the more the cooperatives expanded their advisory service, the less money the state would allocate for the purpose. The distinction between which issues are to be regarded as public interest vis-à-vis productivity enhancing character is, however, an issue that still remains to a certain extent. The uncertainty about HSs' future role and possibilities in the advisory field encouraged other cooperatives and private

actors (such as suppliers of inputs and traders as well as private consultants) to enter and expand their business in the knowledge market (ibid).

Methodologically, the advisory service looked more or less the same until the 1980s: individual extension and courses existed side by side, although the former gradually became more important. Besides these methods, group counselling in the fields has been more or less a mandatory part of the advisory service offer since it was introduced in Sweden in 1945. The idea came from Denmark, which has often set an example and been a role model for Sweden when it comes to advisory issues (Månsson, 1988).

Box 3. Outlook on trends in extension—The 1970s: Criticism towards the Diffusion of Innovation model and the emergence of Farming Systems Research

The Diffusion of Innovation model has been criticised for a number of reasons and by several authors (c.f. Röling, 1988; Nitsch, 1994b, 1998; Leuuwis, 2004). The criticism is based on, among other things, its pro-innovation bias (that innovations are considered worthwhile and that it would make sense for most farmers to adopt them), the 'top-down' model of innovation (the model builds on an old-fashioned view of where relevant innovations are born and that farmers' role in that process has often been overlooked), the strong influence by normative models of rational decision-making and the idea that there is essentially one direction in agricultural development that all farmers who would like to continue farming should follow sooner or later. Röling (1988) argues that one of the things that is misleading with the diffusion model is that it makes us believe that 'diffusion works as you sleep'—i.e. that diffusion is a self-sustaining process once it is started. The failures of extension during this period led to two questions (Röling, 1988): why don't farmers do as they are told and why don't farmers adopt the new technologies? Ljung (2015) highlights three deficiencies with the model that give answers to the questions:

i. The model lacks a system perspective, i.e. it does not put the innovation in the context of which it is meant to be part, but tends to be managed as an isolated phenomenon.
ii. The innovations are not adjusted to the unique situation of each farmer (ecologically, socially or economically).
iii. Adopting new ideas/technology/innovations is not the only thing that motivates us in our decisions and actions.

Farming Systems Research emerged as a response to the perceived shortcomings in research, development and extension as a way to address questions that the

dominant agricultural approaches were poorly equipped to address (Darnhofer *et al*., 2012; Brossier *et al*., 2012; Collinson, 2000). Hence it can also be seen as a response and critique to the reductionist approach that was followed by the Green Revolution (Norman, 2002). The dominant research approach was characterised by disciplinary specialisation and a focus on questions concerning different types of optimisations at farm level. As long as the contexts studied were characterised by homogenous production environments, large commercial farm units, stable economic conditions and biological interactions that were similar to laboratory environments, then that approach was successful (Darnhofer *et al*., 2012; Packham, 2011). However, in more complex situations with heterogeneous environments and where social and cultural factors have influenced the farming practice, the specialised disciplinary approach was inadequate (Darnhofer *et al*., 2012). When it became obvious that many farmers did not follow the production logic underlying mainstream agricultural research and extension, researchers realised that when developing new agricultural technologies, it was important to take the environmental and social context into consideration (Collinson and Lightfoot, 2000). A systemic approach was seen as necessary to capture the 'logic' of the farming system.

The early forms of Farming Systems Research were rather strongly based on the same assumptions as the ToT model. Chambers and Jiggins (1987) even call Farming Systems research an adapted ToT, where the farmer is seen as a system manager and the extension agent as a diagnostic partner and promoter of new technologies and practices among members of farming systems (Jiggins, 1993). The power of choice in practice, however, mostly remained with the scientists—information was extracted from the farmers and their farms and analysed by scientists in a manner that enabled the scientists to diagnose and prescribe for the farmers. Even if the farmers' diagnosis of the problems was one of the starting points, the diagnosis was translated in terms testable by scientists and the solutions were derived from the scientists' knowledge system (Chambers and Jiggins, 1987).

5.4 The period 1980s until 1995: Environmental issues make their entrance in agriculture, the HIR programme is developed and Swedish agriculture is deregulated and reregulated

5.4.1 Overproduction, subsidies and price compensations

The problems in Swedish agriculture concerning overproduction and costly export subsidies led to growing discontent, and during the 1980s there were calls for a new and more liberal agricultural policy that would break with the regulatory framework that had been in place since the early 1930s (Lindberg, 2008; Flygare and Isacson, 2003). The surpluses arose as an undesirable consequence of the focus on efficiency and quantity. An investigation of the agricultural policy in 1983 suggested that the production within the surplus branches should be reduced and that the societal subsidies should eventually cease (SOU 1984:86). The food subsidies that were introduced during the 1970s were also abolished, with the exception of those on milk. The removal resulted in reduced meat consumption, which meant that the surplus grew and had to be exported abroad at prices below domestic levels. The farmers were compensated both through raised in-stores prices and through the state budget. In 1985, the Swedish Parliament decided that in peacetime, Swedish agriculture should produce in line with the country's consumption (Prop 1983/84:76; Prop 1984/85: 166).

5.4.2 An increasing interest and focus on environmental issues and rural development gives rise to new types of advisors

During the 1980s, the environmental aspects of farming made their entrance into Swedish agricultural discourse, partly as a consequence of the problem with overproduction and high food prices (Holmström, 1988). In the public debate, attention was drawn to the downside of modern agriculture, such as eutrophication, nitrogen leaching, unethical animal husbandry and pesticide residues in food (i.e. by Paulsen, 1985). In the agricultural policy from 1985, an environmental objective for agriculture was included for the first time. The policy claimed that agriculture should "as far as possible use environmentally friendly cultivation methods that also contribute to a good management of land, water and nutrients" (Prop 1984/85:166). One way to meet this objective was to limit the use of commercial fertilisers and pesticides. In 1984, environmental taxes on those inputs were introduced and in 1988 they were doubled (SFS 1984:409; SFS 1984:410; Dir. 2001:055). The taxes were

returned to agriculture through funding of research projects on environmental-friendly cultivation methods and advisory activities for more efficient use of chemicals and alternative farming. Another manifestation of environmental thinking in agricultural policy was a support programme for management of valuable farmlands known as NOLA[29], which was introduced in 1986. Economic support could for instance be given to the establishment of wetlands, hedgerows and tree planting to create a more varied landscape and increased biodiversity (Rydén, 2003; Jordbruksverket, 2008). The environmental concern in agriculture was of course also affected by the Bruntland report *Our common future* (WCED, 1987), where the expression *sustainable development* was launched. The evolving focus on the environmental aspects of farming meant that a new group of advisors with an environmental focus became part of the Swedish advisory service system.

It was not just the environmental advisors who made their entrance during this period, but also the rural developers. The three dimensions of sustainable development presented in the Bruntland report (social, ecological and economic) almost created an obvious link to the need for local knowledge and rural development. The interest in rural development also came from the grass-roots level. In 1989, the popular movement *All Sweden shall live*[30] was established, as a result of a campaign of the same name (Hela Sverige, 2017). The depopulation of the Swedish countryside formed the setting for the campaign, whose goal was to mobilise the people in the rural districts and to change the attitudes of the general public and the decision makers. The objective was also to improve the national rural policies. Today, *All Sweden shall live* is a national association consisting of 4,700 village action groups and 40 member organisations. There are 24 county networks working with information and advisory services at county level and the mission is to support local development towards a sustainable society (ibid).

5.4.3 Measures to reduce the cereal surplus

It was not until the 1990s that a balance was achieved between meat production and consumption. Even if a cereal surplus were desirable from a political point of view, measures to reduce the cereal surplus were introduced in 1987 through a programme known as Fallow-87[31] (Flygare and Isacson, 2003; Jordbruksverket, 2006). The programme brought 5% of the arable land out of

[29] NOLA is an abbreviation in Swedish for *Naturvårdsåtgärder i odlingslandskapet*, meaning 'nature conservation efforts in farmland'.

[30] In Swedish *Hela Sverige ska leva.*

[31] In Swedish *Träda-87*.

use, but it did not solve the problem. From 1988, the fallow programme was replaced by a more comprehensive programme labelled *Transition 90*[32], which aimed to stimulate an alternative use of arable land and thereby reduce the cultivation of cereals, oilseed, potatoes and sugar beet (ibid). The compensation to farmers was regionally differentiated. Even though *Transition 90* meant that 10% of the arable land was taken out of use and the export surplus was reduced, it did not solve the surplus and profitability problems in agriculture on a long-term basis.

Politically, the issue of fewer governmental regulations was pursued. The price setting regulations had grown increasingly more complicated and in an annual report from the end of the 1980s Mr Holmström, the head of the *Agricultural Research Institute*[33], wrote the following lines:

> […] the regulating mechanism has been fouled in such a way that the efficiency is hardly visible. Within the price-regulation framework, an internal regulation that is anything but rational has been built—and at some points is almost ridiculous. (Flygare and Isacson, 2003, p. 227)

In 1988, the LRF began to clamour for a 'track replacement' to liberate "the agriculture from a regulatory system that isolates farmers from the market and that may threaten the future competitiveness" (ibid, p. 251).

In June 1990, the Swedish Parliament voted for a new food policy that included deregulated agriculture (prop 1989/90:146). The negotiated prices were now to be replaced by market prices. The new policy also emphasised quality over quantity and included environmental goals to minimise the environmental impact from agriculture and preserve a rich and varied agricultural landscape. The transition to the deregulated market was state-funded and a new public authority—*The Swedish Board of Agriculture*[34]—was established to help farmers adapt to that market. The policy emphasised that during the transition, the farmers should have access to qualified advisory services (ibid). These should include a financial advisory service and knowledge about the new market conditions such as information and proposals for measures to meet the demands placed on agriculture from environmental and animal welfare points of view. The emphasis of the state resources would be to encourage farmers to adapt to the new situation based on their own resources. The Chambers of Agriculture were transferred to the rural units at the County Administrations and were given some new tasks (Flygare and Isacson, 2003). The deregulation was however a short-lived experience. In

[32] In Swedish *Omställning 90*.
[33] In Swedish *Jordbrukets utredningsinstitut*.
[34] In Swedish *Jordbruksverket*.

1994, Sweden voted to become a member of the European Union, encouraged by for instance the LRF, and in 1995 Swedish agriculture was re-regulated—three and a half years after the deregulation.

5.4.4 Public investigation concerning public-funded extension

In connection with the deregulation, a discussion commenced about the advisory services (JoU, 1989/90; Dir.1991:83). One part of that discussion concerned the need for coordination within the advisory system (ibid; Månsson, 1988). In 1992, a public investigation concerning extension in agriculture and horticulture was presented (SOU 1992:99). The point of departure was that the public-financed advisory service would henceforth focus on information regarding exercise of public authority. The investigation (ibid, p. 115-116) stated that:

> There are no longer any rationalisation political motives for the state to meet the agricultural or horticultural needs of technical or financial advice. The same conditions apply as for other sectors of society. However, there may still be reasons for the state to use advisory service and information as a means to address societal interests related to agriculture and horticulture.

The investigation claimed that agriculture would continue to have a long-term need for advisory services in order to maintain its competitiveness, but that it should primarily be the industry's and the practitioners' own choice to offer such services. An area that was specifically highlighted as being in need of knowledge development and advisory services was that concerning farm management (ibid). As an advisory service regarding economic and technical aspects of farming had already been transferred from the state to private and cooperative actors, the parliament decision that followed as a result of the investigation was in line with the then current practice. Several of the bodies considering proposed legislation, however, expressed that the distinction between government-related and non-government-related advisory services was difficult to identify and could lead to problems vis-à-vis the customer.

5.4.5 Advisory services become chargeable and HS develops the HIR programme

As mentioned previously, practically all advisory services were free of charge for farmers until 1967. This was possible because the Swedish government provided funding to HSs to cover both the advisors' salaries and their associated costs. Even after 1967, some HSs attempted to keep the costs of their advisory services down, by financing it with their own funding. On 1st

July 1984, however, the Chambers of Agriculture began to charge for parts of their services. Services that were regarded as socially conditional, such as for example environmental counselling, thus remained free. The costs for the advisory services provided by the cooperatives was, and still is, often integrated in their different control programmes or as part of the cost for the input at stake. The difficulty for advisors and advisory organisations to invoice the actual cost of their services is a discourse that still exists. In terms of substance, it was not until the 1970s that the advisory service was seriously developed (Månsson, 1988). The driving force was changes in the surrounding world which meant that the costs of inputs grew faster than the revenues, which in turn led to increased specialisation and that the connection between production and economy required strengthening (ibid). The tougher economic climate combined with increased monoculture and incidence of pests led to so-called programmed cultivation, with spraying plans in several parts of Europe during the 1970s. This approach was inconsistent with the Swedish environmental policy. Instead, the Swedish agricultural production advisors advocated increased training and more efficient plant protection monitoring—which should be realised through a more intensive advisory service (ibid). The demands for a new type of advisory service also came from farmers, who wanted help to determine the need for chemical pesticides and to decide on a suitable dose.

The first steps towards the advisory service that has been the dominant form of advisory service in crop production since the 1980s, and which still forms the basis of HSs' activities, was taken in 1979/80. Then the young agronomist Erik Stjerndahl was employed by one of the two HS in Scania (the southernmost province in Sweden) to develop a new kind of advisory service influenced by Denmark. When Stjerndahl came to the HS, their business was confined to one agricultural advisor, one dietary and home economics consultant and field trials (Stjerndahl, 2012). The advisory service that Stjerndahl and his colleague developed was initially known as the '*intensive advisory service'* - intensive because the service was based on visiting the farmer 6-7 times per year in order to be able to give suitable advice in the field that was grounded in the farmer's actual conditions. It was the first time such an advisory service had been tested in Sweden and also the first time that an advisory service had been financed entirely by the farmers themselves (ibid). The advisory service was called *HIR*[35] and became very popular. Hence the *HIR programme* was spread to other HS. In short, the HIR crop production service is based on making nutrient balances, developing soil maps of nutrient

[35] At first HIR was an abbreviation for HS's intensive advisory service and later HS's individual advisory service.

content, monitoring the crops and different insects/fungi/shortages continuously during the crop season and making an economic follow-up by the end of the year. Gradually, the HIR programme has been developed and new services have been added to the range of services supplied. The ideas of offering advisory programmes on a subscription basis to farmers based on monitoring of the production, giving farm-specific advice and making evaluations in economic terms were also developed in milk, beef and pork production by other advisory actors. As the individual advisory service was developed and gained ground, private actors entered the advisory service market during the 1980s. *Lovanggruppen*, for example, which is a relatively small private advisory business, was established partly as a response to criticism about the advisory services that had been offered at the Chambers of Agriculture. The desire of the company's founder was to be able to offer advice that took more aspects of agriculture into consideration than did the state-funded service (for further information, see Paper IV).

Box 4. Outlook on trends in extension—The 1980s and onwards: The evolvement of participatory development and the notion of AKIS/AIS

During the 1980s, the most evident development in agricultural extension took place in the countries of the South, with an increased focus on issues of power and equity (Ljung, 2015). These dimensions followed as a consequence of the critique towards the ToT model and the importance of involving the farmers and the local prerequisites in the agricultural development, as mentioned in the farming systems movement. Participation was however seen not only as a way of developing better technologies in relation to the context, but also as a right of individuals and communities in shaping and determining their own destiny (King, 2000). One of the people who influenced the development of the agricultural extension in the South was the Brazilian educator and philosopher Paulo Freire, who made explicit that many poor people in the countries of the south had little influence on their situation. In his books 'Pedagogy of the oppressed' (Freire, 1972) and 'Education for critical consciousness' (Freire, 1974) he called for a change. Based on a social justice agenda and a focus on community-based development, several participatory methods have been developed, for example: Participatory Rural Appraisal, PRA (e.g. Chambers, 1994); Rapid Rural Appraisal, RRA (e.g. McCracken *et al*., 1988) and Rapid Appraisal of Agricultural Knowledge Systems, RAAKS (e.g. Engel and Salomon, 1997). In the pursuit of sustainable farming methods and rural development, participatory methods have become increasingly common in Europe as well (i.e. EIP-AGRI, 2015).

As the systems approach to agricultural research and development evolved to accommodate participatory approaches, the underlying ToT linear model was stretched to its limits (FAO, 1995). In the late 1980s, researchers at Wageningen University in the Netherlands proposed the 'agricultural knowledge and information systems' (AKIS) model. The AKIS model presented in Röling's 'Extension science' from 1988 describes the two-way flow of information and knowledge among the research, dissemination and utiliser sub-system. These sub-systems play equally important roles in the system. Röling (1988) claimed that the best extension systems develop where farmers are organised and able to lobby for the technical assistance that they consider priority. In the AKIS, the two-way exchange of information is crucial for effective generation and transfer of relevant technology. As a consequence, the role of the dissemination sub-system (the extension organisations) was reformulated from a one-way ToT persuasive channel into a two-way channel for requests and answers that facilitates the learning process for both farmers and researchers (FAO, 1995). The change from disseminating to facilitating meant a need for extension workers with fundamentally different attitudes, skills and knowledge. From the point of view of the AKIS (and of participatory research), the facilitator can be described as a broker of information regarding demands and supplies (ibid).

Since then, the view of what constitutes an AKIS has been developed to also include other actors involved in knowledge and innovation generation (c.f. Röling, 1989; Engel, 1995; FAO and World Bank, 2000). Rivera *et al*. (2005) broadened the concept to include rural development and named it AKIS/RD. Within the AKIS/RD model, Rivera *et al*. (2005) distinguished between four main actors whose mission was related to agricultural/rural development innovation: research, extension services, education and training and support systems (i.e. all organisations related to credit, inputs and producers' associations).

More recently AKIS has also been used to refer to an 'Agricultural Knowledge and *Innovation* System', for example by the European Commission (EU SCAR, 2013). Labarthe *et al*. (2013) note that even if there is a general consensus on the adoption of a systemic approach, both in academic and institutional settings, there is no universally shared definition of this system. Parallel to the AKIS concept one can also find the notion of AIS (Agricultural Innovation System). Leeuwis (2012) describes the difference between the two as:

> [AIS]…in contrast to AKIS, do not just involve players in the knowledge infrastructure (classically: universities, strategic and applied research institutes, education and extension) but the whole network of public and private stakeholders on which innovation depends. (in Labarthe *et al*., 2013, p. 5)

During decades of research on agricultural extension matters—for example by researchers within the IFSA community—the view of extension has broadened and deepened. In the research field, approaches and concepts such as social constructivism, systems thinking, social/collaborative learning, participation and action research are more or less natural and unquestionable points of departure (e.g. Röling and Wagemakers, 1998; Cerf *et al*., 2000; Ison and Russell, 2000; Leeuwis and Pyburn, 2002; Wals, 2007; Darnhofer *et al*., 2012). Even though this development has mainly occurred within academia, the changed discourse has of course also affected the agricultural advisory services and the advisors' way of accomplishing their work. Instead of spreading information, which in many respects is what advisors have been doing throughout history, the focus now is rather on dialogue between the advisor and the farmer. The relevance model of communication by Nitsch (1998) is one way to illustrate what happens in the advisory situation. The relevance model builds on two prerequisites in order for communication to occur: i) that the content of the message from the sender corresponds to the receiver's perceived needs, and ii) that the message shall be available in such a way that it corresponds to the receiver's preconditions and opportunities to take part in it (Nitsch, 1998).

5.5 The period 1995 until today: Sweden as part of the European Union and the CAP

5.5.1 The ever-evolving CAP

On 1st January 1995, Sweden joined the European Union. From being a country with its own agricultural and food policy and a national market for food, Sweden became a country with an agricultural and food policy and a commodity market in common with the other EU countries. The Common Agricultural Policy (CAP) is aimed at helping European farmers meet the requirements to feed Europeans. Article 39 of the Treaty of the Functioning of the European Union sets out the specific objectives of the CAP (European Parliament website, 2017):

i) to increase agricultural productivity by promoting technical progress and ensuring the optimum use of the factors of production, in particular labour;
ii) to ensure a fair standard of living for farmers;
iii) to stabilise markets;
iv) to ensure the availability of supplies;
v) to ensure reasonable prices for consumers.

To reach these goals, EU money is used for income support to farmers, different market measures and rural development programmes (EC website, 2017a). Over the years, the CAP has been developed and reformed several times, with the aim to reduce expenses and increase market orientation. When Sweden became a part of the CAP it had recently undergone the so-called MacSharry reform in 1992. The MacSharry reform started the shift from product support (through prices) to producer support (through income support) (ibid). Reduced market regulations were compensated for by production-linked income support, which was distributed on the basis of cultivated areas of different crops and production of certain animals (Naturvårdsverket, 2011). The reform introduced compulsory set-aside as a production-limiting measure and for the first time environmental goals and environmental compensations were introduced as a part of the CAP (ibid). The Swedish EU accession in 1995 thus meant a return to a production-promoting agricultural policy, albeit with production-limiting features (Jordbruksverket, 2011). Since the Swedish entrance into the EU, the main reforms of the CAP have been as follows (EC website, 2017a; Rabinowicz, 2016; Daugbjerg, 2014; Naturvårdsverket, 2011; Jordbruksverket, 2010, 2011, 2012):

- *Agenda 2000* is generally understood as a deepening or continuation of the 1992 reform, as it further lowered the guaranteed minimum prices and raised direct payments. The reform established economic, social and environmental goals within the objectives for the CAP. The main change with Agenda 2000 was that a new rural development policy was introduced as a second pillar of the CAP (the first pillar being the direct payments).
- *The 2003 reform* introduced a radical rebuilding of the CAP, with important innovations such as the 'decoupling' of income support payments to farmers, the introduction of 'cross-compliance' and 'modulation'. The decoupled support was paid to the farmer regardless of the production, but it was required that the land should be cultivated and that the environmental, animal welfare and food legislations were followed—a system called cross-compliance. The choice of production

would thereby increasingly be guided by consumer demand and not by production-related support. Modulation was a system of progressive reduction of direct payments allowing a transfer of funds from Pillar 1 to Pillar 2, which resulted in more funds for policy tools designed to promote sustainable agriculture and rural development. In the following years, the sugar, fruit and vegetables and wine sectors were also reformed, and a new rural development policy for the financial period 2007-2013 was prepared.

- *The 2008 CAP 'Health check'* aimed to modernise, simplify and streamline the CAP and remove restrictions on farmers, thus helping them to better respond to signals from the market and to face new challenges such as climate change, water management and bio-energy. The Health check meant increased investments in environmental measures in the rural programmes, financed through modulation.
- *The 2013 CAP reform* introduced the 'greening' concept to make the direct payments system more environmentally friendly. The idea is that greening supports actions to adopt and maintain farming practices that help meet environmental and climate goals, and that these actions are not reflected in market prices. The single farm payment is now split into a basic payment (70%) and a greening payment (30%). Farmers will only be eligible for the latter payment if they implement three environmental measures, namely: maintaining permanent grassland, crop diversification and dedicating 5% of arable land to 'ecologically beneficial elements'/'ecological focus areas'. The reform also introduced a 25% top-up to the basic payment scheme for young farmers and a range of support measures is available for young farmers as part of the new rural development programme.

For each current programme period, a national and/or regional rural development programme (RDP) is developed which sets out the actions that are to be undertaken during the seven-year period (now 2014-2020). The 2013 CAP reform aimed to improve the EU rural development policy, which was to be achieved in two ways. Firstly, by strengthening its strategic approach, as member states have to build their RDPs based upon at least four of the six common EU priorities (EC, 2013):

1. Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas.
2. Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and sustainable management of forests.

3. Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture.
4. Restoring, preserving and enhancing ecosystems related to agriculture and forestry.
5. Promoting resource efficiency and supporting the shift towards a low carbon and climate-resilient economy in the agriculture, food and forestry sectors.
6. Promoting social inclusion, poverty reduction and economic development in rural areas.

Secondly, the interactions between the two pillars were strengthened through common targeted actions (Table 8). Hence the two pillars also interact in financial terms.

Table 8. *Actions targeted under both pillars in CAP 2013-2020 (EC, 2013).*

Pillar I	Targeted action	Pillar II
Green payment	ENVIRONMENT	Agri-environment-climate, Organic, Natura 2000
Top-up payment	YOUNG FARMER	Business development grants, Higher investment aid
Top-up payment	AREAS WITH NATURAL CONSTRAINTS	Area payments
Alternative simplified scheme	SMALL FARMER	Business development grants
Improved legal framework	PRODUCER COOPERATION	Aid for setting up producer groups, Cooperation and short supply chain

When the 2003 CAP reform introduced the cross-compliance mechanism, it followed with an obligation for the Member States to set up a Farm Advisory System aimed at helping farmers to better understand and meet the EU rules (EC website, 2017b). Sweden's EU membership has however affected the advisory system and more so its service supply. When Sweden joined the EU, a new type of advisory service entered the market—in Swedish known as the *SAM advisory service*, i.e. help with filling in the application form for direct payments within Pillar I. Through EU entry, Sweden also had the opportunity to join LEADER II. LEADER was then a rather new approach to development efforts in rural areas with foundations such as a bottom-up approach, cross-sectoral and innovative thinking, networking both nationally and internationally and a tripartite partnership (public, private and voluntary). Since Pillar II became part of CAP in 2003, the range of services and development projects connected to organic farming, business development and rural development has increased

significantly. These advisory services and development projects are often partly or fully financed by funds within Pillar II.

5.5.2 The sixteen environmental objectives and Focus on Nutrients

Besides the regulations stipulated by the EU, Swedish agriculture is also affected by regulations decided on a national level. One of the regulations that has affected Swedish farmers most clearly is the environmental objectives. In 1999, the Swedish Parliament decided on fifteen environmental quality objectives, which in 2005 became sixteen (Prop. 1997/98:145; Prop. 2000/01:130; 2004/05: 150; Prop. 2009/2010:155). These environmental quality objectives describe the state of the Swedish environment that environmental actions should be geared towards. These objectives are to be met within one generation, i.e. by 2020 for most of the objectives. For certain objectives, the connection to agricultural business is particularly evident. These are: *Reduced climate impact, A non-toxic environment, Zero Eutrophication, Thriving Wetlands* and *A varied agricultural landscape* (for further reading, see for instance www.miljomal.se). The environmental quality objectives meant that for the first time, farming had its own requirements for the reduction of nitrogen and phosphorus emissions (Greppa Näringen, 2011). When the environmental quality objectives and accompanying action plans were drawn up, legislation was discussed as one way of reducing nitrogen leaching according to a Danish model (ibid). However, it was feared that introducing a similar system in Sweden would increase the administrative burden on agriculture. Instead of engaging in such nitrogen management, Sweden chose to invest in advisory services instead. Hence, in the early 2000s, the large advisory programme *Focus on Nutrients* was launched. Focus on Nutrients is a joint venture between the Swedish Board of Agriculture, The County Administration Boards, the LRF and a number of companies in the business of farming. The purpose of the project is to (Greppa Näringen website, 2017):

- Reduce losses of the greenhouse gases; nitrogen oxide, methane and carbon dioxide.
- Reduce losses of nitrate from farmland.
- Reduce ammonia emissions from manure.
- Reduce losses of phosphorus from farmland.
- Avoid losses of pesticides into surface and groundwater.
- Increase energy efficiency on farms.

In order to attain these objectives, the project focuses on increasing nutrient management efficiency by increasing awareness and knowledge (ibid). The farmer is in focus and therefore the core of the project is education and individual on-farm advisory visits. Over the years, Focus on Nutrients has developed and its scope has grown. Today it consists of 41 advisory modules that are performed by different contracted advisory organisations (ibid). The individual advisory visits are preliminarily aimed at farms with more than 50 hectares or 25 livestock units. In addition to individual visits at farm level, Focus on Nutrients offers group activities and courses in relevant subjects. In addition to the work that is carried out within the project, the Swedish Board of Agriculture is working on increasing advisors' knowledge concerning the sustainable use of the cultivated landscape through different competence development measures (Jordbruksverket, 2013).

5.5.3 Advisory efforts to strengthen farm management and gather momentum in production

Besides the three categories of advisory service mentioned by Yngwe (2014) (i.e. the commercial advisory services, the selling advisory service and the free advisory service), the Swedish advisory system has also consisted of other time-limited initiatives aiming to improve the system. These efforts have often been initiated by the LRF and have, in different ways, aimed at helping the farmer develop as a businessman and entrepreneur. Several of these efforts are described in Paper III, and will therefore be presented only briefly here.

As has been described in this chapter, Swedish agriculture has a long history of regulatory policies. These have of course not only affected production, but also farmers' values and behaviours. Through the project *Farm Business Manager*[36], which was launched in 1998, farmers were encouraged to develop an action plan for their own company on how to best meet the future (LRF, 1998, 1999). Some years later, in 2005, the LRF allocated funds to a coordinated effort known as *Mobilization*[37], with the aim of stimulating members to develop their own business and thus make their vision come true (LRF, 2005). Initially, the Mobilization activities were rather traditional in character, with courses, seminars, study circles and individual advisory services. In 2009, however, additional funds were allocated to a more innovative approach. With the help of regional business coaches and individual future dialogues, farmers were helped to set overall goals for their businesses (LRF, 2009). The last venture in the same genre is that of *Lean Farming*. In short, one could say that Lean is both a

[36] In Swedish *Bondeföretagaren*.
[37] In Swedish *Kraftsamling*.

management philosophy and a production practice, and working with Lean as a guiding approach therefore involves both a way of thinking and use of the Lean toolbox (Dyrendahl and Granath, 2011). Although the Lean initiative did not come from the LRF, but from advisors, extension developers and researchers in a collaborative effort, they have been project owners since 2010. Lean Farming is a national collaboration platform with nine organisations with the common idea that Lean can create profitable and competitive companies in agriculture. Lean Farming has developed a methodology for Lean work with education and coaching used in different projects (LRF, 2017; Lean lantbruk, 2017).

Besides the abovementioned efforts to strengthen farm management, the advisory system has also consisted of, and still consists of, other time-limited advisory programmes with the aim of either gathering momentum or helping production in tough economic situations or in other ways perceived as being in need for development. What characterises these programmes is that they bring together advisors with different skills, in order to analyse and find farm-specific advice where the company is treated as a whole. Some examples of such advisory programmes are for example the *Trefoil* (LRF, 2011b), *Start Package Milk* and *Activity Plan Milk* (LRF Konsult website, 2017)[38]. What is common in these ventures is that they are partly financed by the LRF, other cooperative organisations or by EU funds and consequently only partly by the farmers themselves.

5.5.4 The pursuit of a whole farm approach in advisory services

The discourse concerning the need to develop a holistic approach from the farmers' perspective in advisory services has been an issue within agriculture for well over thirty years. The way that the advisory system has responded to that need has differed. In the beginning, the discourse was initiated in academia by researchers within the Farming Systems Movement (Collinson, 2000) driven primarily by donor agencies working with agricultural development in the Global South and their recognition of the failure of the commodity approach. As indicated in Box 4, it is noteworthy that in the 1990s, the experiences from Farming Systems Research and Extension applications in countries of the South were beginning to be seen as being relevant to agriculture research and extension in the Global North, inter alia expressed in the creation of IFSA as a global movement (IFSA, 2017). Inspired by this movement, and the emergence of the sustainable development discourse, Nitsch (1994a) introduced the idea of a *'holistic advisory service'* in Sweden

[38] In Swedish these advisoy programmes are known as *Treklövern*, *Startpaket Mjölk* and *Aktivitetsplan Mjölk*.

during the 1990s while also asking the question: *what is the responsibility of the advisory services?* He argued that the advisors' and the services' fields of interest should be expanded by also incorporating questions concerning the market, social aspects of farming including the farmer's vision, and environmental factors (ibid). The need for increased coordination among the advisory actors for the sake of the farmers was also highlighted by the politics in the 1990s (Dir. 1991:83; SOU 1992:99). In this phase, the LRF introduced the already mentioned advisory effort Farm Business Manager as a way to strengthen the farmers' managerial skills (for further reading, see Paper III).

The second phase, which started in the early 2000s, was based on dissatisfaction among the farmers, who felt that there were several issues that fell through the cracks between different advisors and a frustration among the advisors themselves who could not offer services that were consistent with the farmers' needs. The farmers suggested the need for generalists, but that idea suited neither the educational system nor the advisory organisations and their advisors, as subject competence was in focus. The advisory organisations made some attempts to develop services that corresponded to the needs, but they all failed for different reasons. A concept that still remains from this phase is the so-called *'farm councils*'[39], in which the farmers bring together a mixture of desired competences. Since this solution is costly, it is primarily a concept for large farms or farms facing major changes. Organisational mergers and co-locations are another component of this endeavour (for further discussion, see Chapter 5.5.5 and Papers II & IV).

The third or the current phase, which we are in the middle of, is marked by efforts to apply Lean philosophy to agricultural companies. This can be seen as a prolongation of earlier efforts at working with business coaches as a way to make farmers more aware of their visions and goals (see Chapter 5.5.3 and Paper III). Within this last phase, a holistic advisory service has more or less become interpreted as being synonymous with business management by the involved actors.

5.5.5 A period of mergers

Since the beginning of the 21st century, there have been several organisational changes in the Swedish advisory system. The advisory services that were previously offered by advisors employed by HS have in many parts of Sweden been moved from the parent organisation and instead, separate advisory firms with HS as the main owner have been established. These advisory firms, which are presented in Table 7, are often the result of a merger between advisory units

[39] In Swedish *gårdsråd*.

derived from different regional HS. As described in Paper IV, the organisational solutions in these different firms, as well as the reasons behind the chosen organisational structure, vary. The mergers and the organisational solutions are often both a result of economic forces and different ideas about how to best create customer value or deal with internal issues. Mergers have also taken place among the former regional Animal Husbandry Associations that were established during the 1940s. In 2011, five of the seven associations merged and created the organisation *Växa Sverige*[40] (Troedsson, 2010). The background of the merger was a consequence of the fact that the numbers of dairy farmers were decreasing, combined with increasing demands from the farmers put on the advisory services provided (ibid). As also shown in Table 7, two of the regional HSs and Animal Husbandry Associations earlier decided to merge and establish a new kind of advisory organisation in order to gather advisory service and other services aimed at the farm business under the same roof. Additionally, when it comes to advisory services related to meat production, there have been consolidations in recent years. In 2015 three associations within pork, sheep and beef production merged and established the advisory firm *Farm & Animal Health*[41]. Their aim is to "maintain a high level of health in an effective and profitable production in the pork, sheep and beef sectors" (Gård&Djurhälsan website, 2017).

5.6 The Swedish advisory system at present

This last section is devoted to presenting the main actors of the Swedish advisory system and how the advisors' financial situation appears at present, as a consequence of where history has brought them.

5.6.1 The main actors

Figure 8 is a schematic diagram of the main actors within the Swedish advisory system and approximately when they entered the system. The figure also points out the main political decisions that have contributed to creating and shaping the advisory system as it appears today. Using Yngwe's (2014) terminology, the main actors within the three categories of advisory service are presented below.

[40] Växa Sverige is the result of a merger of the former Animal Husbandry Associations *Svenska Husdjur, Freja Husdjur, Växa, Hansa Husdjur* and *Norrmejeriers producenttjänst. Skåne Semin* and *Rådgivarna i Sjuhärad* decided not to join the new organisation.

[41] In Swedish *Gård & Djurhälsan*, which is the result of a merger of *Svenska Djurhälsovården, Svenska Pig* and *Taurus Köttrådgivning.* The company is owned by *Svenska Köttföretagen AB, Sveriges Grisföretagare, Sveriges Nötköttsproducenter* and *Svenska Fåravelsförbundet.*

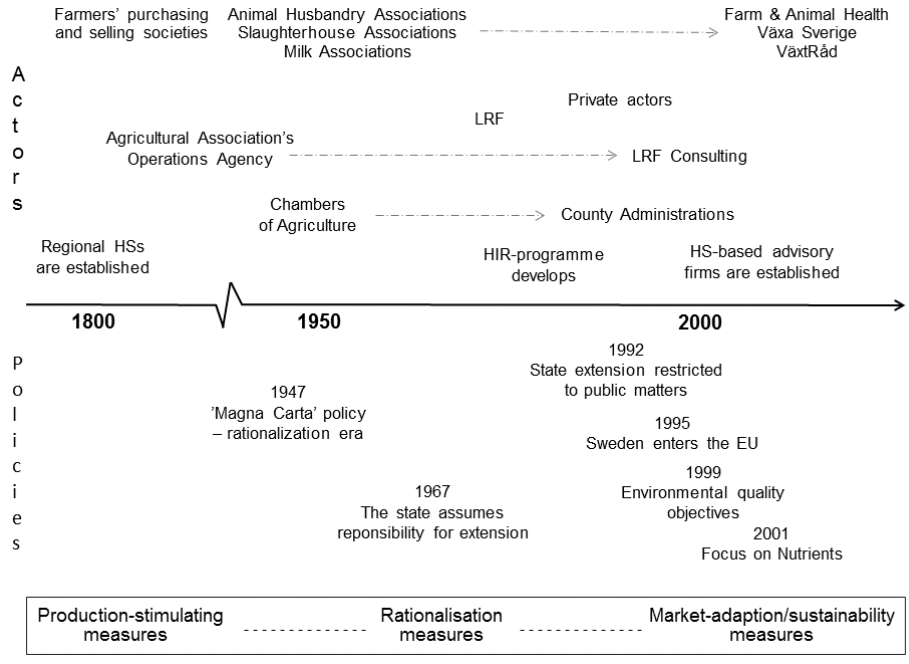

Figure 8. The main actors and the key political decisions that shaped the Swedish advisory system.

The commercial advisory services

The services within the commercial advisory services are mainly conducted by four large independent advisory organisations:

- *HS*—a member-based organisation that provides a range of services, for example advisory services, field trials and education. HS are specialised in crop production, economy and construction, but they also provide services in for example animal production, energy, forestry, business development and rural development.
- *Växa Sverige*—a farmer-owned organisation that stems from animal husbandry and breeding associations. They are specialised in different aspects of dairy production: breeding, feeding, animal health, crop production, economy, construction and leadership.
- *Farm & Animal Health*—a member-based organisation that is specialised in different aspects of meat production that combines veterinary and production advisory services.
- *LRF Consulting*—a subsidiary company to LRF that is specialised in areas such as accounting, tax and legal matters, but which also offers advisory services in management and business development.

These advisory organisations can be found in local and/or regional offices all over Sweden. Most of the commercial advisory services are organised into 'advisory packages' developed within each organisation, which are offered to farmers on a subscription basis with individual contact as the principal form of interaction. In addition to the individual advisory services, the organisations also offer group advisory activities, courses, field/farm visits, study trips and advisory letters. Aside for the four main national organisations there are several smaller, independent, firms with different focuses. According to Yngwe (2014), there are 60-70 private/farmer-owned advisory actors that offer agricultural advisory services, often on a local/regional basis.

Selling advisory service

The selling advisory service can be divided into two groups. The first group consists of the retailers of input goods that offer free advice connected to their products, often related to crop varieties, plant nutrition and plant protection. The market leader in this group is the farmer-owned cooperative *Lantmännen*, with a market share of two thirds (Yngwe, 2014). Other large national actors are for instance *Svenska Foder* and *Gullviks*. The second group consists of food companies that offer advisory services to their contractors, in order for the contracted farmer to produce products with the desired quality. These include, for example, *Nordic Sugar, Toppfrys* (green peas) and *Lyckeby Starch*. The actors within the selling advisory service also organise seminars and field visits.

Free advisory service

In some regions, the *County Administrative Boards* offer free advisory services, funded by the government. In line with the public investigation from 1992, this advisory service is related to questions concerning 'public goods', such as animal welfare and environmental issues (for example, organic farming or the environmental quality objectives). In some cases the County Administrative Boards have their own advisors, and in other cases, the free advisory services are conducted by advisors employed by other advisory organisations. As mentioned earlier, the advisory services performed within the project *Focus on Nutrients* are also free of charge for the farmers. These services are accomplished by contracted organisations/firms after a public procurement process. Sometimes the LRF also offers free, or subsidised, advisory services to its members.

Besides these three different categories of advisory services, there are also interest associations that act as knowledge brokers in the agricultural field. They disseminate information to their members through letters, seminars, study trips, field/farm visits, and so on.

5.6.2 The advisors financial situation

As indicated above, it is not possible to separate an advisor who provides commercial advisory services that is paid by the farmers from one who offers free advisory services. Since the public funded extension is often performed by private actors, an advisor may have different financiers and/or customers (see Figure 9). Apart from the two mentioned financiers, advisors can request funds from the County Administrations for different types of advisory project. Such projects are thus financed by competence development funds aimed at farmers, which is one part of the CAP. Advisors can also make applications to other financiers for development projects of different kinds.

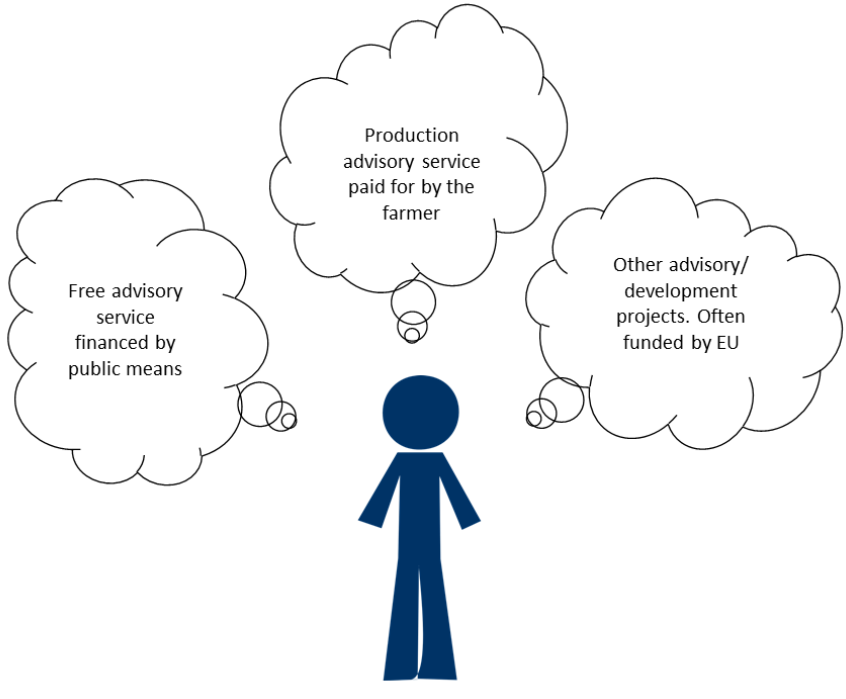

Figure 9. Illustration of an advisor and his/her different funding possibilities.

6 Summary of the papers

6.1 Paper I (published). Farmers and nature conservation: What is known about attitudes, context factors and actions affecting conservation?

The first paper is an analysis of literature concerning the current knowledge about farmers' perceptions of nature conservation and other factors that influence farmers' willingness to perform nature conservation actions. The emergence of environmental and nature conservation programmes, for example agri-environmental schemes within the EU as part of the CAP, is society's way of addressing the negative environmental consequences that have followed agricultural intensification and specialisation. The idea is that the programmes will compensate the farmers for the production of public goods and services, but also act as an incentive for the farmers to adopt more environmentally-friendly production strategies. Since these environmental programmes in farmlands are by necessity mediated through farmers, their attitudes and norms towards the programmes are of crucial importance for their implementation.

Many of the analysed studies emphasise the importance of making local adaptions and to be able to take the individual farm into account if agri-environmental schemes are to be efficient. The schemes should preferably be put in the broader context of the farm's goals, if farmers are to be enticed into applying conservation practices. The paper establishes that even though financial support is often crucial, advice, feedback, and recommendations of measures that farmers feel positive about also increase the likelihood of the scheme being effective. The first impression of the person presenting the scheme, as well as the extensionist's enthusiasm, are important factors when it comes to a farmer's willingness (or the lack thereof) to join a scheme. The paper also establishes that farmers fear losing control over the land through

regulations and that they claim that experts lack the ability to give local and time-specific advice and tend to give generalised recommendations instead.

Several of the analysed studies describe the farmers' closeness to nature and that farmers express a feeling of stewardship. Economic matters might, however, prevent realisation of the feeling of stewardship. Even if income is an incentive to farm, maintaining a nice place to live, being close to the land and nature, and independence are also important factors. However, although funding can be a way to introduce farmers to doing things in a new way, funding is likely to have a minimal or short-term impact on their actions if the farmers' attitudes towards conservation are negative. In the paper, a model is presented to show how the attitudes of the farmer and contextual factors important to the farmer (including the agri-environmental schemes) interact and thus influence how the farming community affects nature and biodiversity. The paper identifies three main ways to influence agriculture's effect on biodiversity: rules and regulations, financial incentives and change in the mind-set of farmers. Consequently, if society wishes farmers to take certain nature conservation measures on their farmland, it may be necessary to work at multiple levels to motivate them to enrol in the developed schemes. An issue with the schemes of today is that they are often developed in such a way that they are easy to evaluate and control. When schemes are developed to fit the administration rather than nature, we lose the ability to adapt locally and thus the possibility to create truly effective agri-environmental schemes.

In the thesis, this paper contributes with four different things. First, it helps to describe and bring an understanding of the farmers' lifeworlds. The paper highlights the farmers' relational approach to nature and that farmers have an interest that goes beyond production issues. That is, their interest is wider than the aspects of farming with which production advisors normally tend to engage. Secondly, the paper emphasises the importance of not building rigid schemes. In order for schemes to be attractive, and thus contribute to nature conservation activities or as an incentive for farmers to adopt more environmentally-friendly production strategies, the schemes ought to be sufficiently flexible that farm-specific solutions are possible. Thirdly, the paper accentuates the role of the advisor in ensuring the success of the schemes. For example, the paper highlights the importance of; i) a good relationship in order for the advisor to be able to motivate the farmer to take the desired actions, ii) being able to take a whole-farm approach in order to put the conservation practices into a larger context, and iii) the ability to give local and time-specific advice. Fourthly, the paper highlights the importance of attitudes and norms related to nature conservation actions at the farm level. Working on changing these could thus be a potential task for advisors. Together, these aspects

provide a rationale for the importance of advisors engaging in questions concerning the farmers' lifeworlds.

6.2 Paper II (manuscript). From collaborative heroes to collaboration as a culture: The importance of internal collaborative skills for sustained collective action

The second paper is a manuscript where the main findings have been presented at the 9th European IFSA symposium in Vienna in 2010. The paper builds on a case study of three advisory organisations and it discusses the emerging responses among Swedish agricultural advisory organisations to farmers' demands for a whole-farm approach in advisory services. The case descriptions present the organisations' conscious ambitions to change their traditional way of working. The paper establishes that starting collaborative processes has not been about striving towards a fixed goal set by the managing directors in the organisations; rather it has been something that has been continuously developed, negotiated and improved and the processes involve the whole organisation.

Based on Mactavish's (2006) model of four collaborative opportunities (the interpersonal, the work team, the organisational and the external), the paper discusses the challenges faced by the advisory organisations. The paper notes that many of the collaborative ideas today are carried out partly by individually interested advisors, and partly by a strong and visionary leadership. If the farmers' demands for advisory services are to be met, their ideas and visions need to be approved and adapted among the staff members and put into everyday practice. The paper establishes that the main challenge ahead for advisory organisations that desire to be the farmer's sought-after partners, and thus become actors that facilitate agricultural development both at farm and regional level in a sustainable direction, is to develop a collaborative culture among the advisors within the organisations.

This paper provides the thesis with insights on the constraints that advisory organisations face in their processes towards finding a new way of working in order to better correspond to the demands put forward by farmers. The paper shows that although the organisations have understood the new requirements of their services and are willing to make organisational changes to deal with perceived shortcomings in their traditional ways of working, thus far none of the organisations have managed to find a concept that is part of their advisory products. Further, the paper highlights the importance of culture and leadership in succeeding in the struggle towards a more collaborative way of working.

6.3 Paper III (published). Advisory Encounters towards a Sustainable Farm Development—Interaction between Systems and Shared Lifeworlds

The third paper describes and analyses advisory efforts and discourses that have affected the Swedish agricultural advisory services since Sweden entered the EU in 1995. The focus was on those efforts that have had a declared aim to support farmers to become more competitive and viable and why these do not seem to have attained the expected results.

As a first-order analysis, the paper organises and describes the advisory efforts and the evolving discourses found in four distinct, albeit intertwined, phases, namely: i) changing farmers' self-image, ii) profitability through cost reductions, iii) mobilisation and looking forward, and iv) developing farmers' management skills. In a second-order analysis, the paper highlights three aspects that are suggested to explain partly why the manifestations within the different phases seem to have had a limited effect on the farming culture. These are: lack of continuity, lack of local support/knowledge and the fact that the initiatives have been removed from the farmers' lived experience. The paper notices that although continuity, trust and local knowledge are accentuated in research as important aspects when creating learning environments aimed at supporting processes towards more sustainable practices (Cerf *et al*., 2011; Koutsouris, 2008; Ingram, 2008; Laurent *et al*., 2006; Leeuwis, 2000; Röling and Jiggins, 1994), the efforts have been conducted by temporary personnel employed by the LRF without including the farmers' ordinary production advisors in the projects. Hence the farmers are left with the task of implementing formulated ideas in practice (cf. Klerkx and Jansen, 2010). Through the analytical lenses of *Weltanschauung* and Habermas' (1987) concepts of *lifeworld* and *system,* the paper emphasises that most of the advisory initiatives taken so far have been rather peripheral to the farmers' lived experiences.

The paper concludes that the preconditions for achieving change would probably have been better if a broader and more cohesive and critical approach had been applied in the studied advisory efforts. As the work towards sustainability implies constantly improving situations, it becomes important to know which system needs to be improved (cf. Bawden, 2010a). This, in turn, requires that actors within the agricultural system must get better at critically reflecting on the set system boundaries as well as raising awareness of our mental frames (Ulrich, 2001) and how these prevent us from seeing what is possible.

The paper contributes to the thesis by highlighting the importance of taking aspects such as continuity, trust and local knowledge as well as having the ability to undertake self- and boundary critique when planning for and realising

learning processes aimed towards improved sustainability. The paper also shows the importance of both involving and engaging the farmer's production advisor(s) in these processes and that they are trying to understand and meet the farmer in his/her lifeworld since this is there where the farmer's motivations and driving forces are to be found. For the production advisors, this means that they will have to leave their traditional role of expert behind and learn to become a critical reflective facilitator instead (cf. Kemmis and McTaggart, 2000).

6.4 Paper IV (manuscript). Conducive environments for collaborative culture: What role for leadership in Swedish advisory organisations?

The fourth paper builds on the findings from Paper II and is also a continuation and deepening of that study. The paper aims to establish what is needed for the creation of a collaborative culture within the Swedish agriculture advisory system. The paper is both a longitudinal study and a case study of four advisory organisations with different organisational structures and development ideas.

In the paper, the prevailing culture in the advisory organisations that stem from the HS is described as individualistic and this is also seen as part of the explanation as to advisors seem to have so much difficulty collaborating. In many respects, the interviewees express criticism towards the services they sell. They are aware of the wishes of a more holistic advisory service and admit that the services have not developed significantly over the decades. Still, they continue to sell *"what they know and master"*. The paper shows that the organisations have taken a series of measures in order to change the culture from individualistic to one that is more collaborative. Some of those measures are of an organisational nature, where the organisational structures have been changed as a way to overcome both internal and external problems. By using the conceptual lenses *loops of learning* and *orders of change*, the paper establishes that the changes taken are of second order character. The present schemata (cf. Bartunek and Moch, 1987) has been questioned and changed, but the changes have never permeated the organisations in such a way that the changes are also reflected in the advisory practice. The paper highlights that advisory organisations appear to lack internal arenas for deeper reflection—corresponding to second and third loops of learning. The deficiency becomes evident when studying the organisations' visions, the chosen organisational structure and the advisory services' structure and content. The paper concludes that the different levels do not appear to be very consistent with each other.

Another reflective discussion that appears to be missing is one regarding the role of the advisory service as well as the role of the advisor.

The paper notes that in theories regarding collaborative cultures, the role of the leadership is emphasised, as the ultimate responsibility of which culture and working procedures that are permitted to develop belongs to them. In the interviews, the leadership is a topic exposed to both criticism and self-criticism. Some claim that too little time is devoted to management tasks, while others state that the managing directors do not take responsibility for their leadership. The paper argues that one reason for the weak and unclear leadership seems to be the strong position of power a certain advisor group appears to have internally. The paper establishes that the absence of ongoing reflective discussions corresponding to double- and triple-loop learning is applicable to both internal discussions within the organisations and external discussions with customers. At internal level, the ability to create triple-loop learning is a matter of survival. An organisation failing to continuously question and reflect on its own competence, practice and role (i.e. triple-loop learning) that instead lets short-term goals and satisfaction of existing services guide and run the businesses, is at high risk of eventually becoming an unattractive and non-competitive partner in a knowledge-intensive society.

The paper contributes to the thesis by exploring the individual culture and the weak leadership as two obstacles that seem to prevent the organisations from developing advisory services that better meet the challenges faced by the farmers. Related to this, the paper also highlights the unreflected idea that seems to reign in the advisory organisations regarding how collaborative cultures are created. Furthermore, the paper claims that the original mission of the HSs, which concerned being beneficial for agricultural development in the region where they were working, seems to have been abandoned as the advisory services have moved away from the parent organisations and created separate advisory firms. The paper also mentions the CAP as a contributing factor in advisory organisations becoming resource- rather than vision-driven (cf. Hjelm, 1998). Obviously, the studied organisations are willing to change their way of working. Hitherto, however, they have not succeeded in the struggle of creating an organisational structure that mirrors their respective vision and which is conducive to the services that are to be performed and which in turn are in line with the overall vision. In order to reach a situation that is characterised by being a concerted whole from vision to practice, the organisations will have to engage in questions concerning boundary judgements related to the systems they would like to improve and power asymmetries within the organisations (Ulrich and Reynolds, 2010; Flood, 1999).

7 Findings from cases and the ethnographic approach

In this chapter I present the main findings from the different cases and how they contribute to the thesis. As presented in Chapter 3.1.1, I have had the opportunity to be involved in several development and evaluation projects during my doctoral studies. These projects have been of different kinds, but a common feature is that they have provided me with opportunities to undertake qualitative research interviews with farmers and/or advisors about different aspects of farming and advisory activities. A background and rationale for each case is also presented in Chapter 3.1.1. Several of these cases have been written about mainly in Swedish earlier, in what is commonly labelled as grey literature. Some of them have, however, been written about and presented as conference papers at IFSA and ESEE. Although many years have passed since the first evaluations, they reflect issues that the agricultural sector has faced over the years, and to some extent is still facing.

7.1 Evaluation of documentations from individual advisory visits within the KULM-programme

This case (case I) highlighted three main issues concerning the state-funded advisory services in general and the studied documentations in particular. The first issue concerned the perceived value of state-funded, or 'free', advice from the farmers' perspective. Many farmers claimed to be satisfied with the advisors they had met and the advice that they had been given, as reflected in the statement *"one should not complain"*. This statement shows that farmers do not feel they are entitled to criticise an activity that they have not paid for. From the public's perspective, however, it is of course of crucial importance to use public money in an efficient way. The second issue concerned the nature of temporary advisory efforts, such as KULM, which

aimed to reach as many farmers as possible and was conducted unlinked to the commercial advisory services the farmers often encounter. The advisors realised that successful advisory services are built on trust and the development of a shared perspective. This takes time to develop, and is based on an ongoing interaction. With the opportunity to work with the same farmer for several years, the advisors believed that they would be better at achieving environmental improvements and developing a long-term competence plan for each farmer. The third issue concerned the documentations, which suffered from the multi-audience purpose (which is described in the presentation of the study in Chapter 3.1.1). Few farmers said that they had any practical use for the documentation. This was because they tended to be too abstract and were not perceived to be written for them, but for the bureaucracy. For the individual farmer, this meant that she/he in general perceived that the advice was not relevant for their specific preconditions and needs. The advisors expressed ambivalence to the documentations and questioned who the most important target audience really was. They found it difficult to relate their concrete advice to the national environmental objectives and admitted that much of the advice given was based on estimates due to the lack of applied, on-farm research.

In the thesis, this case highlights the shortcomings of implementing a state-funded advisory service within the framework of special advisory programmes and with advisors that differ from the farmer's production advisor(s). When an advisor lacks knowledge about a particular farm, the advice given may be perceived as abstract and general. The case also emphasises the drawback with procurement processes in advisory services. In this case, it was the documentations of the advisory visits that were assessed by the 'state' to ascertain whether or not the advisory service performed could be approved as belonging to the programme. In the choice between allowing the documentation be a part of a learning process between the farmer and the advisor(s) and being an assessment document for the County Administrations, the advisors tended to choose the latter to avoid the risk of not receiving the contracted funds. This risk, in turn, is an incentive for both the 'state' and advisory actors to develop programmes and provide services in such a way that they are easy to monitor and assess, rather than being designed to maximise the environmental benefits. This phenomenon is also mentioned as an issue in Paper I.

7.2 Farmers, chemicals and choices—a study of farmers' decision-making concerning chemical use

This study (case II) highlighted three types of situation—called decision-making rooms—where the farmer makes decisions that have an impact on the use of pesticides. These situations are illustrated in Figure 10. The circle represents the farmer's pesticide year and the three letters (A, B and C) the decision-making rooms.

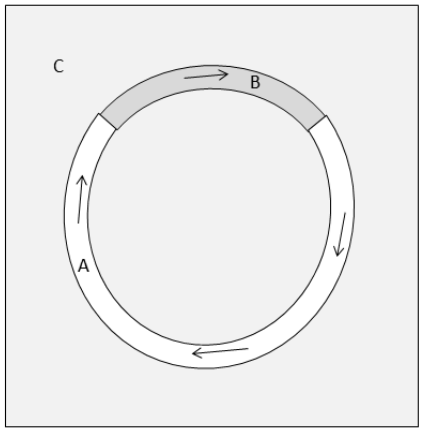

Figure 10. The pesticide year and the three different decision-making rooms (from Lönngren *et al*., 2006).

Room A represents the coming year. As the use of pesticides is coupled with several factors that to some extent are known in advance—for example the specific crop and the nature of the field where the crop is going to grow—the first pesticide plan is made before the crop is established. The most important factor governing the use of pesticides is the economy. Some kind of advisory encounter is the most important information source in the planning situation, although it appears that the encounters seem mostly to be used as a confirmation of decisions already taken. In this decision-making room, the degree of emotional standpoints is low. The decisions appear to be rational, with maximised economic result as a guiding principle.

Room B represents the immediate situation and all the decisions that are taken in connection with the actual use of pesticides. In this decision-making room, the economy is no longer always the main argument. At this point it is rather time factors, external conditions and the urgent work situation that govern the decisions the farmer takes at each specific time. The 'faux pas' that takes place is often connected to stress, convenience and lack of reflection in the moment, which makes it imperative to be continuously aware of these aspects.

Room C represents the long-term stance—decisions that are based on reflections about the business and how the farmer would like to change and develop it in the longer-term perspective. These decisions are linked to visions, dreams and existential thoughts. In the case of pesticide use, room C includes factors such as the perception of nature, attitudes to pesticides, risk perceptions, content and form in information materials and education/ courses, type of production and cultivation techniques, market demands, norms, values, and politics.

The study concluded that to some extent there was a gap between farmers' knowledge and their behaviour. To bridge this gap, work within all three decision-making rooms will be required. Due to the complexity of the issues connected to pesticide use, the study proposed that work within decision-making room C would probably have the greatest long-term effect on health and the environment. However, in order to achieve the desired behavioural change, it would be necessary to work in a different way to classical information dissemination, as changing norms and attitudes in complex issues demand spaces for dialogue and reflection.

This case contributes to the thesis by showing the need to work with advisory efforts in a different way, perhaps above all when it concerns issues that are based on attitudes—such as for instance the use of pesticides. Today's agricultural advisory services work mostly within decision-making room A and to some extent in room B—they mainly concern providing well-defined answers to well-defined questions. Talking about attitudes and values, however, requires another type of conversation of a more reflective nature. The study claimed that advisory encounters were one example of a communicative situation that has the potential to be developed further in order to provide farmers with an even more comprehensive basis for decisions. Dialogue and conscious reflection in decision-making room C will probably result in more judicious decisions in decision-making rooms A and B.

7.3 The Team 20/20 project

This study (case IV) revealed a number of issues that are valid not only for the studied project, but also to some extent for the entire Swedish advisory system. The first issue was related to the homogeneity of the group. The homogeneity was probably one of the reasons why the Team 20/20-group enjoyed working together, but was also perhaps one of the reasons why the expected innovations failed to materialise. Although most participants claimed that the project had been a creative and innovative process, it was difficult as an outsider to understand which system boundaries had been questioned and challenged

during the project. The second issue, which was connected to the first, was the technological fix that the project suffered from. Already at the beginning of the project, the group had limited their thoughts on how to achieve the set goals. Those limits were in this case first set at the field level, and then expanded to the farm level as the project subsequently also included management issues. The technological fix affected in turn the space for innovations, which in this case was insufficient. The third issue was also related to the previous two and concerned the rigidity of the Swedish agricultural advisory organisations and consequently also their advisors. When advisors start their careers, they often inherit a set of farmers from an older colleague, and also a way of working. This seems to imply that even though the remit of an advisor may seem rather free, the perceived manoeuvring space might feel small.

The contribution of this case to the thesis is twofold—firstly the project's existence in itself, and secondly the findings that are applicable also to the advisory system in general. This project was carried out as a participatory and learning (PLA) project with successful farmers, production advisors and different researchers—an approach that it shared with the case presented in Chapter 7.4. The thought with the project was to scrutinise sugar beet production on the participating farms, to establish their development potentials, take measures, analyse the results and come up with new ideas—essentially based on the process of experiential learning (Kolb, 1984). By applying a set of measures, tailored for each farm, the hope was that the total effect would be greater than that when adjusting one parameter at a time—that is to say, some kind of emergent or unknown effect was hoped for. The fact that this approach was perceived as innovative in itself (PLA-inspired projects are not particularly common in Swedish settings), allows us to implicitly draw conclusions about the work that is carried out within the regular production advisory services. Although the measures taken within this project were of such a nature that they should have been able to take place within the framework of the farmers' regular production advisory services, the participants claimed that many of the actions would not have occurred if it had not been for the project. Obviously, the targeted focus on one specific crop meant that the participants experienced an increased level of innovation. Although the 'big innovation' that the project had hoped for remained absent, the perceived innovativeness indicates development potentials within the existing advisory services. As mentioned above, the issues highlighted in this project are also applicable to the advisory system in general. This critique is also mentioned from within the advisory system and discussed in Paper IV. The criticism concerns whether the *right* issues are focused on by today's advisory services—are developments and innovations really sought where the potentials for change of gears are the greatest?

The study concluded that when faced with increased external pressure, and in order to reach viable and sustainable farm management, farmers need to reach at least the second order of change (c.f. Ison and Russell, 2000), which means a changing of established practices. This would involve influencing and changing the system itself, of which the farmers as well as the advisory system constitute part. The study further concluded that innovations going beyond already-assumed outcomes demand systemic learning and an ability to take into account that the farm is embedded in structural and communicative networks. Radical innovation is not a process of fine tuning—it is a process of crossing existing boundaries. In the Team 20/20 project, the system boundaries were set too narrowly from the outset, meaning there was reduced potential to develop practice through new perspectives. This is obviously also an issue within the contemporary advisory services.

7.4 BoT-A Platform

This study (case VI) pinpointed three phenomena that can serve as examples of problem areas found within the Swedish advisory system: i) The aspect of potato farming that the members were the most eager to work with was the potato's role and place in a crop rotation plan. The eagerness in holistic questions was greater than in narrower and more specific questions; ii) The correlation between questions that were perceived as urgent to deal with and the questions where the participant felt an interest in contributing was not very strong, and iii) In a compilation of the different actors' motivations to participate in the project, the advisors ranked the option 'To find measures that ensure a more profitable farm business' as the lowest and 'Getting the opportunity to learn more about an issue that interests me' as the highest.

Obviously, the participants in the BoT-A project acknowledged that the main challenges faced by potato cultivation were of a systemic character, of which potato cultivation constitutes only a part. Issues concerning the farming system as a whole, in order to give the potato the best possible conditions in this context, were considered to be the most urgent issues on which to continue to work. However, despite the perceived urgency, few participants expressed an interest in contributing in these holistic questions. Instead, they signed up to topics that aligned with their proficiency. Most advisors and researchers are schooled in a Cartesian reductionist way of thinking, which is also reflected in the way both the advisory system as a whole and the advisory organisations themselves are organised. Different areas of expertise are divided between different organisations and/or different units. In the quest to make issues more manageable, the ability to handle complex problems seems to have been

overlooked. This problematique is also recognised by Daniels and Walker (2001), who write:

> Environmental and natural resource agencies and companies use hierarchical organization, divide responsibilities along disciplinary lines that reinforce the effects of Cartesian reductionism […].

The third phenomenon mentioned is also discussed in Paper IV and concerns the focus of advisors' interest. While many farmers use advisory services to end up with a more profitable farm, most advisors' interests are at a lower system level—for example, optimising the part of the production that is within the scope of the individual advisor's field of competence.

7.5 Ethnographic findings

Many of the issues that have been revealed in both Chapters 6 & 7 have also continuously been mentioned by other farmers that I have met during my PhD study. Their opinions have tended to circulate around the same issue: the problem of finding competent advisors who are able to think outside the so-called box. This applies especially to organic farmers but also to some extent conventional farmers with an interest in alternative cropping systems built on, for example, reduced tillage and/or reduced chemical use. For these farmers, questions regarding how to improve soil fertility and create vibrant ecosystems are of crucial importance. To succeed with the sustainability aspects of agriculture, long-term strategies and a holistic approach are needed. In their work as crop producers, they continuously have to include aspects such as: how to increase the soil carbon content and the soil's water holding capacity, how to stimulate the soil microbial activity, how and when to establish a crop so it will have the best possible conditions to grow while combating weeds in parallel, how to find suitable fertilisers and stimulate mineralisation so that the plant's nutrient needs are met, and how to favour the natural pollinators and biological pest control. Hence, organic farming is a knowledge-intensive farming system and the knowledge needed is often not learned within academia.

Once again it becomes evident that the advisory system's focus on 'experts' in different areas (which in turn reflects the education system), leaves them ill-equipped for the systemic challenges facing agriculture. Consequently, those farmers who are interested in developing sustainable farming systems have difficulty finding advisors who can help them manage the issues they face. Thus, they have to instead find and make use of each other as support and knowledge sources in their profession.

8 Synthesis

In this chapter, the main characteristics of the Swedish advisory system, which was described in Chapter 5, and the main findings from the papers and included cases, which were presented in Chapters 6 & 7, are presented and integrated as a synthesis of the entire study. The synthesis will present the findings at three different system levels: the advisory system level, the advisory organisational level and the advisory service level.

Chapter 5 sketches the evolvement of the Swedish advisory system and how it has been developed both in relation to Swedish agricultural policies and influences of trends in extension on an international level. When the HS was established in the late 1700s, it was mainly to disseminate knowledge and thus increase agricultural production and improve rural conditions. To accomplish this work, HS received state funds. During the first decades, HSs played an important role, not only for Swedish agriculture, but for the whole Swedish countryside through their societal involvement. From the 1860s, however, their activities were limited to those specifically related to agribusiness and until the end of WWII, practically all agricultural extension activities were concentrated at HSs. The early extension activities were, to a large extent, based on the Transfer-of-Technology model. As part of their work, HSs supported the processes of starting cooperatives in different branches. Subsequently, this development entailed that tasks that had previously been the responsibility of HSs, were moved to these cooperatives—including providing production-related advisory services to their members.

After the war years, Swedish agriculture went into a period of extensive rationalisation. In order to improve this process, the government established regional Chambers of Agriculture. In the beginning, the Chambers were responsible for the external rationalisation process—that is, to contribute to the establishment of rational farm units—while HSs were responsible for the internal rationalisation. Price regulation and border protection were two

important tools in the rationalisation process. These tools had been introduced during the 1930s, but had evolved over the years. In 1967, however, the Chambers of Agriculture assumed responsibility for all agricultural extension activities, as the government was dissatisfied with the result of the rationalisation process. Consequently, HSs became more or less outmanoeuvred from the advisory market. Since the beginning of the rationalisation era, the extension activities had essentially been based on the ideas of the Diffusion of innovation model. Although the model is not explicitly pronounced as a conscious strategy, there are still traces of the model in today's advisory services.

The downside of the rationalisation era was overproduction. As the interest for environmental issues increased during the 1980s, and the ideas of sustainable development were spread around the world, it became increasingly difficult to motivate the state to spend money on extension activities. In 1984, the Chambers of Agriculture began to charge for their extension services, which until then had been more or less free of charge. Partly as a response to the perceived shortcomings of the state-offered advisory services, but also to the fact that there was now money to earn within advisory services, the first private advisory firms were established during the 1980s. In 1992, the government decided that the advisory services offered by the state administration should be restricted to such issues that were considered to be classified as public interest. Hence, the advisory market related to production issues became a free market. Today there are 60-70 private/farmer-owned advisory actors offering agricultural advisory services, often on a local/regional basis and with a focus on a certain part of the production. The costs connected to the regulated agriculture, combined with the negative side-effects, caused the government to vote for a deregulation of Swedish agriculture in 1990. In 1995, however, the agricultural market was re-regulated as Sweden entered the EU and became part of the CAP.

The long era of market regulations, however, had not only affected the production but also the farmers, who had not learned to adjust the production according to demand or to negotiate prices. As a way to tackle this, the advisory system has occasionally been complemented by various advisory efforts, often initiated by the LRF, aimed at making Swedish farmers more entrepreneurial. These efforts, which are described and discussed in Paper III, have often been conducted by temporarily employed personnel, and have not involved the production advisors, who have regular and well-established contact with the farmers. The international extension trend to work with participatory methods, at least among the countries in the South, did not affect

the Swedish advisory methods until later years, and then especially in issues relating to the environment or rural development. As presented in Chapter 5, much of the Swedish environmental advisory service is concentrated within the Focus on Nutrients project. In the presentations of the project, the strength of bringing together different environmental aspects connected to agriculture is often emphasised. Due to the division of the project into different modules, which are then procured by various advisory organisations and firms, this cohesive thought tends to be weakened. The disadvantages of dealing with environmental issues as separate from production issues are further discussed in Paper I & in Chapter 7.1.

Over the past decade there have been several structural changes among the major actors in the advisory system, which are described and discussed in Papers II & IV. These changes can be seen as an expression of the difficulty of creating an organisation that is capable of meeting the new demands placed on them. Within both HSs and the Animal Husbandry Associations, regional organisations have merged and different organisational solutions have been tested. The incentives for the mergers and the chosen organisational structures vary among the studied organisations, but appear to be a combination of trying to deal with both external and internal issues. By creating larger units, the organisations are hoping to cope with failing economies, to ensure the quality of the services offered and to better meet the demands from society and the farmers. The difficulties in finding a structure that manages to handle these demands are also reflected by the emergence of PLA-inspired R&D-projects such Team 20/20 and BoT-A (Chapters 7.3 & 7.4), which from a Swedish perspective is a relatively new and innovative approach. In the Team 20/20 case, the expected innovations did not materialise—probably due to an inadequate problem formulation. This criticism—that the advisory service is focusing on an overly narrow part of the farm production—is also found within the advisory organisations and is further discussed in Paper IV. In that paper, the individualistic culture, a weak leadership and the lack of spaces for reflection concerning the role of the advisory organisations and its services are emphasised as the main reasons the organisations fail in their ambition to develop themselves and their services.

The negative consequences concerning the subject-specific division of advisory services on different actors and the narrow scope of the advisory services is a recurring theme in the papers, the cases and the ethnographic section. As long as the perceived demands of the advisory services is to respond to delimited and well-defined questions, the subject-division and narrow approach are not problems. However, if the advisory services also intend to facilitate the development of sustainable farms, then such an

approach is not enough. To achieve this, what is required is both development of existing services and collaboration between different competences. This applies both to the commercial advisory service and the free advisory service. The model and discussion presented in Chapter 7.2 on the three different decision-making rooms and their impact on how a farmer chooses to act in the immediate situation, show that a long-term relation built on dialogue between advisors and farmers would be preferable in order to raise the farmer's environmental awareness in everyday practice. The importance of working with attitudes and norms related to environmental actions on the farm level is also emphasised in Paper I.

9 Discussion and conclusions

In this chapter, the research findings will be discussed in relation to the research questions and will be examined through the lenses coming from the conceptual framework presented in Chapter 4. Being inspired by soft systems thinking, where the world is perceived as a nested hierarchy of interconnected systems and sub-systems which interact and affect each other in different ways, makes it difficult to discuss one system level at a time in a fruitful way. The Swedish agricultural system, within which the advisory system is a component sub-system, has, just as in other parts of the world, evolved in response to a combination of factors, such as natural geographic conditions, political ambitions and decisions, international influences, culture, educational system, industry, infrastructure, and so on. As Eckholm (1976) has pointed out: "Land use patterns are an expression of deep political, economic and cultural structure […]". It is therefore difficult to understand and describe why social structures look as they do in a meaningful way through an overly narrow or reductionist approach. Important aspects risk being lost if or when the complexity and wholeness is reduced. That being said, I will nevertheless do just that in order to make the discussion more manageable. However, it is my ambition to show how the different system levels interact and impact each other. It is also important to emphasise that I do not claim to have covered all the factors relevant to the evolution of the advisory system as it looks today at different system levels. Most likely, reality is far more complex than what my description attempts to cover.

The discussion will start to revolve around two different systems concepts. In the first part I discuss the evolution of the advisory system from the point of view of it being a component sub-system of a wider human-activity system (Checkland, 1981; Röling and Wagemakers, 1998) by examining it at three different system levels: i) the overarching advisory system level as a whole, ii) the advisory organisational level and iii) the advisory service level. In the

second part, I discuss the advisor's situation through Habermas' (1984, 1987) concepts of a system embedded in the lifeworld. In the third part of the discussion, I discuss the need for a broadened epistemological perspective in advisory services. The fourth part contains the conclusions, while the fifth and last part will be devoted to some methodological reflections.

9.1 The evolution of the Swedish advisory system

9.1.1 The advisory system and the control paradox

Within the Swedish agricultural advisory system consisting of a diverse range of actors, it is an established fact that despite the overlapping knowledge existing among the advisors within the different advisory organisations, the actors are often divided by disciplinary specialisation or expertise, with a relatively low degree of mutual collaboration being evident. This entails that, depending on farm production, many farmers maintain several advisory contacts—who in turn are often employed at different organisations. Development became like this due to several interacting factors of political, economic and cultural natures, as described in Chapter 5. Two interrelated political decisions may be connected to this development; first, the Swedish Parliament's 1990 vote for deregulated agriculture (prop 1989/90:146), thus giving up its goal of food self-sufficiency. Since then, Sweden has, until recently (Prop 2016/17:104), lacked a goal and strategy for food production. Instead, agriculture has been governed by environmental objectives and, after entering the EU, according to the CAP. Although the overall goal of Swedish environmental policy has been "to hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden's borders" (miljomal.se, 2017), the import of food produced through the application of production methods that are unacceptable in Sweden has increased since Sweden's entry to the EU. During the same period, the volume of food produced in Sweden as well as its value has decreased (LRF, 2011a). Although there are certainly several reasons for this decline, the lack of a food strategy as well as competitiveness in Swedish food production have been described as important reasons. Even though the privatisation of the advisory market had begun already during the 1980s (as a consequence of the possibility of charging fees for advisory services), the idea of the deregulation was to make the whole agricultural system more competitive. However, in the absence of a clear

national goal connected to agricultural production, the advisory actors have been free to formulate their own visions and goals.

The second decision, which followed as a logical consequence of the first, was that of 1992 (SOU 1992:99), when the parliament decided that the state-funded extension should henceforth be limited to information and advisory services that were connected to issues regarded as public goods. Although the decision was an adaptation to reality and thus in line with current practice, it meant that the parliament transferred the responsibility of advisory efforts linked to production issues to the market and that advice thereby became a sellable commodity, among others. In the commission directive for the SOU 1992:99, however, it was stated that:

> […] agriculture is currently in a situation where major changes can be expected whereby the need for coordination and unified solutions is high. Therefore, the current agricultural advisory service provided by different organisations should be coordinated as far as possible. (Dir. 1991:83)

In addition, other stakeholders mentioned the need for increased coordination. In 1988, Månsson (a former director of one of the Chambers of Agriculture) wrote:

> It can hardly be contested that strong fragmentation is generally associated with higher costs. It is accentuated by the risk that overcapacity becomes larger and the efficiency lower. […] Each actor guards their territory and does not give anything away—even if it would be justified from both suitability and cost standpoints. […] The agricultural advisory service may not be an end in itself, […] The advisory service must continuously be adapted to changes in production.

However, no actors and no structural arrangements were made to follow up with implementation of this policy change and facilitating the desired coordination.

It is, however, not only the commercial advisory service that has become a commodity on the free market. This happened also to large parts of the state-funded advisory component, as it is procured on the basis of tenders. Although the *Focus on Nutrient* project (described in Chapter 5.5.2) claims to be 'a totally new approach' to free advisory service through their systematic and holistic way of working with environmental issues at farm level (Greppa Näringen, 2011), their basic idea is weakened as the different constituent advisory modules are procured by different actors. This procedure reduces the possibilities for environmental work at farm level, supported by advisory services, to be an ongoing learning process. Instead they rather become separate communication acts that are added, but not necessarily connected, to

each other. As long as different actors are involved in different modules that do not have an underlying degree of coherence or a sense of commonality, there will be untapped potentials. This aligns with Botha *et al*. (2008), who claim that privatised extension can result in discontinuities in relation to addressing environmental issues. In an advisory system where there are no actors or other structural arrangements with a cohesion role, the farmers are left alone with the task of creating added value from the advisory services and with the struggle to search for coherence in their farming enterprise (c.f. Laurent *et al*., 2006). In the end, such a shortcoming is negative not only for the individual farmer, but also for society as a whole, which strives for sustainable development and thus a sustainable use of natural resources.

The development of the advisory system with its many specialised actors can be seen as an expression of the phenomenon that Nitsch (1994a) called *'the agricultural control paradox'*. He claimed that as we develop technologies and/or administrative systems that give control over the delimited and immediate, we lose control through unintended consequences (ibid). According to Nitsch (ibid), environmental pollution, overgrowth of the open agricultural landscape, biodiversity depletion, chemical residues in food and inadequate animal welfare are examples of such undesirable and unforeseen consequences of agricultural industrialisation. Hence, in our quest for control, we divide a field of responsibility into different disciplines, allow the division to gradually deepen and develop modelling and monitoring programmes as well as control systems within each fragmented area. The end result is that society to some extent loses control over the situation as a whole with regard to several of the qualitative aspects of the system, its components and the interaction between the two. The negative effects that arise when we work with inadequate and non-systemic models have been mentioned by systems thinkers such as Bawden (1998). The models we use, he claims, reflect the prevailing theoretical paradigm in which we are working and which, according to Vitz (1996) is characterised by "reductionism, determinism and autonomous individualism, all undergirded by a stringent materialism".

This development is not unique to agriculture. The same features are also found in other sectors in society, and the evolution of the advisory system shares several characteristics with *New Public Management* (NPM). NPM can be described as a cluster of ideas drawn from the private sector based on market-thinking, where great attention is being paid to cost control and financial transparency, the transfer of market mechanisms to public operations and the decentralisation, corporatisation and privatisation of public operations (Ahlbäck Öberg and Widmalm, 2016). Since the beginning of the 1990s, the concept of NPM has become synonymous with new ways of governing and

controlling activities in the public sector (Karlsson, 2011). The development that paved the way for NPM is reminiscent of what happened in Swedish agriculture. At the end of the 1960s, confidence in the state decreased among several segments of society and the extensive regulatory control became increasingly criticised for leading to a management that was overly rigid, insensitive and difficult to control (Ahlbäck Öberg and Widmalm, 2016). In the 1970s and 1980s, the public sector was discredited, and a common perception at this time was that the public sector had become too bureaucratic, rigid and authoritarian. The state was no longer seen as the solution to political and societal problems, but rather as the cause of these (ibid). The solution advocated was that the state should be more like the market, based on public choice theories. In practice, this meant that the government's influence would be reduced in favour of market actors (ibid). In short, NPM advocated clearer governance, where public resources are to be utilised in an efficient and rational way (Karlsson, 2011). According to Hood (1995), NPM had seven characteristics that made it differ significantly from previous management philosophies in the public sector. These were (Hood, 1995):

1. Unbundling of the public sector into corporatized units organised by product.
2. More contract-based competitive provision, with internal markets and term contracts.
3. Stress on private-sector styles on management practice.
4. More stress on discipline and frugality in resource use.
5. More emphasis on visible hands-on top management.
6. Explicit formal measureable standards and measures of performance and success.
7. Greater emphasis on output controls.

Although there were good reasons for changing the management of the public sector, which had previously obtained allocations without any focus on results, to a system of performance management and external reviews, the change has entailed extensive efforts on these reviews and evaluations (Ahlbäck Öberg and Widmalm, 2016). Power (1999) had issued an early warning about what he called the emergence of *the audit society*. He claimed that the fixation on constant measurement of results creates self-reinforcing and dysfunctional processes in the public sector, and that NPM risked counteracting its own main goals, such as cost effectiveness and goal management (ibid). One of the consequences of NPM is that as we measure the measurable, performances are constructed in such a way that it can be measured, audited and communicated to external reviewers (Power, 1999). Consequently, there may be major

reliability and validity problems with the methods and measures used to assess the public service quality, since what is actually measured is the productivity of the public sector (Ahlbäck Öberg and Widmalm, 2016). For example, the flow of patients at a healthcare centre does not provide any information about the quality of the care.

The influences of NPM can be seen at all three levels of the Swedish advisory system, as well as in the agricultural system at large—especially coupled with subsidies within the CAP. When the state withdrew from the production advisory service, they handed over responsibility to the market. No other actor or structure took on the mantle as the cohesive or coordinating power, although there were requests to do so from both politics and stakeholders. The advisory system that evolved as a result, with several specialised actors, shares similarities with NPM through corporatisation and privatisation, as well as the building of measurable systems. At the farm level, the development of *Lean Farming* also aligns with the ideas of NPM. Following the ideas of NPM, administrative systems that are easy to control and monitor are built. The engagement in critical learning processes towards sustainability including, for example, dialogues concerning changing norms and attitudes, was thus difficult to quantify in a measurement-based framework, which in turn meant that there were quality aspects that continued to remain untapped.

9.1.2 The advisory organisations and the forgotten reflection

During the last decade, several advisory organisations in Sweden have undergone changes to their organisational structure and these have been outlined and discussed at length in this thesis (Chapters 5 & 8; Papers II & IV). The rationale for such changes is built on a combination of internal and external factors. One of the internal issues that the organisations have attempted to eliminate through different kinds of re-organisation is the individualistic culture that has and still does characterise several of the advisory organisations. Individualistic culture is taken to mean the culture into which new advisors are socialised, as referred to by Mead (1951) and Bates and Khasawneh (2005; Paper IV). This culture is partly a carryover from the time when each advisor was considered to be his/her own unit of profit within the organisation, a structure that failed to encourage through incentives the sharing of information among colleagues, and was not conducive to the development of collaborations. However, the tradition of being a customer's sole advisor within a certain production area remains in most organisations. This implies that due to the way the services are organised, where all advisors

within a subject group should do the same job, the group of advisors are subsequently homogenised which in turn nourishes and preserves the prevailing culture (Paper IV). The processes of socialisation and homogenisation are examples of structuration (Giddens, 1979; 1984), as they help to support and maintain the structure of the system. The individual-centred advisory culture shares several characteristics as described by Hargreaves (1992), both when it comes to the focus on short-term planning and the avoidance of engaging in discussions that could affect the context of the working situation or raise questions about the role or performance of the profession.

To a large extent, the advisory services have not developed much since they were last addressed in the 1980s. Their basic idea remains the same; to offer farmers advice on production-related issues. There are hence clear arguments for the culture to change to one that is more learning- (Kotter and Heskett, 1992) or collaborative-centric (Edmonson *et al*., 2001), as these types of culture are better suited to meeting the reality of today's agriculture and what farmers face. Prahalad and Ramaswamy (2004) claim that we have to leave the traditional concept of a market, where the market is separate from the value creation process and where firms may act autonomously in the design of products. Instead, they suggest, the market is to be seen as integral to the value creation process, where the firm and consumer meet and co-create unique value together (ibid). It is thus important to distinguish personalisation from customisation (Prahalad and Ramaswamy, 2000). While customisation assumes that it is the producer who designs a product to suit the customer's needs, personalisation is about the customer becoming a co-creator of the product (ibid). In this co-creation process, where the firm and the consumer will participate in a joint problem definition and problem solving, dialogue is an important element (Prahalad and Ramaswamy, 2004). When moving from the idea of the market as a target towards one where it is seen as a forum, demand and supply are no longer two entities that are to be matched, but are rather seen as emergent and contextual (ibid). For advisory organisations, this means not only to provide the farmer with a certain number of pre-developed modules, or give farm-specific advice, but also to involve the farmer in the process of developing a suitable advisory concept that manages to deal with the farm as a whole along with the unique challenges that particular farm is facing.

According to Fullan (1999, 2007), however, it is not restructuring but rather re-culturing that is needed in order for collaboration to develop. Wynen *et al*. (2017) even argue that repeated and frequent structural reforms have a negative effect on the innovation-orientedness of the organisational culture. The importance of creating and supporting an organisational culture that can handle

ever-changing conditions in turn places the focus on the leadership. Beside the individualistic culture, as well as the strong position of power that certain advisory groups have within HS, the weak leadership is referred to as an obstacle to the development of collaborative cultures (Paper IV). Although creating such a culture requires the group efforts of all members as well as a continued effort for its maintenance (Edmonson *et al*., 2001), the main responsibility for the type of culture allowed to develop belongs to the leadership (c.f. Adler *et al*., 2011; Schein, 2010; Popper and Lipshitz, 2000; Edmonson *et al*., 2001; Hjelm, 1998; Fullan and Hargreaves, 1992). Bass (1985) distinguishes between transactional and transformational leaders. While the former works within their organisational culture following existing rules, procedures and norms, transformational leaders change their culture by first understanding it and then realigning the organisation's culture with a new vision and revision of its shared assumptions, values and norms (ibid).

In Paper IV, the concepts schemata (Bartunek and Moch, 1987), loops of learning (c.f. Argyris and Schön, 1974; Swieringa and Wierdsma, 1992; Flood and Romm, 1996) and orders of change (c.f. Sterling, 2010-11; Ison and Russell, 2000; Bartunek and Moch, 1987; Watzlawick *et al*., 1974) are used as lenses when analysing the organisational changes that have occurred. In this analysis, changes are described as belonging to the second order. Obviously, the organisations have identified a number of issues that they have tried to deal with through a number of measures. The measures taken have, however, not had any major impact on the services provided. An important reason that new services are not developed according to the demands faced by the farmers, is the fact that the advisory organisations lack appropriate spaces or dedicated moments for reflection on their action (c.f. Marquardt Arévalo *et al*., 2010) which corresponds to triple-loop learning (Swieringa and Wierdsma, 1992; Bartunek and Moch, 1987). There are simply no arenas where the customers' needs, the role of the advisory organisation, its services and how they should be designed and implemented to make the most of it are retained as subjects for critical reflection. Instead, the services provided simply mirrored the competence available among the advisors and were tailored for such areas where the possibility existed for applying for CAP-related project money. Ison (2010), however, notes that the 'projectified-world' in which we live, does not manage to handle complex and long-term phenomena. As long as the culture is individualistic, the absent but well-needed arenas for critical reflection will most likely not arise spontaneously due to the very character of individualism (c.f. Hargreaves, 1992). According to Hjelm (1998), however, only individuals and organisations that can attain triple-loop learning will be competitive in a knowledge-intensive society, the success of which depended on a managerial

decision by the leadership. By looking at the characteristics of the organisational changes made and following Bass' (1985) terminology on leadership, it becomes obvious that several of the prevailing leaders have hitherto been of the transactional type. Although the prevailing schemata (the original organisational structure) have been questioned and modified, the very foundations of the organisational culture have not been challenged. Instead, the changes made have aligned with existing rules, procedures and norms (ibid). In order for third order changes to occur (Table 6), where the prevailing culture is not only questioned but also changed, transformational leadership becomes a necessity (ibid). An organisation that succeeds in the challenge of realigning its culture with a new vision and revisioning the shared assumptions, values and norms as mentioned by Bass (1985), will at the same have taken several steps towards the creation of what Senge (2006) calls a learning organisation. For such a learning organisation to be implemented fully, however, the structuration process that homogenises the group of advisors has to be replaced by a valuation of each advisor's unique competences, as well as training on the ability to undertake systems thinking.

Connected to, and probably as a logical consequence of, the lack of space for critical reflection, is the lack of ability to make adequate problem descriptions as well as undertaking critical systems thinking aspect of everyday practice (Flood, 1999; Jackson, 1985; Ulrich, 1988). Together, these shortcomings constitute an explanation as to why the change measures undertaken at organisational level have not yielded the desired impact on the organisational culture. Instead of letting the change processes be preceded by: i) a structured, thorough and critical description of the perceived problem, ii) the setting of adequate systems boundaries (Ulrich, 2001; Flood, 1999) where the notion of knowledge-power (Ulrich and Reynolds, 2010; Flood, 1999) had been acknowledged and dealt with, and iii) the identification and implementation of appropriate measures that would improve the situation, the advisory organisations in this study took measures here and there but never through the consideration of or informed by a coherent whole. As a result, we argue that the desired improvements did not materialise.

The perceived potentials with the collaborative way of working with learning processes and the increased innovation possibilities that it intends to bring are also manifested in the PLA-projects studied in this thesis (Chapters 7.3 & 7.4). These projects, as phenomena, can be seen both as an expression of the difficulty of changing the prevailing way of working within the advisory organisations, as well as the perceived difficulty in managing the changes that agriculture faces within the prevailing structures. Using the terminology of *niche* and *regime* (see for instance Kemp *et al*., 1998; Ingram *et al*., 2015;

Smith, 2006), these projects (as well as all the other efforts mentioned in Chapter 5.5.3) can be seen as strategic niche managements aiming at changing, or at least challenging, the prevailing regime (built on non-systemic models (Bawden, 1998) with individuals acting alone). Hitherto, however, the niches have had a limited effect on the regimes. This thus aligns with Ison's (2010) analysis concerning the difficulty projects encounter in influencing complex and long-term phenomena. Smith (2006) also noted that: "The literature suggests that the chance of niche success (that is, transforming the incumbent sociotechnical regime) is improved if the niche has good compatibility with the regime". In these cases, the niches were not consistent with the prevailing regime, and, therefore, did not have the influence to change it. As has been indicated repeatedly, the prevailing schemata or regime will most likely not change without the active involvement of the leadership, as they hold the power over both which culture is allowed to develop, as well as which actions are to be valued and rewarded within the organisation. As written by Schein (2010, p. xi):

> I will continue to argue (1) that leaders as entrepreneurs are the main architects of culture, (2) that after cultures are formed, they influence what kind of leadership is possible, and (3) that if elements of the culture become dysfunctional, leadership can and must do something to speed up culture change.

9.1.3 The advisory services: the learning that is strived for and the one that takes place

Several of the shortcomings described at previous system level (for example not making adequate problem descriptions, not setting appropriate systems boundaries and not identifying and conducting suitable measures relevant to the acknowledged issues and characterised by critical systems thinking) are applicable also at the lowest level in the relationship between the advisor and the farmer. To put it simply, one could say that the work conducted at the advisory service level mirrors the prerequisites given at the higher system levels. As these shortcomings have already been discussed, I will not repeat them here. What I will do, however, is to show how that they are manifested in the advisory services—which is the level that affects the farmers.

As described previously, in the Swedish advisory system the different areas of farming are segmented and linked to many actors, who are often separated by virtue of their respective disciplinary specialisations or areas of expertise. Within the advisory system, however, there is a discourse and a desire to offer advisory services that would manage to regard and handle the farm as a unitary whole, and this has been ongoing since the 1990s. The different manifestations of this endeavour are described in Chapter 5.5.4. Despite the efforts made and

the many years of discussions concerning the need for a holistic approach, there are still great development opportunities to work more with structured goals and visions at farm level. In a final report concerning the development of a new advisory service about financial control in dairy farming, it stated: "Our experience is that too few [farmers and advisors] work with comprehensive advisory services at the overall level, despite the fact that the benefits are high. The working method of analysis, goal management and follow-ups is non-prioritized in many dairy companies today" (HS, 2014). Given the lack of profitability, this statement may be seen as a strong self-criticism of its own services. Although the services presented in Chapters 5.5.3 and 5.5.4, as well as the one mentioned above, have the potential to make farms more competitive, their interpretation of what it is to take a whole-farm approach in advisory services is quite remote from the way it is described by, for example, Darnhofer *et al*. (2012) and is an indication of the incapacity among the advisory actors to think systemically (Ison, 2010; Salner, 1999). The strong focus on economy and competitiveness in the advisory concepts developed to increase the financial control and effectiveness of farms, risks, however, making the services yet another method to keep the agricultural treadmill rolling (c.f. Cochrane, 1958), as they do not create any surplus value as such.

As a response to the need for competence development of advisors, the Swedish University of Agricultural Sciences has recently developed a competence centre for advisory services, known as *RådNu*[42]. From their perspective, a holistic extension is rather to be understood as a combination of certain competences (i.e. systemic thinking and process development), availability of a toolbox with appropriate methods and tools and the ability to organise suitable learning situations in order for experiential learning to flourish (Ljung, 2015).

The need to develop the skills in thinking systemically among advisors (as well as among researchers), also became evident in the *BoT-A*-project (Chapter 7.4) as it showed a clear gap between the learning that was considered as necessary or required (characterised by being a holistic art and corresponding to double- and triple-loop learning) and the learning where the participants felt that they could contribute (i.e. delimited aspects of the holistic situation and close to their more or less narrow proficiency). The same kind of gap is found within the advisory organisations and is manifested in the discrepancy between their formulated visions versus the services that they are providing. In their visions, they, for example, claim to have a holistic approach, that they develop agriculture and rural areas and that they make businesses grow (Paper IV). Their ambitious, but probably realistic, visions insinuate that they are involved in

[42] RådNu is Swedish and means *'Advice Now'*.

learning and change processes that are at least corresponding to the second level of learning (see Table 6). However, both the BoT-A project and Paper IV showed that the advisors were more interested in their subject matter expertise than in whole farm development. The narrow system of interest (Open University, 1997) that follows such knowledge, but also the way in which the advisory services are organised, means that many advisors spend most of their time with questions that are rather attributed to the first level of learning (see also Lindblom and Lundström, 2014). Refining within a certain sub-system of a farm is not equivalent to the learning indicated by the visions and it will definitely not be enough to solve the systemic challenges that agriculture is facing. Consequently, there seems to be a gap between the advisory organisations espoused theories and their theories-in-use (Argyris and Schön 1974).

Besides the lack of competence among advisors to think and act systemically, the way the advisory services are organised in modules is also a reason for the difficulty to reach a whole farm approach as well as the higher levels of learning and change. The modules reflect a traditional market as mentioned by Prahalad and Ramaswamy (2004), in which advisory organisations are to a large extent still part of, and which also aligns with the ideas of New Public Management as described by Hood (1995). To better meet the challenges faced by agriculture and farmers, the advisory organisations would need to develop their views on how to offer services and make businesses towards a market that invites the farmers to join in the service development process (Figure 11). With such a new market, the services would be tailored for each unique farm instead of being based on a combination of pre-developed modules. The engagement in dialogues about the farmer's vision, goals and challenges, would be a more conducive setting for double- and triple-loop learning processes to occur than today's fractioned module system allows for.

The module thinking, however, not only prevents the reaching of the higher loops of learning, it also limits the advisor to working with the single farmer as the customer. In the endeavour to attain sustainable farm development, other constellations may also be interesting, such as landowners in a village or farmers within a river basin. At present, however, it is only the rural developers or advisors within certain environmental projects who are working in such a collaborative way. A service system based on a joint service development between the advisor(s) and the farmer(s), would probably put new demands on both of them. The advisors would, for example, need to develop their observational skills (see for instance Bardes *et al*., 2001; Shapiro *et al*., 2006; Pellico *et al*., 2009) in order to learn to see beyond the expected, recognise patterns and raise awareness of emotional responses to the issues talked about in

order to better manage the complex situation they encounter, capture more of those things that are not pronounced explicitly and learn to identify development potentials. The farmers would, on the other hand, need to develop their procurement competence and learn to verbally express their needs, to involve the advisor in his/her thoughts about visions and goals as well as the farm's economic situation in order to better enable the advisor to give informed advice and thereby increase the ability to become more than just a sounding board to the farmer's ideas (c.f. Lindblom and Lundström, 2014). Should the advisory organisations succeed in developing the advisory services in accordance with the description above, the advisor-farmer relationship would develop significantly and share the characteristics of what Bawden (2010b) refers to as Critical Social Learning Systems.

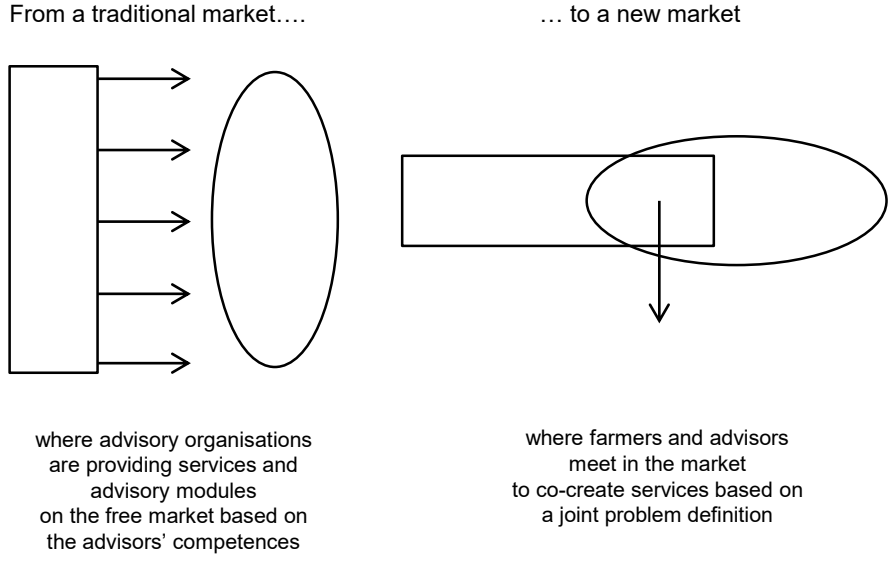

Figure 11. The need for development of the advisory market (after Prahalad and Ramaswamy, 2004).

9.2 The advisor trapped between The Habermasian System and the farmer's Lifeworld

Another way to describe and make sense of some of the issues within the Swedish advisory system is by looking at it through the analytical lenses provided by Habermas (1984, 1987), i.e. the concepts of *the system* versus the *lifeworld*. The discussion will revolve around Figure 12 below. Although the figure is a standalone, it might also be understood in relation to Figure 3 in Paper IV. While the latter figure is a model of today's situation in some of the studied organisations, Figure 12 can be seen as a zoomed out yet simplified model of three advisory organisations and their relation to The Habermasian system[43] and the farmers' lifeworlds.

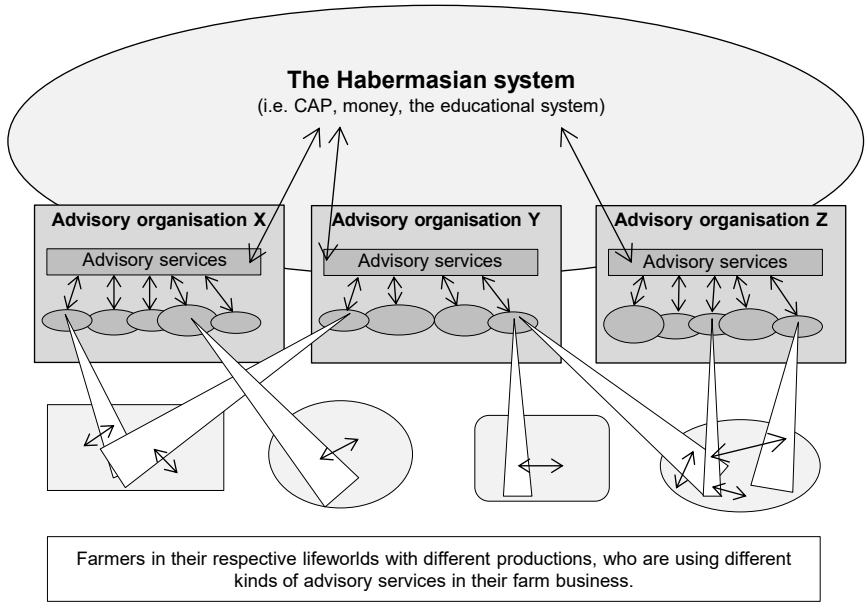

Figure 12. A model of three advisory organisations and their relation to the Habermasian system and the farmers' lifeworlds.

The row of oval-shaped bodies within each advisory organisation represents different advisory groups within each organisation. As discussed in Paper IV, these groups have different epistemic backgrounds, systems of interest and power. The advisors' knowledge and how they perceive the world (i.e. their

[43] As a way to distinguish Habermas' (1984, 1987) *system* from other system concepts used in the discussion, it will be referred to as either *the Habermasian system* or just *the system*.

mental models (Senge, 2006) or schemata (Bartunek and Moch, 1987)) are affected by the educational system, which can be seen as belonging to the system. Their knowledge is often characterised by being more or less reductionist as they, by tradition, are educated in a somewhat compartmentalised and 'systematic' way of thinking. The service supplies offered by each advisory organisation are partly influenced by the advisors' knowledge, and partly by the CAP. To ensure that the state invests the CAP money in the 'right' things and in an efficient and rational way, this money is often linked to reporting requirements. The CAP's influence on the service provision has meant that the advisory organisations have become resource-driven rather than vision-driven (c.f. Hjelm, 1998).

The four variously shaped figures underneath the advisory organisations represent four different kinds of farm business with different productions. The owner of each business is of course a farmer, who is living on his/her farm, in his/her lifeworld, where he/she is responsible for the farm business as a whole. He/she is using advisory services with different focuses. As the advisors are specialised in different subject matters, many farmers maintain several advisory contacts. The advisors' expertise related to the farm business as a whole is illustrated by the white triangles, while the bidirectional arrows indicate the communication acts that take place. In these acts, the advisor and the farmer meet each other in their respective lifeworlds, and such learning situations are well described by Waldenström (2001). It is hence via the advisor, not as a private person but as a knowledge product and an intermediary of the services that in different ways has been developed and affected by the Habermasian system, that the farmer's lifeworld is colonised by the system. This colonisation is reinforced by the system's requirements put on the advisors to be efficient and profitable (i.e. to be 'lean'). The result of this development and approach, where the responsibility for different aspects of agriculture is fragmented and distributed both in different sub-systems and among different actors, without a coordinating actor or structure, and with services based on compartmentalised knowledge and non-systemic models (Bawden, 1998) is that the farm comes to be treated as several non-interacting components. When advisors primarily stay within the frames of their subject expertise and mental models and optimise the production within those fragmented parts of the farm, there is an imminent risk that the development of the farm as a whole will be sub-optimal, as also noted by, for example, Lindblom and Lundström (2014).

The Habermasian system's interference of the advisory system is also manifested through the way the free advisory services are organised and how the advisory organisations have changed the interpretation of their assignment

over the last few decades. As presented and discussed in Paper I as well as in Chapters 7.1 and 7.2, the issues related to nature conservation and the environment are handled in a separate sub-system within the advisory system, although the performer may be an advisor employed by the commercial advisory system (as shown in Figure 9). The requirement of the system to show that the CAP money is used effectively has meant the building of administrative systems that are easy to control and monitor in line with the effects of New Public Management, as mentioned by Power (1999). Consequently, it becomes easier for advisory organisations (or other actors) to carry out information campaigns or arrange courses and seminars on the importance of showing increased environmental consideration, than to engage in dialogues with the ambition of changing prevailing norms and attitudes. When important questions related to a farm's sustainable development are either trivialised or taken out of context, often as a way to make them more administratively manageable, they become peripheral to the farmer's lived experience and thereby risk becoming uninteresting and/or irrelevant from the farmer's perspective. The same tendencies can be found in the commercial advisory services. HS's original mission, which concerned being beneficial to the region's agricultural development, has weakened as the advisory services have moved away from the parent organisation and established separate advisory firms instead. In those firms, profitability has become the driving force. The statement "we sell what we know and master" (Paper IV) may serve as an exemplification of this change. Through these market measures, encouraged by the system, the advisory system has developed at the expense of being relevant for the farmers.

Those who, in addition to the farmers, have to manage and take the daily consequences of this development of the advisory system are the advisors. Although these advisors are not engaged in the exercise of authority, there are similarities between them and what are called *'street-level bureaucrats'* (c.f. Lipsky, 1980; Bergeå and Ljung, 2007), as they become representatives of the system vis-à-vis the farmer. Schierenbeck (2004) claimed that street-level bureaucrats have to follow the rules and be loyal to their organisation while at the same time showing the client consideration. This three-pronged task would naturally be associated with tensions, perhaps manageable at most times, and this is illustrated in Figure 13 below. To some extent, one could claim that the advisor is trapped between the system and the farmer's lifeworld. The thesis findings show that there are advisors who both have ambitions and see potentials with a renewed approach in advisory services, but who gradually become socialised in a culture (affected both by the system's way of organising people and services, as well as which actions are rewarded monetarily) that

reduces their perceived space for manoeuvre. The longer the leadership fails to take hold of their managerial responsibility and create a conducive environment for critical reflection of the advisory service's being, the more the system will retain its pull and continue to make the advisors conform and engage in single-loop learning issues with no questioning whatsoever of the present schemata or the system boundaries, which will have limited influence on the farm's sustainable development.

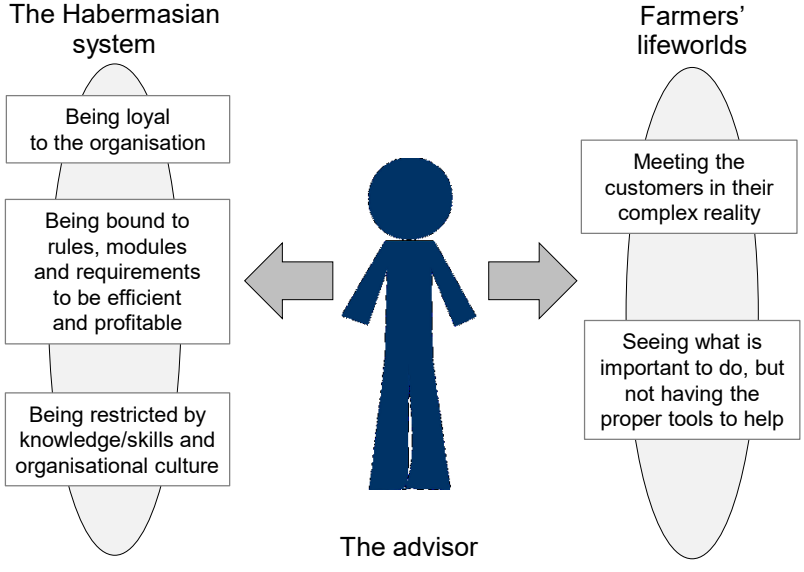

Figure 13. The advisor trapped between the system and the farmer's lifeworld.

Obviously, it is not only the farmers' lifeworlds that have become colonised by the system, but also the actors working within the advisory system as they have let their services be strongly influenced by the forces of the Habermasian system. One of the qualities that seem to have been colonised is the advisory organisations' *development dynamics*[44]. The Swedish economist Dahmén (1986) used the concept 'development dynamic' to describe "a business' ability to quickly adapt to changing external conditions and capacity for renewal". According to him, the quality of the development dynamics of an organisation is the most crucial aspect in its ability to adapt to the ever-changing world and thereby survive as an entrepreneur/businessman and/or

[44] In Swedish *utvecklingskraft*.

organisation. The notion of development dynamics and the importance of developing that capacity has been mentioned in several reports in recent years within other sectors of the Swedish society (for example Regeringen, 2017; SOU 2017:35; SOU 2003:123; Braunerhjelm *et al*., 2009).

Dahmén connects development dynamics to the capacity for transformation and competitiveness to profitability (Grufman, 2014). He describes the relation between the two concepts as follows (Dahmén, 1986):

> Competitiveness may in some circumstances be a prerequisite for development dynamics, but not always. It cannot as such lead to development dynamics. Development dynamics can, however, create competitiveness which was not there in the outset.

The core of Dahmén's argumentation is that competitiveness is not the same as development dynamics. With a high degree of development dynamics, competitiveness can be unified with high salaries and profits (Grufman, 2014). However, if a country or business lacks development dynamics, the only thing that remains in the long run is to compete with low salaries (Johansson and Karlsson, 2006). While competitiveness largely depends on factors that are determined by the system, where power is concentrated in large anonymous bureaucratic and financial control systems (Andersen, 2007) and which is thus remote from direct individual influence, development dynamics are rather linked to the entrepreneur's or organisation's intrinsic qualities and willingness to change. Johansson and Karlsson (2006), however, note that a purposeful design of society's institutions—its rules of the game—is of crucial importance for development dynamics.

The overarching objective of a changed approach in advisory services is to better capture the inherent potentials in Swedish agriculture and thereby more actively influence and create a desirable future. Hence, to unlock the resource that one's own development dynamics have the potential to be, despite possible unfavourable conditions, is thus a challenge for all actors in the Swedish agricultural system.

9.3 The need for a broadened epistemological perspective in advisory services

9.3.1 The difference in epistemological perspective between agricultural extension as an academic discipline and as a practice

Although much of the preconditions for farming have changed quite radically over the last few decades, due to new technologies, fluctuating markets as well as the changing and broadening of societal responsibilities, the base of what constitutes the advisory service has more or less remained the same through the years (as discussed in Paper IV). It has been and is still mainly concentrated on giving advice on rather delimited production issues. From an academic research perspective, the subject of Agricultural Extension (which is the traditional academic field of studies related to advisory services, but which has now been subsumed by other fields or renamed at many universities) has developed through the years as described in the boxes in Chapter 5, and is now influenced by approaches and concepts such as social constructivism, systems thinking, social/collaborative learning, participation and action research (for example Röling and Wagemakers, 1998; Cerf *et al*., 2000; Ison and Russell, 2000; Leeuwis and Pyburn, 2002; Wals, 2007; Darnhofer *et al*., 2012). This implies that research within Agricultural Extension often relies on an epistemology that takes both the advisors' and the farmers' knowledge into account (and often also other stakeholders depending on the subject in question). The epistemology underpinning studies about Extension also tends to advocate the importance of working systemically, i.e. to see, understand and manage reality in agriculture as the complex whole it often is. This has been the basis on which the Farming Systems Research and Extension movement developed beginning in the 1980s (Darnhofer *et al*., 2012). In order to enable learning and to seek situation improvements, researchers in Agricultural Extension begin by defining a system of interest through the recognition of an appropriate system boundary, facilitating a learning process within that notional system, and go as far as imagining that system as a learning system (Bawden, 2010a). In the soft systems tradition of systems thinking, such an approach is viewed as epi-systemic (Bawden, 1991), where systems are used as an epistemological tool and a mental construct. Taking this approach further, drawing on the work of Werner Ulrich, the research epistemology came to emphasise the importance of being 'critical', both in relation to the studied phenomena and the boundary setting process, as well as towards one's own knowledge. Systemic thinking and the higher levels of learning are hence constantly present as two inseparable conceptual frameworks supporting such an epistemology.

When looking at the advisory services, however, they seem to rest on an epistemology that is more traditional and grounded in a Cartesian reductionist way of thinking (Figure 6). Cook and Brown (1999) claim that much of the current work of organisational knowledge and knowledge-creating organisations (which would include advisory organisations) rests on a single, traditional understanding of the nature of knowledge. They call this understanding *the epistemology of possession*, as it treats knowledge as something that people possess (Cook and Brown, 1999). This epistemology tends to privilege explicit over tacit knowledge and knowledge possessed by individuals over that possessed by groups (ibid). One of the reasons for the discrepancy between the prevailing epistemology within the academic discipline of Agricultural Extension and the advisory practice as it is expressed in advisory services is probably that most advisors hold an academic degree in biology, economics or a particular aspect of technology. The epistemology of advisory services thus mirrors the epistemology of these disciplines (rather than that of agricultural extension) and the curricula of the academic educations at which most advisors have a degree. These educations are in turn often based on subject-based specialisation inspired by knowledge in the Cartesian reductionist sense and the dualism of objective science. In advisory organisations, this can be manifested in the way advisors and/or advisory services are divided into different organisations and/or modules based on different subject disciplines. The advisory services provided can thus be said to be a manifestation of the individual and explicit knowledge possessed by the advisors (see Figure 14). While the organisational structure is mirrored in the services provided, the services in action performed by advisors reinforce the structures as described in Giddens' (1984) structuration theory.

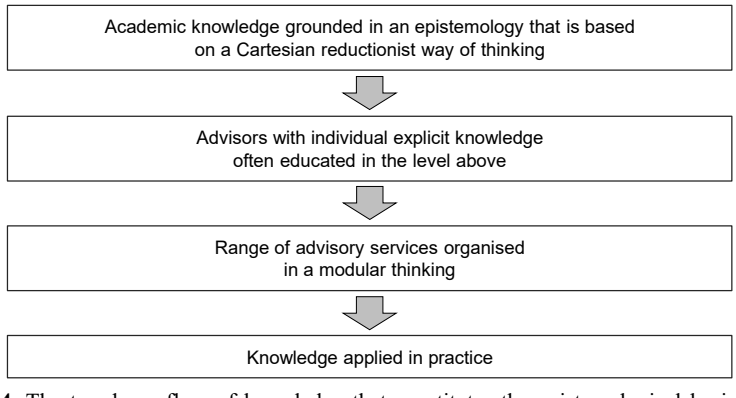

Figure 14. The top-down flow of knowledge that constitutes the epistemological basis for the advisory services.

The epistemological foundation that each person has (even if it is most likely an unconscious and/or unreflected foundation for the vast majority) both reflects the person's ontology and creates mental models of the world that are used in daily life. Our mental models thus not only determine how we make sense of the world, but also how we take action. This means that new insights, ideas, approaches, methods and so on, risk failing to be put into practice when they conflict with deeply held internal images of how the world works. Research that examines advisors' mental models and how they are manifested in advisory practice appears to be quite rare, although there are exceptions (e.g. Abel *et al*., 1998). However, by studying how advisory packages are organised, it seems that the mental models used in practice are strongly influenced by the different fields of competence within advisory services.

This means that the main decision on which services are offered within an advisory organisation is based on the expertise of the advisors (expressed as his/her individual explicit knowledge including certain mental models of reality), rather than being an analysis based on the customer's situation. This, in turn, entails that much of the work done within the advisory service is restricted to questions characterised by a rather low level of complexity. Different sub-systems of the farm are hence treated more or less independently without any significant coherence. Within these sub-systems, optimiation of the production is strived for, through what could be described as learning processes characterised by single-loop learning and first order change (see Table 6). Insofar as advisors think in systems, these are hence of a different nature to the epi-systemic one mentioned earlier. In the modular advisory service approach, the sub-systems instead have an ontological status. They are therefore comparable with hard systems; that is to say, they are treated as if they really existed. The risk with such an approach is that the farm business as a whole may end up becoming sub-optimal. This understanding and application of knowledge has meant that advisors are increasingly criticised for applying general rules in different contexts without adapting them sufficiently to local conditions (Olsson, 2017).

It is worth noting, however, that in the actual advisory situation, the prevailing epistemology may be of a different kind from that underlying the advisory system's structure. Both Waldenström (2001) and Bergeå (2007) have studied the advisory situation in action and described the activity as a joint learning situation, where the world is constructed in dialogue between the advisor and the farmer. Such dialogue includes, of course, both the knowledge of the advisor and the farmer. As the advisory situation often takes place in the production or field, the conversation is often based on both explicit and implicit knowledge possessed by the advisor and/or the farmer. In the cases where the advisor-customer relationship

may last over time, group knowledge is likely to develop as well (c.f. Cook and Brown, 1999). The scopes of the questions, though, are often restricted by the advisory modules (and the advisor's mental models) as a framework in which the advisory encounter and dialogue take place.

9.3.2 Not only knowledge—the need for including also the *knower* and the *knowing*

Within the advisory organisations, the individual advisor's (explicit) knowledge constitutes the essence of their business. The individual subject competence and how one performs as an individual are also skills that are valued and rewarded by the management team. Advisors are often referred to as 'experts' in a certain field of knowledge. This use of the term *expert* thus differs significantly from how Dreyfus (2004) uses it. In his five-stage model of adult skill acquisition, expertise is the fifth and last level. He writes:

> The proficient performer, immersed in the world of his or her skillful activity, sees what needs to be done but decides how to do it. The expert not only sees what needs to be achieved; thanks to his or her vast repertoire of situational discriminations, he or she also sees immediately how to achieve this goal. (Dreyfus, 2004, p. 179-180)

For Dreyfus (2004), *expertise* is not about having profound knowledge in a subject. It is about knowing how to act in a certain situation, with knowledge and experience as foundations. This demands, as mentioned earlier, observational skills to see beyond the expected (c.f. Bardes *et al*., 2001; Shapiro *et al*., 2006; Pellico *et al*., 2009). Senge (2006), and in turn, emphasises *personal master*y as the learning organisation's spiritual foundation. Just like Dreyfus' expertise, Senge's personal mastery goes beyond individual competence, although it is grounded therein. Both terms includes a critical and reflective approach as well as an endeavour to be creative rather than reactive.

As long as the farmers' demands on the advisory service are perceived as giving answers to a well-defined and single-loop learning sphere of questions, the prevailing structure of the advisory service and its epistemology is not a problem. However, when supporting the farmer with more complex questions regarding long-term strategies and farm development, such an approach would become inadequate. By breaking down a farm into its component parts (guided by the advisors' knowledge and mental models) and managing them as if they were real, without handling them at a higher and more complex system level to any greater extent, there is a high risk that more complex and long-term issues

such as sustainability (in all its constituent parts) will not be addressed within the contemporary framework of advisory services. One way to include the issues of sustainability would be to complement the prevailing epistemology in the advisory service system with an epistemology based on practice and on *knowing* (Cook and Brown, 1999: Cook and Wagenaar, 2012). By doing that, they would move in the Dreyfusian direction of understanding expertise. Cook and Brown (1999, p. 387) write:

> Knowledge is commonly thought of as something we use in action but it is not understood to be action. Accordingly, we use the term "knowing" to refer to the epistemological dimension of action itself. […] Knowing is dynamic, concrete and relational.

According to Cook and Brown (1999), *knowing* is an aspect of our interaction with the world and its relationship with knowledge is dynamic. Simultaneously, knowledge gives shape and discipline to knowing. The reciprocal interplay between knowledge and knowing is what they call *bridging epistemologies*. They continue:

> Organizations not only create knowledge, they also—and usually primarily—create goods and services. In doing so, they need to be increasingly innovative. And this requires, we believe, attention not only to what they possess, but also to how they practice. This calls for a broadening of focus from one epistemology to two, including the generative potential of interplay between them. (Cook and Brown, 1999, p. 393)

These thoughts thus align with Ljung (2015), Leeuwis (2013) and Labarthe and Laurent (2013), who in different ways emphasise that the advisor's knowledge and competence is only one aspect of creating good learning situations. The methodological and organisational part—the how—is equally important. However, these aspects are still underdeveloped in Swedish advisory practice. By moving the focus from the individual knowledge possessed by an advisor towards the practice and letting the pursuit of contributing to sustainable farm development constitute the basis for the advisory operations instead, it would probably be easier to develop an advisory service that would be regarded as eager from both a farm and society perspective. Simplified, one could thus say that the driving force for developing and organising advisory services should come from a bottom-up approach, grounded in each unique farm's local context and the farmer's lifeworld (Habermas, 1984; 1987), rather than from a top-down approach where services are developed depending on the advisor's current competence and what is easy for the advisory system to administrate (Figure 15).

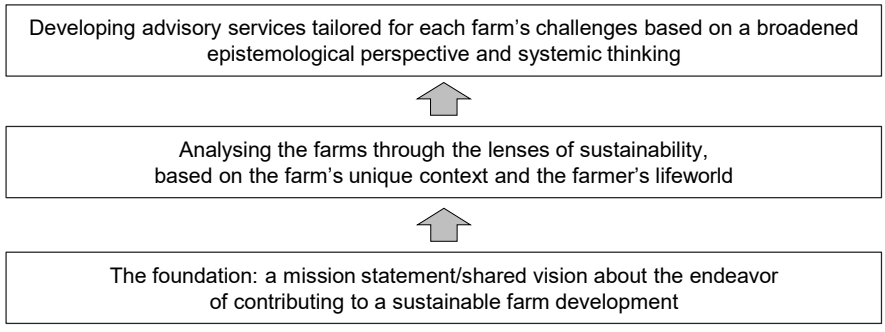

Figure 15. The new perspective where services are tailored after the farm's context and the farmer's lifeworld.

At the level of the advisory organisation, working to the new perspective outlined in the above paragraphs requires that at least some in the organisation, perhaps in a dedicated 'systems division', should possess the ability to view the farming system, not simply as a production enterprise, but as a human activity system; as an epistemological device for the purpose of knowing it (Darnhofer *et al*., 2012) and as a learning system in the manner Bawden (2010a) outlined, from which appropriate learning and change processes can be created. At advisory level, above all, increased awareness of the issues that may arise and those values that are likely to be lost due to the use of excessively rigid mental models as well as overly narrow system boundaries is needed. Increased awareness is also required regarding the difference in approach needed when answering limited questions (which can be solved by the individual) and when one wishes to contribute to sustainable farm development (which will demand the group effort of several people).

9.3.3 What can an advisory organisation learn from a flute workshop?

In order to better understand the broadening of epistemology that is required to address the sustainability challenge at farm-level, the case provided by Cook and Yanow (2011) about workshops in and around Boston creating the finest flutes in the world may serve as an example of the organisational learning required. Cook and Yanow (2011) make the claim that an organisation is not born with its knowledge, and that the know-how required for making a flute from start to finish is not known by a single flute maker, but is rather the result of a group effort. Although each flute maker knows how to perform his or her individual tasks, the know-how required to make the flute as a whole thus resides within the organisation. Further, they claim, the organisational know-how is not meaningfully transferrable from one shop to the next; it is deeply

embedded in the practices of each workshop (Cook and Yanow, 2011). The unique know-how has been learned, not by being given explicit measurement and tolerances, but tacitly, in the hand-to-hand judgements of feel and eye, by working on flutes and having that work judged by the other flute makers (ibid). Cook and Yanow (2011) argue that such organisational learning is better explained from a cultural perspective that assumes the group and its attributes as its unit of analysis, than from an individually-oriented cognitive perspective. They write:

> Organizational learning here is understood to involve shared meanings associated with and carried out through cultural artifacts, it is understood as an activity of the organization, that is, an activity at the level of the group, not at the level of the individual. (Cook and Yanow, 2011, p. 365)

Further on, they provide a definition of organisational learning as:

> The acquiring, sustaining, or changing of intersubjective meanings through the artifactual vehicles of their expression and transmission and the collective actions of the group. (ibid, p. 366)

The category of knowledge and the feeling that the flute makers, both as individuals and as a group, obviously have both about the final product—that is, a flute of world class quality that complies with each workshop's unique requirements put on the instrument—and the process of getting there, is a knowledge and know-how that is lacking in today's advisory organisations. In the individualistic culture that prevails in several of today's advisory organisations, where each advisor is responsible for questions related to a limited part of the farm business; where advisors of different subject disciplines are often divided into either the different subject groups or organisations; where the use of senior advisors as knowledge brokers is scarce; and where there are few arenas for team learning and discussing strategic questions about which kind of processes the advisory organisations would like to be a part of, the "collective actions of the group" as mentioned in the quote above (which Senge (2006) would refer to as alignment) are seldom more than untapped potential. In order for such collective actions to be realised, today's top-down advisory service approach based on the epistemology of individual knowledge possession needs to be challenged and replaced by a broader epistemological perspective that includes the knowledge and know-how of other advisors with other competencies and skills as well as the practice/knowing (Cook and Brown, 1999) of treating the farm as a unified whole, finding paths towards sustainability and the development of a professional vision that sees what needs to be done and by whom.

9.3.4 Moving focus to the knowing implies a need for acknowledging the knowledge of the group

Since the definition of sustainability issues straddle several subject areas, new ways of working more collaboratively in order to manage this complexity will have to be developed. Cook and Wagenaar (2012) write that a theory of practice must address the constraining effects of history, as actors are locked inside a perspective. Although these perspectives allow the actor to act, they also constrain him or her in interactions with others. They continue:

> Although we are dependent on our knowledge, experience, insights, values, and preferred solutions to find our way in the world, these also prevent us from grasping the full spectrum of knowledge, experience, insights, values, and solutions that are available in the human community. (Cook and Wagenaar, 2012, p. 18)

To accomplish the sustainability challenge, today's emphasis on individual knowledge would obviously have to be expanded to also acknowledge the knowledge performed by an advisory group as a whole—including both explicit and tacit knowledge (c.f. Cook and Brown, 1999). Cook and Brown (1999) exemplify explicit group knowledge with, for instance, stories about how work is done and the use of metaphors or phrases that have useful meaning within a specific group. However, the explicit group knowledge would also include the team learning needed in order to handle complex issues. Senge (2006) argues that the discipline of team learning starts with dialogue. This also involves learning how to recognise patterns of interactions within teams that might undermine learning (ibid). Managing of knowledge-power asymmetries (Ulrich and Reynolds, 2010; Flood, 1999), which in the interviews were mentioned as an obstacle to the development of new advisory approaches, is one example of such undermining that needs to be handled. The aim of team learning would be to achieve coordinated action towards a common goal amongst individuals, such as in the flute workshop case of Cook and Yanow (2011). Since team learning is a team skill, 'practice fields' to develop the collective learning skill will be needed.

The tacit group knowledge is, according to Cook and Brown (1999), more difficult to define—although everyone has daily experience of this kind of knowledge. They label this form of knowledge with an expanded definition of the term 'genre' (ibid, p. 391). They write:

> ‘Organizational genre’ applies not only the distinctive and useful meanings a given group attaches to its various literary artifacts. It also applies to its various physical and social artifacts—that is, to different types of things (technologies or products, for example) and to different types of activities (such as ways of doing a task or types of meetings). […] Their meanings emerge and undergo constant confirmation and/or modification through a kind of ‘negotiation in practice’ as they are used in the context of the group’s ongoing ‘real work’. (Cook and Brown, 1999, p. 392)

What Cook and Brown (1999) call *organizational genre* hence lies close to Giddens (1979) *structuration*. The organisational genres or structuration processes that new advisors are now socialised into, and which maintain the prevailing image and practice of the individual and autonomous advisor, will therefore need to be renegotiated in order for the sustainability challenge to be addressed. Engaging in dialogues about what sustainable farm development is and what needs to be done in order to get there will be a challenge in itself, as it is quite far from the here-and-now-questions that are often the focus in today’s advisory services. For the sustainability challenge to be put into advisory practice, a mission statement that will do the epistemically distinct work of giving shape and directions to the group’s actions (c.f. Cook and Brown, 1999) will have to be developed within the group of advisors. Such a mission statement would implicitly connect to a questioning of the mental models that the advisors possess and are being limited by today. Senge (2006) claims that while adaptive learning (i.e. single-loop learning) is possible without vision, generative learning (i.e. double-loop learning) occurs only when people are striving to accomplish something that matters deeply to them. This, of course, requires that the organisation is able to agree on a vision/statement with which the advisors feel compliant.

Although the advisory organisations have different kinds of vision formulated for their business, they have hitherto not affected the advisory practice to any significant extent. This gap between the espoused theories and theories-in-use (Argyris and Schön, 1974) is probably due partly to the fact that even though the vision stipulates what kind of farm companies or processes that the advisory organisations claim they would like to be part of creating, the focus of the advisory modules is not on the farm businesses as a whole. What needs to be developed among the advisors is hence a common group knowledge about the overarching endeavour of contributing to sustainable farm development and a feeling of what should happen in order to move in that direction.

9.3.5 A new epistemological approach both requires and creates a new organisational culture

The mind shift described above will not be put into practice without an engaged leadership that is interested in supporting the process of questioning and breaking of contemporary structures and the development and building of new practices and cultures (c.f. Adler *et al*., 2011; Schein, 2010; Popper and Lipshitz, 2000; Edmonson *et al*., 2001; Hjelm, 1998; Fullan and Hargreaves, 1992). Wen (2014) even claims that organisational learning is impossible without the active participation of managers and guidance within the organisation. Papers II and IV show some of the change processes that are taking place in Swedish advisory organisations to address current working methods and cultures and also the difficulties of changing existing structures. Gagliardi (2017) claims that a culture consists of three components; the logos, the ethos and the pathos. The logos is the ontological and epistemological component, corresponding to cognitive experience and referred to as beliefs. The ethos is the deontological component, corresponding to moral experience and referred to as values. The pathos is the way people perceive and feel reality and constitutes the sensuous experience of culture. In the case of the advisory organisations, both the prevailing epistemological foundations (the logos) and the organisations' values concerning which processes they want to be a part of (the ethos) need to be questioned, renegotiated and broadened. Moreover, this change process needs to result in a situation where the advisors perceive their job as being meaningful and stimulating (a positive pathos). Based on this cultural model, it becomes evident that many of the change processes in progress in the advisory organisations studied are working too narrowly to have any impact on advisory culture and hence also practice.

To succeed in combating the organisational challenges that lie ahead in order to include complex and important issues such as sustainability within advisory services, the organisations need to engage in several parallel processes. These change processes would include:

- To engage in dialogues concerning what sustainable farm development means in real terms and how it could be achieved.
- To develop consciousness about the prevailing structuration processes, organisational culture(s), knowledge-power asymmetries as well as mental models and how those together restrict them from seeing what it is possible to achieve.
- To question which epistemology and work procedures are valid in the path towards farm sustainability.

- To broaden the epistemological perspective and move beyond the individual-possessed knowledge to also include the practice or knowing when advisory services are being developed and organised.
- To formulate and gain support for a mission statement (or shared vision) that takes sustainability into consideration in advisory services and allows that statement to also affect the advisory practice.
- To build conducive structures in order for the sustainability challenge to be realised, which would implicitly lead to including the creation of new structuration processes and nurturing of collaborative cultures.

As discussed in Chapter 9.1.1, the advisory system is strongly influenced by New Public Management (Ahlbäck Öberg and Widmalm, 2016) and the control paradox (Nitsch, 1994a) where the technical/administrative aspects of the system have become the guiding posts for its construction. Cook (2005) claims that the activities of groups are largely a product of how they are designed. He writes:

> If our systems are to function well ethically and not just technically, then ethics needs to be one of the "controls" or "regulators" that we draw on to decide what is a desirable configuration of a system and an acceptable direction to go with it. (Cook, 2005, p. 135)

It is the leadership that has the primary responsibility to provide and maintain infrastructures that make the public discussions of ethics possible, and to safeguard their appropriateness to the human systems in which they function (Cook, 2005). The inclusion of a sustainability perspective will mean discussions characterised by systemic thinking and double- and triple-loop learning. The chosen system, with its system boundary, sets the framework within which the loops of learning are to take place. Bagody and Mahanty (2013) argue that theories of systems thinking are the only way through which double-loop learning can be practised in organisations. These higher loops of learning require cultural changes in the organisation (Putz *et al*., 2012; Dahanayake and Gamlath, 2013). A new organisational culture is thus required for two reasons; partly in order to carry out the internal learning processes that are at hand, and partly to achieve the goal of contributing to sustainable farm development. However, a new organisational culture is also likely to be developed as a consequence of a broadened epistemology in advisory services.

9.4 Conclusions

The aim of this thesis has been to assess the Swedish agricultural advisory system's ability to contribute to sustainable farm development, and to discuss improvements to the system that would enhance this ability. Based on the findings presented in Chapters 5, 6 and 7 and the synthesis and discussion earlier in this chapter, a number of conclusions can be drawn.

- Today's advisory system, which is built on a Cartesian reductionist ontology and consequently non-systemic models of agriculture (in the discussion referred to as the agricultural control paradox and New Public Management), has contributed to a development of advisory services that are characterised by single-loop learning in relatively delimited sub-system farm issues. Such an approach would be easier for the advisory system to administer than supporting strategic and long-term learning processes that would deal with complex issues and treat the farm as a unitary whole. This is manifested both in today's modular thinking in advisory services as well as in the project thinking in the advisory system at large.
- As the advisory system appears today, there is no obvious 'owner' of important societal issues such as agricultural and farm sustainability. Issues that are the responsibility of everybody are hence at risk of becoming the responsibility of nobody—especially when advisory organisations are resource- rather than vision-driven.
- Because of how the advisory system is organised in combination with the individualistic culture with its associated organisational structures and structuration processes, it will be difficult to address complex issues such as farm sustainability within the prevailing structure.
- Because of the individualistic culture and the modular advisory services that are both based on an epistemology of possession, new organisational culture(s) and advisory approaches will require a questioning and renegotiation of the epistemology on which the contemporary advisory services rest.
- One way to address complex issues, such as the endeavour of contributing to sustainable farm development, is to broaden the epistemological foundation in the advisory services to focus not only on the knowledge possessed by the individual, but also on that of the group, as well as on the knowing and the reciprocal interplay between them.

- The addressing of sustainability issues (in all its constituent parts) will require a more systemic way of thinking and acting than today's modular (and hard systems) thinking permits. That will in turn call for a questioning and renegotiating of existing mental models and system boundaries among the advisors.
- In order to succeed with the challenges ahead, the double- and triple-loop learning processes that are at hand, both internally and externally vis-à-vis the customer, will both require and give rise to new and more collaborative organisational culture(s).
- A new approach in advisory service, which is able to address the endeavour of contributing to sustainable farm development, and which is consistent with the shift from vision to practice, will require conscious work with all three components of the organisational culture: the logos, the ethos and the pathos.
- The organisational and epistemological changes needed in order to succeed with the sustainability challenge will not be put into practice without an engaged leadership that is interested in supporting the process of questioning and breaking of contemporary structures and the development and building of new practices and cultures that are conducive to the challenges ahead.

9.5 Methodological reflections

Before bringing this thesis to closure, I would like to devote a few lines of reflection on the methodology used. As noted in Chapter 3, this is not a conventional thesis. Firstly, it is the outcome of a long process of engagement with the subject and from start to finish it covers a period of twelve years. Secondly, it has not necessarily followed a single defined issue or a blue print approach to resolve it. Instead, the thesis has evolved with time and the possibilities given to me while remaining with an interest in and engagement with the Swedish advisory system and its limitations in its delivery of a service to farmers. I have also been employed at different periods of this journey with both sides of the equation.

My interest since the start has been to study the advisory system as it is. I have wished to study initiatives, phenomena and changes that have been initiated and carried out by the actors in the advisory system themselves. I believe that such an approach reveals a lot of information about the issues and struggles that the actors, as well as the whole advisory system, are facing. All the projects and development processes that I have examined over the course of this study can hence be seen as expressions and manifestations of their time

and as arising from the society in which we live. My interest has been to study them in order to understand them in the context in which they have been taking place. Some of the questions I have wondered about through the life of this thesis work include: *Why does the system look as it does? Why have the different advisory efforts and projects been undertaken? How were they performed? What do they tell us about the system as such? What are the rationales for the organisational changes within the advisory organisations? Why have the expected results failed to materialise? Why does it seem to be so difficult to change the way of working, despite the fact that the discourse about the need for change within advisory services has been going on for several decades?* And so on.

When studying change processes, time is a crucial factor. The fact that this study, for a number of personal reasons, has extended over a decade and become a longitudinal study of the advisory system has therefore, in my eyes, become a strength. Some of the projects I have followed could be seen as niches that try to affect the prevailing regime. My primary interest has, however, not been on those projects themselves. It has rather been about understanding the difficulty the niches experience in affecting the regime. Had I not had the possibility to follow the change processes at the organisations in the study for all these years, I am quite certain that I would have missed some of the aspects I have found to be of importance to the question of why the desired changes of the advisory services have not materialised—for instance the notion of culture and leadership.

These insights bring me back to the model by Birner *et al*. (2009) and their conceptual framework for analysis of agricultural advisory services presented in Chapter 1.4.2 (Figure 1). When one is to analyse an advisory system and try to understand why it looks as it does, I believe it is also beneficial to supplement the model with a longer time frame.

References

Abel, N., Ross, H., Herbert, A. Manning, M., Walker, P. & Wheeler, H. (1998). Mental Models & Communication in Agriculture. A report for the Rural Industries Research and Development Corporation. *RIRDC Publication No 98/140*. Kingston, Australia.

Adams, M. E. (1982). *Agricultural Extension in Developing Countries*. Burnt Mill, Harlow, Essex: Longman.

Adler, P., Heckscher, C. & Prusak, L. (2011). Building a Collaborative Enterprise. *Harvard Business Review*, 89(7/8), pp. 94-101. Available at: <https://pdfs.semanticscholar.org/6acf/05e77eb37a7f7f05452b54164cacb839c2b3.pdf>

Ahlbäck Öberg, S. & Widmalm, S. (2016). Att göra rätt – även när ingen ser på. *Statsvetenskaplig tidskrift*, 1, pp. 7-17. Lund: Statsvetenskapliga förbundet.

Ahnström, J., Höckert, J., Bergeå, H. L. & Hallgren, L. (2005). *Farmers attitudes to nature and nature conservation*. Paper presented at 11th International Scientific Symposium on Resource Management (ISSRM 2005) Östersund, Sweden, June 15-19.

Ahnström, J., Höckert, J., Bergeå, H. L., Francis, C. A., Skelton, P. & Hallgren, L. (2008). Farmers and nature conservation: What is known about attitudes, context factors and actions affecting conservation? *Renewable Agriculture and Food Systems*, 24(1), pp. 38-47.

Allen, T. (2008). Philosophy in Red, Philosophy in Purple: Lebenswelt given, Weltanschauung Achieved, Lifeworld Contra Worldview. *Analytic Teaching and Philosophical Praxis*, 28(1), pp. 9-17.

Almedalsveckan (2016). *Vår sårbara livsmedelsförsörjning*, [Seminarium på Almedalsveckan anordnat av Livsmedelsverket, Region Gotland, Länsstyrelsen Gotland och Försvarsmakten]. [2016-07-07].

Alvesson, M. (1999). Beyond Neo-Positivists, Romantics and Localists. A reflexive approach to interviews in organization research. Institute of Economic Research. *Working Paper Series*, 1999/3. Lund: Lund University.

Alvesson, M. & Sköldberg, K. (2008). *Tolkning och reflektion. Vetenskapsfilosofi och kvalitativ metod*, 2 ed. Lund: Studentlitteratur.

Andersen, H. (2007). Jürgen Habermas. In: Andersen, H. & Kaspersen, L. B. (Eds.) *Klassisk och modern samhällsteori*. 3 ed. Lund: Studentlitteratur, pp. 279-296.

Argyris, C. (1974). *Behind the front page*. San Francisco: Jossey Bass.

Argyris, C. (1982). *Reasoning, learning, and action: Individual and organizational*. San Francisco: Jossey-Bass.

Argyris, C. (1990). *Overcoming Organizational Defenses. Facilitating organizational learning*. Boston: Allyn and Bacon.

Argyris, C. (1996). Crossroads−Unrecognized defenses of scholars: Impact on theory and research, *Organization Science*, 7, pp. 79-87. Available at: <http://dx.doi.org/10.1287/orsc.7.1.79>.

Argyris, C. & Schön, D. (1974). *Theory in Practice. Increasing professional effectiveness*, San Francisco: Jossey-Bass.

Argyris, C. & Schön, D. (1978). *Organizational Learning*. Reading, MA: Addison-Wesley.

Argyris, C., Putnam, R. & McLain Smith, D. (1985). *Action Science: Concepts, Methods, and Skills for Research and Intervention*, San Francisco, CA: Jossey-Bass.

Asplund, G. (2009). Kapitel 2: Korsbefruktande kreativitet eller krock och katastrof. In: Frankelius, P. & Vogel, O. (Eds.) *Värdeskapande möten*. Malmö: Liber AB.

Atkinson, P. & Hammersley, M. (1994). Ethnography and Participant Observation. In: Denzin, N. & Lincoln, Y. (Eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.

Bagodi, V. & Mahanty, B. (2013). Double loop learning in the Indian two-wheeler service sector. *The Learning Organization*, 20(4/5), pp. 264-278. Available at: <http://www.emeraldinsight.com/doi/full/10.1108/TLO-04-2012-0029>.

Bardes, C. L., Gillers, D. & Herman, A. E. (2001). Learning to look: Developing clinical observational skills at an art museum. *Medical Education*, 35(12), pp. 1157-1161. Available at: <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2923.2001.01088.x/abstract;jsessionid = 38D743137FCB928D8941C802B6F95F28.f03t01>.

Barker, C. (2005). *Cultural Studies: Theory and Practice*. London: Sage.

Bartunek, J. M. & Moch, M. K. (1987). First-Order, Second-Order, and Third-Order Change and Organization Development Interventions: A Cognitive Approach. *The Journal of Applied Behavioral Science*, 23(4), pp. 483-500.

Bartunek, J. M. & Moch, M. K. (1994). Third-order organizational change and the western mystical tradition. *Journal of Organizational Change Management*, 7(1), pp. 24-41.

Bass, B. (1985). Leadership: Good, better, best. *Organizational Dynamics*, 13(3), pp. 26-40. Available at: <https://doi.org/10.1016/0090-2616(85)90028-2>.

Bates, R. & Khasawneh, S. (2005). Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations. *International Journal of Training and Development*, 9(2), pp. 96-109, Available at: <DOI: 10.1111/j.1468-2419.2005.00224.x>.

Bawden, R. (1991). Systems Thinking and Practice in Agriculture. *Journal of Dairy Science*, 74(7), pp. 2362-2373. Available at: <http://dx.doi.org/10.3168/jds.S0022-0302(91)78410-5>.

Bawden, R. (1998). The Community Challenge: The learning response. *New Horizons in Education*, 99(October), pp. 40-59.

Bawden, R. (2010a). The Community Challenge: The Learning Response. In: Blackmore, C. P. (Ed.) *Social Learning Systems and Communities of Practice*, pp. 39-56. London: Springer.

Bawden, R. (2010b). Messy issues, worldviews and systemic competencies. In: Blackmore, C. P. (Ed.) *Social Learning Systems and Communities of Practice*, pp. 89-101. London: Springer.

Bawden, R., Ison, R., Macadam, R., Packham, R. & Valentine, I. (1985). A research paradigm for systems agriculture. In: Remenyi, J. V. (Ed.). *Agricultural systems research for developing countries*. Canberra: ACIAR, pp. 31–42.

Bawden, R. & Packham, R. (1993). Systemic Praxis in the Education of the Agricultural Systems Practitioner. *Systems Practice*, 6(1), pp. 7-19. Available at: <https://link.springer.com/article/10.1007/BF01059677>.

Berger, P. L. & Luckmann, T. (1966). *The social construction of reality. A treatise in the sociology of knowledge*. New York: Doubleday.

Bergeå, H. L. (2007). *Negotiating Fences. Interaction in Advisory Encounters for Nature Conservation*. Diss. No. 2007:130. Uppsala: Swedish University of Agriculture of Sciences.

Bergeå, H. L. & Ljung, M. (2007). Implementing nature conservation policy in the name of participation: Field-level bureaucrats as a lubricant. Manuscript in: Bergeå, H. L. *Negotiating Fences. Interaction in Advisory Encounters for Nature Conservation*. Diss. no 2007:130. Uppsala: Swedish University of Agriculture of Sciences.

Billaud, J-P., Brives, H., Jiggins, J., Reynolds, M., Röling, N. & Todderi, M. (2004). *Facilitation of social learning processes for integrated catchment management and sustainable use of water. SLIM Thematic Paper 2.* Working paper. Open University, UK. Available at: <http://slim.open.ac.uk>.

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D. J., Horna, D., Benin, S. & Cohen, M. (2009). From Best Practice to Best Fit: A framework for designing and analyzing pluralistic agricultural advisory services worldwide. *Journal of Agricultural Education and Extension*, 15(4), pp. 341-355. Available at: <http://dx.doi.org/10.1080/13892240903309595>.

Bluedorn, A. C. & Lundgren, E. F. (1993). A culture-match perspective for strategic change, *Research in Organizational Change and Development*, 7, pp. 7–9.

Botha, N., Coutts, J. & Roth, H. (2008). The Role of Agricultural Consultants in New Zeeland in Environmental Extension. *The Journal of Agricultural Education and Extension*, 14(2), pp. 125-138. Available at: <DOI: 10.1080/13892240802019147>.

Bougon, M. G., Weick, K. E. & Binkhorst, D. (1977). Cognition in organizations: An analysis of the Utrecht Jazz Orchestra. *Administrative Science Quarterly*, 22, pp. 609-639.

Braunerhjelm, P., von Greiff, C. & Svaleryd, H. (2009). *Utvecklingskraft och omställningsförmåga. En globaliserad svensk ekonomi. Slutrapport från Globaliseringsrådets kansli*. Västerås: Edita.

Brossier, J., Contini, C., Omodei Zorini, L. & Cristóvão, A. (2012). *The origins of the European IFSA: The first meetings and the agenda renewal*. In: Darnhofer, I., Gibbon, D. & Dedieu, B. (Eds.) *Farming Systems Research into the 21st century: The new dynamic*, pp. 33-48. Dordrecht: Springer.

Burr, V. (2015). *Social Constructionism*. 3 ed. Routledge: Taylor & Francis Group.

Caldwell, R. (2012a). Systems Thinking, Organizational Change and Agency: A Practice Theory Critique of Senge's Learning Organization. *Journal of Change Management*, 12(2), pp. 1-20.

Caldwell, R. (2012b). Leadership and Learning: A Critical Reexamination of Senge's Learning Organization. *Systemic Practice and Action Research*, 25(1), pp. 39-55.

Cerf, M., Guillot, M. N. & Olry, P. (2011). Acting as a Change Agent in Supporting Sustainable Agriculture: How to Cope with New Professional Situations? *The Journal of Agricultural Education and Extension*, 17(1), pp. 7-19. Available at: <http://dx.doi.org/10.1080/1389224X.2011.536340>.

Cerf, M., Gibbon, D., Hubert, B., Ison, R., Jiggins, J., Paine, M., Proost, J. & Röling, N. (Eds.) (2000). *Cow up a tree. Knowing and Learning for Change in Agriculture. Case Studies from Industrialised Countries*. INRA Editions.

Chambers, R. (1994). The Origins and Practice of Participatory Rural Appraisal. *World Development*, 22(7), pp. 953-969. Available at: <https://doi.org/10.1016/0305-750X(94)90141-4>.

Chambers, R. & Ghildyal, B. (1985). Agricultural research for resource poor farmers – the farmers first and last model. *Agricultural Administration*, 10, pp. 1-30. Available at: <https://doi.org/10.1016/0309-586X(85)90063-9>.

Chambers, R. & Jiggins, J. (1987). Agricultural Research for Resource-Poor Farmers. Part I: Transfer-of-Technology and Farming Systems Research. *Agricultural Administration & Extension*, 27, pp. 35-52.

Chartier, O. (2007). *Agri-food research in Europe: Final report*. *Overview of the agri-food research landscape in Europe*. [EU AGRI MAPPING Project FP6-506087]. Brussels: European Commission.

Checkland, P. B. (1981). *Systems Thinking, Systems Practice*. Chichester: J. Wiley & Sons.

Checkland, P. B. (1985). From optimizing to learning: A development of systems thinking for the 1990s. *Journal of Operational Research Society*, 36(9), pp. 757-767.

Checkland, P. B. (1999). Chapter 3: Systems thinking. In: Currie, W. & Galliers, B. (Eds.) *Rethinking Management Information Systems: An interdisciplinary perspective*. New York: Oxford University Press.

Checkland, P. B. & Poulter, J. (2010). Soft systems methodology. In: Reynolds, M. & Holwell, S. (Eds.) *Systems approaches to managing change: A practical guide*, pp. 191-242. London: Springer.

Churchman, C. W. (1979). *The Systems Approach and Its Enemies*, New York: Basic Books.

Cochrane, W. (1958). *Farm Prices, Myths and Reality*. Minneapolis: University of Minnesota Press.

Collinson, M. (Ed.) (2000). *A History of Farming Systems Research*. Wallingford, UK: CAB International.

Collinson, M. & Lightfoot, C. (2000). The future of Farming Systems Research. In: Collinson, M. (Ed.) *A History of Farming Systems Research*. Wallingford, UK: CAB International.

COM (2010). *Meddelande från kommissionen. Europa 2020: En strategi för smart och hållbar tillväxt för alla*. Available at: <http://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:52010DC2020&from=en>.

COM (2011a). Bio-based economy for Europe: State of play and future potential−Part1, *Report on the European Commission's Public on-line consultation*. Available at: <https://publications.europa.eu/en/publication-detail/-/publication/c9b28ca9-c92e-41e8-b65a-42667a3683aa>.

COM (2011b). Bio-based economy in Europe: state of play and future potential−Part 2, *Summary of the position papers received in response to the European Commission's Public on-line consultation*, Available at: <https://publications.europa.eu/en/publication-detail/-/publication/af29afb6-105b-47c4-92ca-38e672262557>.

Cook, N. (2005). That which governs best: leadership, ethics and human systems. In: Ciulla, J., Price, T. & Murphy, S. (Eds.) *The Quest for Moral Leaders: Essays on Leadership Ethics*. Cheltenham, UK: Edward Elgar.

Cook, N. & Brown, J. S. (1999). Bridging Epistemologies: The Generative Dance Between Organizational Knowledge and Organizational Knowing. *Organization Science*, 10(4), pp 381-400. Available at: < http://pubsonline.informs.org/doi/abs/10.1287/orsc.10.4.381>.

Cook, N. & Wagenaar, H. (2012). Navigating the Eternally Unfolding Present: Towards an Epistemology of Practice. *The American Review of Public Administration*, 42(1), pp. 3-38. Available at: < http://journals.sagepub.com/doi/abs/10.1177/0275074011407404>.

Cook, N. & Yanow, D. (2011). Culture and Organizational Learning. *Journal of Management Inquiry*, 20(4), pp. 355-372. Available at: <https://www.researchgate.net/publication/240280432_Culture_and_Organizational_Learning>.

Craik, K. J. W. (1943). *The Nature of Explanation*. Cambridge: Cambridge University Press.

Dahanayake N.D. & Gamlath, S. (2013). Learning organization dimensions of the Sri Lanka army. *The Learning Organization*, 20(3), pp. 195–215. Available at: <http://www.emeraldinsight.com/doi/full/10.1108/09696471311328451>.

Dahmén, E. (1986). Farligt att glömma konkurrenskraften. *Rapport: Svensk Export*, nr 3.

Daniels, S. E. & Walker, G. B. (2001). *Working Through Environmental Conflict. The Collaborative Learning Approach*. Westport, CT: Praeger Publishers.

Darnhofer, I., Bellon, S., Dedieu, B. & Milestad, R. (2010). Adaptiveness to enhance the sustainability of farming systems. A review. *Agronomy for Sustainable Development*, 30, pp. 545-555.

Darnhofer, I., Gibbon, D. & Dedieu, B. (2012). *Farming Systems Research into the 21st Century: The new dynamic*. Dordrecht, Heidelberg, New York & London: Springer.

Daugbjerg, C. (2014). *Explaining reform and reversal of the EU's Common Agricultural Policy, 1992-2013*. Paper presented at the ECPR General Conference, Panel P059: De-Compartmentalising Agricultural Policy Making? The New Politics of Food and Agriculture. Glasgow, 3-6 September 2014.

Davis, G. B. & Olson, M. H. (1985). *Management Information Systems: Conceptual Foundations, Structure and Development*. New York: Mc-Graw-Hill Book Company.

Delanty, G. (2005). *Social Science. Philosophical and Methodological Foundations*. 2 ed. [Concepts in the Social Sciences] Maidenhead, Berkshire, UK: Open University Press.

Dir. 1991:83. *Utredning av den statliga rådgivningen till jordbruket*. Beslut vid regeringssammanträde den 12 september 1991.

Dir. 2001:055. *Översyn av skatterna på bekämpningsmedel och handelsgödsel*. Kommittédirektiv, Finansdepartementet.

Dir. 2013:20. 2013. *Kommittédirektiv: Konkurrenskraft och utvecklingsmöjligheter för svensk jordbruks- och trädgårdsproduktion*. Beslut vid regeringssammanträde den 21 februari 2013.

Division of Environmental Communication website (2017). Available at: <http://www.slu.se/en/departments/urban-rural-development/research/environmental-communication/> [2017-07-25].

Dreyfus, S. E. (2004) The Five-Stage Model of Adult Skill Acquisition. *Bulletin of Science Technology & Society*, pp. 177-81. Available at: <http://www.bumc.bu.edu/facdev-medicine/files/2012/03/Dreyfus-skill-level.pdf>.

Dreyfus, H. L. & Rabinow, P. (1982). *Michel Foucault: Beyond Structuralism and Hermeneutics*. With an afterword by Michel Foucault. Chicago: University of Chicago Press.

Dyrendahl, C. & Granath, J. (2011). Lean för lantbruksföretaget – utvärdering av industriellt managementsystem i agrar kontext. Master´s thesis no. 642, Uppsala: Swedish University of Agricultural Sciences.

Eckholm, E. P. (1976). *Losing Ground: Environmental Stress and the World Food Prospects*. New York: World Watch Institute/W.W. Norton.

Edenbrandt, A. (2012). Tillväxt, specialisering och diversifiering - hur har jordbruksföretagen förändrats de senaste 20 åren? *Report 2012:2*. Lund: AgriFood Economics Centre.

Edling, N. (2013). Akademiens olika roller och uppdrag under 200 år. In: *KSLAT Nr 10, 2013, Årgång 152. För stundande skördar. Jubileumskonferensens första del och exkursionerna*. Stockholm: KSLA.

Edmonson, S., Fisher, A., Brown, G., Irby, B., Lunenburg, F., Creighton, T., Czaja, M., Merchant, J. & Christianson, J. (2001). *Creating a collaborative culture*. Paper presented at the Annual Meeting of the National Council of Professors and Educational Administration. 55th, Houston, TX, August 7-11. Available at: <http://files.eric.ed.gov/fulltext/ED470755.pdf>

Eip-Agri. (2015). *Participatory approaches for agricultural innovation*. EIP-AGRI Service Point Publication. [Brochure] Available at: <https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_participatory_approaches_2015_en_web.pdf>

Ekman, S. & Gullstrand, J. (2006). Lantbruket & konkurrenskraften. *Livsmedelsekonomiska institutet, Rapport 2006:4*. Malmö: MCT/Rahms.

Engel, P. G. H. (1995). *Facilitating innovation. An Action-oriented and Participatory Methodology to improve innovative social practice in agriculture*. Diss. Wageningen: Wageningen Agricultural University.

Engel, P. G. H. & Salomon, M. L. (1997). *Facilitating innovation for development: A RAAKS resource box*. Amsterdam: Royal Tropical Institute. Available at: <https://www.researchgate.net/publication/254762043_Facilitating_innovation_for_development_a_RAAKS_resource_box>.

EC (European Commission) (2011). *Structural Development in EU Agriculture. Brief No. 3 - September 2011.* EU Agricultural Economic Briefs. Brussels: EC Agriculture and Rural Development.

EC (2013). *Overview of CAP Reform 2014-2020*. Agricultural Policy Perspectives Brief. No 5*/December 2013. DG Agriculture and Rural Development. Available at: <https://ec.europa.eu/agriculture/sites/agriculture/files/policy-perspectives/policy-briefs/05_en.pdf>.

EC website. (2017a). *CAP at a glance*. https://ec.europa.eu/agriculture/cap-overview_en [2017-06-05]

EC (European Commission) website. (2017b). Farm Advisory System (FAS). https://ec.europa.eu/agriculture/direct-support/cross-compliance/farm-advisory-system_en [2017-06-06]

European Parliament website (2017). The Common Agricultural Policy (CAP) and the Treaty. [2017-06-05]. http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_5.2.1.html

EU (1997). *Treaty of Amsterdam*. Amending the treaty on European Union, the treaties establishing the European communities and certain related acts. Luxembourg: Office for Official Publication of the European Communities. Available at: <http://www.europarl.europa.eu/topics/treaty/pdf/amst-en.pdf>.

EU SCAR (2012). Agricultural knowledge and innovation systems in transition−A reflection paper, Brussels.

EU SCAR (2013). Agricultural knowledge and innovation systems towards 2020−An orientation paper on linking innovation and research, Brussels. http://ec.europa.eu/research/agriculture/scar/groups_en.htm

EU SCAR (2015). Agricultural Knowledge and Innovation Systems towards the Future−A Foresight Paper, Brussels.

Fairclough, N. (1995). *Media Discourse*. London: Arnold.

FAO (1988). *Report of the FAO Council, 94th Session*, 1988. Rome.

FAO (1995). Understanding Farmers' Communication Networks: An Experience in the Philippines. *Communication for development case study*, 14. Rome: FAO.

FAO and World Bank (2000). *Agricultural Knowledge and Information Systems for Rural Development (AKIS/RD). Strategic Vision and Guiding Principles*. FAO, Rome and World Bank, Washington.

Faure, G., Desjeux, Y. & Gasselin, P. (2012). New challenges in agricultural advisory services from a research perspective: A literature review synthesis and research agenda. *J. Agric. Educ. Ext*., 18(5), pp. 461–492.

Fetterman, D. M. (2010). *Ethnography: Step by step*. 3 ed. Thousand Oaks, CA: Sage Publications.

Flood, R. L. (1998). Fifth discipline: Review and discussion. *Syst. Pract. Action Res.* 11(3), pp. 259–273.

Flood, R. L. (1999). *Rethinking the fifth discipline. Learning within the unknowable*. Routledge, Taylor & Francis Group.

Flood, R. L. & Romm, N. (1996). *Diversity Management−Triple loop learning*. England: John Wiley & Sons Ltd.

Flood, R. L. & Ulrich, W. (1990). Testament to conversations on critical systems theory between two systems practitioners. *Systems Practice*, 3, pp. 7-29.

Flygare, I. & Isacson, M. (2003). Jordbruket i välfärdssamhället 1945-2000. *Det svenska jordbrukets historia del 5*. Natur och Kultur/LT:s förlag.

Flyvbjerg, B. (2001). *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge: Cambridge University Press.

Foucault, M. (1976). *The History of Sexuality, Vol. 1*. London: Penguin Books.

Foucault, M. (1982). Space, knowledge and power. Interview with Paul Rabinow. In: Lotringer, S. (Ed.) *Foucault live. Collected Interviews, 1961– 1984*, pp. 335–347. New York: Semiotext(e).

Foucault, M. (1991). *Discipline and Punish: The birth of a prison*. London: Penguin.

Franzén, A. (2015). LBF – landsbygdens eget arkitektkontor. *Byggnadskultur 2.15*. Stockholm: Svenska byggnadsvårdsföreningen.

Freire, P. (1972). *Pedagogy of the Oppressed*. Harmondsworth: Penguin.

Freire, P. (1974). *Education for Critical Consciousness*. New York: Seabury Press.

Fullan, M. (1999). *Change forces: The sequel*. London: Falmer.

Fullan, M. (2007). *The new meaning of educational change*, 4 ed. New York: Teachers College Press.

Fullan, M. & Hargreaves, A. (1992). *What's Worth Fighting for in your School*? Buckingham: Open University Press.

Gadamer, H.-G. (1979). *Truth and Method*. London: Sheed and Ward.

Gagliardi, P. (2017). Artifacts as pathways and remains of organizational life. In: Gagliardi, P. (Ed.) *Symbols and artifacts. Views of the corporate landscape*. New York: Aldine de Gruyter.

Garavan, T. (1997). The learning organization: a review and evaluation. *The Learning Organization*, 4(1), pp. 18-29.

Giampietro, M. (1997). Linking technology, natural resources and the socio-economic structure of human society: A theoretical model, *Adv. Human Ecol*., 6, pp. 75–130.

Giddens, A. (1976). *New Rules of Sociological Method: A Positive Critique of Interpretative Sociologies*. London: Hutchinson.

Giddens, A. (1979). *Central problems in social theory: Action, structure, and contradiction in social analysis*. Los Angeles, CA: University of California Press.

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge: Polity Press.

Giddens, A. (1991). *Modernity and self-identity: Self and society in the late modern age*. Cambridge: Polity Press.

Goffman, E. (1974). *Frame analysis*. New York: Harper.

Greppa Näringen (2011). *Focus on Nutrients. A decade of advice benefiting agriculture and the environment*. [Focus on Nutrients 10-year anniversary]. Alnarp: Greppa Näringen.

Greppa Näringen website (2017). *www.greppa.nu* [2017-06-07].

Groot, A. & Maarleveld, M. (2000). Demystifying Facilitation in Participatory Development. *Gatekeeper Series* No. 89. London: IIED.

Grufman, A. (2014). Konkurrens- eller utvecklingskraft? Empiri till stöd för Erik Dahméns teoretiska synsätt. *Ekonomisk Debatt*, 42(5), pp. 47-58.

Guba, E. G. & Lincoln, Y. S. (1989). *Fourth generation evaluation*, Newbury Park, CA: Sage.

Guba, E. G. & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In: Denzin, N. K. & Lincoln, Y. S (Eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.

Gunnarsson, A. (2002). *Mot maximal regional tillväxtpotential – Ett on Farm Research-projekt i sockerbetor*. [Research programme sent to SLF. Internal material].

Gård&Djurhälsan website (2017). http://www.gardochdjurhalsan.se/ [2017-06-08].

Habermas, J. (1984). *The Theory of Communicative Action. Volume 1: Reason and the Rationalization of Society*. Boston, MA: Beacon Press.

Habermas, J. (1987). *The Theory of Communicative Action. Volume 2: Lifeworld and System, a Critique of Functionalist Reason*, Translated by T. McCarthy. Boston, MA: Beacon Press.

Hajer, M. A. (1995). *The Politics of Environmental Discourse*. Oxford: Oxford University Press.

Hajer, M. A. & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy and Planning*, 7(3), pp. 175–184.

Hargreaves, A. (1992). Cultures of teaching: a focus for change. In: Hargreaves, A. & Fullan, M. G., *Understanding Teacher Development*, pp. 216-240. London: Cassell.

Hazell, P. & Wood, S. (2008). Drivers of Change in Global Agriculture. *Philosophical Transactions of the Royal Society B.*, 363, pp. 495-515. Available at: <http://rstb.royalsocietypublishing.org/content/363/1491/495>.

Hela Sverige website (2017). The Swedish village action movement. Hela Sverige ska leva! http://www.helasverige.se/kansli/in-english/ [2017-06-04].

Herriott, R. E. & Firestone, W. A. (1983). Multisite Qualitative Research: Optimizing Description and Generalizability. *Education Researcher*, 12, pp. 14-19.

Hilding-Rydevik, T., Håkansson, M. & Isaksson, K. (2011). The Swedish Discourse on Sustainable Regional Development: Consolidating the Post-Political Condition. *International Planning Studies*, 16(2), pp. 169-187. Available at: <http://www.tandfonline.com/doi/abs/10.1080/13563475.2011.561062>.

Hjelm, G. (1998). *Arbeta konsultativt*. Stockholm: R&U Förlag.

Hood, C. (1995). The 'New Public Management' in the 1980s: Variations on a theme. Accounting, *Organizations and Society*, 20(2/3), pp. 93-109. Available at: <https://doi.org/10.1016/0361-3682(93)E0001-W>.

Holmström, S. (1988). Svenskt jordbruk 1930-1987. En koncentrerad översikt om jordbrukspolitik, teknik, produktivitet och lönsamhet. In: *KSLAT Supplement, 20, 1988. Jubileumssupplement. Historiska artiklar sammanställda med anledning av 175-årsfirandet av akademiens installation*. Stockholm: KSLA.

Home, R. & Rump, N. (2015). Evaluation of a Multi-case Participatory Action Research Project: The Case of SOLINSA. *The Journal of Agricultural Education and Extension*, 21(1), pp. 73-89. Available at: <http://dx.doi.org/10.1080/1389224X.2014.991112>.

HS (2014). Ekonomistyrning Mjölk. *Rapport nr 2010-4914*. Stockholm: Hushållningssällskapens Service AB.

Höckert, J. & Ljung, M. (2003). Utvärdering av dokumentation vid enskild rådgivning inom KULM. Kompetensområde 2 och 3. *Rapport 2003:9*. Jönköping: Board of Agriculture.

Höckert, J. & Ljung. M. (2005). *Formativ utvärdering: Mot maximal regional tillväxtpotential – Ett On Farm Research-projekt i sockerbetor*. [Internal report in Swedish].

Höckert, J. & Ljung, M. (2008). *Slututvärdering: Mot maximal regional tillväxtpotential – Ett On Farm Research-projekt i sockerbetor*. [Internal report in Swedish].

Höckert, J. & Ljung, M. (2009). *When extension system fails to connect with the farmer's lifeworld*. Paper presented at the 19th ESEE in Assissi, Italy.

Höckert, J. & Ljung, M. (2012). *Rapport: BoT-A Plattform*. [Internal document].

Höckert, J. & Ljung, M. (2012). *Sharing farmers' lifeworld: Advisors key to sustainable farm development*. Paper presented at 10th European IFSA in Aarhus, Denmark.

Höckert, J. & Ljung, M. (2013). Advisory Encounters towards a Sustainable Farm Development: Interactions between Systems and Shared Lifeworlds. *Journal of Agricultural Education and Extension*, 19(2), pp. 291-309.

Höckert, J., Ljung, M. & Sriskandarajah, N. (2010). *From collaborative heroes to collaboration as a culture: The importance of internal collaborative skills for sustained collective action*. Paper presented at 9th European IFSA Symposium in Vienna, Austria.

IFSA website (2017). *The history of IFSA*. Available at: <http://ifsa.boku.ac.at/cms/index.php?id=27>. [2017-07-05].

Ingram, J. (2008). Agronomist-farmer knowledge encounters: An analysis of knowledge exchange in the context of best management practices in England. *Agriculture and Human Values*, 25(3), pp. 405-418.

Ingram, J., Maye, D., Kirwan, J., Curry, N. & Kubinakova, K. (2015). Interactions between Niche and Regime: An Analysis of Learning and Innovation Networks for Sustainable Agriculture across Europe, *The Journal of Agricultural Education and Extension*, 21(1), pp. 55-71. Available at: <http://www.tandfonline.com/10.1080/1389224X.2014.991114>.

Ingvarsson, A. (2014). Snabb minskning av gårdar sedan EU-inträdet. *Land lantbruk* [2014-07-19].

Isacson, B. (1988). Hundra års arbete med myrodling och vallkultur i Sverige. In: *KSLAT Supplement 20, Jubileumssupplement. Historiska artiklar sammanställda med anledning av 175-årsfirandet av akademiens installation*. Stockholm: KSLA.

Ison, R. (2010). *Systems Practice: How to Act in a Climate-Change World*. Milton Keynes, UK: The Open University. Pp. 243-265. Available at: <https://link.springer.com/chapter/10.1007/978-1-84996-125-7_10>.

Ison, R. & Russell, D. (2000). *Agricultural Extension and Rural Development. Breaking out of Knowledge Transfer Traditions*. Cambridge: Cambridge University Press.

ISTANET (2017). *Innovating for Sustainability Transitions in Agriculture: networking synergies between research and practice*. [Proposal to COST (European Cooperation in Science & Technology)].

Jackson, M. C. (1985). Social systems theory and practice: The need for a critical approach. *International Journal of General Systems*, 10, pp. 135-151.

Jiggins, J. (1993). *From technology transfer to resource management*. *Proceedings of the XVII International Grassland Congress 1993*. Palmerstone North: New Zealand Grassland Association, pp. 615-22.

Johansson, A.W. (1997). *Att förstå rådgivning till småföretagare*. Diss. Bjärred: Academica Adacta.

Johansson, D. & Karlsson, N. (2006). Begreppet utvecklingskraft – en fördjupad analys. In: Johansson, D. & Karlsson, N. (Eds.) *Svensk utvecklingskraft*. Stockholm: Ratio.

Jordbruksverket (2006). Miljöeffekter av träda och olika växtföljder – rapport från projektet CAP:s miljöeffekter. *Rapport 2006:4*. Jönköping: Jordbruksverket.

Jordbruksverket (2008). Ängs- och betesmarker – en genomgång av tillgänglig statistik. *Rapport 2008:30*. Jönköping: Jordbruksverket.

Jordbruksverket (2010). CAP efter 2013. *Rapport 2010:12*. Jönköping: Jordbruksverket.

Jordbruksverket (2011). Jordbrukarstödens utveckling. Sveriges femton första år som medlem i EU. *Rapport 2011:42*. Jönköping: Jordbruksverket.

Jordbruksverket (2012). Ett grönare CAP – analys av kommissionens förslag till förgröning av den gemensamma jordbrukspolitiken. *Rapport 2012:13*. Jönköping: Jordbruksverket.

Jordbruksverket (2013). Lantbruk i samklang med miljön. *Projektrapport Kompetensutveckling för uthålligt brukande 2009-2011*. OVR259. Jönköping: Jordbruksverket.

Jordbruksverket (2014). Produktivitet – grunden för konkurrenskraft. En genomgång av grundläggande begrepp. *Rapport 2014:26*. Jönköping: Jordbruksverket.

Jordbruksverket (2015a). Strategier för konkurrenskraft. Spelar strategierna någon roll för jordbruks- och trädgårdsföretag? *Rapport 2015:11*. Jönköping: Jordbruksverket.

Jordbruksverket (2015b). Jordbrukspolitik, inlåsning och strukturomvandling. *Rapport 2015:14*. Jönköping: Jordbruksverket.

Jordbruksverket (2016). *Landsbygdsprogrammet del av Europa 2020*. PP-presentation om landsbygdsprogrammets mål och prioriteringar. Available at: <http://www.jordbruksverket.se/download/18.26aaa7aa15471338dad1c0fe/1462198923061/Europa+2020%2C+m%C3%A5l+och+prioriteringar.pdf>.

Jordbruksverket (2017). Den svenska marknadsandelen är 94% för ägg och 28% för lammkött. *Jordbruket i siffror: En blogg från Jordbruksverket*. 2017-03-16.

Jordbruksverket, LRF and LRF Konsult (2014). *Grön konkurrenskraft i Sverige 2014 – produktivitet i Sverige och i konkurrentländer*. Available at: <http://www2.jordbruksverket.se/download/18.2b94dc5814a2e549b27e7166/1418214568248/ovr299b.pdf>.

JoU (1989/90). Jordbruksutskottets betänkande. *1989/90:JoU12*. Rådgivningen i lantbruket. Available at: <https://data.riksdagen.se/fil/9F2FACE9-BD0A-40B6-8C86-04CB77162F1C>.

Karlsson, T. (2011). *New Public Management – Vad är det och varför kritiseras det av akademiker?* [Blog] School of Public Administration, University of Gothenburg, [2011-02-04].

Kelly, G. A. (1955). *The Psychology of Personal Constructs. Volumes I and II*. New York: W. W. Norton.

Kemmis, S. & McTaggart, R. (2000). Participatory action research. Communicative Action and the Public Sphere. In: Denzin, N. K. & Lincoln, Y. S. (Eds.) *Handbook of Qualitative Research*. 2 ed. Thousand Oaks, CA: Sage, pp. 567–605.

Kemp, R., Schot, J. & Hoogma, R. (1998). Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management. *Technology Analysis & Strategic Management*, 10(2), pp. 175-198. Available at: <http://www.tandfonline.com/doi/abs/10.1080/09537329808524310>.

King, C. (2000). *Systemic Processes for Facilitating Social Learning: Challenging the Legacy*. Diss. Agraria 233, Uppsala: Swedish University of Agricultural Sciences.

Klerkx, L. & Leeuwis, C. (2009). Shaping Collective Functions in Privatized Agricultural Knowledge and Information Systems: The Positioning and Embedding of a Network Broker in the Dutch Dairy Sector. *The Journal of Agricultural Education and Extension*, 15(1), pp. 81-105.

Klerkx, L. & J. Jansen. (2010). Building Knowledge Systems for Sustainable Agriculture: Supporting Private Advisors to Adequately Address Sustainable Farm Management in Regular Service Contacts. *International Journal of Agricultural Sustainability*, 8(3), pp. 148-163. Available at: <http://www.ingentaconnect.com/content/tandf/ijas/2010/00000008/00000003/art00002>.

Kline, S.J. & Rosenberg, N. (1986). An Overview of Innovation. In: Landau, R. & Rosenberg, N. (Eds.) *The Positive Sum Strategy: Harnessing Technology for Economic Growth*. Washington: National Academic Press.

Knierim, A & Prager, K. (2015). *Agricultural Knowledge and Information Systems in Europe: Weak or strong, fragmented or integrated?* Brochure from PRO AKIS. Available at: <http://www.proakis.eu/sites/www.proakis.eu/files/AKIS_characterisation_briefing_final(1).pdf>.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.

Koltko-Rivera, M. (2004). The Psychology of Worldviews. *Review of General Psychology*, 8(1), pp. 3-58.

Kotter, J. & Heskett, J. (1992). *Corporate culture and performance*. New York: Free Press.

Kopelman, R. E., Brief, A. P. & Guzzo, R. A. (1990). The role of climate and culture in productivity In: Schneider, B. (Ed.) *Organizational culture and climate*. San Francisco, CA: Jossey-Bass.

Koutsouris, A. (2008). Innovating Towards Sustainable Agriculture: A Greek Case Study. *The Journal of Agricultural Education and Extension*, 14(3), pp. 203-215. Available at: <http://dx.doi.org/10.1080/13892240802207619>.

Kuhn, T. S. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Kvale, S. (1997). *Den kvalitativa forskningsintervjun*. Lund: Studentlitteratur.

Labarthe, P., Caggiano, M., Laurent, C., Faure, G. & Cerf, M. (2013). *Deliverable WP.2-1. Concepts and theories available to describe the functioning and dynamics of agricultural advisory services*. Available at: <http://www.proakis.eu/files/Deliverable_WP2%201_concepts%20and%20theories%20of%20AKIS(1).pdf>.

Labarthe, P. & Laurent, C. (2013). The importance of the Back-office for Farm Advisory Services. *Euro Choices*, 12(1), pp. 21-26. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/1746-692X.12015/abstract>.

Larsson, G. (1999). Från gårdsbokföring till statistiska lönsamhetsmått. Statistik baserad på bokförings- och taxeringsmaterial. In: Jorner, U. (Ed.) *Svensk jordbruksstatistik 200 år*. Stockholm: SCB.

Laurent, C., Cerf, M. & Labarthe, P. (2006). Agricultural Extension Services and Market Regulation: Learning from a Comparison of Six EU Countries. *The Journal of Agricultural Education and Extension*, 12(1), pp. 5-16.

Lean lantbruk website (2017) http://www.leanlantbruk.se [2017-07-05]

Leeuwis, C. (2000). Learning to be sustainable. Does the Dutch agrarian knowledge market fail? *The Journal of Agricultural Education and Extension*, 7(2), pp. 79-92.

Leeuwis, C. (2004). Communication for Rural Innovation. Rethinking Agricultural Extension, 3 ed. Oxford, UK: Blackwell Publishing Ltd.

Leeuwis, C. (2012). Development and Support Role of Extension Services for Sustainable Intensification in Agriculture: Moving from Extension to Innovation Intermediation. *Conference Proceedings from Teagasc Best Practice in Extension Services 'Supporting Farmer Innovation'*, Dublin, 1 November 2012, pp. 7-10.

Leeuwis, C. (2013). *Coupled Performance and Change in the Making*. [Inaugural lecture upon taking up the post of Professor of Knowledge, Technology and Innovation at Wageningen University on June 6, 2013]. Available at: <http://library.wur.nl/WebQuery/wurpubs/fulltext/264764>.

Leeuwis, C. & Pyburn, R. (Eds.) (2002). *Wheelbarrow full of frogs: Social learning in rural resource management*. Assen: Royal van Gorcum.

Lev, L. & Campbell, D. (1987). The temporal dimension in Farming Systems Research: The importance of maintaining flexibility under conditions of uncertainty. *J. Rural Studies*, 3, pp. 123–132.

Lindberg, H. (2008). Politikbyte och idéernas betydelse. Reformeringen av den svenska jordbrukspolitiken. *Historisk tidskrift*, 128:(1), pp. 29-53.

Lindblom, J. & Lundström, C. (2014). Lantbrukares beslutsfattande och lantbruksrådgivning: en förstudie (DEMIPROF) [Farmer's decision-making and agricultural extension – a pilot project (DEMIPROF)] *Rapport nr 15: Institutionen för mark och miljö*, Uppsala: Swedish University of Agricultural Sciences. Available at: <http://pub.epsilon.slu.se/11639/8/lindblom_j_lundstrom_c_141127.pdf>.

Lipsky, M. (1980). *Street-level bureaucracy: Dilemmas of the individual in public services*. New York: Russel Sage.

Livsmedelsverket (2017). *Livsmedelsförsörjning vid kris*.[website] https//:www.livsmedelsverket.se/om-oss/krisberedskap/livsmedelsforsorjning-vid-kris [2017-05-12].

Ljung, M. (2015). *Rådgivning ur ett historiskt perspektiv*. [Unpublished internal material].

Ljung, M. (2001). Collaborative learning for sustainable development of agri-food systems. Diss. Agraria 308, Acta Universitatis Agriculturare Sueciae. Uppsala: Swedish University of Agricultural Sciences.

Ljung, M. & Höckert, J. (2003). *The (mis-)use of written documentation in public funded extension–the gap between managerial and bureaucratic decision making*. Conference paper presented at the 16th European Seminar on Extension and Education (ESEE) in Eger, Hungary, September 2-8, 2003.

Lorenzoni, G. & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study. *Strategic Management Journal*, 20(4), pp. 317-338.

LRF (1998). *Verksamhetsberättelse 1998*. Stockholm: LRF.

LRF (1999). *Bondeföretagaren*. Study circle material. Tierps Tryckeri AB.
LRF (2005). *Tillsammans får vi landet att växa. Verksamhetsberättelse 2005*. Stockholm: LRF
LRF (2009). LRF satsar halv miljard på företagsutveckling. *Press Release, January 1, 2009*.
LRF (2011a). *Mer svensk mat, mer värd mat och fler matbönder: LRFs livsmedelsstrategi med perspektiv till år 2020*. Printfabriken. Available at: <http://www.publishingfarm.com/uploads/LRFs%20livsmedelsstrategi.pdf>.
LRF (2011b). *Slutrapport av projektet "Lönsamhet, tillväxt och stabilitet genom kvalificerad nötköttsrådgivning" kallat "Treklövern".* [Internt material]. Stockholm: LRF.
LRF (2015). *Lean lantbruk. Det finns aktiviteter som skapar värde*. LRF.
LRF Konsult (2011). *Preliminär 2011: Lantbrukets lönsamhet*. Strålfors.
LRF Konsult (2013). *Preliminär 2012: Lantbrukets lönsamhet*. Strålfors.
LRF Konsult (2017). *Aktivitetsplan mjölk*. [website] [2017-06-07]. http://www.lrfkonsult.se/varatjanster/affarsradgivning/aktivitetsplan-mjolk
Lundell, M. (2014). Enorm strukturomvandling – svenskt lantbruk läggs ner i det tysta. *Extrakt: En populärvetenskaplig tidning från forskningsrådet FORMAS*. Available at: <http://www.extrakt.se/jordbruk-och-djurhallning/en-jattelik-omvandling-i-det-tysta/> [2014-04-22].
Lundell, M. (2015). 9 av 10 jordbruk borta på 25 år. *SVT Nyheter: Vetenskap*. [2015-05-09]. http://www.svt.se/nyheter/vetenskap/9-av-10-jordbruk-borta-pa-25-ar.
Lönngren, M., Ljung, M. & Höckert, J. (2006). *Bönder, kemikalier och val. En studie av lantbrukarnas beslut kring bekämpningsmedel*. [Intern rapport till Säkert Växtskydd, SLU och Mikom]. Available at: <http://www.mikom.se/images/minabilder/pdf/Bonderkemikalierval.pdf>.
Mactavish, M. (2006). Collaboration. In: Campbell, N. (Ed.) *Correctional leadership competencies for the 21st century–manager and supervisor levels*. Washington DC: U.S Dept. of Justice, NIC.
Mannheim, K. (1993). Competition as cultural phenomenon. In: Wolff, K. (Ed.) *From Karl Mannheim*. London: Transaction Books.
Marquardt Arévalo, K., Ljung, M. & Sriskandarajah, N. (2010). Learning through feedback in the field. Reflective learning in a NGO in the Peruvian Amazone. *Action Research*, 8(1), pp. 29-51. Available at: <http://journals.sagepub.com/doi/abs/10.1177/1476750309351356>.
Maunder, H. (1973). *Agricultural Extension. A reference manual*. Rome: FAO.
May, R. (1974). *Kärlek och vilja*. Stockholm: Aldus/Bonniers.
McCracken, J. A., Pretty, J. N. & Conway, G. R. (1988). *An introduction to rapid rural appraisal for agricultural development*. London, UK: International institute for environment and development.
Mead, M. (Ed.) (1951). *Cultural patterns and cultural change*. Sage.
Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass
Midgley, G. (1992). The Sacred and Profane in Critical Systems Thinking. *Systems Practice*, 5(1), pp. 5-16.
Miljömål.se (2017). Environmental Objectives. Generational goal.[website] http://www.miljomal.se. [2017-07-05].

Miller, D. & Friesen, P. H. (1982). The longitudinal analysis of organization: A methodological perspective. *Management Science*, 28, pp. 1013-1034.

Mintzberg, H. & Waters, J. (1985). Of strategies, deliberate and emergent. *Strategic Management Journal*, 6(3), pp. 257-272.

Morell, M. (2001). *Jordbruket i industrisamhället, 1870-1945. Band 4 i Det svenska jordbrukets historia*. Natur och Kultur/LT:s förlag.

Motion 2000/01:MJ233. Livskraftigt lantbruk – landsbygdens motor. Motion till riksdagen, *Motion 2000/01:MJ233*.

Månsson, E. (1988). Jordbrukets rådgivning förr, nu och i framtiden. In *KSLAT Supplement 20, 1988. Jubileumssupplement.* Historiska artiklar sammanställda med anledning av 175-årsfirandet av akademiens installation. Stockholm: KSLA.

Naturvårdsverket (2011). Miljöeffekter av EU:s jordbrukspolitik. Syntes av 18 rapporter om påverkan av jordbrukspolitiken (CAP) i Sverige. *Rapport 6461*. Stockholm: Naturvårdsverket.

Nitsch, U. (1994a). Helhetlig rådgivning. *Tidskrift for Landøkonomi*, 1994(3), pp. 156-171.

Nitsch, U. (1994b). *From Diffusion of Innovations to Mutual Learning. The Changing Role of the Agricultural Advisory Services*. [Unpublished manuscript].

Nitsch, U. (1998). Konsten att informera om miljön. *Samhälls- och landskapsplanering nr 3*. Uppsala: Institutionen för landskapsplanering Ultuna, SLU.

Nordström Källström, H. (2002). Att vara lantbrukare eller inte: En studie av förutsättningar för livskraftigt lantbruk i tre nedläggningsdrabbade områden i Sverige. *Jordbruksverket rapport 2002:10*. Jönköping: Jordbruksverket.

Nordström Källström, H. (2008). *Mellan trivsel och ensamhet. Om sociala villkor i lantbruket*. Diss. No 2008:74, Acta Universitatis Agriculturae Suecia. Uppsala: Swedish University of Agricultural Sciences.

Norman, D.W. (2002). *The farming systems approach: A historical perspective*. Paper presented at 17th Symposium of the International Farming Systems Association, Lake Buena Vista, Florida, November 17th-20th, 2002. Available at: <https://www.researchgate.net/profile/David_Norman5/publication/251791709_The_farming_systems_approach_A_historical_perspective/links/00b7d529fb19097266000000.pdf>.

OECD (2015). Fostering green growth in agriculture: the role of training, advisory services and extension initiatives. In: *OECD Green Growth Studies*. Paris: OECD, Publishing. Available at: <http://www.keepeek.com/Digital-Asset-Management/oecd/ agriculture-and-food/fostering-green-growth-in-agriculture 9789264232198- en#page50>.

Olsson, J. (Ed.) (2005). *Hållbar utveckling underifrån. Lokala politiska processer och etiska vägval*. Nora: Nya doxa.

Olsson, P-O. (2017). Efterlyses: Rådgivning värd namnet. *Lantbrukets affärer*. Available at: <http://www.lantbruketsaffarer.se/efterlyses-radgivning-vard-namnet/>. [2017-09-15].

Open University (1997). *T860 Environmental decision making: a systems approach, Course text*. Milton Keynes: Open University.

Packham, R. (2011). The farming systems approach. In: Jennings. J., Packham, R. & Woodside, D. (Eds.) *Shaping change: Natural resource management, agriculture and the role of extension*. Wodonga: Australasia Pacific Extension Network (APEN).

Packham, R. & Sriskandarajah, N. (2005). Systemic Action Research for Postgraduate Education in Agriculture and Rural Development. *Systems Research and Behavioral Science*, 22, pp. 119-130. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/sres.679/abstract>.

Paulsen, M. (1985). *Den stressade potatisen*. Stockholm: Minimedia AB.

Pellico, L. H., Friedlaender, L. & Fennie, K. P. (2009). Looking is not Seeing: Using Art to Improve Observational Skills. *Journal of Nursing Education*, 48(11), pp. 648-653. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/19731892>.

Pettigrew, A. M. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organization Science*, 1(3), pp. 267-292.

Popper, M. & Lipshitz, R. (2000). Organizational Learning. Mechanisms, Culture and Feasibility. *Management Learning*, 31(2), pp. 181-196. Available at: <http://journals.sagepub.com/doi/abs/10.1177/1350507600312003>.

Porter, M.E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal, Winter Special Issue*, 12, pp. 75-94.

Power, M. (1999). *The Audit Society. Rituals of Verification*. Oxford: Oxford University Press.

Prager, K., Creaney, R. & Lorenzo-Arribas, A. (2017). Criteria for a system level evaluation of farm advisory services. *Land Use Policy*, 61, pp. 86-98. Available at: <http://dx.doi.org/10.1016/j.landusepol.2016.11.003>.

Prahalad, C. K. & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value. *Journal of Interactive Marketing*, 18(3), pp. 5-14. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/dir.v18:3/issuetoc>.

Prahalad, C. K. & Ramaswamy, V. (2000). Co-opting Customer Competence. *Harvard Business Review*, January-February 2000 issue. Available at: <https://hbr.org/2000/01/co-opting-customer-competence>.

Prop. 1983/84:76. *Om vissa livsmedelspolitiska frågor*. Available at: <https://data.riksdagen.se/fil/7EEED503-913D-41D3-9BFE-7BCC047ACDCE>.

Prop 1984/85:166*. Om livsmedelspolitiken*. Available at: <https://data.riksdagen.se/fil/9F5DCFD8-D5DA-4133-B626-AE99A47701C8>.

Prop 1989/90: 146. *Om livsmedelspolitiken*. Available at: <https://data.riksdagen.se/fil/BC789A18-9B94-40EB-9882-F21432701636>.

Prop. 1997/98:142. *Riktlinjer för Sveriges arbete med jordbruks- och livsmedelspolitiken inom Europeiska unionen*. Available at: <http://www.regeringen.se/contentassets/a71ea7a831ae4c4a8062c1c765d4013e/riktlinjer-for-sveriges-arbete-med-jordbruks--och-livsmedelspolitiken-inom-europeiska-unionen>.

Prop. 1997/98:145. *Svenska miljömål. Miljöpolitik för ett hållbart Sverige*. Available at: <http://www.regeringen.se/49bba3/contentassets/c887c3695078405aa08d48990deec32e/del-1>.

Prop. 2000/01:130. *Svenska miljömål – delmål och åtgärdsstrategier*. Available at: <http://www.regeringen.se/49bba2/contentassets/14511ab6345d41f987552af0ac10307c/svenska-miljomal---delmal-och-atgardsstrategier>.

Prop. 2004/05:150. *Svenska miljömål – ett gemensamt uppdrag*. Available at: <http://www.regeringen.se/49bba0/contentassets/785691c6e5f34a519ed502d5acbc9d12/propositionens-huvudsakliga-innehall-t.o.m.-kapitel-19>.

Prop. 2009/10:155. *Svenska miljömål – för ett effektivare miljöarbete*. Available at: <http://www.regeringen.se/contentassets/1449a8c7eba646699273112764057181/svenska-miljomal---for-ett-effektivare-miljoarbete-prop.200910155>.

Prop. 2016/17:104. *En livsmedelsstrategi för Sverige – fler jobb och hållbar tillväxt i hela landet*. Available at: <http://www.regeringen.se/490897/contentassets/256cc25ab5a84db7 a76730abb9cc3773/en-livsmedelsstrategi-for-sverige-fler-jobb-och-hallbar-tillvaxt-i-hela-landet-prop-2016-17-104.pdf

Putz, D., Schilling, J., Kluge, A. & Stangenberg, C. (2012). Measuring organisational learning from errors: Development and validation of an integrated model and questionnaire. *Management Learning*, 44(5), pp. 511–536. Available at: <http://journals.sagepub.com/doi/abs/10.1177/1350507612444391>.

Rabinow, P. (Ed.) (1991). *The Foucault Reader: An introduction to Foucault's thought*. London: Penguin.

Rabinowicz, E. (2016). EU:s jordbrukspolitik – hur ser reformtrycket ut inför 2020? *Rapport 2016:4*. Lund: AgriFood Economics Centre.

Redclift, M. (Ed.) (2000). *Sustainability. Life chances and livelihoods*. London: Routledge.

Regeringen (2017). *Regeringen stärker den regionala tillväxtpolitiken. Pressmeddelande från regeringen* [2017-06-16].

Regeringen (2016). *Innovation partnership programmes–mobilizing new ways to meet societal challenges*. Available at: <http://www.government.se/articles/2016/07/innovation-partnership-programmes--mobilising-new-ways-to-meet-societal-challenges/>.

Rivera, W. M. & Alex, G. (2005). *Extension Reform for Rural Development, Vol. 1-5: Case Studies of International Initiatives*. Washington, DC: World Bank and USAID.

Rivera W. M. & Zijp, W. (2002). *Contracting for agricultural extension. International case studies and emerging practices*. Washington D.C.: CABI Publishing.

Rivera W. M., Qamar M. K. & Mwandemere, H. K. (2005). *Enhancing coordination among akis/rd actors: An analytical and comparative review of country studies on agricultural knowledge and information systems for rural development (akis/rd)*. Rome: FAO.

Rogers, E. M. (1995). *Diffusion of Innovations*. 4 ed. New York: The Free Press.

Rogers, E. M. & Shoemaker, F. F. (1971). *Communication of Innovations: A Cross-Cultural Approach*. New York: Free Press.

Pretty, J. N. (1995). Participatory Learning for Sustainable Agriculture. *World Development*, 23(8), pp. 1247-1263. Available at: <http://doi.org/10.1016/0305-750X(95)00046-F>.

Runefelt, L. (2010). Svenska Mosskulturföreningen 1886-1939. In: Runefelt, L. (Ed.) *Svensk mosskultur. Odling, torvanvändning och landskapets förändring 1750-2000. SOLMED nr 41*. Stockholm: KSLA.

Rydén, R. (2003). Medvindens tid. Ekologiska Lantbrukarna och jordbrukspolitiken 1985-2000. *Ekologiskt lantbruk nr 36, januari 2003*. Uppsala: Centrum för uthålligt lantbruk, SLU.

Rydén, R. (2006). Bland bönder och godsägare. Att forska i hushållningssällskapens arkiv. *Landsarkivets i Uppsala småskriftserie nr 7*. Landsarkivet i Uppsala.

Röling, N. G. (1988). *Extension Science: Information Systems in Agricultural Development*. Cambridge: Cambridge University Press.

Röling, N. G. (1989). *The Agricultural Research-technology Transfer Interface: A Knowledge Systems Perspective*. The Hauge: International Service for National Agricultural Research (ISNAR).

Röling, N. G., & Engel, P. G. H. (1991). IT from a knowledge system perspective: Concepts and issues. In: Kuiper, D. & Röling, N. G. (Eds.) *The edited proceedings of the European Seminar on Knowledge Management and Information Technology,* Wageningen, The Netherlands, November 23-24, 1989, pp. 8-20. Available at: <http://library.wur.nl/WebQuery/wurpubs/fulltext/277576>.

Röling, N. G. & Jiggins, J. L. S. (1994). Policy paradigm for sustainable farming. *European Journal of Agricultural Education and Extension*, 1(1-3), pp. 23-43. Available at: <http://dx.doi.org/10.1080/13892249485300041>.

Röling, N. G. & Jiggins, J. (1998). The ecological knowledge system. In: Roling, N. G. & Wagemakers, A. (Eds.) *Facilitating Sustainable Agriculture. Participatory Learning and Adaptive Management in Times of Environmental Uncertainty*. Cambridge: Cambridge University Press, pp. 283-307.

Röling, N. G. & Wagemakers, M. A. E. (Eds.) (1998). *Facilitating Sustainable Agriculture. Participatory Learning and Adaptive Management in Times of Environmental Uncertainty*. Cambridge: Cambridge University Press.

Salner, M. (1999). Preparing for the learning organization. *Journal of Management Education*, 23(5), pp. 489-508. Available at: <http://journals.sagepub.com/doi/abs/10.1177/105256299902300504>.

SCB (2012). *Yearbook of Agricultural Statistics 2012−Including Food Statistics. Official Statistics of Sweden*. Available at: <http://www.jordbruksverket.se/omjordbruksverket/statistik/jordbruksstatistiskarsbok/jordbruksstatistiskarsbok2012.4.50fac94e137b680908480003982.html>.

Schein, E. H. (2010). *Organizational Culture and Leadership*, 4 ed. San Francisco, CA: Jossey-Bass.

Scheirenbeck, I. (2004). En välfärdsstat för alla? Frontlinjebyråkrater och invandrarklienter. In *SOU 2004:49. Engagemang, mångfald och integration: Om möjligheter och hinder för politisk jämlikhet*. Stockholm: Fritzes.

Schendel, D. (1996). Editor's introduction to the 1996 Summer Special Issue: Evolutionary perspectives on strategy. *Strategic Management Journal, Summer Special Issue*, 17, pp. 1-4.

Schutz, A. & Luckmann, T. (1974). *The Structures of the Life-world*. London: Heinemann Educational Books.

Searle, J. R. (1995). *Konstruktionen av den sociala verkligheten*. Göteborg: Daidalos.

Senge, P. M. (2006). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Currency Doubleday/Random House Inc.

SFS 1984:409. Lag om skatt på gödselmedel. *Svensk författningssamling 1984:409*.

SFS 1984:410. Lag om skatt på bekämpningsmedel. *Svensk författningssamling 1984:410*.

Shapiro, J., Rucker, L. & Beck, J. (2006). Training the clinical eye and mind: Using the arts to develop medical students' observational and pattern recognition skills. *Medical Education*, 40(3), pp. 263-268. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/med.2006.40.issue-3/issuetoc>.

Silverman, D. (1985). *Qualitative Methodology & Sociology*. Aldershot: Gower.

Skr. 2003/04:129. En svensk strategi för hållbar utveckling – ekonomisk, social och miljömässig. *Regeringens skrivelse 2003/04:129*. Stockholm: Regeringskansliet.

Sköldberg, K. (1991). *Reformer på vridscen. Organisationsförändringar i kommun och landsting*. Lund: Studentlitteratur.

Smith, A. (2006). Green Niches in Sustainable Development: The Case of Organic Food in the United Kingdom. *Environmental and Planning C: Government and Policy*, 24: 439–458. Available at: <https://doi.org/10.1068/c0514j>.

SOU 1946:42. Riktlinjer för den framtida jordbrukspolitiken. *Betänkande angivet av 1942 års jordbrukskommitté. Del I*. Stockholm: Iduns tryckeriaktiebolag.

SOU 1946:46. Riktlinjer för den framtida jordbrukspolitiken. *Betänkande angivet av 1942 års jordbrukskommitté. Del II*. Stockholm: Iduns tryckeriaktiebolag.

SOU 1966:30. Den framtida jordbrukspolitiken. *Betänkande angivet av 1960 år jordbruksutredning. A: Bakgrunden*. Lund: Berglingska boktryckeriet.

SOU 1966:31. Den framtida jordbrukspolitiken. *Betänkande angivet av 1960 år jordbruksutredning. B: Mål och medel*. Lund: Berglingska boktryckeriet.

SOU 1984:86. Jordbruks och livemedelspolitik. *Huvudbetänkande av 1983 års livsmedelskommitté*. Stockholm: Liber.

SOU 1999:92. Rådgivningen inom jordbruket och trädgårdsnäringen. *Betänkande av Rådgivningsutredningen*. Stockholm: Allmänna förlaget.

SOU 2003:123. Utvecklingskraft för hållbar välfärd. *Delbetänkande av Ansvarskommittén*. Stockholm: Edita Norstedts Tryckeri AB.

SOU 2014:38. Tillväxt och värdeskapande – Konkurrenskraft i svenskt jordbruk och trädgårdsnäring. *Delbetänkande av Konkurrenskraftsutredningen*. Stockholm: Elanders Sverige AB.

SOU 2015:15. Attraktiv, innovativ och hållbar – strategi för en konkurrenskraftig jordbruks- och trädgårdsnäring. *Slutbetänkande av Konkurrenskraftsutredningen*. Stockholm: Elanders Sverige AB.

SOU 2017:35. Samling för skolan. Nationell strategi för kunskap och likvärdighet. *Slutbetänkande av 2015 års skolkommission*. Stockholm: Elanders Sverige AB.

Sriskandarajah, N., Bawden, R. & Packham, R. (1989). Systems agriculture: A paradigm for sustainability. Paper presented at the *Ninth Annual Farming Systems Research/Extension Symposium*, October 9-11, 1989, University of Arkansas, Fayetteville, Arkansas, USA.

Stake, R. E. (1995). *The art of case study research*. Sage Publications.

Statistics Sweden (2016). *Statistics Sweden, Agricultural Statistics 2016*. Available at: <http://www2.jordbruksverket.se/download/18.7914403215ba2c445969e1dc/1493296473164/jo02br1601v2.pdf>.

Statistics Sweden, Swedish Board of Agriculture, the Swedish Environmental Protection Agency and the Federation of Swedish Farmers (2012). *Sustainability in Swedish Agriculture 2012*. Available at: <http://www.naturvardsverket.se/upload/02_tillstandet_i_miljon/Hallbarhet-i-svenskt-jordbruk.pdf>.

Sterling, S. (2010-11). Transformative Learning and Sustainability: Sketching the conceptual ground. *Learning and Teaching in Higher Education*, 5, pp. 17-33. Available at: <https://pdfs.semanticscholar.org/ba32/34d91fdb9359855919c096210849ea20370b.pdf>

Stjerndahl, E. (2012). Personal message [2012-11-27].

Southern, N. L. (2005). Creating cultures of collaboration that thrive on diversity: A Transformational perspective on building collaborative capital. In: Beyerlein, M. M., Beyerlein, S. T. & Kennedy, F. A. (Eds.) *Collaborative capital: Creating Intangible value.* (*Advances in Interdisciplinary Studies of Work Teams, Volume 11*), Emerald Group Publishing Limited. Pp. 33-72.

Sulaiman, V. R. & Hall, A. (2002). Beyond technology dissemination: Reinventing agricultural extension. *Outlook on Agriculture*, 31(4), pp. 225-33.

Swanson B. E. & Claar, J. B. (1984). The history and the development of agricultural extension. In Swanson, B. E. (Ed.) *Agricultural Extension. A Reference Manual*. Rome: FAO, pp. 1-19.

Swieringa, J. & Wierdsma, A. (1992). *Becoming a Learning Organization: Beyond the Learning Curve*. Wokingham: Addison Wesley.

Säljö, R. (2000). *Lärande i praktiken. Ett sociokulturellt perspektiv*. Stockholm: Prisma.

Tosey, P., Visser, M. & Saunders, M. (2011). The origins and conceptualizations of 'triple-loop' learning: A critical review. *Management Learning*, 43(3), pp. 291-307. Available at: <http://journals.sagepub.com/doi/abs/10.1177/1350507611426239>.

Troedsson, Å. (2010). Fem husdjursföreningar blir en. *Land lantbruk*, [2010-03-03].

Tyrstrup, M. (2014). I välfärdproduktionens gränsland. Organisatoriska mellanrum i vård, skola och omsorg. *Stiftelsen Leading Health Care, Rapportserie, 2014:5*. Available at: <http://entreprenorskapsforum.se/wp-content/uploads/2014/05/UV_Tyrstrup_webb.pdf>

Ulrich, W. (1983). *Critical Heuristics of Social Planning: A New Approach to Practical Philosophy*. Haupt: Berne.

Ulrich, W. (1988). Systems thinking, systems practice and practical philosophy: A program of research. *Systems Practice*, 1, pp. 137-163.

Ulrich, W. (2001). The Quest for Competence in Systemic Research and Practice. *Systems Research and Behavioral Science*, 18(1), pp. 3-28. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/sres.v18:1/issuetoc>.

Ulrich, W. (2005). *A brief introduction to critical systems heuristics (CSH)*. [PDF at the ECOSENSUS project website], Milton Keynes, UK: Open University. <http://projects.kmi.open.ac.uk/ecosensus/publications/ulrich_csh_intro.pdf> [2005-10-14].

Ulrich, W. & Reynolds, M. (2010). Critical systems heuristics. In: Reynolds, M. & Holwell, S. (Eds.) *Systems Approaches to Managing Change: A Practical Guide*. London: Springer.

Usher, R. & Bryant, I. (1989). *Adult Education as Theory, Practice and Research.* London: Routledge.

Van den Ban, A. W. (1981). International experience in communication and innovation. In: Crouch, B. R. & Chamala, S. (Eds.) *Extension education and rural development. Volume 1*. Chichester: John Wiley & Sons, pp. 293-307.

Van den Ban, A.W. & Hawkins, H. S. (1996). *Agricultural Extension*, 2 ed. Oxford: Blackwell Science.

Van der Ploeg, J. D. (1990). *Labor, Markets and Agricultural Production*. Boulder: Westview Press.

Vitz, P. C. (1996). Back to Human Dignity: From Modern to Postmodern Psychology. *The Intercollegiate Review*, 31, pp. 15-23.

Waldenström, C. (2001). *Constructing the World in Dialogue. A study of Advisory Situations in Swedish Agriculture*. Diss. No 105. Department of Education, Stockholm University. Edsbruk: Akademitryck AB.

Wals, A. E. J. (Ed.) (2007). *Social learning towards a sustainable world*. Wageningen Academic Publishers.

Watzlawick, P., Weakland, J. H. & Fisch, R. (1974). *Change: Principles of Problem Formation and Problem Resolution*. New York: Norton & Company.

WCED (1987). *Our Common Future*. Oxford and New York: Oxford University Press.

Wen, H. (2014). The nature, characteristics and ten strategies of learning organization. *International Journal of Educational Management*, 28(3), pp. 289-298. Available at: <http://www.emeraldinsight.com/doi/full/10.1108/IJEM-04-2013-0062>.

Wetherell, M., Taylor, S. & Yates, J. (2001). *Discourse theory and practice. A reader*. London: Sage.

Winter Jørgensen, M. & Phillips, L. (2000). *Diskursanalys som teori och metod*. Translated by Sven-Erik Torhell. Lund: Studentlitteratur.

Wynen, J., Verhoest, K. & Kleizen, B. (2017). More reforms, less innovation? The impact of structural reform histories on innovation-oriented cultures in public organizations. *Public Management Review*, 19(8), pp. 1142-1164. Available at: <http://www.tandfonline.com/doi/full/10.1080/14719037.2016.1266021>.

Yin, R. K. (2003). *Case Study Research. Design and Methods*. 3 ed. [Applied Social Research Methods Series, Volume 5]. Thousand Oaks, CA: Sage Publications.

Yngwe, K. (2014). *Agricultural Knowledge and Information Systems in Sweden*. *Report for the AKIS inventory (WP3) of the PRO AKIS project* [PDF]. Available at: <http://www.proakis.eu/publicationsandevents/pubs>.

Åström, E. (2017). Folk och Försvar aktualiserar behovet av en livsmedelsstrategi. *Nyheter från LRF*. [Publicerat 2017-01-05].

Ödman, P.-J. (2003). *Tolkning, förståelse, vetande. Hermeneutik i teori och praktik*. Norstedts.

Örtenblad, A. (2001). On differences between organizational learning and learning organization. *The Learning Organization*, 8(3), pp. 125-133. Available at: <http://www.emeraldinsight.com/doi/full/10.1108/09696470110391211>.

7 U.S.C. §304. *Investment of proceeds of sale of land or scrip. Title 7 of the United States Code, Agriculture*. Available at: <https://www.law.cornell.edu/uscode/text/7/304>.

Paper I-IV