How intentions guide the application of principle in co-creating sustainable agriculture

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Received 3 February, 2014; Accepted 4 June, 2014

Transitions towards sustainability require processes of decision-making that enhance sustainability in several dimensions at the same time. This article is about farmers’ decision-making in the context of their intentions and practice, as they seek simultaneously to support natural systems and the social quality of their farms. What does it take? An initial response is provided by an exploratory study based on seven semi-structured interviews and farm visits conducted with farmers in mid Sweden. Five respondents were striving to base their production on bio-resources and/or local consumption; one operated a large-scale production system, and one was a professional gardener. The interviews covered a) the farm and the farming system, b) farm history and development, c) planning, management and decision making, d) satisfaction and evaluation, e) attitudes and intentions, f) collaboration and other interests, and, g) policy and governance issues. Important personal intentions that shaped how guiding principles were adopted into practice were found to include emotional orientations such as love and care, connectivity, empathy, capability, honesty, engagement and appropriateness. This paper discusses whether these drivers could be considered to offer appropriate guidelines for deciding how and when to make decisions linked to sustainability goals.

Key words: Co-creation, sustainable agriculture, intentions, transitions, decision-making.

INTRODUCTION

The official policy approach to sustainable development in Sweden has been based on environmental quality objectives for sixteen different areas that define “…the direction of the changes in society that need to occur within one generation …” (Miljömålsportalen, 2011). The purpose is “to guide environmental action at every level of society”, socially, economically and ecologically. Interim targets lead the way; progress is monitored and evaluated. The goals are progressively clarified in the light of experience. The importance and urgency of driving transitions (Rockström et al., 2009) has been accepted in Sweden as a societal responsibility. However, many practical difficulties arise when transitions are required in multiple dimensions at the same time. Policy, business, technology, and information specialists offer useful guidance but, from many individuals’ point of view, the guidance does not connect in a compelling way with their day-to-day experience. With respect to farming, Gliessman (2007) and Francis et al. (2003) show how interdependence among multiple actors needs to be improved in the transition toward sustainable agriculture. In their description of agro-
ecology they reveal a number of systemic connectivities between the components of farming systems and their context. These have been discussed from various theoretical perspectives for example, also by Midgley (2010), Odum (1995), Holiday et al. (2002), Ison (2010), Eksvärd and Rydberg (2010), Bell and Morse (2008). The need for systemic thinking and learning for sustainable development transitions is particularly clear in a farm setting where everyday decisions are affected by the intentions of the operators, in interaction with many parts of the system on- and off-farm.

In agriculture, before fossil fuels were widely and abundantly in use, mankind’s possibilities for living and increasing well-being lay in designing farm systems rich in biodiversity and in managing the interactions among natural and farm functions that had different system qualities. Through adapting their systems to the potential of the place, and by adapting their actions to enhance benign natural and social processes, and mitigate the negative, they co-created a variety of place-based agrarian systems. It could be said that farmers provided co-creative services to the functioning of the system as a whole, just as the bee or the grazing cow. However, the increasing amounts of external inputs of energy and other resources applied in farming have un-balanced the relationships within farms as well as between a farm and its context.

In his book on how to act in a climate change world Ison (2010) explores the importance of the decision-making processes and choices of individuals in creating transitions. He emphasises that we are always “in situations, never outside them” (p.37) and that appreciation of the situation one is in must be anyone’s starting point when decisions have to be made on the way forward. In this paper we adopt Ison’s use of the term systemic decision-making to indicate decisions that are made out of conscious or unconscious awareness of the inter-connectivity of the situation in which they exist.

However, we also note Reason’s (2006) claim that when someone is working for the purpose of transformative change (in his case through action research), the quality of the actions taken lies in our “ability to see the choices we are making and understand their consequences”. Yet, as Midgley (2010) discusses, we do not and cannot have “God’s eye view” of total connectivity, and thus our understanding of any situation is inevitably limited. The desire to understand connectivity in conditions in which only partial understanding is possible takes us toward the development of an ability to see our choices, while knowing that that the consequences of acting on any one choice can never be fully foreseen.

Eksvärd and Rydberg (2010) suggest that “organisms are capable in their roles of being both producers and consumers to add to each others’ place” that is, the ability to co-create the world of their joint existence. Odum in 1995 captured a similar view in more formal terms: “During self-organization, system designs develop and prevail that maximize power intake, energy transformation and those uses that reinforce production and efficiency.”

In Sweden today, existing strategies for enabling transitions toward ‘sustainability’ have tended to prescribe what not to do, and to focus on how to limit the disrupting impacts of human deeds, not on what to do and how to co-create ones place and context. Building on studies as “Facilitating Systemic Research and Learning and the Transition to Agricultural Sustainability” (Eksvärd, 2010) where farmers interests are considered one of the drivers for the sustainability of the system, this paper turns the existing approaches around and asks if it is possible that farmers that have survived as farmers despite the harsh prevailing market conditions have a strategy of co-creating their place and context? If so, what do farmers do to co-create their own place in the prevailing system? What guidelines or basic assumptions do they use for systemic decision-making?

METHODOLOGY

Interviews

The methodology chosen for this study has been to follow the process of the Kolb learning cycle (Kolb, 1984), using farm visits to gain a rich picture of the farmers’ situations and context. Seven semi-structured qualitative interviews (Flick, 2002) where conducted with six farmers and a gardener, at five farms (Table 1) during the summer of 2010, in mid Sweden. Of the seven persons interviewed, six were clearly experienced in cultivation and/or husbandry. One was comparably new to farming. In one case the two active farmers on the farm took part in the interview at the same time. The interview session and the visit to the farms included Participatory Action Research (PAR) (Whyte, 1991; MacIntire, 2008) interview methods such as systemic diagramming through rich pictures (Checkland and Poulter, 2006), a farm tour, and participant observation to support a better understanding of the whole farm situation and the farmer’s context. The process of doing and reasoning while doing for example systemic diagramming usually tells more then the actual picture produced.

Three main criteria where used to select farmers to interview: a) they were identified locally as having a production system different from mainstream; b) were striving to base their production on bio-resources and/or local consumption of the produce; c) were recognised as deriving their main income from farming. These criteria were chosen as indirect indicators to find farmers with socially, environmentally and economically functioning production systems. Therefore, three of the farms were purposefully selected from the membership of the society “Kärrgårda” (www.karrgardar.se), that includes among its goals the development of sustainable cultivation and production systems. Another was selected from a book based on a low-input production system. For reasons of contrast an additional farmer was selected through peer referral, who operated a large-scalecrop production system relying heavily on bought inputs. Overall, care was taken to select a range of farms that generated income by operating contrasting farming systems.

The topics discussed in general covered planning, management and decision-making, and to get a rich systemic picture of aspects that may influence this and the sustainability situation of the farm, specifically included a) the farm and the farming system, b) farm history and development, c) the respondent’s degree of satisfaction with the current status of the farm, and evaluation of its prospects, d) the respondent’s attitudes and intentions, e) interest
**Table 1.** Description of the farms visited and the people interviewed.

| Respondents | Respondents profession | Enterprise description | Sources of income | Approx. work load | Respondents background |
|-------------|------------------------|------------------------|-------------------|------------------|-----------------------|
| 1           | Farmer / project manager | The farm is run as an educative enterprise to “show a meeting place of the history and the future” and offering visits, courses and lectures. Formerly abandoned. 16 ha with native breed animals, bakery, café and garden. | Sold products Subsidies Project money Other jobs | On total 3 full-time | Non-farming |
| 2           | Gardener, working for Farmer 1 | Produce products to the farm café. Aims at showing the joy and easiness of cultivation to visitors. | Salary (Included above) | | Educated gardener |
| 3           | Farmer | 3 ha of horticultural production. Production idea: produce healthy quality products to a local market in a sustainable way. | Sold products | 1 person + 0.5 extra during the summer. | Life-long experience Economist |
| 4           | Farmer/ "Organic inventor" | New enterprise, since 5 years, on formerly abandoned farm, 1 ha. Aim: Self sufficiency, finding new crops and production systems. | Other job Sold products | 60% of full time | Long experience of farming |
| 5           | Farmer | Crop production Owns approx. 200 ha fields and 155 ha forest. | Sold products Farm services Subsidies Other jobs | 2/3 of fulltime on farm | Life long experience university farming education |
| 6 and 7     | 2 farmers | Old-fashioned mountain farming with preservation interest. Production: meat and diary products from 6 cows, potatoes for own use. Covers 2 600 ha of mainly forest and swamp. | Sold products Subsidies Hunting on lease Cultural subsidies through 1 paid worker. | 3 persons full-time | Life-long experience |

in collaboration with others, and other interests, and, f) policy and governance affecting farm development. The depth of discussion varied depending on the interest of the farmer. The shortest farm visit lasted 1 h and 25 min and the longest a full day, including an overnight stay.

The interviews were recorded, transcribed and analysed manually in order first, to identify situations and contexts and the development of the farm systems, and respondents’ explanations of why these systems are the way they are; secondly, to identify and examine the intentions and decision-making processes the respondents’ described for managing their farms in these ways.

**FINDINGS**

When asked about why their farm system was as it was, all farmers mentioned the nature of the place, their own interest and choices, and, the history of the farm (often referring to the people who had operated the farm before them). The gardener explained in detail how it is the place that tells how the garden should be. In one case, collaboration with a neighbour farmer was mentioned as an important additional factor, while another mentioned her concern to preserve local culture and the knowledge interconnected with the place. The geographical location, and proximity to cities, was also mentioned. They all described clearly that their farm was a co-creation between them, nature, former inhabitants, neighbours and the local context. At this stage of the interviews, external issues of policy, subsidies and governance were not mentioned by any of them as influencing their farming system choices.

From the rich pictures of the farmer’s situation produced by the interviews, findings focusing on inclusiveness, connectivity and examples of systemic decision-making are presented below. Presenting them case-by-case, in turn gives a rich picture of how these aspects can be found in different parts of the farm systems.

**Respondent 6 and 7 at their mountain farm**

The whole farm system is organised around dairy production, based on the hay produced on the farm itself. Haymaking is the essential historical practice for self-
sufficiency in this mountainous area. The farm today has six mountain cows. The farm also has shielings (upland meadows), which give enough hay for approximately one cow. Fences have been constructed to keep the cows out of the hay fields and allow them to graze freely in the surrounding forest. The talk with the farmers clearly shows how connected their lives are with the cows’ needs and behaviour.

R7: We go to the shielings in the fall as we have to be at home to cut [the hay in the summer]. (…) This year we were not ready but we couldn't wait any longer as the cows were on their way to the shielings. They know when it is time to leave the farmstead at end of August and then they go here to the shielings.

The farmers clearly express that the animals are the main focus of the farm, and explain that without them, they themselves would not survive. They point at the importance of them, the humans, to take good care of the animals. When asked what the cows need they respond.

R6: The first thing, if I may express myself, is love and care. That is the first. To get a good balance with the cow. So that she feels that she is taken care of…

The cows need to be handled kindly, firmly and in a way that the cow feels important and taken care of. These two farmers’ primary intention is to handle their animals out of love and care.

The farmers described how time bound they are both in their daily and yearly routines. They have heavy planning to do as the only time to transport things to the farm is during the late winter when the snow for skiing and snowmobiles is good. When asked about how decisions are made they replied in terms of relying on tradition for guiding the main production planning. It is clear how these traditions are well interconnected with the prerequisites of the place.

The way the two farmers describe their lives and farm production correlates well with how they approached drawing a picture of their farm system (Figure 1). Quite hesitantly, the person holding the pen constructed a timeline, beginning with when they woke up in the morning, directly including themselves in the production system. They then decided to draw a cow in the middle of the picture because their six cows were the centre of their practice. These respondents did not abstract themselves from the system. They tried to represent it from inside their own lived and felt experience.

At this farm decisions concerning production and livelihood are made purposefully to sustain a very locally adapted and self-sufficient system based on love and care and that farm practices connect with the natural conditions.

Respondent 5 with large scale crop production

From first impression the farm seems thoroughly organised to maximise the efficiency of production. This is reflected in the enterprise structure and how the work is done. However, the importance of the enjoyment of the farmer, and care taking of the farm, were also emphasized by this respondent. His efforts are focussed on achieving a ‘good result’ in financial and economic
terms. For instance, when he was asked how much the operating area was (in the drawn picture of the farm (Figure 2)), the farmer answered in terms of monetary turnover. When asked again about size, it turned out that his farming system comprises a number of interdependent arrangements with others: the number of hectares he owns (194 ha) is not the same as the area he sprays (1000 ha), while the area ha he fertilises and sows is 350 ha. The area he harvests (approx. 210 ha) produces mainly wheat (60%), oilseed crops (winter rape) (20%) and linseed (20%). In other words, he enters into various arrangements with other farmers to optimise his workload, income, and harvest returns.

The farm’s production has become co-dependent on collaboration especially with a neighbour farmer. The respondent explains this relationship works perfectly and has it’s base in co-ownership of almost all the machines that cultivate the ground. He explains that he never waits impatiently for access to the combiner (risking that the quality of the wheat goes down). In his view, the advantages of having good machinery efficient on his large fields through sharing are so much greater than trying to operate the system alone.

R5: (…), and if something breaks down we are two who can share the toil with it and wrench it, and well, have some fun at the fact that the machine broke in the middle of the harvest.

He explains that it works as they are very straight with each other and do not hide feelings or thoughts.

The importance of enjoying the farm-related work stands out in this interview. For this farmer, enjoyment is part and parcel of achieving a good monetary result. He explains that if the economic calculations of any type of production do not meet his standards it is not interesting:

R5: It should be fun to work too, of course, it is all connected. You have to like to work, there is no one else driving you, no one to tell you what to do. That is the basic course [if you want to be a farmer].

The above fits very well with the reasoning while drawing the picture (Figure 2) of his farm system where he presented his farm in terms of a commercial enterprise. The picture does not include him; rather he explains the situation as an outside manager. However, when the interview turns to decision making, the monetary profit motive is not as apparent any longer in the conversation. What this farmer considers important are two things: that the decision is “right” and will do good in terms of the functioning of the system, and that the basis for collective decision making with partners is clear, honest and easy to understand.

R5: we have a need and it costs more then we actually will make from it, but this need, should (…) be satisfied, then we need to do this. (…) it is right to do something just because it is connected [to other parts of the system], it will be good in the long run, so forget the calculations.

And he continues:

R5: A decision should be straight, simple, clear and serious, so that ‘no-one will think there is anything
strange about the decision (…) all wildcards should be on the table (…) That’s what’s driving me.

At the end of the interview, the interviewer impressed by the level of organisation at the farm, says so to the farmer but he insists that this is not the case. He claims it has turned out to be incredibly structured because he wants things to be simple, practical and taken seriously, claiming that that is what he goes by.

At the farm productivity, profit, efficiency are important but underlying these intentions appear to be more personal principles of practicality, simplicity, being serious, collaboration, enjoyment, honesty and doing what is considered transparent and right.

Respondent 4: The experimenter.

Respondent 4 calls himself an "organic/ecological experimenter ". His aim is to create a system of self-sustainability on his 1 ha of land. During the farm visit he shows about ninety different edible plants, both annuals and perennials. He explains the organisation and system plan while drawing Figure 3.

He works 2 days a week off-farm but says he needs little money. His dream is to be able to live fully from the farm produce, from a system that is organised to not take much labour when he retires, being independent on money. At the time of the visit he claims that 90% of what he and his wife eats are from the own production. He keeps looking for and trying “new” things and practices, drawn from old ideas, un-conventional sources or practices not tried before in this location.

The production cycle draws on a mix of organic and biodynamic production principles. When asked how he decides when to do what, he simply answers that it depends on what feels best at the moment. The farm is for own use and his pleasure and interest in experimentation. He is also very keen to share his knowledge and experience through organisations, networks and the books on garden production he writes.

He had intended to become a veterinarian but quit half way through his studies as he did not like working for the large-scale farms that are the main clients of a farm-based veterinary practice. He explains his journey from intended veterinarian to experimenting self-sufficiency crop grower by his urge to live as close to nature as possible and to try new things:

R4: and then I got (...) a book by John Seymour on (...) self-sustainability and then I thought Wow! Blimey! This is what I am going to do. You have to try new things because if everybody just continues in the old patterns there will never be any change to anything.

Respondent 4 is eager to find new ways forward but also is interested in conserving old production methods, varieties and species that flourish locally without external inputs. He keeps returning in our conversation to the need for local and small solutions to global problems and the need to try new things in order to create transformative changes.
Respondent 3 producing organic vegetables

Respondent 3 is a well-established organic vegetable and honey producer, who for decades has sold his products through alternative markets like consumer groups and farmers’ markets, and direct to restaurants. He became widely known through the national press when he started free range, organic poultry production in the 1980s. This part of the enterprise he has now ended. Though the acreage is small, 3 ha, he lives from his produce, seems to be doing well and sets aside time to meet friends and do sports once a week.

He studied economics when deciding to take a break and try farming for one year and took over the farm from his grandparents. This was 1970. Being a vegetarian he wanted to grow the food he himself ate and started a production very different from his father’s dairy production and the other conventional farmers in the area:

R3: I had to start from zero, and slowly get together a few pieces of machinery and some equipment. But, from 1980 I have supported myself from this.

The start was not always easy. He describes, for instance, the critical reactions of relatives and neighbours to his uncommon ideas about what he wanted to do, but he also speaks about the stimulation he got through learning together with other farmers (who lived a bit further away) about how to pursue his interests:

R3: (...) it became an excitement to try to show that it worked. Every, every neighbour said no, that won’t work.

This farmer has stayed small scale and diversified. He tells of his friends in another area who have many beehives and relatively large acreages of potatoes (15 ha). For them, any set back has a serious impact. He declares that, in contrast, he has been able to absorb a real set back in some area every year and still makes a living. He enjoys the farming, the meetings with his customers, and running the farm as a business:

R3: So I feel satisfied when I see that I make it (...) and then when you are in the Market Square and meet people that show to much gratitude…

His farming system is organic; he says he would not have gone for conventional production for “every reason” - environmental, safety in work, customers’ needs. To him organic production is the only choice. He explains how he has developed his organic system to be more efficient by adapting the production to his small scale system and direct contacts with his customers. For example he sows a little bit of carrots every week to have nice produce over the whole season. This is possible when using a one row manually driven seed drill.

The farmer is the only one left in the area solely living from the farm. Yet, his acreage is too small to qualify for any subsidies. He has acted and developed his farm according to what he found to be healthy, fun, environmentally sustainable, safe, and to meet the needs of the customers. He has stuck to the production principles and practices that from the beginning he felt was right for him, no matter what parents or neighbours said, while collaborating with and learning from others. He has learnt to be efficient at a scale appropriate to his production intentions.

Respondent 1 and 2 at the model farm

This farm was brought back into production by a wife and husband team after having been abandoned for many years. It has been turned into a model farm that offers programmes for visitors and schoolchildren. In addition to their interest in growing native breeds and crops, they have started a small vegetable garden, an artisanal bakery, and a café, as well as holding courses and meetings at the farm. All the enterprise areas are integrated with each other. The farmer is an experienced project manager who is looking for transitions in society. She is frustrated by the possibilities and problems caused by the industrialism of the 20th century and describe her engagement and intentions with becoming a farmer in these terms:

R1: (...) I studied agricultural history (...) I thought I was going to read about farm history but then I realised it was all of Sweden’s history – it was politics! (...) pastures are disappearing, meadows are disappearing, you overuse the soil to the point of non functioning and have no respect for it (...) this place is like, a meeting between history and the future. You get yourself encapsulated in a force wanting to change something, wanting to show something or wanting … … to make something clear.

She said she focuses on the possibilities, at times not quite realistically, rather than on problems, and notes that exploring the possibilities can incur heavy costs and an overload of working hours. But she enjoys the ability to not be limited by old thoughts and patterns. She explains her difficulties with authorities not accepting the farm budget as they cannot comprehend that she actually is selling sheep skins for 3-5000 SEK a piece by making them exclusive for a special market based on their traditional breed.

The intention to create and demonstrate the potential of a farm based on the natural resources of the place has had a major impact on the way that the enterprise has been developed. The place was also chosen because of its resources: water, a slope towards the south, a good garden spot etc. It has also had impact on their choice of breed, saving the original characteristics where you can use the meat, skins and wool from the sheep, not just one product. She does not set specific, quantified goals.
for the farm but rather looks for a quality outcome' of togetherness on a farm and works to reduce the gap between the city and the rural area, the large scale and small scale farming, humans and animals.

The conversation with respondent 1 covers about every fault she sees in society, from the negative health consequences of spending too many hours in front of a screen, to the spreading of sewage sludge manure on fields, on to industrialisation and its discontents. She presents a very wide picture of today's problems, clearly giving voice to the struggle. When describing the farm through drawing a picture (Figure 4) she describes a dynamic system dependent on its context, and in interaction with a variety of sub-systems.

She keeps coming back to the need to get things in balance, to close the gaps between things, relationship and functions that are set against each other. She wants to create a model farm where 'it all works out', according to the needs of society, the people working there, and the conditions of the place.

When asking respondent 2, a gardener employed by the farmer, about the development of the vegetable garden she explains:

R2: I did not have any idea at the start but then it [the nature] told me, this should be here, this should be here and that should be there, that's what it is to be working with the soil (...), you should do what the stomach [gut instinct] tells you. That’s the secret. (...) So I am into this way of thinking, to work from inside yourself (...).

The gardener (R2) wants to show people that it is fun to grow vegetables, and keeps referring to the joy of co-creating relationships and functions together with nature, being connected to a whole system constituted in nature and in experiencing life as fun.

ANALYSIS AND DISCUSSION

Guiding principles

All the farmers can be said to be satisfied with what they were doing as all did what they said they wanted to be doing and they all, in different ways, make their living from their farms. The gardener (R2) was satisfied when things felt good, R5 was satisfied when he produced a good economic result and an attractive farm system, while at R6 and R7, the respondents were very pleased with how things had worked out at their farm, and they were very thankful.

Within, the connected areas covered by the interviews all the respondents gave voice to principles that guided their decisions and actions and the intentions that had shaped the development of their farm systems. These are presented in Table 2.

The core guiding principles that the respondents referred to most often were "closing the gap", "doing together with nature", "appropriateness", "finding new systemic ways to farm", "doing what is right" and "acting with love and care". Doing what is right was explained to be that which is practical, simple, serious, honest and that would contribute to prosperous enterprises. Even though all where eager to learn, they all stuck to what they knew was right for them and their place whether other found it good or not.

These principles and intentions are examples of what guide them in what to do and are the base for their continued farming and prosperity. There are many principles given and presented, but they are all
Table 2. Guiding principles [N=7].

| Principle                        | Respondents | Comment                                                                                                                                                                                                 |
|----------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sense of connectivity            | All         | All farmers were aware of connectivity among the parts of their farms, but talked about this in various ways i.e. in terms of inter-actions with society, with customers, among crops, with partners, and in terms of the whole farm system. 2, 6, 7 are also express themselves as part of the system. |
| Love and care                    | 2, 6, 7     | Love and care as the basis for relating to the natural functioning of the place and with other species (the cows).                                                                                       |
| Efficiency and new ways          | 1, 3, 4, 5  | These farmers talked about finding new ways to do things more easily and to improve production in terms of their guiding principles.                                                                    |
| Functionality and Appropriateness| All         | All valued technologies with good functionality and that were appropriate for their system and the context.                                                                                              |
| Good feeling                     | 2, 4, 5, 6, 7 | This was mentioned in various ways, e.g. in terms of getting knowledge from feelings, responding to something that feels good; and knowing what is "right" through observational and experiential attention to systemic feedbacks. |
| Engagement                       | All         | All were very engaged in what they were doing, and believed in their ideas.                                                                                                                           |
| Collaboration                    | 1, 2, 5, 6, 7 | At the farms of R1 and 2 and R6 and 7 collaboration was mentioned as important; for R5 it was the basis for the farming system.                                                                         |
| Trust                            | 2, 5, 6     | Trust was mentioned in a variety of ways, either in relation to nature or to partners.                                                                                                                 |
| Enjoyment                        | 2, 3, 5, 6, 7 | Work and running the farm as fun, or at least enjoyable.                                                                                                                                               |
| Simplicity                       | 4, 5        | Both these farmers looked for the simple way of doing things.                                                                                                                                          |
| Honesty and clarity              | 2, 5        | R2 was honest and open about her not very common worldview, R5 was clear that honesty and clarity were drivers of his business and relationship to others.                                                   |
| Action                           | 2, 5        | All had adopted the practice of purposeful action as a means of learning.                                                                                                                           |
| Sharing                          | All         | All where eager to share their knowledge.                                                                                                                                                              |
| Capability                       | All         | All trusted their own capability.                                                                                                                                                                       |
| Results - feedback               | All         | All enjoyed the results they had achieved and receiving feedback, whether it was through a relationship with customers, or in the form of a surviving walnut tree, a trusting cow, a good income or just the feeling of being happy. |
| Health effects of the system     | 1, 3, 4     | These respondents emphasised the importance of striving to co-create a system that is healthy and that produces healthy products for customers, workers and the farmer.                                |
| Conserving old knowledge and practices | 1, 4, 6, 7 | Conserving old varieties, animals, knowledge; not dependent on modern inputs.                                                                                                                         |
| Creating change                  | 1, 4        | Both actively desired to contribute to societal transitions and talked about the importance of “finding balance”. In different ways both wanted to “close the gaps” caused by the tensions they saw as created by present societal arrangements and farm practices. |

characterised of wanting to do well for the system.

**Appropriate science, metrics and practices**

According to Goobie (2011), today’s modern science and technology try to comprehend and solve environmental problems with methods based on a number of ‘isms’: scientism (modern science as the authoritative source of knowledge), technological utopianism (technology as the solution to societal problems), mechanism (nature as made up of distinct parts and operating like a machine), empiricism (true knowledge based on observation and experimentation), dualism (people separated from nature), anthropocentrism (people as the most important and advanced living creatures) and an instrumental rationality (nature’s purpose is to be utilised). It is noteworthy that none of those interviewed saw science as the most authoritative source of knowledge for the running of their farms, none thought knowledge could be gained only from observation or experimentation nor that people are separated from nature. Five of the respondents did clearly not see nature as something to be utilised exclusively for mankind’s satisfaction. They did not see nature to be working like a machine. None of the respondents claimed to set specific and quantified goals that they wanted to meet. Rather, their planning and management decisions were based on their intention to develop a working system constituted by the natural and social conditions and potential of the farm. Even
respondents 6 and 7, who were keen to maintain the proven solutions for working sustainably at that place, had no fixed ideas on how things should be or should become. No one said that they would be satisfied or happy if they reached this or that production level. All were happy when they received feedback on the way that their systems were working whether it was from a satisfied customer, or in terms of a surviving walnut tree, a trustful cow or a good sales result. This puts in question the appropriateness of the science and metrics normally used to help farmers move toward sustainable farming systems.

The findings suggest a need for discovering (or perhaps formalising) a new kind of appropriateness to both scale and intention. There are indications of what this might be in the way that the farmers in four farms talked about technology as ‘appropriate’ and a key factor in satisfying their own intentions for their farms. Respondents 6 and 7 said that they did not know how they would be able to replace the hand driven milk separator if it broke down; R4 respondent said he could not find equipment that matched the size of his fields; the respondent at R3 was pleased to have found the right equipment for his needs and R5 described co-owning equipment, such as a 50 metric tonnes/hour combiner, with a neighbour partner as one of the successes and joys of his farming practice.

Intentionality

All the farmers seem, to a varying degree, to have adopted the sentiments of Hall (1995), who says: “How can we see fit the activities of humans into the grand energy schemes of the world around us, which sooner or later will determine what we do anyway?” (p. 205). He notes that while people are free to choose what they do and what they value they are not free to choose the consequences of their actions. He suggests that people’s actions will bring prosperity if only they are consistent with the larger patterns of nature. This fits nicely with Hamilton (2002) discussion on dualism being unsustainable and the claim by Rand et al. (2012) that to be maximal rational at decision making may have unintended side effects of making decisions more selfish “whereas, interventions targeting prosocial intuitions may be more successful”. They conclude: “although the cold logic of self-interest is seductive, our first impulse is to cooperate.”

Overall, the findings of this exploratory study suggest an underlying intentionality that is inclusive and non-separating, valuing connectivity and systemicity to shape farming in ways that mimic natural patterns. The large-scale farm – that had been brought into the study to serve as a contrast - produced a surprise in respect of intentionality. This farmer’s guiding principles seem aligned to the same underlying intentionality although in this case he was more focused on connectivity in terms of good collaboration with people than on connectivity with nature. Could the core intentions of the respondents be the drivers for systemic decision-making on a societal level? Are they the ‘missing guidelines’ needed? This article suggests that this might be the case and inspires further research.

How might Swedish agriculture look if the stakeholders to a larger extent made their choices based on such intentions? One implication might be that Swedish society (and the EU’s agricultural policy) would need to develop a greater tolerance of diversity. Although this study suggests that there might be an identifiable cluster of underlying intentions that are associated with a drive toward sustainability, the outcomes in each case are very different. Application of the metrics used today in Sweden to judge the sustainability of farms and farm-based enterprises would not catch the dynamic differences in system outcomes that result as intentions interact with place. Goodie (2011) discusses the need to move on from just measuring ecological footprints to really thinking about our “thoughtprints” which aligns well with this study.

Conclusions

This article discusses the need to look at how farmers’ intentions co-create the farmed landscape and farm-based enterprises. It has looked into the questions if it is possible that farmers have a strategy of co-creating their place and context as a means of being sustainable. Instead of looking into what not to do to contribute to sustainable development, the question is ‘what to do’ and if there are guidelines or basic assumptions to support such systemic decision-making.

This exploratory study strongly suggests that there is a lot to learn about transitions for sustainability at societal level from what already works in a sustainable manner in particular places. These farmers are prevailing in situations where others have had to close down. From the guiding principles found to be part of the respondents decision-making can be said that to be and act as a co-creative part of a sustainable system requires having the intention of ‘doing well for the system’. All the guiding principles presented are prosocial and based on connectivity. Could it be that to have a pre-understanding of the type of effects coming from decision making for sustainability we need to look at the intention behind the decision? That is suggested by the findings of this study. According to this, intentions of co-creating prosocial solutions well interconnected with the place and contexts should guide transformations for sustainability.

The study also makes it clear that the same cluster of intentions and principles give rise to different decisions, actions and outcomes in different context. The exact outcome to emerge is not clear beforehand. This means that evaluation of sustainability through the lens of
intentionality would require different metrics then what is used today.

Conflict of Interests
The authors have not declared any conflict of interests.

ACKNOWLEDGEMENTS
My gratitude goes to the farmers who spent their time with me during the summer of 2010, to the Carl-Fredrik von Horn foundation managed by The Royal Swedish Academy of Agriculture and Forestry for funding support, to Janice Jiggins for her valuable comments and to all who have inspired this study.

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