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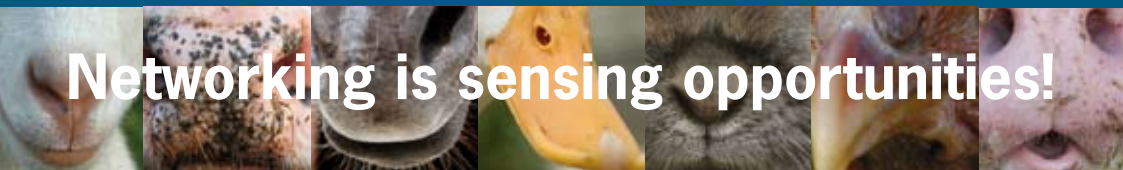
Networks with free actors

Encouraging sustainable innovations in animal husbandry by using the FAN approach (Free Actors in Networks)



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This book is the English translation of two reports, published in 2007 by the Wageningen UR policy-supporting research programme called 'Netwerken in de Veehouderij' [*Networks in Animal Husbandry*]. The programme financed by the Dutch Ministry of Agriculture, Nature and Food Quality has supported 120 networks of livestock farmers and others aimed at achieving sustainable animal husbandry. The first report ´Netwerken met vrije actoren' [*Networks with free actors*] described the development process of the research programme, the methods used to support these networks, the intervention strategies applied by network facilitators and their effects. In the second report 'Netwerkgereedschap voor vrije actoren' [Networking tools for free actors], the models and methods were elaborated in further detail. Both reports were illustrated with numerous examples from the network experiences. For this book the two reports have been synchronised and translated as part one and two. Where relevant some additions have been made to include experiences from the last part of the programme that was still ongoing while writing these texts.

Networks with free actors

Encouraging sustainable innovations in animal husbandry by using the FAN approach (*Free Actors in Networks*)

H.E. Wielinga, B.W. Zaalmink, et al


Civil society
Municipality
Government
Business world
Network

Summary

After three-and-a-half years of experience with 120 networks of livestock farmers a new approach has arisen which offers good perspectives for encouraging sustainable innovations: the FAN approach (Free Actors in Networks), with actors focussing on energy and connections to steer things along. Players with the capacity to fulfil this connecting role have become scarce in the knowledge market. The 'Networks in Animal Husbandry' (NiAH) programme has interpreted this role in a new way, making use of knowledge workers.

Part one of this publication describes the approach and how it has come into being, its theoretical substantiation and the conclusions which can be drawn on the basis of this experience. There will always be entrepreneurs with good initiatives. However, the path to sustainable innovations is full of obstacles, causing most initiatives to die an early death. The chance of an initiative actually setting things in motion is greater if it is taken up by a network of entrepreneurs. However, such a network needs a 'free actor'. A free actor has the capacity, the insight and the position to do what is necessary to help the network overcome the major obstacles. Some of these are knowledge obstacles. For example, it is not easy for entrepreneurs to drum up the right expertise, especially when new search directions are concerned. There are process obstacles as well. The faith that is needed as a stimulus for making an active contribution to the network, even when things get harder, does not always automatically come into being. And there are obstacles in the environment such as frustrating regulations, or resistance among other parties which also have to start moving to make new practices possible. Some 50 networks of livestock farmers a year have been supported by researchers and consultants acting as network facilitators in the context of the 'Networks in Animal Husbandry' programme during the period 2004 – 2007.The initiatives and the enthusiasm of the entrepreneurs form the starting point for the network projects. The facilitators make connections on the basis of their expertise in the subject matter. The programme provides them with a 'backpack' with methods for working with networks looking for knowledge; methods to help them identify the connections to work on during the process and the interventions which will help them turn efforts into results. In addition, the facilitators are embedded in a reflective structure, creating a 'Learning Community' of network facilitators.

The programme temporarily provides free actors in the form of knowledge workers who know how to find their way around the knowledge infrastructure, can intervene in the process to keep the internal interaction in tip top shape and help to bring about the necessary interaction with the outside world. The programme did not start from a theory or a method but from a search direction. The many network projects in the programme have resulted in a host of experiences of working with networks aimed at achieving sustainable innovations. As a

result, thoughts on underlying theories and useful methods have converged so far that we can now say that we have an approach: networks with free actors. The fist part of this book describes how this approach has grown and what it has produced. We will place the approach in the wider context of the innovative capacity of the agricultural knowledge system in the Netherlands. Part one is rounded off by conclusions at four levels:

- for **researchers:** the contribution to the scientific discourse.
- for **entrepreneurs**: added value can be achieved from handling initiatives through networks and finding suitable support for this.
- for **innovation centres, innovation platforms and other knowledge** intermediaries: the free actor method offers a set of instruments to accelerate innovation processes at an entrepreneur level. The role of temporary free actor is not exclusively reserved to researchers or business consultants but may also be fulfilled by teachers.
- for **governments:** the free actor gives a new interpretation to the knowledge worker's connecting role. The approach of networks with free actors can fill the gap which appeared when the Research-Extension-Education triptych ceased to exist.

The second part of this book is practice oriented. It describes the major tools, four analysis models and two self-evaluation methods, for free actors and illustrates them with examples taken from the network experiences.
The four models are mutually complementary and each touches on an important area of dynamics within a network. They help the situation to be recognised ,so that the network is able to take the appropriate next step if a similar situation occurs. The **Network Analysis** distinguishes between different positions of involvement: partners of the initiative, users, suppliers and links. The **Spiral of Innovations** distinguishes the different phases of an innovation process from an initial idea to embedding the changed practices into the institutional environment. The **Triangle of Change** distinguishes between change agents, gatekeepers and survivors and offers facilitators footholds for steering on the energy in a network. The **Circle of Coherence** distinguishes between interaction patterns in a network, in which different mechanisms for active contributions and attuning between actors come to the fore: exchange, challenge, structure or dialogue. It enables more detailed steering on the basis of connections and energy in the network. The two self-evaluation methods are inter-complementary. The **Timeline Method** is a tool used in progress meetings with the network participants. The **Learning History** adds an analysis to the result.

Inhoudsopgave

General introduction and guide to this book

The role of the Dutch government is changing. It is no longer that of dictating everything through regulations and grants, but encouraging and facilitating entrepreneurs and society to make their own choices in order to achieve a sustainable, future-oriented and socially acceptable animal husbandry. The Networks in Animal Husbandry (NiAH) research programme (2005 – 2007), funded by the Dutch Ministry of Agriculture, Nature and Food Quality (ANFQ), is an experiment aimed at giving substance to these new relationships and at changing the principle of 'taking care of' into 'taking care that'. This programme facilitates networks of agricultural entrepreneurs and other actors as a means of achieving sustainable animal husbandry. Its sub-objectives are to improve the flow of knowledge, gather experience of a network approach, increase the ability of both the sector and the production chain to cope with things themselves and finally, to work on the basis of actual demand.
This book is the result of three-and-a-half years of networking. An important conclusion is that having the networks facilitated by a reflective, inspiring and connecting person is important when it comes to actually and successfully implementing a future-oriented idea. This is the role of the free actor.

The book is in two parts. The first part deals with the basic principles for the FAN (Free Actors in Networks) approach to the research programme and the overall results. The second part pays attention to the tools (models and methods) developed, which can be used by a successful free actor to help a network achieve its ambitions.

Part I – The research programme
Chapter 1 discusses the general framework and results of the research programme. Chapter 2 describes the starting point of the experiment, starting from the original objectives. Chapter 3 pays attention to the theory underlying the methods and the approach as a whole. The next chapter describes the development of the methodology, including the 'backpack' with models for networkers, the methodology of learning histories and the structure for reflection with facilitators.
Chapter 5 presents the 2006 results. Here you can find observations by the facilitating action research team, based on the learning histories and completed by illustrations from the extensive flow of publications in local and trade magazines, video films and other communications, directly or indirectly initiated by the NiAH experiment in 2006. The observations have been categorised on the basis of the support method, effects on the participating agricultural entrepreneurs, effects on the knowledge infrastructure and effects as regards social acceptance.
Chapter 6 places the experiment in a wider context. The Research-Extension-Education Triptych, which used to be very successful, no longer satisfied its objectives and gave way to market relations in the agricultural knowledge system. However, this also meant that an important connecting function was lost. The approach of networks with

free actors (FAN) offers a perspective for reshaping this function without the limitations which caused the old system to run aground. Part I ends with preliminary conclusions about the approach and the results.

Part II – The tools

There is a saying: "If you only have a hammer, everything looks like a nail". A facilitator (free actor) of networks needs more than just one instrument. Courage, enthusiasm, curiosity and common sense are vital assets, but they do not always suffice to be able to coach networks successfully.

After a short introduction, chapter 9 to 14 describe four analysis models and two self-evaluation methods which have been developed further and used by facilitators to facilitate networks. However, these tools are not exclusively intended for animal husbandry networks, but have proven their practical use when coaching such networks. They can be applied universally, both by facilitators in agriculture and in other sectors of society.

The descriptions are concise and provide clear illustrations to tempt as many networkers as possible to make further use of these tools. The models are mutually complementary and each of them covers an important area of dynamics within a network. They help to identify what is taking place so that the network can make the most suitable next step in every specific situation. The two methods for self-evaluation complement each other. The Timeline Method is a tool to be used during a progress meeting with the participants in the network. The Learning History adds an analysis to the result obtained using the Timeline Method. The schedule on page 53 provides a guideline.

More information on the conceptual scope of the models can be found in Chapter 15. It also describes key terms such as network, free actor, knowledge, strategic space and vital space in more detail. Part II ends in a tale, illustrating the use of the models in their mutual cohesion. The tale illustrates the four different strategies to induce change and shows the different functions of knowledge in situations involving different interested parties.

Part I – The research programme

1. An approach unfolds

1.1. Introduction

'Networks in Animal Husbandry' is an experiment to look for new ways to create opportunities for agricultural entrepreneurs who display plenty of initiatives. The experiment intends to connect them to their environment, to knowledge workers – giving a new impulse to the innovative capacity of the agricultural sector – and to civil society groups outside the agricultural sector so that farmers will again be held in high esteem in society as a whole. The experiment forms part of the wider cluster of research programmes *'Verduurzaming Productie en Transitie'* (Achieving Sustainable Production and Transition), funded by the Ministry of ANFQ and carried out by Wageningen University and Research Centre (UR). The experiment, supporting 120 networks of entrepreneurs, starts in 2004 and ends at the end of 2007. The scope and the duration of the experiment has enabled a whole raft of experience to be gathered. This publication serves as a point of orientation. How far has the experiment progressed? What has it produced so far? How significant is it for the discourse on promoting sustainable innovations? And what can the researchers and the other parties involved do when the experiment is over? It should be mentioned here that most of the text of this book has been written during the last phase of the programme, while 60 networks were still being assisted. The conclusions as well as the examples from practice as shown in the textboxes are primarily drawn from the second phase (2006). Where relevant, additions have been made at the end of the third phase (2007) in the English version.

The experiment is different from other research projects in many respects. Although the search direction was given at the start, lots of space for experimenting has been created for the route to be chosen and the intended results. The methods used and the underlying philosophy have grown and have been shared by the researchers and network facilitators to such an extent during the experiment, that from early 2007 onwards we – the facilitating action research team involved – could speak of an approach with its own distinct profile compared to that of other network approaches. We now refer to it as the approach of networks with free actors (FAN).

1.2. From knowledge on the shelf to the focus on energy and connection

It is often said that too much knowledge is left unused, laying on the shelf of scientific research. If this was true, the NiAH researcher as a facilitator could simply ask livestock farmers which knowledge they need and show them the way to the shelf in question. However, early in the experiment it became clear that this image of 'knowledge on the shelf' is an oversimplification. Finding the right experts and involving them in a network project will sometimes help. But mostly, a further step will be necessary to 'translate' their knowledge so that it can be applied to the specific circumstances

'Knowledge on the shelf' is an oversimplification. It often still needs translating.

of the initiative. More often however, the knowledge sought will not be available. Having the right experts assist in finding insights which will help the initiative to progress can be useful. In this event, the knowledge sought will be the result of a joint search process, in which the experience and inventiveness of the entrepreneurs are important factors too.

Actually, knowledge – in the sense of insight and expertise – appears not to be the only limiting factor for innovative network activities. Other parties' cooperation is often required to obtain space for experiments, such as the managers of nature reserve areas, animal welfare activists or policymakers. This shows that the linkage function of the facilitator is not merely restricted to making a connection with knowledge workers. Involving various actors around the network in the search is also part of the facilitator's tasks. Every network has its own internal dynamics. Although enthusiasm and commitment to the subject within the network are important selection criteria, they are not constant qualities. Not every participant in a network has the same expectations and ambitions. The mutual trust required for a joint quest, for experiments, for personal commitment and, at some point, for making investments

is continuously put to the test. There are significant differences in leadership between networks. This also influences the responsibilities to act on by the network facilitators. But their role is only temporary. If they, being the experts on the subject matter, are to distance themselves from the dynamics, lots of innovative potential in the networks can be lost by a socio-psychological incapacity to handle new challenges. It is exactly their independent position as the expert that often enables them to create space for the network participants to find a new division of roles. Some facilitators really have what it takes. Often they intuitively do the right things, without realising afterwards what they have done to get the process in the network back on track. However, there are some patterns in network dynamics. Insight into this helps to identify what is happening and enriches the repertoire of possible interventions.

In the experiment we have looked for support theories and methods for knowledge development in networks, which enable our facilitators, free actors or members of the network in general, to take effective action in response to developments in their network. There is no fixed pattern along which every network develops. Members of networks or 'networkers' have to be capable of navigating in an unpredictably changing landscape. There is no recipe book which can provide all the answers. Reality is always more complex than any model can show. Intuition continues to be the main compass. This intuition can be sharpened by theories and models and mainly also by reflection on members' own experiences and the experiences of colleagues.

By definition, strictly defined objectives are incompatible with innovative processes. Lots of networks find that their objectives have shifted during the process, for example because the level of ambition appears to be unrealistic, or because new insights open up perspectives for new opportunities, or because faith in the network has grown, causing the level of ambition to be adjusted upwards. The experiment offers space for this. Of course, monitoring, correcting and evaluating is difficult if the objectives which serve as reference points keep changing. One can view the quality of the changing objectives as the result of the quality of the process. This means that other beacons are necessary to steer by.

In the experiment we have mainly chosen energy and connection. The theory on *'Living networks'* as described by Wielinga (2001) offers a theoretical framework to substantiate this choice. Energy means enthusiasm, motivation, willingness to contribute and to attune. How can a healthy process, which generates energy, be distinguished from an unhealthy process from which energy is leaking away? And what can be done about it? Connection means a relationship, deliberately taking each other and other actors into account and maintaining the communication. Which connections are important during specific phases of development of the initiative? What is missing and what can be done to

improve this? The network stories and the collegial consultation talks with facilitators show that they are already implicitly using these beacons for their intuitive actions. The NiAH experiment has collected and developed methods to transform this implicit capability into a conscious capability and made it available in a wider context.

The NiAH programme has developed a practical approach to work on sustainable innovations by focussing on networks. Knowledge workers act as network facilitators to do that what is found to be necessary in the network during the searching and learning process. As a result, they temporarily fulfil the role of the “free actor”. Every network needs such a free actor to be able to function. New practices call for new connections and new relationships. To find them and to experiment with them, a temporary free actor, in the person of a knowledge worker, is a valuable reinforcement of the network.

2. Point of departure

2.1. Focus on entrepreneur initiatives

The initiative for the NiAH programme originates in 2003 from discussions between policymakers at the Ministry of ANFQ and the research coordinators for the animal husbandry sectors of Wageningen UR. The principle of demand-driven research is to be applied in a new way, starting from the initiatives of livestock farmers. When a network of entrepreneurs with such an initiative presents itself, a facilitator/ researcher can help them put their initiative into effect while providing or getting the expertise they need. Every network admitted to the programme is given a budget from which it can pay the facilitator and other experts. The enthusiasm and commitment to the subject of the participants are among the major selection criteria. In addition, initiatives are selected which can make a contribution to sustainable development of the animal husbandry sector. This means the NiAH programme has to serve several objectives. The policy documents from this period show the following objectives:

- reinforcing the sustainability of the sector;
- entrepreneurs' robustness and innovative capacity;
- to be demand-driven from practitioners;
- improving the knowledge infrastructure;
- better utilisation of knowledge which is alleged to be left on the shelf;
- knowledge dissemination and trickle down effect;
- making a contribution to systems innovation and sustainability.

During the project it has been decided together with the Dutch Ministry of Agriculture, Nature and Food Quality that the highest priority must be given

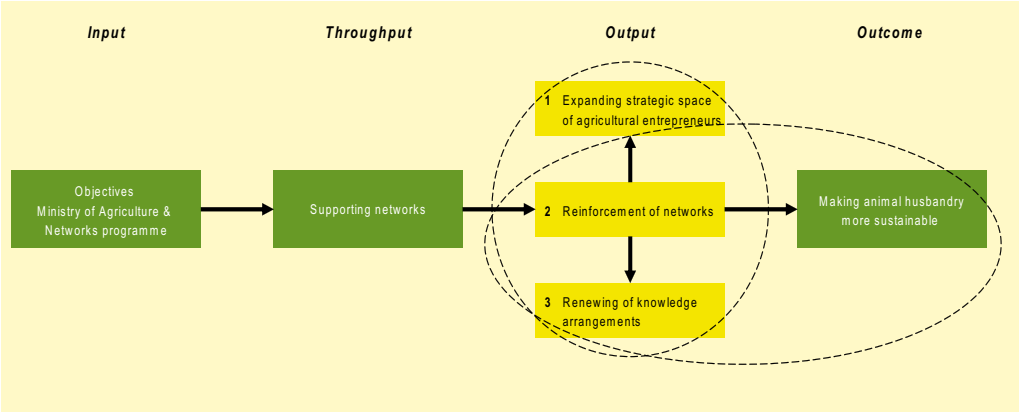


Figure 1. The Effect Monitor.

to the robustness of entrepreneurs and the trickle down effect. Figure 1 shows the effect monitor, developed as part of the programme, to visualise the different objectives and to relate them to the results. As part of the programme, a tender was issued aimed at networks of at least three livestock farmers with a good idea. The first tender results in 167 applications, 50 of which are selected for the first phase (2004-2005). 35 Wageningen UR researchers are added to these networks. In addition, a communication team has been set up to give the results more publicity and a research team has been set up to monitor, evaluate and to develop methodology. For the over-all coordination there is a programme coordinator with a programme team. He also takes care of communication with the funding agency, the Ministry of ANFQ. In the second phase (2006), the programme supports 39 networks and in the third and last phase (2007) 60 networks have been assisted, 19 of which are continued from the second phase.

The network selection criteria have been changed. In the first year, NiAH invites numerous study groups to respond to the tender. However, this results in relatively many short-term questions. NiAH sets higher criteria for the second tender by giving priority to the 'questions for the day after tomorrow'. This results in significantly fewer applications. In the third round (2007) the emphasis is put on networks of livestock farmers looking for connections with other parties in the production chain and with civil society organisations. The second phase also admits parties in the production chain to be part of a network, besides agricultural entrepreneurs. The networks are not only selected on the basis of the text of their applications. Most networks are also paid a personal visit. An instrument has been developed specifically for these selection interviews, paying prominent attention to the motivation and enthusiasm of the network participants and their willingness to play an active part themselves.

2.2. Knowledge workers as facilitators

The manner in which networks are supported has also changed. The programme initially recruits 'network managers' among Wageningen UR researchers who have expertise in the subject matter and affinity with working in groups. For the second phase the word 'manager' is replaced by 'facilitator', which has a less controlling ring to it. The ability to distinguish between content and process also gained importance as a selection criterion. In addition to researchers from Wageningen UR, the second phase of the programme also invites some facilitators from consultancies to participate. All network facilitators facilitate at least two networks and are coupled to a second facilitator who keeps a certain distance to the network so that s/he can provide reflection. In the third phase, this position is replaced by 'sparring partners', with whom the network facilitators can consult on a regular basis.

3. Ecological perspective as a theoretical framework

3.1. Introduction

The NiAH experiment is not designed on the basis of a theory, but is the result of a search direction. During the process, the family characteristics become clearer and ideas on a support theory converge. There is an affiliation with theories on innovation based on systems theories, stating that the characteristics of a complex structure cannot be deduced from the characteristics of its constituent components. There is also an affiliation with theories on complexity which presuppose self-steering mechanisms enabling systems to adapt to changing circumstances for as long as the mechanisms in question have not been blocked. And there is an affiliation with constructivist theories which do not take knowledge as an objective truth, but as an individual construct. Interaction enables such individual constructs to converge to become collective constructs which contain both images of the truth and action repertoires.

3.2. Ecological perspective

These theories come together in the ecological perspective (Wielinga, 2001). This perspective serves well as a theoretical framework for the NiAH programme. Networks of people are seen as living structures which are healthy or ill and which develop autonomously. Ecosystems consist of complex structures the constituent components of which are interconnected by coupling mechanisms that enable the system to be reproduced. During the evolutionary process, the task division and specialisation in the system will grow, on condition that the coupling mechanisms grow along with the system's complexity.

Networks of people behave like ecosystems. They form complex structures which enable a division of tasks and specialisation. This enables benefits of scale as long as the network participants are interconnected. A network can be said to be healthy if there is growing willingness on the part of the participants to contribute to the network and to mutually attune their efforts. This becomes obvious from the participants' sense of satisfaction and enthusiasm.

A network is not an isolated thing. It forms a node in a more comprehensive network in which it plays its role and to which the same principles apply. On the other hand, every node can be seen as a network in itself. Even an individual participant in a network is a complex system in which various motivations, loyalties and pictures of what is possible or impossible compete for their share of attention.

As a rule, evolutionary growth is not a smooth process. The structure which forms to channel the flow also imposes restrictions on its continuous change. Often, something will have to be broken in that structure to make space for new changes. Networks which want to innovate are faced with the task of entering into new connections for which they have to overcome barriers which are inherent in their structure.

Networks enable a division of tasks and specialisation

This calls for actors with:

- the capacity to do what ever is necessary for the network,
- sufficient individual room for manoeuvre to bare the associated risks,
- sufficient insight to decide on an effective strategy to do so, and
- the position to get other network participants to accept their lead.

This is the role of the **'free actor'**.

Every network needs at least one free actor to stay healthy and develop. This role can be fulfilled in various ways and positions. Ideally, one or more of the partners in the network have this role. The chance of the network successfully developing into a continuous network can be predicted by means of the question of whether such a free actor can be identified within the network at the end of the project period. Innovation calls for abandoning common practices, entering into new connections and looking for new mutual relationships. Since this is often more than can be expected from the actors within a network, innovation processes can be accelerated by assisting networks to do this. The NiAH programme temporarily provides a free actor in the form of a knowledge worker who takes the role of facilitator.

The ecological perspective leads to the following starting points for actual practice:

Focus on energy: creative interaction occurs when issues which appeal to people's feelings come together. This insight matches the central role played by the initiative of the agricultural entrepreneur and the enthusiasm within the network as an important criterion for admission. It also fits to the choice of subject matter specialists as facilitators; the first connection between the facilitator and the entrepreneurs is made on the basis of their knowledge of and interest in the subject matter. Their insights and ideas also matter. This is where this approach is different from a strictly demand-driven approach. The network will undergo a healthy development for as long as the creative energy can be felt. Participants will be prepared to make an effort and to attune to each other. The facilitator will do everything within his/her power to keep this energy in the network. That is the process function.

Focus on connection: new practices call for new connections to be made. With experts who have the knowledge and experience to feed the search and learning processes. With actors who can create space for experiments, such as policymakers who watch over the rules or have funds at their disposal to encourage initiatives. And with actors whom the network participants have to consult to put the new initiatives into practice, such as parties in the production chain or civil society groups. This is the facilitator's linkage function. In addition, the programme pays relatively much attention to communication to advertise what is taking place in the networks to a broad audience. This again leads to new connections and contributes to a climate which will lower the threshold for taking initiatives.

Knowledge as co-creation: the knowledge which participants in networks need for their initiatives originates from interaction within the network and with relevant actors outside the network. Knowledge developed elsewhere can make a good contribution to this, but changing practices calls for more. The picture of 'knowledge on the shelf' is not sufficient for this. Scientifically validated knowledge has been developed in a certain context and can serve as inspiration, but not as strict regulation for practical situations which always differ from that context. As soon as new connections in which knowledge is generated get a structural character, we call these new knowledge arrangements.

Models as inspiration, not as strict prescriptions: are intended to enable a better distinction and to see more opportunities of intervention. The truth is always more complex than the seven phases of the Spiral of Innovations or the eight interaction patterns of the Circle of Coherence (Chapter 10 and 12). Following models blindly can have detrimental effects, because any variations which are initially difficult to fit into models will be obscured. Common sense and intuition continue to prevail. In the ecological perspective intuition is seen as the integrated attuning mechanism which surpasses rationality.

Objectives serving to achieve movement: living nature does not have any predetermined final objectives. Ecosystems develop into a division of tasks, specialisations and, as a result, into beauty on condition that the connecting mechanisms continue to grow along with the system's complexity. This insight implies another perspective of objectives and evaluation criteria. Objectives no longer define the intended end result, but stake out a playing field in which space is created to build on connections enabling a search and learning process to form. There is a search direction and there are rules which give the actors involved faith in the process to which they are committing themselves and which leads to a movement towards sustainable innovation. This faith is predominant, but has to be confirmed over and over again. As things progress, it is often found in practice that the original phrasing of the question was not the most relevant one or the objectives are not feasible. Adjusting ambitions, objectives and sometimes even the rules and the playing field can be of significant importance for a better result, as long as the actors involved (including the programme coordinating team and the financier) continue to have faith in the process. This calls for plenty of attention to communication and customisation.

The facilitator as a free actor: the free actor creates space for a search and learning process whose outcome, by definition, cannot be a given fact in advance. Innovation requires experimenting with new practices and letting go of common practices. Sustainable innovations also require choices above and beyond economic short-term interests. This often requires contacts with parties outside the familiar circle. Plenty of initiatives would ask a lot of an existing network, let alone a group of entrepreneurs who are only bound together for a specific reason. From an ecological perspective this process can be compared to an evolutionary leap to a higher level of structure of a system, with a usually more complex division of tasks and a more complex coupling structure. The free actor is the catalyst in this. He or she provides measured interventions required to bring about new connections and creates space for the participants to adjust to the new relationships.

This ecological perspective forms the basis for the methodologies used in the programme.

3.3. Scientific contribution

The ambitions of NiAH go beyond service provision to agricultural entrepreneurs or working on new perspectives for the sector. The programme also intends to make a contribution to the scientific discourse on knowledge systems. What does this experiment teach us about facilitating knowledge networks with primary producers, as an instrument to encourage sustainable development? The standards created for scientific quality depend on the type of knowledge aspired to. Every type of knowledge has its own domain in which it generates effective answers (Figure 2):

Uncontested knowledge

If, thanks to scientific research, knowledge is available which is not contested by anyone, experts can use this knowledge to point the way. The world can be seen as one big clockwork; the more we know about how it works, the better we can determine what the right objectives are and how we can achieve them. However, such knowledge is often not available. If the problems are complex and there are serious conflicts of interest, there is little chance that an agreement will be reached on the objective truth. Decisions often have to be taken without sufficient security, since the risks of delaying a decision are greater than the chance that further research will produce results in time to avoid possible costly mistakes.

Knowledge with value

Knowledge may be valuable to one party, without all other parties agreeing on the knowledge in question. The one party values knowledge if it is trustworthy and helps to reinforce its own position. Trustworthiness is closely associated with the degree to which sources can be verified and the position of the sources in possible conflicts of interest. Knowledge with value fits well into the knowledge market; it can be traded as a product. Such knowledge can also be used as a weapon to score points off others in a conflict of interests. It is quite common for one party to ask the scientist to tell them what is 'objectively true', as part of a negotiation strategy. This referee role only works in the domain of uncontested knowledge, but it cannot settle other

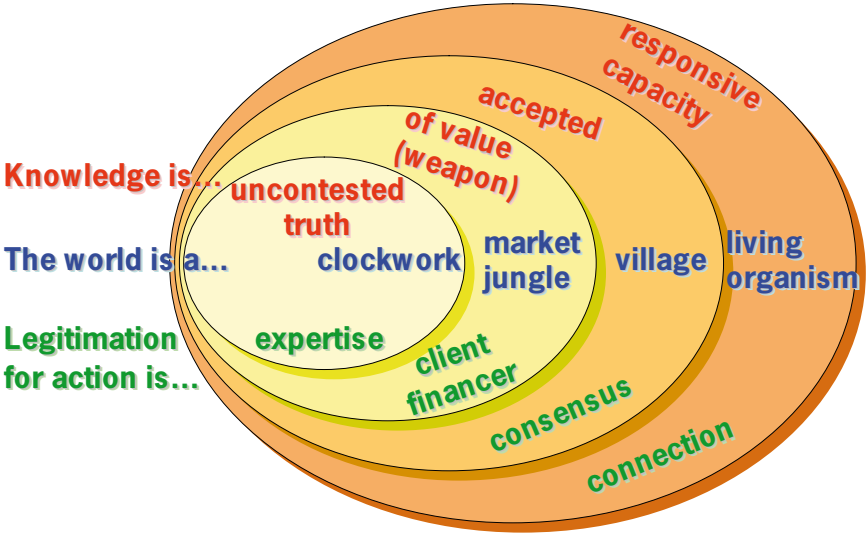


Figure 2. Diagram with the four knowledge domains.

conflicts. Knowledge as a weapon fits in with the metaphor of the jungle, where everyone has to fight for survival. Where collective values are at stake, requiring collective action, the market and the jungle as a metaphor fall short.

Accepted knowledge

Knowledge can also be the result of negotiating and learning processes. This knowledge is accepted as the basis of consensus on the route to be followed. The experiences and insight of all parties involved are important for this kind of knowledge. A suitable metaphor here is that of a village where all inhabitants depend on each other. The constructivist view of knowledge, where every individual makes his own construction of the truth, fits here. Interaction in a social system enables these constructions in a social system to grow towards each other, so that certain knowledge is accepted in the system. In this domain, action is not given a legitimate basis by the expert or the customer, but by consensus in the social system. This line of thinking forms the basis of most participative and interactive methodologies which employ 'multi-stakeholder processes' to achieve commitment for collective action. Such methodologies require the voluntary participation of the parties involved. They fall short when this participation is absent as is often the case, for example if there is great disparity in positions of power or in the event of conflicts.

Knowledge as responsive capacity

If the previous three domains are insufficient, the ecological perspective offers the option of seeing knowledge as the capacity to generate an effective response to changing conditions. Every living being can observe signals, interpret them and generate a response to them. This cognitive cycle links living organisms to their environments. Abstract language enables people to make complex constructions of the truth and communicate about them with others. This gives them an immense capacity to observe and interpret signals, and a great repertory of actions to respond to them. The quality of the response is determined by the degree to which people are connected to each other and to their environment. This, as a result, indicates the health status of the social system. On the basis of their study of the evolutionary development of knowledge, Maturana and Varela (1987) redefine knowledge as 'effective action in the domain of existence'. Not only explicit knowledge, but also one's own experience, knowing who and how to mobilise etc. is important. Consensus is often not necessary or not even useful for healthy interaction. What is crucial is that the parties take each other seriously. Achieving this usually requires a combination of communication (substantiating, questioning, negotiating) and position game (using strategy and power). In this domain, connection is the guiding principle for the actions.

The fourth domain distinguishes itself from the other three because controllability is no longer a goal here. If people make an active effort to achieve their ambitions without losing connection with themselves, with each other and with their social, economic and ecological environment, the outcome will be good even if the outcome cannot

Networking is mainly communicating!

be predicted in advance. Anyone who has ever swum near a coral reef will have been impressed by the beauty which can result from the autonomous development process of making an effort, from attuning, dividing tasks and specialisation. Every type of knowledge places other requirements on research methodology and on the justification of results. NiAH intends to generate knowledge of the fourth category, as a contribution to a continuous discussion which enables actors to find authentic and effective answers to changing conditions. When viewed from this perspective, research scientifically fulfils the following criteria:

- the hypotheses have been made explicit;
- the methodology can be followed and verified;
- the reflection is substantiated by theory and
- the results contribute to the scientific discourse due to:
  - the plausibility of the results found,
  - continuous development of theories,
  - the provision of concepts and language to enrich the discourse and
  - the relevance of questions raised by the research.

3.4. Hypotheses

The experiment tries to find leads which make the following hypotheses plausible or implausible:

- **Initiatives of networks of entrepreneurs form a good starting point for sustainable innovations:**
  This hypothesis is based on the assumption that good initiatives are always available but will only develop into innovations if space is made for them in their environment. This distinguishes NiAH from network projects starting from policy objectives or research results.
- **Networks need a free actor to achieve an innovation step:**
  There must be somebody with the overview, position and competencies to be able to do what is necessary to bring the network to a higher level where it can develop and achieve the innovation. The NiAH experiment temporarily provides this free actor.
- **Having knowledge workers facilitate networks makes an important contribution to sustainable innovations:**
  The knowledge worker's role as catalyst and free actor can bring about processes which otherwise would have run aground prematurely. Here NiAH is different from network approaches which mainly create meeting places.
- **The specific professional background of the network facilitator is important for the quality of the development phase in the network:**
  Facilitators do not have to know everything about the subject in question. What is important is that they have sufficient expertise in the subject matter to be able to make a connection through a common language and a shared interest in the subject. The product of this relationship is the result of two-way traffic. And also the facilitator's insights and ambitions (especially as regards sustainability) matter. This is where the NiAH approach is different from pure service provision in the demand and supply model. The NiAH also disagrees with the assumption that process facilitation requires specialised professionals and that expert knowledge of the subject matter would be a disadvantage, since it would tempt the facilitator to take over responsibility for the contents instead of leaving it with the network.
- **A backpack with methodologies and structure for periodical collective reflection are important when using subject matter specialists as free actors:**
  If we can make this hypothesis plausible, the NiAH approach offers perspectives for other network projects which would to like to employ subject matter specialists as network facilitators.

4. Network methodologies

4.1. Initial characteristics

Compared to other projects set up to encourage sustainable innovation on a business level, the following characteristics distinguish the experiment right from the start:

- the entrepreneurs' initiative is the starting point;
- their enthusiasm is an important selection criterion for participation in the NiAH programme;
- networks are the vehicles for developments, and not the individual entrepreneurs;
- assistance is in the form of a budget for expertise; other costs and investments are for the account of the network participants;
- networks are coached or 'facilitated' by knowledge workers who can find their way around the knowledge system;
- the facilitators are subject matter specialists with an affinity for group work; which distinguishes them from trained process facilitators who lack specific subject matter expertise.

4.2. Action research

It has been implicitly assumed that the facilitators can make a good contribution to the network by making use of their contacts, their common sense and their intuition. This hypothesis is still the guiding principle. But during the course of the programme, the research team has suggested and developed models and methodologies which the facilitator can use to:

- make a sensible distinction between situations they encounter in their work as networks facilitators, and
- expand their repertory of possible interventions in such situations.

This shows that the research team has not only observed and evaluated, but decided to implement action research and gather knowledge about the functioning and coaching of networks in active interaction with the actual practice. This knowledge can immediately be tested in practice. As of that moment, the research team has also referred to itself as the 'KON team' (Knowledge Of Networking). Within the space left by the set-up of the experiment, the focus in the methodology has gradually become so much sharper that we can now safely say that we have a specific approach; the FAN approach.

4.3. A backpack with tools for analysis and a structure for reflection

It was decided to give the facilitators a 'backpack' with tools to enable them to see more and to choose from a wider repertory of actions. Thematic meetings were held to come to a common language for reflection on network processes and there is a virtual 'Network Guide' on the internet with reference and practice materials. For reflection on the progress in the various networks collegial consultation meetings have been held in clusters of five to six facilitators, and – for the second and third phase – one member each of the research

team and the programme team. This has led to a 'Learning Community' with the network facilitators as fellow researchers in the research into effective coaching of knowledge networks.

During the experiment, the backpack has been filled with various tools which are described in the second part of this book.

- **The distinction between Knowledge – Process – Conditions**
  Facilitators divide their attention among:
  - **knowledge:** the subject matter-related search and learning process,
  - the **process** which enables participants to make an active effort and to attune such that the potential in the network grows into an added value, and the
  - **conditions** created by the outside world which might make it more or less easy to materialise ideas.

  There used to be a presumption that knowledge workers without methodical baggage may focus on the content too much. That is why this distinction is intended as an eye opener and as a means of properly dividing attention. Questionnaires held during the first phase confirm this assumption. Since knowledge asks less and the process more attention than expected by the facilitators, more attention has been paid to process facilitation in the second phase and onwards.
- **Four kinds of knowledge objectives for networks**
  The facilitators have been asked to make a distinction between objectives

During the experiment, the research team has provided the facilitators with a backpack with tools.

resulting from different knowledge processes in their networks:

- **knowledge for optimisation:** improvements along the main direction of the (farm) enterprise;
- **knowledge for a change of track:** developing alternative paths for the enterprise;
- **knowledge as a weapon:** making strategic use of knowledge to get other actors to move so that change will be made possible;
- **knowledge as a continuous learning process:** improving the communication structure among the members of a network enabling them to continue to learn from each other and to tackle new issues.

These tools are also intended as eye openers. For example, a knowledge worker lacks the right connection if s/he thinks that s/he has to put forward new knowledge whereas the network is asking for knowledge as a weapon to convince others with scientific arguments. Every type of knowledge objective calls for a different approach and for involving other actors in the process. This gives rise to the insight that we can interrelate these different orientations by conceptualising an innovation process in consecutive phases of knowledge development. The Spiral of Innovations results from this and replaces the first two instruments.

- **The Network Analysis** (Poorthuis, 2006) distinguishes between different positions of involvement (Chapter 9). A network that can be built on has partners who feel like they are the owners of the initiative, suppliers (e.g. of semi-manufactures, knowledge or funds), users (e.g. of products or knowledge) and 'links' or who can connect the partners with their environment. The analysis instrument helps to analyse involvement and the structure of the network. The analysis may give rise to contact being made with certain parties involved, to brokers who can take some work away from the partners being looked for and to network participants' positions being clarified. The awareness that the network participants do not all have to share the same positions of involvement can create space. NiAH has decided on the Network Analysis to enable facilitators to critically monitor the way the network is constructed and to steer towards its improvement.
- **The Spiral of Innovations** distinguishes the different phases of an innovation process: an initial idea coming into existence, inspiring supporters, planning activities and acquiring space for them, developing new ideas or practices, implementing them, disseminating the innovation, and finally embedding changed practices into the institutional environment (Chapter 10). This distinction is important because every phase requires interaction with other actors in the outside world and brings specific barriers which have to be overcome. However, innovation is not a linear process. It often takes place in leaps and bounds and sometimes previous phases have to be repeated.

That is why the phases have not been presented as a straight line, but as a spiral.

- **The Triangle of Change** (Wielinga, 2001) distinguishes between change agents, gatekeepers and survivors (Chapter 11). The energy necessary to bring about change originates in a network of change agents who inspire each other. Such a network is usually of an informal nature. However, movement requires interaction with the gatekeepers, who feel responsible for structure and try to keep risks under control. They usually take up formal positions. There are almost always also survivors who will only start to move when they feel that it will not harm their positions. The Triangle of Change offers facilitators footholds for steering by energy in a network. So, first generate sufficient energy with change agents, then negotiate with gatekeepers and do not invest any energy in survivors until you can offer them a good perspective.
- **The Circle of Coherence** (Wielinga, 2001) distinguishes between interaction patterns in a network, in which different mechanisms for contributing and attuning between actors come to the fore: exchange, challenge, structure or dialogue (Chapter 12). Each one of these mechanisms is essential for a healthy and vitalising process. If the interaction is not healthy, participants can escape, struggle, resign in it or adjust themselves to it. But something in the mutual connections is blocked then. The Circle of Coherence offers insight into possible 'warm' and 'cold' interventions which may help to eliminate these blockades so that the network is generating energy for the participants again. The Circle of Coherence enables more detailed steering on the basis of connections and energy in the network.
- **The Effect Monitor** distinguishes between effects which a network can bring about: effects for the entrepreneur, the knowledge infrastructure and for tangible changes (Figure 1).
  - The effect for participating entrepreneurs is visualised by the concept of 'strategic space' (Van Baalen et al, 2005). This space is bigger if they see more possibilities for their business operations and know ways to solve their problems.
  - The effect on the knowledge infrastructure shows in changing knowledge arrangements: connections which have come into being with knowledge workers, lower thresholds for mutual consultation, new routines for search and learning processes and changed institutional arrangements.
  - The effects have become tangible when new practices have actually been brought about. These practices can be tested to their contribution to 'Profit, Planet and People'.
- **The Timeline Method** is the first step, preferably together with the network participants, in drawing up a Learning History (Chapter 13). Relevant events are collected by having everyone look back on the process individually. What

moments were remarkable, which events improved the process and which were perceived as restrictive? And at which moments 'did the penny drop'? A story is created by placing these findings next to each other on a timeline. Although it often takes some convincing by the facilitator to get it started, this self-reflection is highly appreciated afterwards.

- **The Learning History** is introduced in 2006 to get an insight into the processes which take place in the networks (Chapter 14). The instrument is derived from the 'Learning Histories' method of Kleiner and Roth (1997). The Learning History consists of a story about relevant events and a reflection on the story. The facilitators collect the events using the Timeline Method. The result is a kind of film with important scenes, which are given importance by the facilitator using the instruments referred to above ('glasses') afterwards. The network stories of NiAH (which are much more attractive reading than standard reports) have been collected and made available in the form of a report (in Dutch).

4.4. The 'Learning Community'

During the first phase of the programme, the facilitators' main task is considered to be helping the network participants detail their questions and make connections with experts who could provide the answers. Training facilitators was not supposed to be necessary for this. But two interim evaluations among facilitators in the initial period helps to reveal that there is more to it and that the process requires more attention.

That is why a start has been made to fill a backpack with networking tools during the first phase, This has not been intended for attention in a group context, but to serve as a tool to be available when necessary. However, facilitators make little use of this in practice. This only gradually improves when we start to see the facilitators as fellow researchers in the action research into the functioning of networks looking for knowledge.
After the start of the second phase in 2006, the facilitator team which consist only of researchers of Wageningen UR is expanded by commercial farm advisors – with valuable practical experience. In this phase we also introduce collegial consultation meetings in clusters of five to six facilitators where they can share their experiences and analyse them as input for follow-up actions. To draw up the learning histories, the facilitators are asked to use the main methodologies (Network Analysis, Spiral of Innovations, Circle of Coherence and Effect Monitor) as glasses to view the timeline stories which they have to draw up together with their participants. The stories show that they have tried to interpret their situations through these glasses, be it often in retrospect.

The third and last phase (2007) starts with a 24-hour meeting during which various items are discussed in great detail, including the methodologies. The reports of the collegial

consultation meetings in the clusters of facilitators in the last phase show that the tools have now become general practice and provide a language which enables practical situations to be described and analysed effectively.

5. The harvest

Preliminary results

At the time of writing the first report, the programme was still running at full speed. The results discussed in this chapter do not cover the output of the entire programme. The lion's share of the findings stems from the 2006 learning histories. This methodology gives a subjective representation of what the parties involved find important. The participants and facilitators first collected their findings using the Timeline Method. Next, the facilitators added their analyses to the findings to turn them into learning histories. The 39 networks coached in 2006 have produced 30 learning histories which have been used to compile the figures for this chapter

The spread of the 39 networks in phase two (2006), broken down by sectors is as follows:

- 13 in dairy farming
- 9 in pig farming
- 6 in poultry farming
- 8 in mixed farming systems
- 2 in rabbit farming
- 1 in horse keeping

box 1

(Boxes 1 and 2). The research team, complemented by two network facilitators, then convened a GDR[1] session to draw up a list of findings based on remarkable elements contained in the learning histories. These findings have been classified and combined into the following outline, to which practical illustrations have been added. The findings have been clustered

The spread of the 39 networks in phase two (2006), broken down by objectives is as follows:

- 13 x **optimisation** within the main direction of the business;
- 12 x **changing** tracks;
- 9 x (further) developing a **learning network**, to permanently make use of the expertise of others;
- 5 x collecting **knowledge as a weapon** to score points off other actors.

box 2

by interventions (learning experiences on the art of coaching/facilitating), effects for the network participants, effects for the knowledge system and effects for society. Where useful the findings have been complemented by experiences from the first and third phase of the programme.

5.1. Interventions

The network facilitator's work appears to comprise three major fields of attention:

- **Making connections with actors outside the network.** A distinction is to be made here between
  - ➢ actors with expertise who fuel the search and learning process, and
  - ➢ actors who have to get moving for the network to achieve its objectives, such as parties in the production chain, civil society organisations or policymakers.

  This is the **linkage function** (paragraph 5.1.1).

[1] Group Decision Room is an advanced group configuration with a network of interlinked computers, suitable for meetings organised to sound out opinions, brainstorm or take group decisions.

- **Creating space in the network** where participants feel free to search and learn. This is the **process function** (paragraph 5.1.2). The findings have been subdivided into the categories: inspire, form a group, search and learn and make the process and the network facilitator's position subjects of discussion.
- **Bringing about movement by the network** causing changes to be achieved. This is the **strategy function** (paragraph 5.1.3). This may relate to decisions by the actual participants on investments, contracts being entered into or practices actually changing. This often also relates to other actors – who also have to make changes possible – starting to move.

Besides these three functions we could also distinguish the expert's function: the use of the network facilitator's own expertise to give practical advice or plot out the route. It is remarkable that few facilitators explicitly mention this function in the learning histories.

5.1.1. The Linkage Function

Connecting to expertise

When the facilitator brings the network into contact with external expertise, this often gives rise to drastically new insights (Box 3), puts an end to introspection, or creates an environment where a discussion may arise (Box 4). Timing is important here. Sometimes a facilitator actually has to keep the external experts away so that the

Among other things, the free actor is an intermediary between the network and the world outside the network.

After a discussion with an expert, the 'Nolana' network came to the conclusion that they had embarked on the wrong course with their self-chosen strategy to breed self-moulting sheep. They found that, instead of working with constantly different breeds, it would be better to develop and maintain an entirely new breed.

box 3

The 'Melk uit natuur' *[Milk from Nature]* network had problems getting good contacts with organisations for nature conservation. When they invited different organisations to a workshop, they found out that it had suddenly become a lot easier to turn the matter into a subject of in-depth discussion. This meeting would never have taken place without the network facilitator's input.

box 4

The 'Caring Dairy' network consists of dairy farmers who are keen to learn and who readily absorb external experts' input. When the facilitator saw that the expertise did not really hit home, he deliberately organised some sessions without external experts. The participants now set to work using each other as those with first-hand experience and using all the available space and knowledge to draw their own conclusions.

box 5

network will have the opportunity to develop their own thoughts (Box 5). Expertise can

The 'Arbeidsorganisatie op grote melkveebedrijven' *[Labour organisation at large dairy farms]* network first had to create a safe environment where participants were not afraid to present their vulnerable side. When a workshop with an external expert was proposed, some participants objected. It was too early in the process for this. After the facilitator had taken the time to create a safe environment, the expertise engaged afterwards turned out to be good breeding ground for the network participants to enter into open discussions with each other on each other's competences as regards dealing with hired hands in their enterprises.

box 6

also be too early if the facilitator still has to work on the climate in the network first (Box 6). A question which calls for alertness is that of secondary interests of the experts who have been invited. When a policy officer from the Ministry of ANFQ was involved in a certain case, the network was left behind with the question whether it had really been the intention to input expertise of policies or to create buy-in for policy.

Experts of Wageningen UR and the commercial sector fulfil the linkage function more than experts from the (green) educational sector or scientists from outside Wageningen UR. Actually, the cooperation with agricultural schools is in the form of students providing input. Teachers' expertise is hardly being used. We are under the impression that there are opportunities here.

The 'Boergondisch Rijk' network (poultry) has made policymakers of the Ministry of ANFQ so enthusiastic that they did their best to gain more space to negotiate with the provincial and municipal boards on the modifications to rules and legislation necessary to be able to achieve the network idea.

box 7

The 'Snelle Signalering Dierziekten' *[Rapid Detection of Animal Diseases]* network needed knowledge from the Agency for Veterinary Health about recognising veterinary diseases. The agency was so pleased with the mutual contact that it became a partner instead of a supplier of knowledge.

box 8

Connecting with external parties

Several interventions consisted of involving external parties in the search process, having the side effect of understanding and involvement being created with those external parties stimulating them to cooperate in finding solutions. This applies to both parties in the production chain and policymakers (Boxes 7, 8, 9). But still the step towards creating movement in the outside world continues to be difficult. Getting parties together in a workshop is doable, but getting them to take follow-up action is an art which still requires attention. However there are also good examples (Box 10). In the terminology of the Spiral of Innovations (Chapter 10) this involves the step from development to implementation.

The 'Verbeteren Rendement Advieskosten Varkenshouderij' network *[Improving the Efficiency of Consultancy Costs in Pig Husbandry]* needed knowledge from consultancy organisations. Once these external commercial organizations started to see that they would also be able to make use of the end result their input in and contribution to the initiative increased. This benefited both parties and brought about an end result which is also used by others than the participant pig farmers.

box 9

The 'Scharrel Netwerk Veluwe'*[Veluwe Free Range Network]* wanted to develop a remedy for poultry red mite. This is a difficult and underestimated problem; the pesticides which are allowed by law are insufficient. The network first developed a basic tool to visualise the extent of the problem. After several search paths had been ineffective, it was decided to submit the problem to higher level parties (the Ministry of ANFQ and sector organisation). These parties set to work on this: by now over half a million euros have been freed up for a more extensive research approach.

box 10

Several barriers are encountered here. Developing in the own familiar circle is more pleasant and safe than having to enter into a battle with parties which are often not open to change. When selecting activities one might be tempted to stick to developing as long as possible, as a result of which the barrier will only get higher

The other parties in the broiler production chain of the 'Boerenkip' network *[Farmers' chicken]* spent a long time developing a new broiler concept in an intimate circle. Once a well thought out concept was available, they found that it was difficult to fully and seriously involve the broiler producers in their network.

box 11

The 'Ecolana' network was struggling with complex notions and ideas. Developing a land fund with private investors requires so many parties being involved that it is quite easy to overlook a party.

box 12

The board of the 'SPAN-V' network takes great strides developing a quality system for the production of horse milk for human consumption. However, the other network members regularly blow the whistle on the board, so that eventually only small steps can be made.

box 13

(Box 11). The threshold can actually be lowered by involving such external parties in the development process at an early stage. A second barrier we have noticed is that participants and facilitators together have a poor insight into the external force field, as a result of which they do not apply their energy to the easiest ways to gain acceptance (Box 12). A third obstacle which has been reported is the difference in energy between the people who actively work to promote the network and their own supporters. If you march ahead of the troops too far, you run serious risks (Box 13).

A quotation from a facilitator from the commercial advisory service DLV: *"As a commercial advisor you do not often get the kinds of question I have encountered via 'Networks in Animal Husbandry'. The type of question which is important to the networks is not often solved on a 100% commercial basis. The reason of this is that the question often contains a rather large experimental element. It is felt that solving the question may offer possibilities, but direct returns won't be achieved that fast. But in due course there is always some return to be gained. If it hadn't been for the support offered by this kind of project, lots of questions would never have been dealt with although once they have been worked out, the original questions virtually always result in valuable answers."*

box 14

Conclusions about the linkage function

The linkage function occupies a prominent position in the network facilitator's work. S/He creates new possibilities for the network by making connections which the network participants cannot make so easily, such as connections with people who have knowledge of the subject matter as well as with other parties which he or she can access more easily. This makes the network facilitator into a catalyst who enables the agricultural entrepreneurs to occupy a better position in the larger playing field. We can assume that this is due to the facilitator's knowledge of the knowledge system, the

sector and the policy circuit and to his/her position of independent scientist or adviser in a project carried out by Wageningen UR and funded by the Ministry of ANFQ, which will make it easier to make contacts (Box 14).

5.1.2. The Process Function

Inspiring

Facilitators have mentioned the following inspirational interventions:

- visiting other enterprises
- visiting each other's enterprise
- organising informal meetings such as making coach trips (Box 15),
- inviting experts to bring new insight, and
- providing their own expertise and enthusiasm.

Group formation

The network experiences reveal that groups can form in various ways, ranging from:

- networks which take off enthusiastically only to discover after some time that the participants are acting at different speeds, to
- networks which are brought together by an external initiator, but have gradually taken control themselves;
- an extra degree of difficulty is observed with networks of board members or representatives with a relatively large group of supporters.

Interventions mentioned by the facilitators in this context are:

- a brainstorming session at the start and
- first connecting to what is on the group members' minds and then shifting to a higher level.

Reports on interventions for the process function are rare in the second phase, and still require special attention while drawing up the learning histories in the third phase. Collegial consultation talks and other signals from facilitators show for example that the Network Analysis is a useful way of clarifying the position of the various parties involved. What may be helpful is realising that not every participant has to be a partner.
The collegial consultation talks show that although facilitators frequently intervene in the processes, they do not often consider what they are actually doing and which effects their actions have. As a result, it is

difficult for them to accurately describe their inventions when drawing up the learning histories.

Searching and learning

The search and learning process takes various shapes, for example:

- Getting the participants to collect and

Formal and informal aspects are combined when people leave their own environment and spend some time together. For example, the coach trip organised by the 'Snelle Signalering Dierziekten' *[Rapid Detection of Animal Diseases]* network generated a host of energy for developing an internet tool. And the trip to Ben&Jerry's in the US proved to be highly stimulating for the 'Caring Dairy' network.

box 15

The 'Scharrel Netwerk Veluwe' *[Veluwe Free Range Network]* has been developing an instrument to measure the degree of red mite infection. Because poultry farmers can work on this themselves, it has increased participants' awareness of the seriousness of this subject matter for their own enterprise (also see box 10).

box 16

The 'Caring Dairy' network has been developing a checklist to enable participant dairy farmers to evaluate each other's enterprises as regards animal welfare.

box 17

The 'Mestvergisting Regelgeving' *[Manure Digestion Legislation]* network has experienced differences of opinion as to the thin fraction that is left behind after biogas digestion. Is this a substitute for fertiliser or does this product require further processing to create more specific products? The network set up two working groups to work on both alternatives. After the findings were reported to the participants the network decided on a clear course to steer by in the future.

box 18

record data. This is effective for creating awareness, a sense of urgency and the willingness to take action (Box 16).

- Having participants evaluate each other's enterprises is another popular intervention (Box 17).
- Sometimes different opinions occur as to the search direction of a network. In one network two subgroups each outlined their own search direction after which the network jointly came to the conclusion that only one track really had any chance of succeeding (Box 18).
- The timing of putting tasks on the agenda has turned out to be important. If subjects require plenty of mutual trust, this trust first has to grow through success in less sensitive matters (Boxes 6, 19).

The 'Ko-alitie' *[Cow-alition]* network, set up to merge five dairy farms, chose a step-by-step approach, starting from cooperation in the production of roughage. This gives them the experience to enable cooperation on those parts of the farm operations which place high requirements on mutual trust.

box 19

The facilitators have reported a few 'puzzles'. In one case it was found after some time that it was not such a good idea to have certain activities done by members' children, since the parents are liable if problems occur. This was solved by getting the help of college students. However, the underlying question is: how can a network drum up people to help during the development stage?

Making the process a subject of discussion

The Timeline Method has been found to work well as an intervention in order to reflect on the process with participants (Box 20, 21). This often makes participants

Quote from a facilitator: *"Initially I was sceptical of the Timeline Method, but now that I've used it I've become an enthusiast. The network itself is much more on the agenda now instead of only the manual they are working on."*

box 20

Quote from a facilitator: *"It has led to some quite crass remarks. Not that it was all new, but issues are formulated in a quite outspoken manner. You deliberately incite them, which is actually an intervention in its own right."*

box 21

more aware of their responsibility to take the initiative in the process. This for example enables irritations to be discussed, improving the willingness to comply with agreements. The method also shows that participants' ambitions may differ. Some participants see the end product as a goal in itself, whereas others merely see it as a means to an end at a higher level.

The network facilitator's position and role

Findings in this category point to the field of tension between the participants and the network facilitator as the initiator of the network's activities. Even though initiative and enthusiasm within the network are important admission criteria, participants tend to take up a position where they depend on the facilitator. What do facilitators do to encourage the group to take more initiative? Examples:

- Individual coaching of individual members of the network who act as pioneers;
- Being the joker: "YOU keep poultry, I don't";
- Not shying away from conflicts; fights can have a healing effect;
- Considering to quit. This will create a sense of urgency;
- Connecting to something that is supported and then shift to the next level from there;
- Making space for different intentions and ambitions (recognising different 'gear stages');
- Taking up a clear position themselves if the process threatens to get bogged down ("I think that we now have to …").

Contacting the network participants individually also works well. This will make it easier for participants to tell their own stories about their intentions, ambitions and possible dissatisfaction with how things are progressing. Individual contact can involve visiting participants, but more often it takes the form of a 'phone round'. (Box 22) In general it takes an extra effort to deduce from the stories which interventions the network facilitators have exactly implemented, which effects they have had and how they have behaved in the dimension of responsibility for the process. More specifically, there are questions about what to do when things get really difficult, for example if entrepreneurs reach the point where they actually have to invest or have to give up freedom, if the network has to set to work with external parties.

Some participants go too fast for the other participants and have to be reined in by the facilitator. This also applies to participants who stray too far from the network.

In addition, the facilitators have reported interventions which had an inciting effect, e.g. "What was forced down their throats turned out to make the difference",

The 'Energiek Schoonebeek' *[Energetic Schoonebeek]* network went through a phase where there was a difference of opinion on the direction into which the network initiative should develop. The facilitator then had personal talks with each of the individual participants. This pointed him in the direction where there was sufficient support and showed him the weight certain objections had, enabling him to get the discussion within the network going again, so that a decision was made.

box 22

or situations which called for inciting interventions, e.g. "How do you get participants to look elsewhere?" It is no problem if facilitation creates some tension. On the other hand, the facilitators have concluded that their facilitation has generally accelerated the search and learning processes quite a bit.

Conclusions on the process role

All network facilitators have deliberately and actively been working on the group processes in their networks. They mention lots of examples of successful interventions, but also of puzzles in this area. In general, accounts give the impression that network facilitation have helped to increase mutual trust in the networks, in their own initiative and the capacity to develop. One of the hypotheses in the NiAH experiment is that

The strategic space of entrepreneurs in the network is increased if the network jointly communicates with municipality officials.

the network facilitator's own expertise is important to enable them to connect to the network participants on the basis of subject matter and common interests. Some facilitators have actually reported that the expertise they have put in has had a positive effect on the participants' enthusiasm. However, there are not many indications to support this hypothesis. Partly because we are not asking for learning histories about this in the reports and also because the network facilitators probably do not really pay attention to this. However, this is partly also because at the start of the experiment we actually instructed network facilitators not to act as the experts themselves. Knowledge of the subject matter may sometimes frustrate the process. Still, the network facilitators' expertise is very important in order to engage the right expertise, since they know their way around the knowledge system.

The fact that network facilitators rarely mention their own interventions is remarkable. They do a lot by feeling and intuition without consciously thinking about this. Interpretations in terms of the tools from the backpack were made during the learning histories in retrospect, only because the facilitators had been instructed to provide them. The language provided by these tools was not used a lot in the findings on 2006. In the learning histories of 2007 this appears to have improved. The tools provided language to reflect on the events

that made a difference including their own role.

The Timeline Method introduced halfway through the second phase has turned out to be a useful instrument for facilitators to make the progress in the process a subject of discussion with the network. This often results in participants assuming more responsibility for their network.

After the second phase we conclude the following areas to be given more attention:

- Coaching from the development stage to the implementation stage (what to do when things get heated?);
- Timing: when is the network ready for which type of activity?;
- The game between the network facilitator and the network concerning responsibilities (this is a permanent point of attention);
- Learning to specify intervention and effect.

5.2. Effects for participants

Strategic space

- Entrepreneurs have clearly increased their strategic space – their insight into their own opportunities for action. This is illustrated by the following comments (Box 23)
- A growing insight into what entrepreneurs can do themselves;
- More insight into policy and into the space offered by the policy;
- Insight into bottlenecks in the policy and into directions for solutions which can be offered to policymakers;
- Becoming aware of their own problems, resulting in increased willingness to take action;
- Outward orientation, active communication with the outside world, discovering that this can be done by entrepreneurs themselves, and that this can be enjoyable;
- A feeling of no longer being a bystander but being an active player in the knowledge system;
- Contributions to improving colleagues' awareness;
- Becoming the owner of one's own development;
- Not only learning to deal with contents, but also with the process and the conditions.

Support and recognition

Some findings indicate that participants feel that the network has led to improved recognition of their problems with others, such as policymakers at the Ministry of ANFQ (Box 24, 25, 26). Motivation is enhanced by the sense of being active in a useful way, not only for one's own enterprise but also for colleagues in the sector or being a pioneer in developing new perspectives for the livestock sector.

Responsive network

Strategic space refers to the insight into possible options to act. Responsiveness is more than this and concerns the capacity of individuals or networks to actually generate an effective response to changing conditions. However, responsive capacity

Some quotations from participants:
"Two steps forward, one step back." "You get a lot of knowledge by actively working with the subject matter yourself." 'Samen sterk voor een steviger strategie' *[Collective strength produces a firmer strategy]* network.

"The only right way is through schools. I believe in it, provided they manage to find the drive mechanism and continuity." Participants of the 'Happy Cow' network who have acquired new and surprising business insights by mutual reflection with fellow farmers, students, advisers and researchers.

"The way in which the network is trying to utilise its opportunities with the municipality, electric power companies and entrepreneurs in the leisure industry is unique. If the plans can be put into practice, this network will be the best example of successful cooperation between the business world, the government and agricultural entrepreneurs for the Dutch province of Zeeland and probably also for the rest of the Netherlands." 'Groene Samenwerking' *[Green Collaboration]* network.

"The network is often on your mind, even while you're driving your shovel". Participant in the 'Monitoring konijnenhouderij' *[Monitoring in Rabbit Farming]* network.

box 23

The 'Emissie-arme Huisvesting Vleeskuikens' *[Low-emission Broiler Housing]* network has noted a hiatus in Netherlands manure legislation as regards nitrogen losses. Initially they presented their practical data to the Farmers Association, as a result of which the association has started discussions with the Ministry of ANFQ on this subject.

box 24

The 'Ketenrendement Konijnenhouderij' *[Chain Efficiency in Rabbit Farming]* network organised a workshop with participants from the slaughtering and retail industries and Wageningen UR. This resulted in much more understanding for each other's opinions. One of the rabbit keepers concluded: "We should have many more of these workshops".

box 25

The 'Scharrel Netwerk Veluwe' *[Veluwe Free Range Network]* invited policy-making officials from the Ministry of ANFQ to discuss their red mite problems. Much to the members' surprise, the officials immediately accepted their invitation. It was quite an eye-opener for the members that this could be arranged so easily.

box 26

is more difficult to measure than strategic space. Positive examples of increased responsive capacity:

Presenting the network to other networks is a learning opportunity which improves responsive capacity.

- development from a study group to a network with strategic power and space;
- the network has learned to negotiate with official bodies;
- a manual as a result, for the member's own enterprise and a new network;
- the experience that sharing knowledge pays off; entering into connections has become easier;
- using each other's network, as a learning moment;
- roles come into being in the group (a division of tasks, specialisation and, as a result, more power;
- the search for knowledge offers a better insight into possibilities of cooperation and the consequences for network members' own enterprises.

A question yet unanswered in this context is how this can also be stimulated without the temporary financial impulse of an experiment such as NiAH.

The 'Vers en veilig in de pens' *[Fresh and safe in the rumen]* network is an example of learning and changing. This network has gathered a great deal of knowledge about automatic feeding of fresh grass and improving the quality of this product. The social relevance of this is that better quality leads to fewer losses, and, as a result, to fewer emissions. This network has tackled this issue by making connections with such parties as schools.

box 27

The 'Mestvergisting Regelgeving' *[Manure Digestion Legislation]* network has clearly served the sector, specifically by identifying the bottlenecks and proposing solutions for enterprises which want to expand by introducing manure digesters. The document drawn up by them has been distributed widely in the sector and has also been used by policymakers on municipal and national levels to remove these bottlenecks.

box 28

The 'Snelle Signalering Dierziekten' *[Rapid Detection of Animal Diseases]* network has resulted in a prototype of an internet tool for pig farmers. Together with funding from the Commodity Board for Livestock, Meat and Eggs (PVE), this prototype initiated a development to expand this instrument to other animal diseases.

box 29

The 'Boerenkip' [Farmers' chicken] network is an example of the third category. The participants advocate the production of broilers which are kept in a more traditional manner so that animal welfare requirements are better complied with.

box 30

The 'Energie uit biomassa' *[Energy from biomass]* network is working on using grass and other natural biomass as sources of energy in order to make nature reserve areas more profitable.

box 31

Tangible results

The learning histories mainly describe the network processes, and pay less attention to the concrete result or the products of the networks. A survey of the 39 networks in 2006 shows that they have booked results on three levels:

- learning and changing on the level of the network and thus being an example to others (11 networks, see e.g. Box 27);
- developing knowledge and products for their own use, which are also useful for others outside the network and are of direct importance to the sector (16 networks, see e.g. Boxes 28, 29);
- results with social relevance which go significantly beyond the sector's interest (12 networks, see e.g. Boxes 30, 31).

Some concrete products of the network efforts are:

- an innovative breeding programme for self-moulting sheep (less pesticides required, easier management);
- an internet tool for recognising contagious diseases among pigs;
- internet tools for recording and analysing working hours on dairy farms;
- the establishment of an association of entrepreneurs with biogas digesters;
- a Cow Coach (instrument to measure the well-being of dairy cows);
- a method to measure red mite infection among laying hens;
- a database to record experiences of livestock farmers (successes and failures);
- remote advice with multi-point video-conferencing;

- a business manual for pig farms;
- a manual for discussions between advisers and livestock farmers;
- a Claw Check for sow farmers (chart of various claw disorders of sows in group housing).

A specific puzzle concerns disseminating a way of working, such as that of the modelling network with college students for an 'experience database'. Dutch expatriate farmers in countries like Portugal, Denmark and Poland are very interested in this.

Where extra-network results are concerned, we can ask to which extent we can expect entrepreneurs in the NiAH networks to invest their time and energy in such results. Where the government's request has social objectives, e.g. a connection with society for the 'licence to produce', networks often appear to need an extra push for them to do what is required for this. This can also become a dilemma. What should the network facilitator do if such objectives have been formulated – maybe to obtain funding for the project idea – but participants no longer ask for them once the project has been set in motion?

Conclusions as to the effects for participants

Referring to the three levels at which a free actor is necessary, we conclude that the network facilitators have booked good results with their process function (trust) and their linkage function (search and learning process). However, to fulfil their strategic function (causing movement) they need something more concrete to work by.

When knowledge processes are classified into phases according to the Spiral of Innovations (Chapter 10) this finding means that NiAH has mainly been effective in the phases of inspiration, making plans and development and that there is a need for a firmer role in the implementation phase during which the network initiative wants to create movement in the outside world.

This finding is understandable when viewed against the background of the theory and the context. The NiAH programme fills the vacancy of free actor in the vulnerable stage between the initial initiative and a robust network which is capable of taking up a position from where it can arrange its own affairs through interaction with other parties. One year of coaching is very short and networks can hardly be expected to go through all steps and come to tangible results within that period.

Disseminating innovations and structural embedding require more time. Dissemination occurs when the good results of a network inspire others to start moving as well. The question of whether this actually happens not only depends on the stimulating power of the result and the communicative effort to publicise this, but also on the sense of urgency that others have. This gives rise to the question of the extent to which participating entrepreneurs can be expected to disseminate their results to a wider public if there is no direct interest for themselves.

5.3. Effects for society

5.3.1. Knowledge arrangements

Influences of the network activities on the knowledge infrastructure can be observed at different levels.

- First contacts made by the facilitator which have opened up a channel of communication;
- Lower thresholds making it easier to maintain contacts;
- The awareness that more is required than just tapping on the right knowledge. Creating the right conditions for change is also important;
- The step from a user of knowledge to fellow-researcher in one's own enterprise. Knowledge as co-creation;
- The network obtaining a position that makes other parties interested in interaction and whose involvement can fuel their enthusiasm;
- Entrepreneurs who become aware that their experience and their network activities are valuable to others;
- The recommendation of the LTO Pig Farming section [national farmers organisation] to the members to follow the example of this way of working in networks;
- A first introduction to agricultural schools which can lead to more structural mutual contact;
- The experience that 'just walking into a town hall' can lead to joint efforts towards a solution.

But others also seek access to the networks in the NiAH programme. This is partly due to the activities of the communications team. For example, over 5,500 subscribers are receiving an electronic newsletter (Attention Mail) with brief newsflashes and links on the networks and other related projects.

Further to section 5.1.1. on the linkage function of the facilitators we have also noted that agricultural entrepreneurs have started to see the added value of Wageningen UR experts. Some networks are actually surprised by how easy it has been for their facilitators to gain access to the right officials of the Ministry of ANFQ. They would never have thought of bringing their problem to that level.

There are also many questions about the effect on knowledge arrangements. In general, we have observed the first signs of movement in the networks, with a better perspective of results than at the start, but tangible results require more time and continued efforts.

Some puzzling questions concern the choice of partners with whom connections have been made.

- Often more connections have been made with individual people than with institutions. It is specifically difficult to get large organizations to cooperate.
- The experts used often are Wageningen UR researchers. Shouldn't we make more efforts to tap expertise from outside this circle?

The Attention Mail with news facts etc. about Networks in Animal Husbandry is sent to over 5,500 subscribers.

- We presume that commercial agencies can also offer lots of brainpower. They have been used relatively little.
- Eight networks (out of 39 in this phase) have made connections with agricultural schools. This mostly concerned the assistance of students. Teachers have been less involved. We are under the impression that there are more opportunities here than we have been utilising.

Two questions are about the types of participant who have registered for the NiAH programme.

- Is this approach only suitable for the 'happy few' who can afford to free up time and resources for a relatively uncertain search and learning process? Or does this set-up also offer perspectives for wider groups of entrepreneurs?
- Does this approach reach the more innovative entrepreneurs, enabling them to use their creative powers for improving the innovative capacity of the entire sector? Or does the NiAH programme only appeal to the front runners?

Finally there are some questions about the future of the free actor.

- On the basis of the NiAH experiences we conclude that the facilitator as a temporary free actor fills an important hiatus in the knowledge system. The question is what will happen after the experiment.
- The role of Wageningen UR researchers in the co-creation of knowledge, as shaped in this programme, calls for a reorientation of the research. Exactly what type of research is needed for this?

5.3.2. Social objectives

NiAH as an encouragement

31 out of the 39 networks coached in 2006 have objectives which go beyond business efficiency, such as:

- developing ecologically sound and animal-friendly livestock production systems,
- generating green energy,
- animal husbandry to serve nature conservation, or
- looking for other (new) relationships with consumers.

These networks are looking for innovations in relation to the legitimisation of animal husbandry in society.

It is plausible to assume that in many ways NiAH has encouraged entrepreneurs to work on these objectives:

- For many networks, the NiAH programme has been an important encouragement to take action. The entrepreneurs would probably not have started on an individual basis.
- For the facilitator, as researcher and intermediary for a network, it is easier to make connections with parties such as animal welfare activists, conservationists, banks and other market parties and government institutions than it would be for the entrepreneurs.
- The facilitator is in a position to remind the participants in the network of their intentions when the close-to-home questions about business operations are battling for attention with the insecure elements of their project regarding contact with the outside world.
- The facilitator's expertise network and knowledge of the subject matter ensure that the technical and economic feasibility of possible solutions are never lost sight of.

A remarkable thing is that movement often is initiated by contact 'via the lower levels' and not via the top. Formal negotiations are less well suited to creating mutual understanding. It starts with informal meetings which the network facilitator can help initiate.

Methodology for emancipatory projects

The network stories show that agricultural entrepreneurs' confidence in taking the initiative for their own future has increased thanks to the project facilitation. Network participants are no longer reactive but have taken an active position in respect of other actors.

Specific examples of this emancipatory effect are found in small sectors such as rabbit husbandry, horse keeping and sheep

farming, which tend to get less attention as regards sector representation and research.

This practice of knowledge co-creation has outgrown the classic image of knowledge dissemination: the trickle down effect where users of knowledge gradually or quickly implement innovations that haven been hatched elsewhere.

We expect the FAN approach to offer perspectives for emancipatory projects where no cut-and-dried solutions are available and where a good result depends on healthy interaction between equal actors.

Tangible effects

The effects can be noticed at different levels.

- Meeting places have been organised: talks with conservationists, environmentalists, animal welfare activists, civil servants; open door days for consumers or people who live in the area, for example to enable them to form another picture of biogas digestion for green power.
- These talks sometimes get a more structural character and the actors actively help to think about developing new practices (Box 32).
- In a number of cases, a network has created space for experiments in local or national regulations. Without this exceptional status, new experiments would not be possible with regulations adjusted to the usual practices (Box 33).

In general, we have found that one year is too short to complete the entire process from idea to implementation. Network facilitation has helped to give the participants in the networks trust in each other and in the process, to attune their ideas to each other and translate them into concrete activities and to put them in contact with experts and other actors necessary for the search and learning process. Mostly a network has built a stable basis to develop from after a year of facilitation: the participants know what they want and how things can be done. The search and learning process is running (the development stage) and the participants know how to reach the experts and authorities necessary for implementation.

Puzzles

There is a certain tension between the roles of policymakers or animal rights activists as critical opponents and as partners taking a proactive approach to networks in a search and learning process. One role asks for distance and the other role asks for closeness. Dealing with this tension calls for plenty of tact, patience and skills building up informal relationships.

The experiment has employed researchers and advisers as free actors to assist networks of entrepreneurs in the vulnerable process from idea to implementation. There are many indications to prove that this has filled a vacancy in the knowledge system. However, this does not prove that the public funds used to develop knowledge are spent better this way than via other possible

- The 'Groene Samenwerking' *[Green Collaboration]* network has achieved structural collaboration with municipal bodies.
- The 'Ketenrendement Konijnenhouderij' *[Chain Efficiency in Rabbit Farming]* network has got the slaughter sector to actively cooperate and proactively think with the rabbit husbandry sector.
- The 'Verbeteren Rendement Advieskosten Varkenshouderij' *[Improving the Efficiency of Consultancy Costs in Pig Farming]* network has got consultancy organisations, veterinarians and animal feed companies to become actively involved in the network after a first introduction.

box 32

- The 'Boergondisch Rijk' network has convinced the municipality council to change regulations enabling the network to work on mobile broiler housing.
- The 'Nolana' network has been granted an exception to the Ram Regulations (a directive of the Commodity Board for Livestock, Meat and Eggs) to be able to cross-breed sheep as required.

box 33

channels such as knowledge vouchers which individual entrepreneurs can freely spend on expertise of their choice.

If we assume that the role of free actor is important for stimulating sustainable innovations in networks, the question still remains of how this role can be filled after 2007. Where will networks be able to present their initiatives and find facilitators with sufficient baggage? And who will maintain a structure for reflection and professional development for the facilitators?

6. A new generation of connections

6.1. From the Research-Extension-Education triptych …

What is new to the NiAH experiment is that it starts from the initiatives of agricultural entrepreneurs and tackles these initiatives through networks. The initiative forms the starting point of a search and learning process where the participants in the network connect to experts who can assist them and to people and authorities who have to enable new ideas to actually be implemented and achieved.

In a sense this is not completely new. In the period 1950 – 1990 the Dutch agricultural sector entered the top three of the world market for agricultural products. This was mainly owing to the short communication lines connecting agricultural entrepreneurs, knowledge workers, policymakers and parties in the production chain, enabling the sector to develop an impressive innovative capacity. Actors did not see each other as competitors, but as part of a collective system to be proud of and for which shared responsibility was felt: initially to ensure the national food security, and then, when that job had been done by the late 1950s, a responsibility to conquer the world market in order to contribute to the national economy. Some 25% of Dutch exports value was due to agriculture in about 1990.

Society offered the agricultural sector plenty of space and a high degree of self-management via the national commodity board for agriculture. Through publicly funded research, agricultural extension and education, the Ministry of Agriculture offered facilities to develop agricultural practices which enabled family-owned farms to make a good living. The government extension service became the connecting link, not only between farmers and researchers, but also between sector organisations and governments at various levels. We could say that at that time the agricultural sector had a huge army of 'free actors' at its disposal, who could do whatever was necessary for the networks in which they were active, without having to formulate an objective for every action on the basis of which their performance was evaluated. This resulted in a coherent agricultural system with great faith in the best way, validated by science and for which joint responsibility was felt.

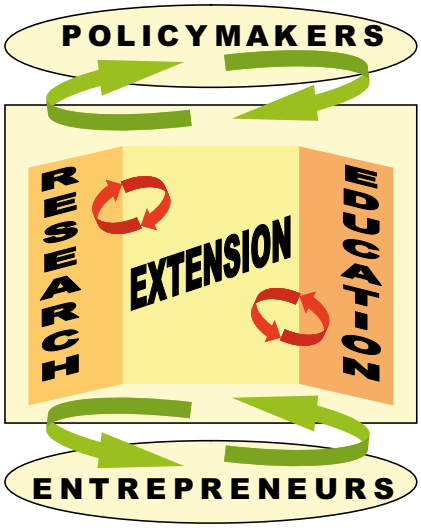


Figure 3. The Research-Extension-Education triptych with internal and external linkages.

There are two main reasons why the Research-Extension-Education triptych (Figure 3) of the 'open knowledge system' failed. The agricultural network had neglected its connections with the rest of society and insufficiently realised that the harmful side effects of the production system could not be 'endlessly thrown over the fence'. When pollution and subsidised overproduction forced the government to adopt restrictive policies, the knowledge system turned out to be insufficiently capable of generating solutions: if problems are complex and there are serious conflicts of interest, there is little chance that an agreement will be reached on the objective truth. As a result, the sector no longer could keep up its collective responsibility. Secondly, the division of tasks and specialisation in the agricultural sector had progressed so far that one collective service-providing system no longer sufficed. More and more the work of the 'free of charge' government extension workers was taken over by specialized commercial advisers who were able to work to customer requirements as long as they were paid for this. When the national agricultural extension service was restructured into the privatised commercial advisory service (1990), the linkage function ('second-tier advice') was still given so much importance that almost half the service was changed into Information and Knowledge Centres which continued to be part of the Ministry of Agriculture. However, views changed after the extension service had been privatised and this function did not come to much.

6.2. … via the market…

The 1990s were marked by a predominant faith in the market. Knowledge became a product. Researchers became producers and advisers became traders of knowledge products. The government became a substitute customer which, on behalf of society, had to formulate knowledge questions for which there was little demand or insufficient purchasing capacity. Not the input but the output of the research had to be funded in a system of programme funding. Policymakers lost their interest in the linkage functions. The general belief was that demand for this would grow when the market found this necessary. To enable the government to call the sector to account for their performance, they should not interfere with the production process itself. This quickly increased the distance between civil servants and the agricultural sector, which was aggravated by the re-orientation of the Information and Knowledge Centres which had to switch their networker role for that of expert for policy support. As a result, researchers lost a major part of their connections to the primary sector, whereas they had to work increasingly hard to secure government funding for their research. The advisory market developed lots of competition between actors among whom there had formerly been a division of tasks (national agricultural extension service, socio-economic extension by farmers' associations and private advisory organizations). They all jumped into the lucrative market of standard subject matter advice. This made it only more difficult

The researcher as a free actor keeps participants alert.

for agricultural entrepreneurs who wanted something new or different to find their way around the knowledge system. There was no shortage of initiatives, but most of them remained small-scale (Remmers, 2000). And next, politicians started to worry about the connection between research and practice: the Netherlands as an innovative knowledge country did not live up to its ambitions, because too much knowledge was allegedly 'left on the shelves of research'.

6.3. … towards: together again in a new division of roles

Since the turn of the century there has been renewed interest in connections in networks. The NiAH programme is an attempt to fill the vacancy which was created in the knowledge system in the 1990s, i.e. the link between agricultural entrepreneur, research, policy and other stakeholders in rural areas. Instead of the 'second-tier extension agents' of the past, now researchers are employed as free actors to do what is necessary in a network of entrepreneurs to raise the network's initiative to a higher level. Besides researchers, teachers at agricultural schools may also fulfil this role of free actor. The *Green Knowledge Cooperative* (regrouping agricultural colleges and Wageningen University) as well as various public funds for projects connecting agricultural education to practice, can be seen as attempts in this direction.

The task now is to breath new life into the success factor of the former Research-Extension-Education triptych system while at the same time finding solutions for the limitations which caused the Research-Extension-Education triptych to run aground. A new generation of connections is necessary, not only between entrepreneurs and knowledge workers in the sector, but also with actors in society who have to provide them with a new 'licence to produce'. The current Dutch government's motto 'Work together, live together' justifies the assumption that politically the time is right for this quest now.

7. Conclusions

7.1. Effects after almost four years of Networks in Animal Husbandry

From initiative to robust networks
The majority of the 120 networks of livestock farmers facilitated by the NiAH programme have made progress in implementing their initiatives, with steps which would have been difficult for them to take themselves if there had not been any assistance. The network facilitators have been important in the process to get participants to trust each other and gain confidence in their capacity to make their ideas come true together. The facilitators managed to mobilise expertise when necessary and to open doors to policymakers and other social actors which would usually remain closed to the networks, let alone individual entrepreneurs.

As a result, the facilitators have mainly played a role in the process running from the initial idea in the network of initiators through the plan and development stage to the stage where the innovation is actually implemented. We described this role as that of the 'free actor', the person with the overview, the position and the competence to do what is needed to get a network to work well. In the event of sustainable innovation processes this means creating space for new ideas, for making new connections, for carrying out research and experiments in the participants' own enterprises and for investments. The learning histories of 2006 and 2007 give the impression that entrepreneurs have started to see more possibilities for their business operations (strategic space), take a more active attitude and are better capable of involving others and causing movement when circumstances call for this (responsive capacity). Over two-thirds of all networks have worked on changes which have a relationship with the social acceptance of the sector (environment, energy, animal welfare, nature, consumer relations).

Networks with free actors as an approach
The NiAH programme has developed an approach to encouraging sustainable innovations: the FAN approach (Free Actors in Networks). The core elements of this approach are the following:

- The starting point is the initiative of entrepreneurial individuals.
- A network of stakeholder participants who want to invest time and energy in the initiative is formed around these individuals.
- This network gets a free actor added to it with:
  - knowledge of the subject matter;
  - affinity with group work;
  - capacity to take up challenging positions and bear the risks;
  - sufficient insight into knowledge processes to be able to recognise where the process requires corrective steering;
  - sufficient ability to select and implement an effective strategy in these cases;
  - access to relevant experts and

various stakeholders in order to make the contacts needed by the network.
- The free actor steers by energy and connection.
- To enable the free actors to effectively fulfil their role, they are embedded in a 'Learning Community' where they can reflect on their practical experience with others and can gather energy for follow-up steps if necessary.

In addition, the programme has generated the language and methods to make this reflection easier.

7.2. Conclusions regarding the scientific discourse

Indications for the hypotheses

- **The initiatives of entrepreneurs in networks form a good starting point:** This hypothesis is confirmed by the experiences of the facilitators. Although not all ideas came from farmers, crucial was that they embraced the initial idea and felt committed to its realisation. Furthermore, it regularly happened that the objective shifted in the course of a project, e.g. because ambitions were too high, the real problem was different from what was initially assumed, or because external information had revealed other opportunities. From the point of view of programme philosophy this is positive. It is the search direction that counts, but the end result cannot be laid down in advance, otherwise it would not be innovative.
- **Networks need a free actor to be able to take innovative steps:** We have found lots of leads to support this hypothesis. This does not mean

The free actor helps participants in the network formulate and reflect.

that this role should always be filled by a researcher, although it cannot be contested that a researcher's position as independent expert is an advantage. We can also think of teachers or of independent entrepreneurs with sufficient experience and overview. The presence of a free actor among the network participants at the end of the project period is an indicator of the future feasibility of the network.

- **Facilitation/coaching contributes to sustainable development:** Indications confirming this hypothesis are the encouragement emanating from the programme to serve such issues, the facilitator's efforts to keep the network's attention when difficult choices have to be made and his/her capacity to open doors to relevant actors. In this context we would also like to mention the emancipatory effect of the approach, causing entrepreneurs, organised in a network, to take up a more explicit position in the wide field of stakeholder actors in the rural area.
- **The facilitator's knowledge of the subject matter is essential:** There are sufficient indications to confirm that the importance of knowledge of the subject matter when making connections, sharing enthusiasm, being able to advise on the search and learning path to be followed and switching to the right actors.
- **The reflection structure and the backpack with tools for facilitators are conditions for quality:** The difference between the first phase – where the facilitators were sent to the networks without any tools being provided to them – and the subsequent phases (2006 and 2007) – where the facilitators reflect on their work together and pay attention to the backpack with tools – can be noticed by the interest shown by facilitators. However, the learning histories of 2006 still fail to provide sufficient concrete descriptions to make it possible to document how facilitators are using the methodologies provided to them. The collegial consultations and the learning histories of 2007 show improvement. Nearly all facilitators indicate that the structure for joint reflection has been most important for their work.

Scientific contribution

The NiAH experiment has been looking for an approach to bring researchers closer to what agricultural entrepreneurs are demanding. This approach has unfolded during the time of the experiment. In this approach the research team has chosen to apply action research, i.e. learning by causing movement and reflecting on it. As a result, the trial mainly has an explorative character. Factors which may have been important are identified on the basis of subjective experiences, without being able to make any definite statements as to their relative contribution. This approach fits in well with the ecological perspective as the theoretical framework in which the emphasis is on the nature and quality of connections and on healthy interaction processes which may produce ecologically sound solutions. In

this perspective the free actor can be seen as a catalyst for system innovations on the network level.

Contribution to the development of methodologies

During the project, a backpack was filled with mutually complementary analysis models which help facilitators distinguish between roles, stages and situations in networks and take effective action. The models are not prescriptions which facilitators have to follow blindly. They are rather to be used as mental exercises to sharpen the facilitators' intuitive capacity of responding adequately. Feedback from the facilitators indicates that the tools have proven to be practical and comprehensive, although not everyone has the same affinity with each of them. Furthermore, for some tools, like the Circle of Coherence (Chapter 12), it takes time to be able to use them to their full extend. The Timeline Method (Chapter 13) was easy to implement and well appreciated by both facilitators and network participants, although they usually needed some encouragement to engage into the exercise. Without exception they were grateful afterwards for what it had delivered. The Learning History method (Chapter 14) served well for reporting, adding the analysis of the facilitator to the results of the timelines drawn up with the participants.

Although there are good examples of networks that pushed through to realisation, dissemination and embedding, in terms of the Spiral of Innovation (Chapter 10), the NiAH programme appears to have assisted networks mainly in the stages from initial idea to planning and development. One explanation is that the assistance only lasted for one year, which is too short to pass all stages of an innovation. Another possible reason is that the programme reached the limits of what can be expected from subject matter specialists as facilitators, without additional training when it comes to situations where difficult investment decisions have to be taken or tricky negotiations have to be done.

An issue that continuously needs attention is the game of responsibilities between the facilitators and the participants in the networks. The trick is to offer encouragement without taking the initiative away from the network members. This game gets another dimension with participants who represent others. How does interaction stay healthy? It is plausible that the methodology and the structure for collective reflection are also useful for other network projects with researchers, teachers or advisers.

7.3. Conclusions for entrepreneurs, knowledge workers and the government

Entrepreneurs

The starting point for the 120 innovation projects in the NiAH programme was that entrepreneurs were offered the opportunity to propose initiatives via networks and that every network was granted a budget for hiring expertise. It is not usual – yet – to

hire expertise for this kind of project. The experiment shows that there is added value in taking up initiatives as a network. It also shows that good coaching by a free actor on a temporary basis is important, on the one hand as a link to parties which are difficult to access for entrepreneurs and on the other hand as a process facilitator to help find new ways and relationships in the network. The 120 network projects have brought a host of results, as the website (www.verantwoordeveehouderij.nl/netwerken) shows. Results can be divided as follows:

- useful methods for livestock farmers (measuring instruments to improve awareness, calculation tools on internet, a business manual for pig farmers);
- documented subject matter experience (articles, brochures, reports and publications);
- interactive knowledge exchange (workshops, introductions and open door days);
- new connections between daily practice and knowledge institutions, schools, governments and companies;
- new forms of cooperation between enterprises serving as sources of inspiration for others;
- documented network experience (learning histories).

Knowledge workers

For the FAN approach the NiAH programme has developed methods and concepts which can be used by knowledge workers. This enables the discussion on network approaches to go beyond the conclusion that networks are important and that steering by connection and energy is necessary. The NiAH experience also indicates how this can be done. In addition, the free actor concept adds something to possible perceptions of the role of the knowledge worker. Apart from being an expert on the subject matter s/he can also fill important connecting functions in the knowledge system. Experience shows that providing a backpack with tools is not sufficient when knowledge workers with expertise on the subject matter act as network facilitators. A structure for joint reflection and learning, and working on a common language for this are necessary ingredients of this approach.

Government

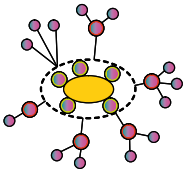
The FAN approach offers perspectives as a policy instrument for encouraging sustainable innovations by renewed entrepreneurship, new knowledge arrangements and connections with actors in society. The conclusion of the NiAH programme is that, at knowledge system level, the network facilitator as a free actor fills a function in the rural environment which has been vacant since the Research-Extension-Education triptych run aground.

In the 1990s it was assumed that the market would provide connections if there was a demand for them.
If, at present, it is stated that insufficient use is being made of knowledge for sustainable innovations, we conclude that this assumption was not correct – specifically where relatively small-scale and sustainable

initiatives are concerned. There are many indications that this connecting function brings benefits for society. An interesting question is, however, who has to maintain this function, when a demand with sufficient purchasing power cannot be expected. This question is relevant to the division of roles between governments, innovation platforms, knowledge centres and sector organisations.

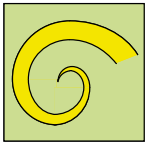
Composition of the network
Who is involved?
How do we make connections with stakeholders?
Which positions do actors take?
Do we lack important players?
Is this network a solid foundation?

Network Analysis



Development of the content
How far developed is the idea?
What is the next step?
What kind of knowledge is required?
Which actors need to be motivated for action?

Spiral of Innovations

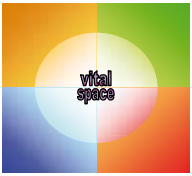


Focus on energy
Where does the energy for change originate?
What is the best sequence to approach the actors?
When can this next step be taken?

Triangle of Change

Focus on connection
How healthy is the interaction?
Which connecting line is the limiting factor?
Which intervention is currently effective to improve the interaction?

Circle of Coherence



Progress meeting with the network
What were the important moments?
What can they teach us for the future?

Timeline Method

Self-evaluation
What does the film of the network look like?
What are the important scenes?
How can we understand what happened?
What can this teach us?

Learning History

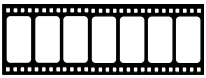


Figure 4. Overview of the tools and the questions they try to answer.

8. Introduction

8.1. The free actor

This second part of the book provides tools for networkers. The models in this part are intended to be used as reference material and as a source of inspiration by people who are interested in contributing to the creation of a well-functioning network. This commitment requires space, insight and the ability to take the action required by the network. We call this the role of the free actor in a network. A network needs a person to fulfil this role, otherwise it will simply stop functioning sooner or later. A particular person may be specifically asked to fill the role of a free actor, such as network facilitators in the 'Networks in Animal Husbandry' (NiAH) programme, which is the source of this book. However, a person may choose to spontaneously adopt the role of a free actor. In fact, anyone can take the stage as a free actor as long as all the network members are aware who is currently filling the role.

8.2. The tools

The following chapters describe four analysis models and two self-evaluation methods. The four models are mutually complementary and each touches on an important area of dynamics within a network. They help the situation to be recognized, so that the network is able to take the appropriate next step if a similar situation occurs. The two self-evaluation methods are inter-complementary. The Timeline Method is a tool used in progress meetings with the network participants. The Learning History adds an analysis to the result. The diagram (Figure 4) can be seen as a road map to achieving this aim. Chapter 15 contains further information about the conceptual scope. This chapter also describes the keywords, such as network, free actor, knowledge, strategic space and vital space in greater detail. The report concludes with a tale illustrating the use of the models in their mutual cohesion. The tale illustrates four different strategies to induce change. The tale also demonstrates the function of knowledge in situations involving different stakeholders.

9. The Network Analysis

An initiative starts taking place when people who share an affinity for a certain idea are connected and linked. The Network Analysis is a model that enables the network's involvement in a specific initiative to be understood and its position to be explored. The Network Analysis enables you define the scope of the initiative, the participants who support the initiative, which people represent a link in the chain as well as indicating the direction the links should take. The analysis inspires with new ideas and insights and helps network members prepare to make contacts. The network facilitator can analyse the network together with the initiator and network partners; if you are the initiator, this analysis can be done with the partners.

9.1. The Network Analysis in detail

Four questions guide you through the Network Analysis.

(1) What is the core?
What is it intrinsically about, what are we trying to achieve? State this initiative in one or more powerful key words and focus on that during the rest of the analysis.

(2) What is the involvement?
Who and what are you dealing with? Who are the interested parties, who stands to gain from the initiative, who do you have to take into account, and who else is involved? Which developments, movements, institutes, rules, circumstances and the like are important?

(3) What are the positions of involvement?
The network positions are:

- **Initiators:** Take the initiative, state the starting point and invite others. The initiator is initially a single individual. S/He is the partner, link, supplier and user. Gradually, a network of involvement where others adopt the position of partner, link or user, is created.

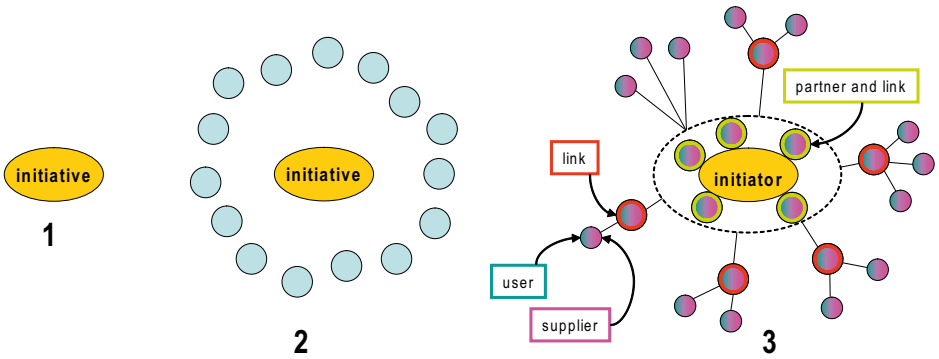


Figure 5. The three stages of the network analysis.

- **Partners:** Sustain the initiative and do everything to make it visible, execute it and act as examples (Box 34).
- **Links:** Create relationships with and connections to other networks, lead the way from specific angles, are ambassadors and work on building knowledge and information (Box 35).
- **Suppliers:** Everyone involved contributes to the network, but there are also specialist contributions. The people involved supply what is needed to realise ambitions.
- **Users:** Everyone involved is a network user, but there are also specific users such as clients.

Between the initiative as core and all the stakeholders, there is a space which some may occupy for a shorter or longer period of time (see Figure 5):

- as a link that creates relationships and connections,
- or, as a link and partner – or simply a partner – who propagates the initiative and does everything possible to ensure it reaches a successful conclusion.

A Network Analysis in the making.

Not everyone has to be a partner

A network of dairy farmers seeks to improve their operating profit by investing collectively. A biogas digester seems like a good option to begin with. The group gets off to a good start. However, the enthusiasm diminishes as they gather more information and the moment to decide about specific choices get closer. This becomes apparent by the effort it takes in finding a date for a follow-up meeting, for example. The facilitator decides to call up the participants individually to find out what's going on. That's how he discovers that there are differing views concerning what people want. As it happens, a considerably large biogas digester is needed for a substantial profit. Some participants want to proceed with it, but this investment is too great for others. When the facilitator puts this up for discussion in the following meeting, they agree that not everyone has to feel pressured to invest to the same extent. That's a relief because not all of the participants have to be partners in this undertaking.

box 34

Searching for links

A network has been working on getting 'energy recovery from nature reserves' off the ground in their own region for almost two years. They already made many contacts when working out the idea, for example with heating manufactures, drying houses, livestock farmers in the area, the forestry agency, municipal and provincial authorities. The participants gradually notice that the chief ambition they have is to get their idea off the ground in order to conserve the protected nature reserve. They see themselves chiefly as the devisers of the idea and lack the actual doers in their network. It becomes clear with a Network Analysis that in addition to being partners, they are also the link to all parties involved. How would it be if other parties also became a link? What if, for example, the province, an innovation broker or the forestry agency formed a link to potential buyers of natural biofuel? Even just the idea that such parties might be able to devote themselves to the realization of this innovation provides a new twist to the discussion about the network partners. How can we, as originators, further let go of tending to our innovation project? Perhaps it is then advisable to establish a supervisory board of trustees on which distinguished people sit in their own name. While talking about it, diverse people came to mind that the partners really wanted to involve. It turns out that most of these people are already in the contact network! The sentiment clearly switched. They once again see new points of contact in order to proceed further with the project, and therefore, specific agreements are easily made.

box 35

Ask yourself if these links also occur in your situation. Which behaviour shows that someone is a link? Or that someone is a partner? The key issue is how someone really behaves! All of the people involved have at least a position of user or supplier. This creates a snapshot of the dynamic network of involvement.

(4) Is this network a solid foundation?
The Network Analysis creates a snapshot of the dynamic network of involvement. The key question is: does the current form of the network offer the potential to expand and build on? Each analysis supplies new ideas of how you can continue to consolidate your network to bring the initiative one step closer to realisation.

9.2. Using the Network Analysis

The facilitator should preferably make the Network Analysis together with the network participants. Their perception is guiding. It helps to visualise the positions, for example, in a mind map on a flip chart or paper table cloth. Place the main text in the centre. Then hold a brainstorming session with the group and place the answers this triggers to the second question about involvement around the main text. Continue with the involvement positions. Who are the connections and who are the partners? Don't forget to include yourself! Confirm that the links and partners actually are links and partners: which behaviour demonstrates that? It's about what a person really reveals through their thoughts and behaviour! And finally, draw your conclusions: which connections require some concerted effort. And ask yourself the leading question: is this a network that offers a solid enough foundation on which to build?

10. The Spiral of Innovations

People take action because they want something: they want to profit from an opportunity, solve a problem, improve a technique, change direction, realise a dream: the content is guiding.

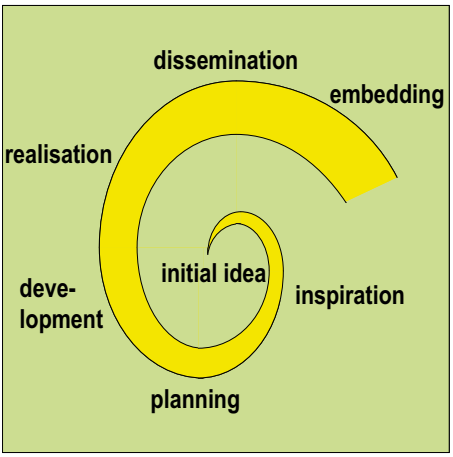


Figure 6. The different stages of the Spiral of Innovations.

The Spiral of Innovations (Figure 6) shows how an initial idea proceeds through different stages before turning into an innovation: a new practice that is widely applied in a broad context and with which the environment structurally complies. Not every idea matures into an innovation – they don't have to either. The model is intended to determine where you are in the innovation process. Which phase is being addressed, what does it mean for the type of knowledge that is being worked on and which parties have to be mobilised?

Innovation cannot be fabricated as a manageable project. It's an autonomous process: a good biotope automatically generates innovation. You can improve the climate of the biotope by helping to create the right connections and by removing barriers. The Spiral of Innovations helps you detect barriers and prioritise the connections that have to be made to others.

The Spiral of Innovations distinguishes seven phases. Each phase prioritises other activities, and usually involves other actors. The shape of the Spiral of Innovations shows that the idea usually starts off small and spreads to involve more actors as the process of innovation progresses. Furthermore, knowledge processes and innovation are rarely linear, which explains why the model is shaped like a spiral. The phases can even be repeated more than once. The embedding of the idea frequently ends in a place which differs to where the initial idea was conceived.

10.1. The phase of the initial idea

The start of this phase is usually not planned. A person may possibly have a problem or a vague dream (Box 36). The initial spark can also be triggered by a confrontation, or an unexpected event.

Knowledge

An initial idea is generated by an individual's response to his or her environment. Experiences, knowledge, convictions, dreams and anxieties, creativity and

An initial idea frequently originates by chance.

intuition; all these aspects play a role in a person's capacity to pick up signals from the environment and do something with them. For example, by interpreting them in such a way that leads to an out of the box reaction. And that is precisely the reaction that sows the seeds of change. We call this: *knowledge as responsive capacity*: the capacity to respond effectively to a changing environment (see also Paragraph 3.3.).

Connection

Initial ideas are often created when someone looks beyond the confines of his/her immediate circle. Initiators are frequently people who are relatively new to a specific environment. This explains why they notice aspects that others consider normal, or have fewer inhibitions about introducing new concepts and reactions.

Barriers

The chance of initial ideas maturing into innovations is increased through contact between the known circle and the world around it. If the threshold to make such contacts is high or newcomers are not readily accepted, barriers form which frustrate the creation of an innovative climate.

Combating parasites with pest control?
A poultry farmer is having problems with red mite in his barn. A terrible problem that plagues the entire sector and which can no longer be controlled with legal agents. People would rather not discuss it. However, this farmer notices that the darkling beetle population increases when there are many mites and that the number of mites then diminishes. Evidently, this is a natural enemy. He concludes that 'The mites could then be controlled biologically using this natural predator. The initial idea is born. He discusses his idea with a few fellow poultry farmers. Moreover, one of them has bronchial problems. And this worsens when he uses the common chemical methods of pest control. The idea that they might be able to do something about it appeals to them. The inspiration phase has begun.

box 36

Interventions

Based on the factor that most restricts the creation of new ideas, you can consider undertaking the following interventions:

- Organise contacts with people from outside the immediate circle, from a more unexpected angle. As the NiAH programme demonstrated, without

exception, visits, excursions and open house days which give outsiders a look behind the scenes boost energy and often yield new ideas.
- It can be refreshing to meet and communicate with people who hold opposing ideas or invite them to a brainstorming session. It's important to be aware of the risks that people take in making new contacts. Competitive considerations, for example, play a role, or in the case of livestock farmers, the contamination with diseases. Finding solutions together, such as sharing the risks or preventive measures against contamination can lower the threshold and open the door to new contacts. Hopefully leading in turn to the birth of new ideas.

10.2. The inspiration phase

The inspiration phase begins as soon as someone starts sharing his/her initial idea with others. In the inspiration phase, the initial idea takes shape as the concept inspires others. This process takes place when the initiator discusses the idea with others. They can contribute, possibly because they hold similar ideas, or because the debate offers perspectives for a solution they may have been searching for (Box 36, 37, 38). This phase creates an *initiative group* that focuses on wanting change. As soon as the network starts implementing action, or decides to implement action, the group progresses from the inspiration phase to the planning phase.

Knowledge

People who feel an affinity with an initial idea relate it to their own world, their own experience, their perception of reality, interests, dissatisfaction, hope and anxiety. This creates new insight and new perspective which in turn generates energy. This is the core of inspiration. The interaction between the participants in the group brings perceptions closer together. Participants don't necessarily have to agree on everything. It's not always necessary to have the hard facts. In a healthy process, a time always comes when such high levels of agreement on the subject in question are reached and on the course of action, that people feel the urge to start taking action.

Who's participating?

It becomes more appealing to keep dairy cows in the pasture if the automatic milking system, the milking robot, can also go there. Such a system does not yet exist. An enterprising researcher in search of supporters places advertisements. The advertisement in one specialist journal produced four reactions, an appeal via the 'Attention Mail' with newsflashes from the NiAH programme yields thirteen interested farmers. At the first meeting it turns out that the views of the desired end result were fairly divergent. They do not think that's bad, but rather inspiring. There is a search direction. A network that applies to the NiAH programme ultimately takes shape.

box 37

That's shocking!
The discussion reluctantly gets going in the network of poultry farmers that wants to tackle the red mite problem. They ask five fellow poultry farmers to participate, but it proves a disappointment for the three initiators to convince them of the urgency. The facilitator brings in an expert who devises a simple measuring instrument, a type of imitation opening in the shape of a cylinder with a wooden stick in it. When you pull the stick out of the cylinder after hanging it in the barn for a week, you can simply count the number of lice that have crawled in. The participants are rather shocked by the result in their barns. Some still thought that they had explicitly prevented the mites from entering their farms; now it turns out that everyone has the parasites. Their readiness to take action substantially increases because of this awareness.

box 38

We call this *accepted knowledge* as the basis for collective action.

Connection

During the inspiration phase the main focus is the connection among like-minded people. Their synergy produces the fuel needed to power action. Later phases not only energise the participants, but may also de-energise them. For this reason, it is crucial to create a sound foundation. Subsequent actions often require others, such as financiers or managers, to create space. So in this phase it is essential that the network of change agents acquires a position from which the environment takes the network seriously.

Barriers

A network can stagnate in this phase for several reasons:

- In a social setting that does not embrace different opinions, it is difficult to find supporters prepared to take a different view or approach that deviates from the norm.
- People can easily fear competition, this reticence may hamper the discussion about what is wrong and needs changing. It can even threaten to halt the process.
- A culture of complaint is lethal for changes; it drains energy away and prevents people from dreaming.

A specific pitfall for change agents is that they start complaining if they have requested cooperation only to be faced by a negative response. The motion is halted and they blame those who obstructed progress. The Spiral of Innovations shows that they actually asked for too much room to manoeuvre too soon. The change agent had not yet generated sufficient energy or acquired the right position.

Interventions

Depending on the nature of the barrier, a free actor has a number of options in this phase:

- Invite inspiring people with promising stories.
- Introduce participants to inspiring examples.
- Arrange informal discussions. The key is

getting people to meet and connect.
- Avoid negotiations. Discussions with people in function, especially if they represent an organisation in the discussion, rarely energise and inspire.
- Complainers are best excluded from this phase. They drain energy and contribute nothing in return.

10.3. The planning phase

The next phase starts when the network participants are prepared to start acting and have a reasonable chance of success of creating sufficient space to realise their ambitions. The planning phase starts with creating space. It ends with concrete agreements about the action that needs to be taken and the effort required by each of the participants. Space is necessary at two levels, namely within the network itself and in the network's environment. For example, financiers, partners or, if employees are involved in the network, their managers.

The NiAH programme teaches an important lesson in this respect – this phase needs time. It is tempting to quickly come to an agreement so the action can start. But all too frequently, it appears that participants fail to keep to the outlines of the agreements. The time devoted to this phase will be rewarded fully at a later stage. This is an aspect discussed in detail in Chapter 12, Circle of Coherence.

Knowledge

As in the previous phase, this phase also requires accepted knowledge. It makes a difference if you are attempting to reach a consensus with supporters or with gatekeepers (see the Triangle of Change, Chapter 11). Gatekeepers are important in the planning phase. They are actors who have to create space for the activities in the subsequent development phase. These people include financiers, partners and, in the case of participating employees, managers. Financiers place their own criteria on the initiative. Managers have objectives which are used to assess their own performance. Whether the initiative contributes to the objectives is a question of negotiating about giving and taking. The knowledge used by the gatekeepers to make their choices also plays a role. The initiators will have to translate their ideas into the gatekeepers' language and imagery (see second part of Box 40) in order for knowledge to be accepted as the starting point.

Connection

In this phase, the *connections within the network* acquire an added dimension. In the inspiration phase, the focus was on what connected the participants. In this phase, the participants should define the precise focus, discard the elements outside the scope of the chosen focus, and clarify just how much each participant is willing to invest. This means that not everyone can get their way. This debate must be conducted carefully and allowed enough time to mature. A network that very quickly reaches agreement about an objective and the task division can run into problems later on when the task gets difficult and

the unspoken expectations or risks weigh heavily on personal motivation. Keeping an open dialogue between all participants and challenging each other is crucial in understanding where everyone stands and how the network can cope with differing opinions. This phase is intended to give participants the opportunity to become familiar with each other and with each individual's 'instructions for use' before things get out of control.

You will also frequently find yourself *connecting with the gatekeepers* in this phase. If an activity requires external funding, a financier must be found. The financier will want to see a project plan and will place demands on the project. If participants are employees, a manager must also grant approval. Entrepreneurs may have partners who need to agree about the time and the amount invested. All of these actors will want to be informed about the costs, benefits, and risks. They will want you to submit detailed project plans with concrete objectives, instruments, activities and evaluation criteria. The art is to formulate the plans in such a way that the plan inspires confidence while leaving space for a search. Furthermore, in terms of the Network Analysis, the network must contain enough links so the necessary connections can be made.

Barriers

If the participants are unable to agree on clear objectives, activities and the task division, or take this too lightly, intervention will be called for to address the manner in which the participants are communicating. For more detail, see the Circle of Coherence (Chapter 12). Some examples of barriers that may obstruct external connections are:

- The initiative fails to meet the criteria or match the gatekeepers' views.
- The scale of the initiative is too small to be taken seriously.
- There are missing links (see the Network Analysis in Chapter 9) connecting the initiators and the gatekeepers.
- The gatekeepers are too result-oriented and force the initiators into a straitjacket.

Interventions

Depending on the type of barrier, a free actor can do the following:

- Help to find links that relate to the gatekeepers' world. An even better approach is if you or your network can personally and informally involve people from the circle of external actors into the discussion.
- Help the network search for support from other networks with similar ideas.
- Experience imposed criteria and objectives as space and not as a fixed objective. The perimeters are determined by the possibilities the initiators think they need for the planned activities and the securities the gatekeeper requires to ensure the relationship remains one of trust. This can be negotiated.

The planning phase works towards formulating a project plan with objectives, activities, task division and other

Some participants see the end product as a goal, others merely see it as a means to an end.

agreements that have to be made in order to get started. It is important that the free actor, steering and guiding the situation by focussing on energy and connection, sees the project plan in the proper perspective. This package of agreements is intended to be used as a regulatory agent to control exchanges between the participants and also to ensure that all of the parties have faith in the fact that their joint efforts will result in a worthwhile investment. Trust is essential.

It is actually better to refer to a search direction rather than objectives. At this stage no one can predict what the ultimate result will be. It's often easier to exclude elements from the search, rather than include them. This is the way to delineate the perimeters of the space you as a group are prepared to invest in. The art is to formulate the objectives so that the participants are confident enough about the activities, while still retaining space for a search with surprises. When the project plan has been drawn up and agreed, the initiators have become a development group.

10.4. The development phase

The development phase starts with agreements about the objective and the task division. In many cases, the participants may still have to have to follow the development

path for a while before being able to bring the objective and the task division into focus. In some situations, the development path being followed may turn out to be a dead end. In this case the network will be forced to reconsider its plans all over again. In this phase, the network takes the initial idea a stage further by developing it into a technique or a procedure. If necessary, the group can call upon the assistance and competence of experts or start experimenting.

Knowledge

In this phase, the network is engaged in searching for knowledge that will help them progress with their initiative. These are their own experiences, experiences of others, scientific knowledge and data collection and experiments in the network. Sometimes there is *uncontested knowledge* that is relevant for the initiative and specifically applicable to the network participants' circumstances. This form of knowledge has been validated by scientific research and is beyond all suspicion. If this type of knowledge is unavailable, *knowledge with value* can also provide the answer. For the participants, a specific type of knowledge is valuable if they have faith in the source and recognise how the knowledge can be applied to their initiative.

This knowledge may often need translating to the specific circumstances of the network participants. The belief that there is a wealth of *scientific knowledge lying on the shelf* and that innovation is simply a question of applying this knowledge, is too simple. In addition to this knowledge, the entrepreneurs' own experience and the creative process of all of the stakeholders are a major contributing factor in the development of new practices. Relevant knowledge is the result of interaction: the co-creation of knowledge.

Connection

In this phase the *connections within the network* still require close attention. Once the participants really get started, the network often runs into a brick wall at some stage. The results fail to match the expectations, the whole process demands more effort than predicted, some people may be unable to fulfil their commitments, and so forth. In this case, it's important to remember the perspective that first

Breeding programme on the wrong track

A network of sheep farmers wants to develop a self-moulting breed of sheep that is more suitable for the maintenance of nature areas. Sheep with too much wool aren't so suitable for this type of project. Their breeding programme has already been running for a few years when they receive support from the NiAH programme. Because of his experience as researcher, the facilitator quickly discovers that the network implements the wrong crossbreeding principles. They decide to establish a new breeding objective and to introduce a breeding programme by following another principle.

box 39

Up-scaling the research

(1) The network of poultry farmers that wants to control red mite has its hope vested in an American professor with experience in controlling them with darkling beetles. However, he warns that the remedy is worse than the disease. It led to more serious beetle plagues in the US. The network couldn't work it out with the modest budget in the NiAH programme. The solution therefore must be worked out by chemical pest control, which was exactly the problem in the first place (see Box 36). (2) In order to make policymakers and the sector aware of this, the network makes a video with unique night recordings of the chickens plagued by parasites. This makes such an impression on the representatives of the sector organisation and the Ministry of ANFQ that they free up half a million euros for a more large-scale investigation. The darkling beetle still plays a role in this, but then preferably without the damaging side effects. The disappointing results from the development phase are therefore cause for the network to return to the planning phase and with that, to involve other parties. After this, a development phase follows once again, now on another scale.

box 40

inspired the participants to start the action and find a way to deal with mutual irritation and disappointments. Celebrating small successes in a big way can really reintroduce a sense of positive energy. For more information about interaction patterns and possible interventions, see Chapter 12, Circle of Coherence.

No exceptional position, however, adjust regulations

The new breeding programme for self-moulting sheep cannot be carried out legally. In order to counteract the spread of scrapie (a brain disease in sheep, comparable to BSE in cattle), the legislator has specifically determined that sheep farmers may only use non-resistant rams within their own breed. According to this 'ram regulation', you therefore cannot use these rams to create a new crossbreed of sheep. The network enters discussions about this with policymakers with the support of the NiAH programme. They request an exceptional position, but this proves to be impossible. Instead, the Commodity Board for Livestock, Meat and Eggs adapts the definition of a breeding programme. The network can then proceed with this and the entire sector ultimately profits.

box 41

This phase focuses on *connecting with expertise*. This means mobilisation experts with the proper professional knowledge. They contribute pieces to the puzzle and can help put the puzzle together (Box 39 and first part of 40).

Connecting to other parties can be equally important in this phase. Developing a new concept into a practical solution does not guarantee acceptance by the outside world. If you succeed in involving external people in this phase, the network will have fewer problems in the realisation phase.

Sometimes the network will run into limitations during the development phase that prevent the search from continuing. The network must then return to the planning phase to negotiate extra space with external parties (Box 41), or to modify the original plans. Another possibility is to mobilise other parties so that the search can continue at a different level (Box 40).

Barriers

The linkage function of a free actor or network facilitator such as in the NiAH programme, is essential to achieve success. A few examples of obstacles that may be encountered in the development phase follow:

- Reality develops differently than anticipated in the project plan;
- The right expertise is not available;
- The right experts are difficult to mobilise, or are too focused on their own agenda;
- Expertise is protected for competitive reasons;
- External parties refuse to be actively involved because they are afraid of taking a risk;
- Promising results spark external resistance.

Interventions

Depending on the barrier the free actor can do the following:

- If reality deviates from the plan, which is usually the case, you can adjust the plan. The entire point is not just about the plan and the objective, but relates to the space within which participants and their environment have confidence and faith in their combined efforts. The boundaries surrounding this domain of trust need regular maintenance. The boundaries often expand as the project progresses and people have a better understanding of their mutual positions.
- When expertise is unavailable, the network must develop it itself. This concept took some getting used to in a number of networks in the NiAH programme. But it quickly leads to the discovery that co-creating knowledge is satisfying and can even lead to better results.
- It's not easy to exchange knowledge in high-risk, innovative programmes in a climate in which knowledge is a product that can result in a competitive advantage. There is little other option than to negotiate the price and possible mutual benefits when the search is successful.
- The bigger role conflicts of interest play, the harder it is to involve others, or even the counterparty, in the development phase. The counterparty may prefer to keep his hands free to show a form of resistance during the realisation phase. Even so, it is often possible to find people willing to contribute in a personal capacity. It makes a difference if you address them in their role as a representative or as an informant who provides insight into the interests, considerations and views of the other party.

10.5. The realisation phase

The development phase makes the transition to the realisation phase when the priority shifts from the search process onto realising the solution. This transitional line is sometimes blurred. There are, however, important differences in the activities to be implemented, the composition of the broad network and the way knowledge is utilised and applied. The realisation phase starts when the network knows what it wants and how to achieve this, as well as actually wanting to implement this practice. This will not only influence and change one's own production method and organisation, the consequences also impact on others. The cooperation of other parties in the chain may be required, legislation and regulations may need to be amended, or complaints from other interested parties dealt with too.

As discussed in the development phase, it helps if contacts with people in the network's surroundings were already in place at an early stage. These *people* are characterised by their enthusiasm and open behaviour and form the *informal network*. The actors needed in the realisation phase are usually *organisations* that are part of the *formal network*, people with a management or representative function. For the NiAH networks, these were mainly parties in the (production) chain, civil society organisations, such as animal protection and consumer organisations, nature conservation organisations, and policymakers at different levels.

The process of transformation from the informal character of the inspiration phase to the formal character of the planning phase appears to be repeating itself. But this time, the emphasis is not on space for a search, but on implementing a changed practice.

Knowledge

In the realisation phase, knowledge plays an important role in positioning the network regarding other actors. If arguments and evidence are employed to acquire a better position, then we are actually using *knowledge as a weapon*. Network participants often hope that the development phase will provide scientific arguments they can use to convince the other party. They are counting on *uncontested knowledge* being sufficient for the purpose, but may be horribly mistaken. There is a risk that 'objective expertise' is exploited to win a power struggle, which solidifies the contradictions rather than dissolves them. *Knowledge with value* is a better approximation of what is needed because it includes the negotiating aspect of knowledge; which knowledge is valuable to the stakeholders? The basis for cooperation in this phase is to strive for *accepted knowledge* once again. It's worth mentioning that the parties do not have to be in total agreement about every aspect in order to gain momentum.

Connection

To realise renewal and implement change, connections must be made with

other parties, for example, in the chain, regulators, other stakeholders in the region, etc. Not everyone is waiting for change. Moreover, not every form of change equates to an improvement for all those involved in the consequences. Existing structures have been developed based on the recent past. When a network takes steps towards the future, these structures don't usually change at an according rate.

Barriers

In summary, barriers can occur in a number of fields:

- The network has not yet acquired a strong enough position in the field of power relationships.
- Actors in the wider network fail to appreciate and see enough added value.
- Some actors in key positions are actively or passively opposing change.
- There are numerous ways in which this kind of barrier can occur.

Interventions

Connections established in this phase have a negotiation character. This makes it equally important to be in a negotiation position. Sometimes you have to work on this position before you can negotiate (Box 42). It is also important that all of the parties feel that their risks and interests have been recognised. The previously mentioned informal network can play an important role in achieving this. Informally you can look for solutions that offer mutual advantages. It can be useful to involve an independent negotiator. If the solution works and all of the parties around the network have paid a

New housing concept does not comply with regulations

A network has developed a mobile poultry stable. With this innovative concept, the broilers have more room for outside access than is cited in the regulations for extensive poultry farming. Moreover, their outside run is continuously refreshed and renewed because the stable is relocated after each cycle. However, municipality officials consider a mobile stable to be the same thing as a permanent building, which should therefore remain within the boundaries of the building area. They actually consider this animal-friendly form of production to be ground-based intensive animal husbandry. In accordance with the zoning scheme, they therefore don't grant a permit. The network knows what it wants, but encounters difficulties on account of external factors, in this case the municipality officials, who do not want to budge. This is typical for the realization phase. The type of knowledge that the network now needs is not of a technical nature, because they already know how things work. The participants want scientific arguments to get the officials in motion; knowledge as a weapon. Perhaps more important is that they want to be taken sufficiently seriously in the position game. For that purpose, the network uses the facilitator's or researcher's contacts to try to interest the officials from the Ministry of ANFQ, the Ministry of Housing, Spatial Planning and the Environment and the province in their plan.

box 42

A German version of the Claw Check (Box 43) has also been published.

contribution, then the realisation phase is completed.

10.6. The dissemination phase

The dissemination phase starts when the new practice or technique has become familiar in the environment and is being replicated. The realisation phase does not necessarily have to have been completed. If others witness the progress that has been made in the development phase, this can spark a knock-on effect and also set others into motion. If others see that renewed concepts work, you can expect a following. We call a modernisation an 'innovation' when it has become a widely accepted practice in the environment.

Whether the network will actively support the dissemination of the new practice is another matter. This depends on whether it is in the network's interest. Sometimes it's easier or cheaper when more actors implement a new practice. Maybe dissemination is a demand placed by one of financiers. For example, the government can demand that public money benefits a wider audience. The network can also have idealistic reasons to actively share their experience with others, for example, to help the sector, or to improve the sector's image. In other cases it may be unreasonable to ask network

participants to devote their time and energy to activities for others, if the network itself does not stand to benefit. Dissemination can work against the interest of the network participants by causing them to lose their competitive advantage, for example. In these cases, other people must fulfil the dissemination role.

Knowledge

The knowledge put into practice by a network and accepted by the environment is described as *knowledge with value*. Applicability to the individual situation and faith in the source are key. Whether scientific validation (uncontested knowledge) plays a role depends on the value users place on this as evidence; we have observed big differences.

Connection

Dissemination takes place when others become aware of and are inspired by positive results. The users and the links are important to those who want to actively work on this in terms of the Network Analysis (Chapter 9). Which target groups benefit from the changes and new ideas, which channels can they use to find new information, which actors can act as links in the chain, and how can they be mobilised?

Barriers

If the dissemination process stagnates, the cause can be found at various several levels:

- The network sees insufficient benefits in dissemination.
- The potential users were not correctly assessed (Box 51).
- Factors that make the users' circumstances different from those of the network participants were overlooked.
- The proper communication channels and links were not found to inform potential users.

Interest across the borders

A network of pig farmers keeps pregnant sows in group housing. They notice that the sows now have problems with their claws more often than previously when they were kept in traditional pens with individual housing. In order to draw timely attention to this and to map out developments, the network develops a chart with photos of the most common claw problems. Using this tool, the 'Claw Check', sow farmers can quickly and easily gain an impression of general claw-health at their farm. There is much interest in the chart. After the Dutch specialist journal 'Pigs' circulates the chart, the specialist journals in Germany and Belgium, with about 40,000 subscribers in total, follow suit. The network had not consciously set-out to circulate it. The interest followed after the first publication. Claw health in sows in group housing turns out to be an international problem.

box 43

Interventions

When others benefit more from the dissemination than the network participants, you can, for example:

- Search for another actor (for example, sector organisation or publisher) to take on the dissemination (Box 43).
- Compensate the efforts invested by the network participants in dissemination activities.
- Make agreements with the network about the advantage they will have and allow them to be the first to benefit from the initial success before communicating the new practice to others.

Two-way communication is essential to reveal how circumstances, ideas and attitudes can differ. Articles, for example, in specialist journals communicate in one direction only. Study groups, open house days and other informal types of meetings work two ways. An interesting development within this framework is the emergence of interactive websites and video conferences through the internet in which several people can participate simultaneously.

The dissemination phase never actually reaches completion. In the dissemination phase, there are continually other actors who are inspired by the network's experience to take their own steps towards implementing change.

10.7. The embedding phase

The embedding phase starts when the actors agree about structural changes to their mutual relationships, prompted by innovation. Changing practices acquire a new structural character (Box 44). Institutionalisation takes place because positions between the parties alter, certain contacts become more or less frequent, funding or organisational structures change. When a structural change occurs in the contacts between the entrepreneurs and researchers, teachers and advisors (the knowledge infrastructure), we can speak of an altered *knowledge arrangement*.

Knowledge

The structure adapts to suit the change. This places the actors in a better position to find the right answer to the changing conditions. This brings us back to *knowledge as a responsive capacity* as illustrated in the phase of the initial idea.

Connection

This phase centres on the structure that determines the height of the threshold to establish and maintain certain connections. A set of tasks, contractual agreements, new projects or organisations may all be concerned here. But the focus may equally be on less tangible elements such as a change in attitude, or statements made by managers or policymakers to legitimise the new practice.

Barriers and interventions

The adaptive capacity of organisations, broad networks, and subcultures can be very diverse, for reasons too numerous to mention here. For more study results, refer to Chapter 12, Circle of Coherence.

10.8. The Spiral of Innovations as a tool

This paragraph distinguishes between and outlines seven ideal typical phases. In practice, the phases are often not as clearly defined and participants may often need to revert to the previous phase in order to advance again. The planning phase and the development phase may alternate if the intended plans turn out not to be really feasible. It is sensible to ensure that the actors needed in the realisation phase are already involved in the thought process of the development phase. Caring Dairy (Box 44), for example, jumped from the development phase to the embedding phase to accelerate the dissemination phase. It is, however, questionable whether the developed practice remains unchanged during the dissemination phase. Other actors can continue with its development. And at each stage of the process, new initial ideas can form the start a new spiral.

The model of the Spiral of Innovations is intended as a kind of compass which can be used to orient yourself towards the phase in the innovation process requiring the greatest attention. This phase differentiates the type of knowledge that is needed, the actors you need to involve, the barriers you can expect and the type of interventions that can help the process to continue on its own.

From 11 to 500 dairy farmers

The 'Caring Dairy' of 11 dairy farmers, in close collaboration with Unilever and a dairy collector, sets out to produce high-quality milk for the production of ice cream to be sold in supermarkets under the brand name of Ben&Jerry's. They register their experiences in a type of logbook: the 'Cow Coach'. With the Ben&Jerry's plan that they administer under license from the American parent company, exceptional care for the environment, contact with consumers and providing work for the mentally disabled are also included. After the dairy collector withdraws, the network proceeds further with a larger dairy cooperative. They want to up-scale the plan to 500 dairy farms. The network participants receive a leading role with the Cow Coach and their network facilitator is hired by the dairy cooperative as the project leader. In this case, the network first makes a step in the embedding phase in order to make the dissemination phase possible.

box 44

11. The Triangle of Change

The Triangle of Change provides insight into the different roles people can play in a change process. It differentiates between change agents, gatekeepers and survivors (see Figure 3). None of the roles is superior to another. And each player will take on each of the three roles when the time comes.

Change agents are the first to sense other opportunities. This explains why they are prepared to deviate from existing patterns and follow new paths.

Gatekeepers feel responsible for the existing structure. Change requires adaptability from the existing structure. Moreover, not every change equates with an improvement. Gatekeepers who, for example, monitor the risk of the network safety being endangered, are needed to ensure the stability of the network.

Survivors primarily consider their own position and safety. If this requires acting as a gatekeeper or even as a change agent, they will. This role is always a difficult point of discussion. People aren't often aware that this is their dominant role. This ignorance explains why there are frequently communication problems when a network includes too many survivors. The role of a survivor is legitimate. Those who fail to protect their own identity are of no use to others. However, not too much should be expected of them when it comes to change processes. Someone else will have to create an environment within which the survivors feel able to change.

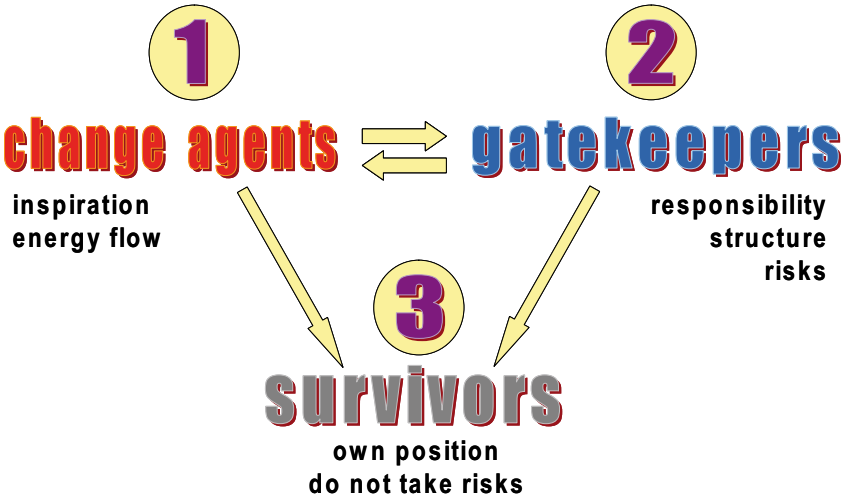


Figure 7. The Triangle of Change.

Seeking supporters and critical friends

During the spring of 2006, a critical article appeared in a national newspaper about research that Wageningen UR performed under its auspices, but that, according to the journalists and scientists whom they cited, was scientifically unsound. A network of livestock farmers experimented for years with methods that provide good results for the disease resistance of dairy cows, but which lacked hard scientific evidence. An international search for possible theories yields intriguing results that could make this phenomenon understandable. Acceptance by traditional science is, however, not yet guaranteed. So the network sets out to find supporters and critical friends: supporters with similar experiences and for whom the new theoretical direction provides perspective, and critical friends from managerial and scientific circles who are willing to deliberate about what the network can do to present this search direction as relevant and promising.

box 45

The energy for change develops in a network of change agents with a mutually inspirational effect. This kind of network is frequently characterised by informality. Sooner or later the change agents will have to interact with the gatekeepers. Healthy changes are the result of interaction between change agents and gatekeepers who take each other's viewpoints seriously. Insight into the workings of the dominant roles in the triangle of change will support you in focussing on energy. Energy is generated by working on something new, whereas the maintenance of an existing structure costs energy. A structure will only start to adapt and change once enough energy for this process is available.

If we link the Triangle of Change to the Spiral of Innovations (Chapter 10), we see how the initiators first look for a network of change agents in the inspiration phase. This generates energy. Negotiations with the gatekeepers who have to create space for experiments follow in the planning

Focussing on energy means:

1. ***Starting with the change agents:***
   - Starting with what motivates people who want change;
   - Increasing the momentum by making or allowing connections of like-minded participants (Box 45);
2. ***Negotiating with the gatekeepers:***
   - Ensuring the gatekeepers take the momentum seriously;
   - Searching in the negotiation between gatekeepers and change agents for sound solutions to make structural space for change or, if more appropriate, space for experiments;
3. ***Creating conditions in which survivors can change***
   - Showing that change is possible without insurmountable risks;
   - Offering feasible alternatives;
   - Showing that continuing along the familiar path is not an option.

phase. This costs energy. Alternatives are developed in the development phase. This phase usually creates new energy, even though it generally means taking hurdles that drain energy. Confrontation with the structure that consumes energy is faced again in the realisation phase. This stage will show if the new situation offers enough perspective for the survivors to join the momentum. If this is the case, the activity disseminates because others free up energy. In the embedding phase, the structure adapts and embeds the activity. The change agents frequently transform into the new gatekeepers. And if the structure becomes rigid and leaves no scope for change, the former change agents adopt the role of survivors.

Figure 8. The Circle of Coherence with the dimension of contents on the y-axis and the dimension of relations on the x-axis.

12. The Circle of Coherence

The Circle of Coherence provides insight into the interactions within the network. Certain networks energise, while other networks drain energy. The Circle of Coherence helps you identify the source of energy or even the leak responsible for draining the energy. A network that provides insufficient energy implies that there is a missing or obstructed connection. An action, that helps overcome the barrier in one case, could possibly be counter-productive in another situation. The Circle of Coherence differentiates between various interaction patterns that require different interventions.

Using the Circle of Coherence as a tool, you can take the following action:

- expand your insights in the functioning of a vital network;
- expand your own intervention repertoire;
- gain perspective into the possible consequences of the interventions you implement;
- clarify the participants' positions in the network;
- clarify the differences and similarities between the participants.

Concentrate on the energy that is absent or present. You will have to focus on the participants' willingness to commit themselves to the network and their willingness to align their efforts to the focus the network needs. A coherent network creates added value. In a healthy network, people experience the vital space as something that they find rewarding, interesting and pleasant to do. In a coherent network, consensus shared by all is not a prerequisite. The major factor is achieving good exchange positions and ensuring there is space for enough challenge, structure and dialogue. This is created when you make and maintain the proper connections. The art is discovering which connections you need to concentrate on and the type of intervention needed.

12.1. Two dimensions

The Circle of Coherence shows two dimensions of interaction (see Figure 8).

The **content dimension** involves what we know and want. It generates energy to learn something new, to create something that doesn't yet exist, to realise plans and to fulfil dreams. The energising part of the **dimension** is located between the two extremes, between **similarities**, that which we already know, can do and have, and **differences**, that which is unknown, cannot do or do not have. Energy is lost at the poles. Too much diversity creates confusion, too many similarities are uninspiring. The area in between is called **vital space**. The steering mechanisms are naturally ingrained to keep the interactions vital. Faced by too much choice, we limit our observations to those aspects we are able to cope with. Our observation channels are wider and more receptive when there are too many similarities, as this offers the opportunity to discover more interesting and ever present differences.

The **relational dimension** involves the relationship between the 'I' and the 'we'.

Because people are social beings, we always search for a position between the self-actualizing of the 'I' and the purpose and protection represented by the 'we'. "It is satisfying to be able to apply all of my qualities and to develop." That commitment is enhanced by value when it contributes to the greater social unity that offers the 'I' and the protection and the added value of cooperation.
The poles here are the *I*, my interests, my dreams, my integrity, my knowledge and ability, my contributions and my influence in networking, and the *we*, the collective interest, the written and unwritten codes; in summary, all the elements needed to attune the individual contributions to a coherent network with added value. An excess balance of 'I' in the network means that self-interest plays too great a role. This causes competition for position and a lack of harmony resulting in (too) little synergy being achieved through task division and specialisation. Too much 'we' in the network means excessive pressure to adapt. As a result little comes of the individuals' interests, wishes and qualities.
Between these extremes is the **vital space** in which mutual trust develops. This trust is necessary to collectively learn and take risks in order to experiment. "If, as part of a network, I can concentrate on those of my qualities that can make the best contribution, than I have to trust and have faith that others are also contributing at the same level." The steering mechanism is ingrained in this process too. Too much pressure from the 'we' pole causes people to take up more space. Too much 'I' diminishes added value, purpose and protection, through which the readiness to adapt actually increases. In the vital space, people take the responsibility to contribute and to attune these contributions mutually. Being outside the vital space offers them an excuse not to do this. This commitment has a subject component, "what do I want and what do the others want?", and a relational component, "how do we ensure that we take each other seriously?"

12.2. Four quadrants

With the two dimensions cross, four quadrants are created **within the Circle of Coherence**. In each quadrant, the attention is focused on another aspect of the interaction:

- Quadrant 1: **exchange**. Testing the waters: "Will this network be worthwhile for me personally? Do the returns balance my investment?"
- Quadrant 2: **challenge**. "Which position can I take in the network? Is my effort valued enough? Is it challenging enough?"
- Quadrant 3: **structure**. "How do we organise ourselves? What is the best task division? How do we maintain the structure?"
- Quadrant 4: **dialogue**. "What motivates the others? What lessons can we learn from each other?"

According to group dynamics theories it is likely that a new network begins in the first quadrant, from where it proceeds through the quadrants clockwise, ending in the fourth quadrant (Box 46). This pattern may be different in practice.

The circle is closed

A network of dairy farmers, an agricultural contractor, a livestock transporter, a commercial biogas digester, an accountant and a bank employee search together for solutions to the manure problem. It is a productive group. They know where they stand with each other (1st quadrant), they dare to challenge each other (2nd quadrant) and make good working arrangements that they can fulfil (3rd quadrant). There is justifiable curiosity about each other's experiences and ideas during the progress about the different work groups that they form (4th quadrant). The network draws in new experts during the following phase. Now the cycle begins all over again, feeling out what these newcomers have to offer (1st quadrant), putting them to the test (2nd quadrant), et cetera. Nevertheless, the network is not back to square one. The patterns now repeat themselves at a higher level of coherence.

box 6

The Circle of Coherence illustrates that each of the four aspects requires attention in order to achieve healthy interaction. Patterns can be identified within that interaction, whereby one aspect is given more attention than the others. In a healthy network, these patterns alternate. When attention has been devoted to one aspect, the focus automatically shifts to one of the other aspects. There will always be someone who calls attention for it.
The connection breaks when **outside** the circle. In this sphere there is insufficient contribution or attuning. Within the circle, patterns alternate, which doesn't automatically occur outside the circle. There these patterns tend to escalate, because behaviour from one elicits similar behaviour from another. "If I retreat, the sum of the network will also provides less for the others, causing them to also retreat sooner. If I fight against another, I provide him with the arguments to fight against me."
Each quadrant therefore shows a pattern outside the circle. Those patterns are not vital:

- Quadrant 1: **escape**. "The return is not worth my investment. I withdraw."
- Quadrant 2: **battle**. "My effort is not valued highly enough. I must compete to conquer the position that I need".
- Quadrant 3: **resignation**. "The organisation is not optimal, but I cannot change anything. The first step is up to someone else".
- Quadrant 4: **adaptation**. "We protect what we have against elements which do not fit the pattern. I adapt for the sake of acceptance from the network because that's useful to me".

To recover connections, interventions are necessary to break through the barriers. The Circle of Coherence differentiates between a warm and a cold intervention in each quadrant.
A **warm intervention** works on insight and generates energy (inspirator, negotiator, intermediary, joker). A **cold intervention** influences the mutual positions by blocking unproductive routes. This requires energy, but if this strategy succeeds, it prevents

even more energy draining away (regulator, strategist, competitor, prophet). The latter type of intervention is risky. The situation may also escalate further. Both types of interventions can be employed to reintroduce vitality into the network.

The art is to create customised space for the network members. Too much space leads to chaos; thus requiring more structure and harmony. Too little space obstructs authentic contributions; it is then necessary to loosen the reins. It is useful to be aware of your own personal qualities and preferences. What tends to be your initial reaction if faced by pressure? Once you know your preferred response, it can be taken into account during your interventions. Maybe your first response is effective, but maybe not in the situation you find yourself in at that particular moment.

Use the following questions to assess the dominant interaction pattern in the network.

- **Vital or not?** (is the network inside or outside the circle?)
  Do the participants stimulate each other to achieve the objectives or is energy draining out of the network? Is there vital space or is something missing? This is shown by the participants' enthusiasm. Are they sufficiently prepared to contribute and attune, or not?
- **I or we?** (Is the network positioned to the right or left of centre?)
  Is the 'we' or the 'I' more prominent? Is the attention mainly directed towards the individual position: "What do I stand to gain? Can I do what I think is important here? Are they listening to me? Am I getting my own way, if not, then I quit?" Or is it directed towards making or maintaining a healthy network: "What has to be done to keep the network alive? What is my contribution? How can we call attention to our individual responsibilities? How do we arrange our mutual task division? What can we learn from each other? How do we manifest ourselves as a network to the outside world?"
- **Similarities or differences?** (Is the network above or below the centre?)
  Are there enough shared similarities to enthuse the participants? Is attention mainly directed at aspects that all the actors can identify with (interests, objectives, views) and that they can jointly achieve (even with the potential conclusion that the result is insufficient to make contributing worthwhile)?
  Or do they actually emphasize the differences (in the opinions of what is interesting, challenging or vexing, differences in power and influence that are experienced as purposeful, or to the contrary, oppressive)?

12.2.1. Quadrant 1: exchange & escape

In the first quadrant the participants attempt to discover the benefit they achieve from the network individually (see Figure 9). They weigh up if their personal investment will pay back sufficient profit.

Inside the circle, the participants contribute to the network and receive enough in return.

Figure 9. The first quadrant of the Circle of Coherence is characterized by exchange or escape.

The basis for contributing and attuning is **exchange**.
When participants withdraw from the network, creating their own safe haven, this reaction is called **escape**, from the perspective of the network. We have landed **outside** the circle. This can be legitimate from the perspective of the individual, however it creates a situation where the basis for you, as individual, to contribute to the network is withdrawn. When participants withdraw, it means that they consider their contribution will cost more than it yields and/or that the risks involved are too great compared to the probability of success. When some people escape from a network, the entire fabric of the network is weakened, meaning the substance that remains yields less for those who continue to support it. Consequently more participants are likely to withdraw or retreat further. The behaviour of one individual legitimizes similar behaviour in another.

Which interventions can be implemented if this behavioural pattern is observed in others?

- **Warm** intervention: the **inspirator** involves people through contributing new insights or presenting appealing initiatives or examples. For instance, organising a coach trip to other similar initiatives or organising lectures.
- **Cold** intervention: the **regulator** sets boundaries. S/He stakes out the playing field and the house rules, forcing the participants to cooperate and interact. The regulator determines the context within which the network should function. If you don't play by the rules, you don't belong in the club. Examples are house rules or codes of conduct.

Warm and cold interventions can sometimes go hand in hand (Box 47). It is sensible to start using the approach of a warm intervention, so sufficient energy is left to settle the cold matters afterwards with fewer problems. The term regulator is derived from the role that the authorities often adopt in order to effect damage limitation. When individuals exhibit socially irresponsible behaviour, society seen as a large network could label this as an expression of 'escape'. If the authorities, the establishment and target groups involved agree that such behaviour is impermissible, than rules and regulations must be enforced to prevent 'easy riders' from profiting from

A difficult start

An initiator has found 15 fellow dairy farmers who are prepared to form a network to search for a cow-friendly housing plan. Only six participants show up for the first meeting. Eleven people come to the second meeting. However, this meeting does not proceed well. The emphasis lies more on what must be done rather then on what the participants want. Moreover, they are irritated by a new participant who adopts a dominant attitude and is hardly ever cooperative. After this meeting, the facilitator and the initiator predict that the situation won't improve autonomously. The facilitator decides to call up all participants and to make an inventory of what they would like and further explain what the NiAH programme consists of, as well as conveying what is and is not possible. At this stage, two participants quit, one of whom is the dominant newcomer. For the third meeting, an expert is invited who has developed a method to recognise indications of stress or wellness in cows. The network also makes contacts with two livestock housing builders whom the network goes to visit. After the meeting, there is a solid network of dairy farmers who get busy collaborating. One factor for the unsuccessfulness of the second meeting is the emphasis on making task agreements. This is clearly too soon. Without sufficient attention for the exchange position (1st quadrant) and the mutually challenging positions (2nd quadrant), making such agreements (3rd quadrant) is unsuccessful. The second factor is the difficult newcomer. He chooses the position in the 2nd quadrant (challenge & battle). However, there are other participants not ready yet and the facilitator does not immediately have an answer for that either. Because this newcomer demands so much attention, he makes it additionally difficult to have a discussion addressing desires and ambitions. The balance in the exchange positions between giving and taking within the network is threatened to tip in the wrong direction because of the combination of these circumstances.

The facilitator implements a number of interventions during the telephone survey:

- She gives attention to the critical participant. Consequently, he sees that it's better not to proceed further with the network. This eliminates a barrier for others to participate. This intervention fits in the 2nd quadrant.
- The inspirator. Consequently, she gives attention to each of the other participants who now have the opportunity to express their ambitions. She now also has the chance to report what possibilities she sees. And from what she heard, she can arrange for an expert and visits that make it appealing for the participants to continue.
- The regulator. During the telephone calls, she also states which expectations are not realistic. This provides clarity.

The expert contributes new inspiration with his method. The collective visits to the livestock housing builders set the mutual discussion well underway.

box 47

Watching and listening to others, for instance, going for a visit is an example of a warm intervention in the first quadrant.

the restrictions that limit the behaviour of the rest of society. After a while it's time to move on to quadrant 2.

12.2.2. Quadrant 2: challenge & battle

In the second quadrant the attention is drawn towards the demarcation of the positions participants take in relation to each other (see Figure 10).

When the network is **inside** the circle, participants try to acquire a good position and challenge others to demonstrate their qualities. **Challenge** is therefore the basis for contributing and attuning in the network. When the network is **outside** the circle, participants battle for the positions in

Figure 10. The second quadrant of the Circle of Coherence is characterized by challenge or battle.

the network. The success of one is at the expense of another. **Battle** is the appropriate term. This can be recognised

when people discuss the same topics, but use totally different words or manners of speech, which therefore blind them to any similarities that may be present. It may or may not be necessary to discuss the positions first before you can find a connection to the content.

When participants shift from challenge to battle, this entails a level of commitment that is more often higher, than too little. This commitment is, however, discordant. The opponent is seen as an obstruction to progress. This leads to battle. People think that their case can only be safe if others who threaten this case are being battled and disabled. Each blow delivered to one party, legitimizes the other party to fight back even harder. The incompatibility of the mutual positions characterises this power struggle.

The initial period in which all parties are on friendly terms, is usually succeeded by a period characterised by many proposals and ideas. More in fact than there are people who seem prepared to listen to them seriously. Other people may seem preoccupied with the lack of headway being made. This is a difficult phase. Facilitators are often tempted to skip this phase by taking the initiative themselves and plotting the course. However, it is an essential part of the process and has an important function! The participants need to know where they stand with each other. After an affable, promising start, they start straining at the leash to explore the limits of possibility. Are differing opinions permissible at this stage? Can this group work together in the face of adversity? This is essential in order to gain trust. During this phase it seems that the content is all-important, but actually winning trust is more vital. Achieving a satisfactory consensus will still be unsuccessful as long as this challenging phase is not given sufficient attention.

The difficult participant

The facilitator calls the difficult newcomer after the meeting that went badly. She asks him about his expectations of the network prior to and after the meeting. He states that during the meeting he began to suspect that he would be unable to do what he really wanted within this group. This partially explains his rather unconstructive attitude. After continuing to ask questions, the facilitator confirms his suspicions, whereupon he decides to pull back. Here she has applied the intervention of the negotiator, specifically, listening well and thinking about what is and isn't suitable. Together, they come to the conclusion that further participation is not worthwhile. This is a warm intervention. The cold intervention would be to strongly advise against him to show up in the network: the intervention of the strategist. This clearly demands a great deal of effort and costs a lot of energy.

box 48

The free actor can choose between two **interventions**:

- **Warm** intervention: the **negotiator's** attention is focussed on the people who make suggestions or challenge others. S/He ensures everyone really feels their

Two opposing search directions
In a network, a direction conflict develops about the route to be followed. Two factions in the network just cannot agree. They then decide to follow through with both directions to investigate which direction ultimately provides the best possibilities. One group proceeds with one idea, the other group with the other idea. One direction turns out to have no prospects. The network then chooses to further develop the other direction collectively. This is a smart solution by the negotiator who makes sure that both parties receive attention and have the chance to work out their ideas. The two parties challenge each other. This provides sufficient perspective from which to choose. This makes the network ready for the 3rd quadrant.

box 49

opinion has been listened to. The point at which a person feels his opinion or proposal has been given insufficient recognition, is precisely the turning point when his viewpoint changes from challenging to threatening (Box 48). The negotiator maintains a healthy debate by balancing useful ideas that match and realistic differences which can be worked on (Box 49).

- **Cold** intervention: the **strategist** plays his/her strong card to keep people in line using the basic rules of play, such as showing respect and by preventing one party from winning at the expense of another.

12.2.3. Quadrant 3: structure & resignation

In the third quadrant, participants are more occupied with the collective task and mutual harmony than they are with themselves (see Figure 11).
Inside the circle a more **structured** pattern emerges. Participants accept mutual differences and adopt rules to structure their interaction.
Outside the circle is a situation of **resignation**. Participants accept an unequal distribution of positions or unequal positions of power and influence. This acquiescence is not born of satisfaction, but more from a feeling of incapacity. The disadvantaged party fears sanctions if it would do what it thinks that should be done. "We lack the capability and power to have any effect". The dominant party is afraid that the

Figure 11. The third quadrant of the Circle of Coherence is characterized by structure or resignation.

Nothing much comes from good intentions

A network of dairy farmers wants to investigate how it can deal with working hours more efficiently. The facilitator searches for an appropriate model for time registration. The farmers agree to maintain a registration system. During the following meeting it turns out that almost everyone has reasons to explain why they were unable to register this time. Evidently, it is too much to ask at this moment. The model is then simplified to a few indicators. That proves to work well. The intervention is that of the intermediary, specifically, to create space for experiments in such small steps that the participants trust that they can take them. It works here because the participants actually wanted to collect the data. However, the level of ambition was somewhat high. It would not have worked if the decision was insisted upon by a few. If the 3rd quadrant degenerates into such an unequal distribution of influence, then the result is passivity. In that case, the way back proceeds by searching for space for experiments as well, but the free actor must pay more attention to the silent party.

box 50

disadvantaged party will abuse the extra freedom it attains.
The positions not yet established in quadrant 2 (challenge & battle), are solidified in this quadrant. The participants accept the differences. This is stimulating if the right qualities now appear to be in the right place. Resignation occurs when participants disagree with the distribution of power but think to lack any means to change the situation. It escalates as the disadvantaged party takes less and less responsibility because each attempt to do so is punished, or punishment is the expected outcome. The dominant party sees this as a legitimate reason to tighten their control. This actually creates a situation in which everyone feels constrained.

In a narrow network (see Paragraph 15.1.), an example could be a dominant chairman who seriously inhibits the opportunities others have to address issues. An example in the broad network is an actor whose assistance is needed to further and achieve your objectives, but with an attitude that does not tolerate discussion. The overriding impression is of a person who simply states: "I don't need you, my will shall be done!"

Which **interventions** can be implemented in this situation?

- **Warm** intervention: The **mediator** creates space for experiments for the complying party by showing that the risks are and will remain limited. This party is only willing to participate if a successful experiment really offers prospective for improvement (Box 50).
- **Cold** intervention: The **warrior** levels the path for the complying party by conquering the dominant party's space. There are situations where there is no other option than to break down power positions for making the dominant party realise that he has to take other stakeholders seriously. The difference

between this approach and the association we usually have with fight is that the purpose is not to win but to restore connection.

12.2.4. Quadrant 4: dialogue & adaptation

Mutual differences are not the predominant factor in the fourth quadrant. Similarities and consensus bind the participants (see Figure 12). When there is vital space, they feel a shared responsibility for the content as well as the mutual relationships.

Figure 12. The fourth quadrant of the Circle of Coherence is characterized by dialogue or adaptation.

The mutual differences are still present, but they take a secondary role. The basis for contributing and attuning is the **dialogue**, a genuine curiosity about what the others have to contribute.
The network can end up **outside** the circle if the willingness to attune is at the expense of authentic individual contributions. Then an unhealthy compulsion towards **adaptation** develops, without there actually being someone who enforces it. This phenomenon is known as 'groupthink' and it usually

"Which one of the facilitators has been playing the joker sometimes?"

Who knows the consumer?

A network of poultry farmers wants to put eggs on the market as high-quality Grade A with a specific image that is intended for a high-demanding consumer. They think they know exactly who the consumers are and what they do or do not want. To address that, the facilitator depicts himself as such a consumer. He then bursts the balloon of a few important assumptions, for example, the idea that 'a five-star hotel for chickens' is enough of a selling point. The facilitator presents himself as a wealthy urbanite who not only operates founded on ethical motives, but also has personal motives (development, esteem). By revealing himself as an epicurean, suddenly other aspects of the target group are revealed. So far, these had remained concealed because they didn't fit the image the farmers had of 'the' consumer. This is the effect of the intervention of the joker. Without that acknowledgement, the confrontation would have resulted in a dispute between initiators and facilitator, with the facilitator as challenger. With this, he had actually drawn the interaction towards the 2nd quadrant.

box 51

appears unconsciously. The network members fail to realise it. They only notice that the network doesn't generate as much energy as it used to. The network can end up in this situation when the participants feel their hard won achievements are at risk. No one is in a position to say: "Hold on, something isn't quite right here"; the strategy of risk avoidance is adopted.

Do not postpone difficult decisions

A network searches for new ways to finance land. Preferably, they want to have citizens invest, through which more interest and dialogue could develop between producer and consumer. The farmers in the network work well together and trust each other, already having achieved a lot. However, they appear to postpone a number of difficult decisions, for example, the rules-of-thumb concerning the mutual use of each other's land on the pretext of: 'We can sort that out later'. The facilitator brings the focus back to the negotiation: "It would be better for you to establish these agreements now, because it will only become more difficult later". This is a friendly, but yet decisive, version of the prophet. As an outsider, he can assume this role easier than the farmers who have conflicting interests concerning this issue.

box 52

Which **interventions** can be implemented in such a situation?

- **Warm** intervention: the **joker** expresses in words the emotions that many people sense, but don't dare say aloud. When s/he finally verbalises their emotions and views, the result is often a sigh of relief (Box 51).
- **Cold** intervention: the **prophet** brings people back to earth. S/He says, "It's time to reform. You are treading the wrong path and heading for disaster!" S/He makes it difficult for people to continue to ignore their own sense of awareness or conscience (Box 52).

13. The Timeline Method

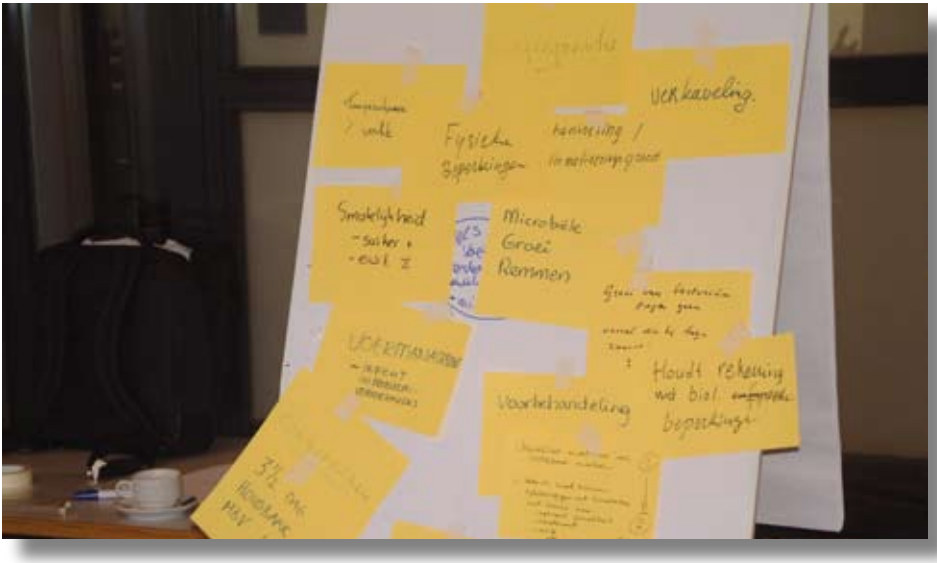
The Timeline Method is an aid to chronologically organise and provide insight into the important events and influences inside and outside the network. It can be used to monitor and evaluate processes. This instrument is also used to create a network story together with the network.

The strength of this method is that the network participants' various individual experiences emerge and have a place, quickly and clearly. Everyone's story matters. Deeper insight into the development of the network is achieved by discussing a completed timeline in the group. The Timeline Method consists of two steps, specifically, (1) filling in the timeline, and (2) the discussion.

13.1. Filling in the timeline

All network participants and the network facilitator first describe their **'eureka moments'** on post-it notes. These are the unforgettable and important moments. They are generally the moments that took place within the network and that lead to something being accomplished. These moments are arranged in chronological order (see Figure 13).

Then, everyone writes down the **positive and negative issues**. These are the factors or moments that had a positive or negative influence on the developments. This may be factors, actors, events etc., inside as well as outside the network. For example,



Organization of a creative session is frequently one of those 'eureka moments' that provide new perceptions and inspiration.

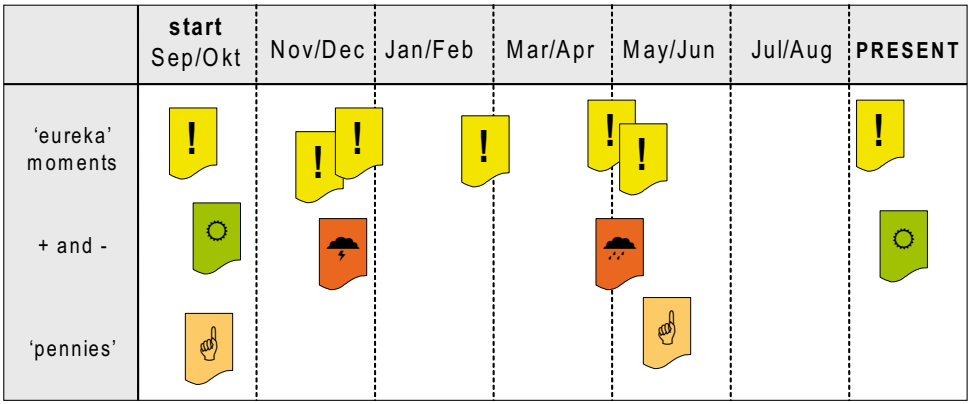


Figure 13. The Timeline Method reveals all relevant issues in a chronological sequence.

a minister who adopts a network, an act or certain legislation that is approved, an item in the media about the network or a visit to a farm. The participants also place these issues in the timeline.

Finally, everyone describes the **'penny drop moments'**. These are the defining moments of insight when you finally 'see the light'. These moments are also placed on the timeline.

13.2. The discussion

When the timeline is completed, a discussion follows. This discussion allows each participant the opportunity to explain what s/he found so important in the developments and the reason. It is important to clearly be aware beforehand that each story is true. The method is not intended to convince one another of one's own truth. There are many stories to be told. Each and every one of us has his/her own story and perception. It is can be an enlightening and surprising experience to hear how other network participants have undergone and perceived certain events. Ultimately, the discussion about this accelerates the network's learning process.

The end of the discussion signals the completion of the film showing the current state of affairs in the network. The groundwork has been done, the script is written, the actors are ready to perform.

14. The Learning History

The Learning History can subsequently be used by you as facilitator, or collectively with your network, to make a further analysis of the film. The Leaning History unravels the film, as it were, into various scenes. The models from the previous chapters can be worn as a pair of glasses to analyse the scenes.

Not every scene is suitable for an analysis through all glasses. Sometimes just one pair of glasses will do. Other scenes can provide interesting perspectives or insights if two pairs of glasses or more are combined. Consider the questions below as a checklist. Don't try to find an answer to all the questions, but check to see if you might have overlooked important aspects in your story using these questions. Appendix 1 contains an example of a Learning History.

By examining the questions from unusual perspectives and being surprised by the results, it will gradually become clearer what can be read into your basic story when viewed through these glasses. Analysing these scenes should help you gain a better

The glasses:

1. The glasses of the **Network Analysis** give a wider view of the composition of the network.
2. The glasses of the **Spiral of Innovations** give a wider view of the processes that the network has gone through.
3. The glasses of the **Circle of Coherence** give a wider view of the collaboration in the network.

Some scenes in the timeline film provide interesting perspectives or perceptions by looking at them through several glasses.

understanding of what is happening in your network and give greater insight into the effects of your own actions.

The glasses of the **Network Analysis** (Chapter 9) show the composition of the network around a specific initiative. Looking through these glasses leads to questions that clarify:

- What is the specific initiative concerned and who is the driving force behind it?
- Who or what is involved and who or what is in the picture, but uninvolved?
- Who are the links and what precisely are they linked to?
- Who are the partners or temporary partners and what are their tasks?
- Is there a network that can be used as a foundation for further action and what are the factors that back up this assumption?

The glasses of the **Spiral of Innovations** (Chapter 10) are used to examine how the idea develops into an innovation. Questions inspired by these glasses are:

- How far has the idea developed according to the *stages* of the Spiral of Innovations
- What *knowledge* is being addressed? Is it clear which are, and which are not the most pressing questions?
- Which *actors* play a crucial role in this phase?
- What is the quality of the *connections* between these actors?
- Which *event or intervention* altered the connections and what was the effect? And did this influence the position in the Spiral of Innovations?

Finally the issue can be examined through glasses of the **Circle of Coherence** (Chapter 12). These glasses, look at the interaction within the network. They show:

- If there was one or more clear dominant interaction patterns present during the *initial situation* and how was this identified.
- If there were internal or external *complications* in this scene that influenced the mutual interaction in the network and what were they. In addition, which factors indicated that the influence was felt.
- Which *intervention* took place, who intervened and was it a conscious choice.
- What the *effect* of this intervention was and how could the effect be perceived.
- If there was one or more clear dominant interaction patterns present during the *final situation* and how was this identified.

15. Concepts and contexts

15.1. Network

What is a network? If ten people are asked to explain, they will give ten different answers. People refer to social networks, professional networks, solid and fuzzy networks, informal and formal networks, narrow and broad networks.

A network is always a **collection of actors** who are related to one another in some way. People are usually members of several different networks simultaneously. There is not always a collective objective, a hierarchy or a task division present in a network. Sometimes these characteristics develop. The degree to which people feel connected in a network can vary greatly. The stronger the connection is, the more the identity of the network increases and the interaction patterns are more clearly recognisable. In a social network, people acknowledge each other as members of that network; there is a shared identity which reinforces the sense of 'we.'

This book is not about non-committal networks. We assume that there are initiators with a firm ambition and who try to mobilise others in support of their aims. An initiative gains a strong foundation by constructing a network comprised of actors who all want to accomplish something. Through building a network, for example through carrying out diverse fact finding and initial meetings, inviting experts, exploring interesting practical examples or by disseminating information about the initiative, the paths which can be followed to advance the initiative will become clear. If a broad network is created, there will be more paths to choose from, which can all be followed simultaneously. This usually increases the chance of success.

In this context, the difference between **narrow** and **broad** networks is significant. In the **narrow** context, people consciously choose to participate in the network. The level of participation can vary from occasional meetings of colleagues, for example, to an intensive collective search for new practices, such as in the NiAH programme.
In the **broad** context, the network consists of people and representatives from agencies that have to be motivated in order to facilitate what the initiators want. In order to accomplish an aim both types of networks are needed. The models used in this report act as guidelines to working with narrow as well as broad networks.

The difference between **formal** and **informal** networks is significant when it comes to the choice of an intervention strategy. When a network consists mainly of actors who have acquired their position in the network based on their professional position, it is called a **formal** network. These actors frequently represent others who have given them a mandate. This type of network safeguards the structure. **Informal** networks are formed on the basis of personal affinity. The energy necessary for action comes from people meeting in informal networks. This type of networking was the point of departure for

the experiment in the NiAH programme. Networks with a minimum of three members with an initiative could apply to join the programme.

15.2. Actor

An actor is a **person or a collection of people**, such as an organisation, a lobby group or a cooperative venture. A network can consist of individual actors (persons), or of actors who, for the purpose of convenience, are regarded as a unit. When speaking of compounded actors, then it is important to realise that each actor is in turn a network with individuals in different positions. The recurring pivotal feature of a network approach is the relationships that are the most defining for the interaction required for the initiative. Sometimes compounded actors will suffice; in other cases more effort will be required to identify the individuals who are crucial to the process.

15.3. Free actor

A free actor is in a position to direct energy within the network and on the links between its participants. This may be an initiator or – in the case of the NiAH programme – an external; facilitator. It can also be a team or even an entire organisation that keeps networks healthy in a broader context or initiates new activities. The work of a free actor cannot entirely be delineated or pinned down beforehand using performance indicators. S/He must be able to recognise what the needs of a the network are at a certain stage and then take the necessary course of action to advance the network. A free actor must ensure that s/he wins the trust of others. Others must be able to rely on the free actor using his/her space to manoeuvre properly for the benefit of the network.

15.4. Vital space

Vital space is referred to when people in a network experience satisfaction and utilise the space to become creative. Vital space in a network can be perceived by the energy it generates. Committing to the network and taking others into account becomes an increasingly pleasurable experience for the people involved. This space depends on the confidence that people have in each other to cooperate effectively, to relinquish their tried and trusted, familiar views and to embark on the search for something new. The Circle of Coherence (Chapter 12) shows how you can use the vital space as a compass to orient the direction of a network.

15.5. Working in networks

Working in networks is quite different to working in organisations. In organisations, it is customary to first formulate an objective, than choose the relevant instruments and finally to ask people to perform tasks (see left part of Figure 14).
In networks, this procedure works the other way round. People are the departure point in networks; people with dreams and ambitions, who want something, make connections with other and create

something together. This commitment embraces and contains energy. This energy increases when ambitions seem to reinforce each other and people start to notice that their efforts are a meaningful contribution to the greater whole. This also increases the readiness for attuning through which connections can grow. The focus therefore shifts from objectives to relationships; in other words, to the connections, the energy to maintain healthy connections (see right part of Figure 14).

There is no structure that prescribes who is in charge or who the subordinates are, what the objective is, what the task division and the rules of play are or how these are upheld. Something can be created within a network that resembles a structure, but it is not a contract. A networker depends on other network participants who independently choose to contribute to the network and to attune that contribution to others.

15.6. Knowledge

Some view objective truth as knowledge, others view knowledge as a product. You can also look at the knowledge possessed by one person or the knowledge that people acquire together. There is no cut and dried definition. A network often needs a specific type of knowledge. It's useful to identify precisely what is needed. Specifically, it matters quite considerably regarding the expectations about the outcome and the way in which a network is facilitated. Network participants can use

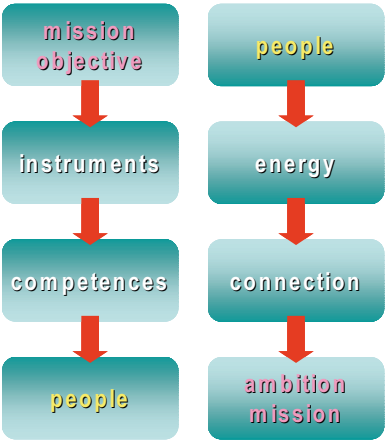


Figure 14. Organizations frequently start out with objectives for which people are ultimately needed. A network starts out with people who collectively achieve a non-specific objective.

knowledge to optimise (doing the same, only better), to change direction, as a weapon (strengthening of positions) and as a permanent learning process (the quality of searching together for solutions to questions that arise).
The Spiral of Innovations (Chapter 10) illustrates how each of these aspects of knowledge demands other activities and for which reasons other relationships are important. In this book, we regard knowledge as a **responsive capacity**. This is the capacity of a person or a network to respond to what occurs in his/her/its environment.

15.7. Strategic space

We call all the options available to solve problems or challenges 'strategic space'. When people see more options after a certain activity than they did previously, their strategic space has expanded. This concept lends itself to monitoring and evaluation because searching questions can be asked and the difference various activities make can be measured with a certain probability. Whether people are actually going to do something else with that increased space often depends on many factors. Using behavioural change as a method of quantifying can be complicated. People can have good reasons for not accepting certain solutions. The strategic space was one of the key concepts in the NiAH programme. Livestock farmers expand their strategic space in the networks through knowledge they acquire (information, insights, raising consciousness, experiences etc.) and through the connections they make with others (researchers, financers, citizens and fellow entrepreneurs).

15.8. To conclude: born networkers

Some people seem to be natural networkers. By intuition they do the right things at the right time. If you ask them in retrospect what they did exactly, they often don't even know anymore. When the reconstruction is successful, then we see

For some networkers it seems to come naturally. They are born networkers. The communication is sometimes even non-verbal…

that their behaviour generally reflected exactly what our models indicated. This is not coincidence. The models provide no standard prescriptions, but they enlighten what happens when a process succeeds. Development is, just as with evolutionary processes in nature, an autonomous process that leads to more task division, specialisation, commitment, coherence and satisfaction provided it is not obstructed. The mechanisms for attuning are ingrained. Someone with a well-developed antenna intuitively senses what has to be done.

In the course of a person's life, many events occur which sooner or later contribute to the selectivity of the antenna. In addition, not everyone has a wide repertoire of intervention options at hand when that intervention is needed. 'To a man with a hammer, everything looks like a nail', as the saying goes. That is why it helps to practice recognising situations and choosing effective interventions, so that you can resort to them if the situation arises. This booklet with tools can be used as a guide to help broaden your repertoire of responses.

The models used in this booklet are intended to help you determine the position and direct you towards the next steps. It is not a hard and fast set of rules. Your own intuition (healthy common sense) must remain guiding. You can sharpen your intuitive power using the models in this booklet and in particular through reflecting on your experiences and those of others. The models aid this process by offering a common language to help unravel experiences and by providing insights in potential cause and effect relationships in the dynamics of networks.

16. The beaver dam

In closing, we recount a fable. To evade an imminent disaster, four proposals are made in the tale. The reader may choose which is the most appealing approach.

16.1. The tale

Once upon a time there was an expansive tract of forest populated by animals. The animals had lived there contentedly for many long years. But one day dark clouds appeared on the horizon. The river flow slowly started to dry up. There was no longer enough water for the hippopotamus to swim around in or for the elephant to spray himself. It would not take long anymore before even the pigs couldn't take their customary mud bath any longer. And even worse, within a foreseeable time, the animals would die from thirst. Not less rain was falling than in the past. The birds started to investigate what was the matter. The result was alarming. Up-river, there was a huge beaver dam being built that barely let any water trickle down-stream. What could be done?

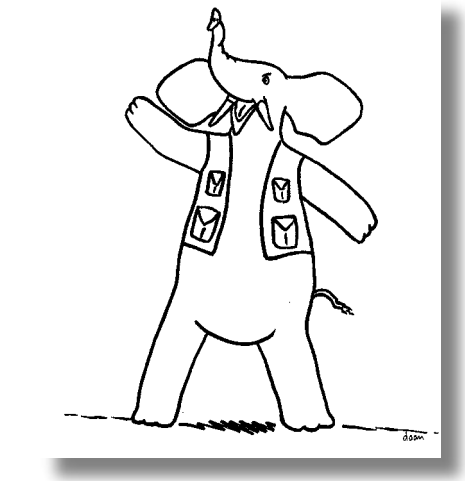
Lion King called the animals out from the forest to meet and asked for advice. Something had to be done. But what?

The river flow slowly started to dry up.

The first one to stepped forward was the **hippopotamus**. This hippopotamus knew everything about water; he was a hydraulic engineer. In his opinion, there had to be a technical solution to satisfy everyone. He proposed performing a thorough proper investigation to discover the best solution to the problem. This proposal could be used to convince the beavers to cooperate on a collective solution. The investigation had to focus on moving the dam from up-stream to down-stream. The advantages were evident. Beavers and other animals could live in peace and harmony with each other and a reservoir would be created which, even in dry periods, everyone could drink from. The pigs could roll around in the mud, the elephant could happily squirt with his trunk and the hippopotamus could swim to his heart's content. That's how a problem can be transformed into higher quality solution for everyone. Naturally, part of the investigation would have to include performing an environmental impact report (EIR) to see who would be disadvantaged by the operation. Arrangements had to be made to relocate nests. If the advantages were quantified objectively by the investigation, high-level consultation could take place with the beaver captain about the conditions, for example, help with moving the dam, day care for the beaver babies etc.

There were some mutterings of approval from some sides. "Good plan." "Many advantages." Technology has no limits. Little could be said against objective yield calculations. But there were also doubts. Had the hippopotamus considered that the beavers might not want to negotiate with the animals? Especially about a plan initiated by the counter party? How great was the chance of success and did this justify all the work this investigation would entail? What would it cost, all those project agencies for hydraulic expertise, transport, EIR, etc.?

The second one to raise his voice was the **elephant**. He said, "The beavers are intruders. They began this without taking any of the general interests of the forest into consideration. We have to make it clear to them who is in charge here. Building dams should be permitted, but within the societal preconditions; therefore, no dams in the major flow of the river." The elephant continued with: "King, give me the assignment. I shall investigate the extent of the damage that the beavers are causing and which legal steps we can undertake against the beavers. If they don't agree, then

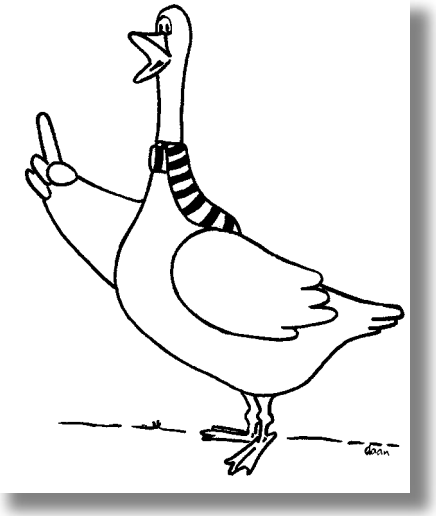


I want a mandate and the necessary means to form a small brigade we can employ to forcefully set down our demands. The dam must go! We'll make it clear to them what can and cannot be done. If necessary, we will drive away the beavers and destroy the dam."

Once again there were some mutterings of approval. Tackle it right away, otherwise you'll set precedents and the damage becomes worse. "We have the oldest established rights here. Beavers don't belong here."

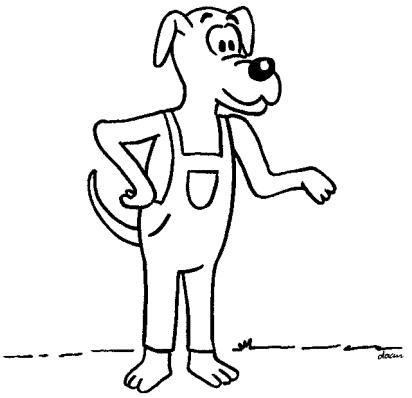
However, there were serious considerations once again. Who knows the kind of trouble the beavers could cause if they got angry? Plus, the beavers had been released into the wild by humans. They thought that beavers should be allowed to live in the area. If they drove the beavers away, others would come in their place, because humans are persistent creatures "Then couldn't we talk to the humans?" shouted someone. The king roared in reply: "Are you crazy? You can't talk to humans. Besides, if they discover that a lion, a hippopotamus and an elephant are walking around here, they would catch us and lock us away in a zoo." No, talking to humans was out of the question. Raging war on the beavers was an option, but not without risks.

The **goose** was the third to come forward. Geese are, as you know, social animals. They are excellent organisers and happy to talk to everyone. The goose said, "King, a participative investigation is the only thing that's appropriate. Give me the mandate and the means to have an open dialogue with the beavers. Perhaps the beavers don't even realise the suffering they're causing. There might be solutions we can discuss. Of course the beavers also have their own interests that the other animals must



take into account. Beavers see their world differently to geese, pigs, hippopotami, elephants or lions. A perspective in which everyone can be comfortable can only develop when we enter an open search and learning process together. Then there shall also be solutions that do justice for all. Who knows, the beavers might ultimately embrace the hippopotamus's idea, but then they themselves would have considered it too."

Once again there were some mutterings of approval. Peaceful approach. Perhaps the beavers aren't that bad at all. Who knows what could come of it? You have to at least give it a try. But the birds, who had investigated the entire situation, didn't entirely agree on this. The beaver captain looked like a tyrant. He incited a lot of fear. Not someone to enjoy a cosy cup of tea with or hold an open discussion. They had also seen several strongly muscled workaholics plodding away. The first impression wasn't of a communicative group.



As last, a **young dog** jumped forward. "There have to be some beavers who want to look beyond their own world, even if they are not involved at management level or don't yet dare to voice their own opinions. King, give me the space, then I'll search for a group of other enthusiastic young animals and we'll go together to search for contact with young beavers who we can talk to and who will also listen to us. Perhaps we can start a scouting club. And then we'll investigate mutual understanding and creative solutions. By the time we have found enough enthusiastic supporters on both sides, you can go and negotiate with the beaver captain."

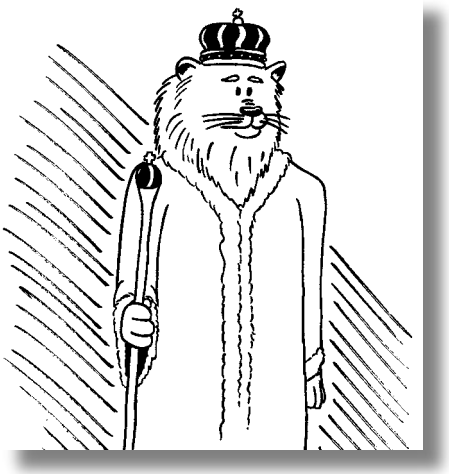
Once again there were some mutterings of approval. Those young dogs, with their new ideas. But now problems also arose. How do you manage such an approach? You can't monitor this process. What performance indicators can you use to evaluate the group? It's about serious matters, about life and death. There's no time for fun and games.

The lion heard the four proposals as well as the comments from the public. He retreated with his ministers to take a decision, the rhinoceros from public order and safety, the hamster from finance, the stork from land use and the bull (a Scottish Highlander) from integration affairs. Which of the directions should he choose for the solution?

As a free actor, which solution would you recommend to the king?

16.2. The tale unfolds

The king chose an integrated investigation approach. With the investigation proposal from the hippopotamus under his wing, the goose was sent to the beaver captain as the king's process facilitator. However, the negotiations didn't proceed smoothly. The captain was unwilling to cooperate. The goose was dispatched a second time, but now with the threat of the elephant. This didn't improve the situation. The beaver captain had an entirely different view of the matter and threatened in reciprocation with a beaver guerrilla if it came to a confrontation.



After hearing the four proposals as well as the comments from the public, which of the directions should the lion king choose for the solution?

Ultimately, the young dog was allowed to form a group of young scouts. He would probably taken this course of action without permission anyway, because that's the kind of young dog he was. But now a steering group with whom they had follow-up meetings also started. The scouts found young beavers who were interested in intercultural contacts. They discovered that beaver families were experiencing problems with the rising levels of water in the reservoir. This meant they constantly had to relocate their nests. The construction of the dam actually stopped too much passage of water. However, the beaver captain, who was single and was indeed not particularly communicative, was unaware of these problems.

The young dog and his friends dug canals to channel the flow. After their first attempts were initially unsuccessful, they found help from both factions of animals who admired them for their courage and persistence. A rocky area was found that was suitable for a waterfall. Now that there seemed to be an acceptable solution for both sides, they could achieve a break-through in the negotiations. They dug the canal to the rocky area with unified strength. They created a barrier that kept the water level in the reservoir constant and directed the river flow evenly, even in times of drought.

And so they all lived happily ever after…[2]

[2] Text: Eelke Wielinga, illustrations: Daan Spijker.]

16.3. Knowledge and the beaver dam

Which role did knowledge have in the diverse components of the tale?

The approach of the **hippopotamus** is the **instrumental approach** (see Figure 15). He reasoned on the basis of objective data and technical possibilities. When the best solution is established, then others may think about the communication to convince actors involved. The instrumental approach works well as long as all actors involved trust in the uncontested knowledge that the experts provide. The best route to follow is derived from that. Science must ensure that the confidence in this type of knowledge with the predicate 'scientific' doesn't disappoint, because that affects its leading role.

*Figure 15. The **hippopotamus** chooses the instrumental approach.*

This approach generates insufficient solutions when people can no longer agree about the truth. Then there is insufficient uncontested knowledge available. This is the case when problems are so complex that scientists can no longer provide assurance. It is also the case when there are huge conflicts of interest, like in the tale. Then each party has its own truth and often its own experts to verify that truth. The position of the expert is important in this case. If he represents the counter party, then he is suspect. That's why the hippopotamus's approach has no chance of success here.

The **elephant's** approach is the **strategic approach** (see Figure 16).
For him, it was about strengthening the position of the animals in the forest against that of the beavers. Actually he's committed to winning, to securing the interests of the forest in this way. Knowledge has the form of arguments and threats. Arguments in the hope that the other party will become aware of the legitimate and moral rights of the forest and threats to strengthen the arguments by overruling. We can call this last one a **position play**.

The strategic approach works well when there is an open exchange so that actors can manoeuvre each other into positions by pushing and shoving, whereby they can arrive at new task division and specialisation that provide added value. This is the leading principle in the market. Ideally, a healthy market develops in which everyone does what he's best at through a combination of exchange and competition. This makes knowledge a transferable product. Handy if knowledge is incontestable, but not

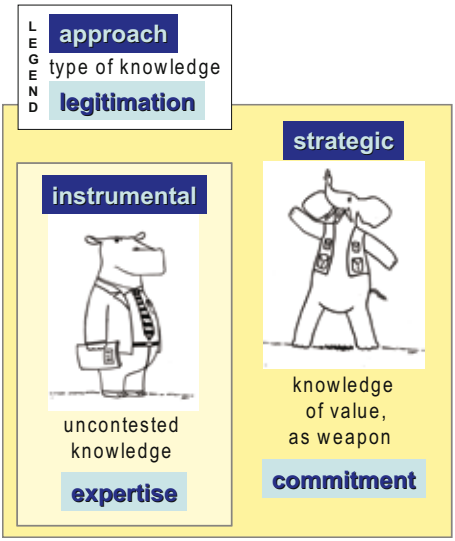


*Figure 16. The **elephant** chooses the strategic approach.*

necessary. It's fine as long as someone attaches sufficient value to pay for it.

The strategic approach is also effective when there is a battle that can be won. That is possible by implementing weapons such as the small task force the elephant wants to mobilise. Such a battle will, however, always involve damage. This damage can be limited when the battle is not fought physically, but handled with arguments. This approach requires accepted rules of play, such as a legal framework, for example, and institutions that can impose the rules of play. Knowledge then plays an important role once again, but now as a weapon in a position struggle. Whoever commits to a strategic approach is legitimised by the commissioning body. Specifically, this attaches value to his input and the knowledge that he uses with it. Therefore the client attains the main role in the knowledge market. If the government finances the research programme, then it buys knowledge in its role as a surrogate client, but in the name of society as a whole.

This approach generates insufficient solutions when the battle cannot be won by one party and there is also no open exchange from which operable positions could develop to be able to deal with assignments collectively. The will to win a battle can be healthy at the micro level as long as conditions are created for an open exchange at a higher level. The elephant has no chance because there are no acceptable rules of play and there is no perspective of a victory. The counter party has too many opportunities to sabotage a forcibly imposed solution.

The **goose's** approach is the **communicative approach** (see Figure 17). He relinquishes the idea that only one truth exists. This creates an opening to the other party. Space can only develop to collectively solve and search when all parties involved first feel their own interests are acknowledged and their vision of reality. Whoever claims to possess the truth is an obstacle in this search process. The concept of knowledge as individual construct applies here. Everyone has acquired his own knowledge through education, experience, persuasion etc.

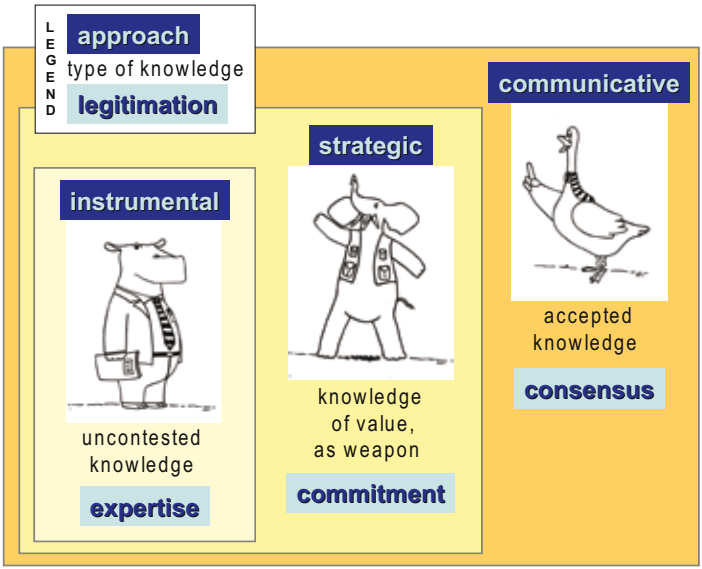


*Figure 17. The **goose** chooses the communicative approach.*

Images of reality can converge through interaction. Such a collective learning process should lead to knowledge that all parties involved accept. Whether that knowledge is also scientifically valid is of less importance. What it entails is that parties recognise this knowledge as the basis for collective action. It is important to keep everyone on board in the collective search process. That's why it is important to only take the next steps when all the stakeholders are in agreement. Intervention in this approach is therefore legitimised through consensus.

The communicative approach is effective when the actors involved recognise their mutual dependence. Methods for participation and interactive policy-making, for example, take this understanding of mutual dependence as a basic assumption. But at the same time this is the weak link. Specifically, the approach generates insufficient solutions when that recognition is absent. This causes the goose to fail. The beavers have no real affinity with the other animals in the forest. There is consequently nothing to negotiate, not to mention any chance of success for a collective learning process.

The approach by the **young dog** is the **ecological approach** (see Figure 18). He searches for the energy and connection. His drive and enthusiasm inspires others. This power creates a network that is strong enough to attract the interest of the free-thinkers in the counter party. He creates space for experiments for well-intentioned forces which form an informal network on the other side of the frontline. This is **position play**. Through this, he tries to break through the blocked communication lines so that connection can be created. Shared insight can grow in the connection.

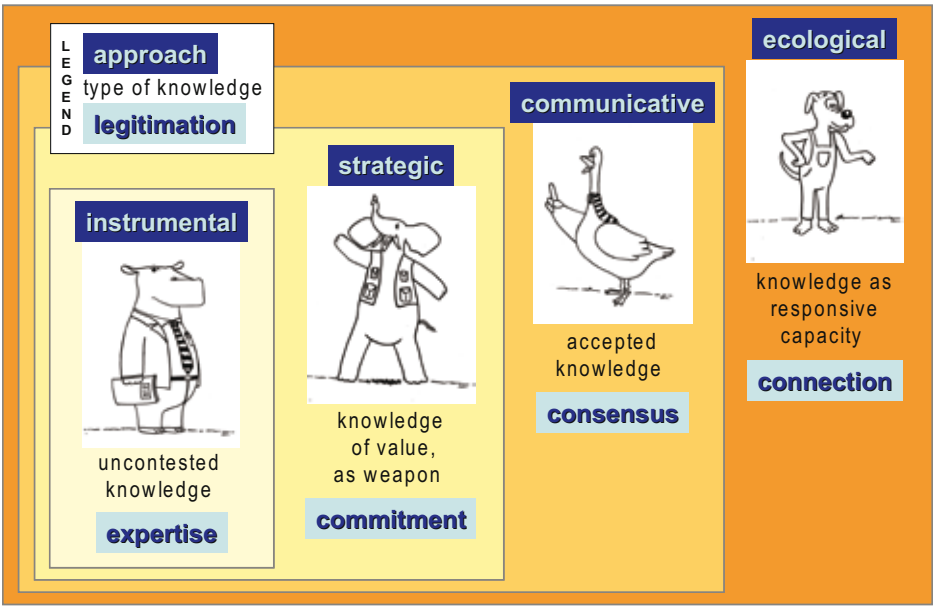


*Figure 18. The **young dog** chooses the ecological approach.*

Together they can work on applicable and sustainable solutions.

The dog's ecological approach succeeds because he sees opportunities to create openings by an informal network, despite the barriers in the formal structure. The facts that come to light through this interaction would not have been discovered if external investigators had kept to a formal mandate and continued working according to accepted methods. Through the energy and insights created by the informal network, this network ultimately became the interlocutor that was interesting enough for the formal network of negotiators and authorities. This is how the connection was created and sustainable solutions came within reach.

What is now the role of knowledge in this approach? Knowing where to site the waterfall? Knowing how to regulate water? Skill in digging canals? Knowing about problems on both sides of the dam? The competence to mobilise the correct actors in the correct order so that they can ultimately work on sustainable solutions? Being able to signal that there is a problem that requires a solution? Ultimately, they are all crucial elements in making the ecosystem healthy again.

The function of knowledge in the ecological perspective is maintaining the connection between mutually dependent components of an ecosystem. Each living organism is able to perceive signals and to generate a response to them through which it remains connected to its surroundings. Networks of people can be regarded as living organisms. Knowledge makes sure that people can receive and interpret signals from their surroundings and consequently can respond to them. Knowledge is effective when people use it to remain connected to their surroundings. Viewed in this way, knowledge is a capacity, specifically the capacity to provide an effective response.

16.4. The network tools and the beaver dam

When do you use the Network Analysis, the Spiral of Innovations, the triangle of change and the Circle of Coherence? Based on the fable, we demonstrate how you can use various tools in their context for a concrete initiative.

16.4.1. Is this network a solid foundation?

With a new activity, the first question is, "Is this network a solid foundation?" The Network Analysis (Chapter 9) provides a guide for this.

In the fable, the king is the *initiator, partner* of his own initiative and also the **link** that connects with the diverse links involved. There is, of course, a history before the moment that the king calls the animals together, but that is excluded from the tale. Networks always have a prior history. This is relevant in as much as it has something to say about the current role distribution.

At the moment the tale begins, there are no *links* that could connect with the beavers. These links can be created by meeting with the animals who, for example, know a lot about what happens around the river, live in a certain place, or have certain contacts. When a minister doesn't limit himself to advising the king who takes decisions, but makes plans with him to further explore the different solution directions, to be engrossed in the momentum and to implement the ideas, then he positions himself as a partner. He adopts a partial responsibility for the initiative.

Suppliers are, in this case, the animals from whom a contribution is needed to advance the initiative. Initially, it is the birds that supply information about the situation at the beaver dam. But the animals who come up with suggestions are also suppliers at that moment. There could also have been a wise owl who flew by, guiding the king in considering his approach. At this point, the owl would also be a supplier of knowledge.

Users are the animals in the forest who witness the flow of water drying up. This analysis teaches that the key obstacle is in the absence of links between the animals in the forest and the beavers. They have to work on that and four suggestions are proposed accordingly.

What also can be seen is that the role division subsequently develops. Initially the king is the initiator, partner and link simultaneously, then the goose is the link, the young dog the partner and the animals who assist in digging a canal become the suppliers. Finally, the beavers also become users of the solution found.

16.4.2. Which types of knowledge and activity are needed here and who needs to be mobilised?

By applying the concept of the Spiral of Innovations (Chapter 10) to the tale, you can work out for yourself which steps are needed to realise an initiative. We don't know where the *initial idea* comes from. But because the animals clearly notice that the water is running low, they quickly enter the *inspiration phase*. This transforms into the *planning phase* when the lion king assembles the animals. Then the questions come up that concern the position of everyone in the process, what the next step should be and who needs to be involved.

The four suggestions provide different answers based on different assumptions. The hippopotamus assumes that uncontested knowledge is the key to the solution. If you perform the *development phase* properly and with the input of sufficient expertise, then the *realisation phase* is merely a question of conveying the message through a good communicator.

The elephant doesn't see much value in such a *development phase*. For him the issue is clear – the beavers have to be dealt with. He wants to immediately proceed to the *realisation phase* which deals with position play through implementing arguments and a show of power.

The goose sees the lack of communication as bottleneck. This causes a lack of shared understanding of mutual dependence. He wants a *development phase* in which the animals work with accepted knowledge. That requires not only committing experts, but also affected stakeholders, in this case, the beavers. This is a condition for a *realisation phase* in which all parties collaborate.

The young dog agrees with the goose, but doesn't believe that the beavers would work together on a *development phase* without first forming an informal network. To ensure the beavers are also inspired to collaborate, the animals have to return to the *inspiration phase*. This last supposition turns out to be correct. He makes the difference by not beginning with the experts or the authorities, but first by recruiting supporters on the other side of the frontline.

When the young dog comes into action, we see an alternation between the *inspiration phase* in which young beavers become involved and the *development phase* in which they make important discoveries together. This transition inspires others to join the initiative, so higher levels of collaboration develop to search for solutions. Once a good solution is within

reach, a new *planning phase* follows when the parties negotiate at a higher level. Now they can tackle the realisation phase with unified forces.

The tale doesn't continue by explaining if a *dissemination phase* and an *embedding phase* follow. Perhaps the animals discuss a fixed task division for the maintenance of the waterways, or a consultation organisation emerges for future problems. That belongs in the *embedding phase*. The *dissemination phase* consists of others taking the lessons learnt from this experience seriously in their own practical situation. Maybe this will be your responsibility, as a reader.

16.4.3. How do you focus on energy?

Determine the proper sequence of involvement of actors using the Triangle of Change (Chapter 11). The hippopotamus, the elephant and the goose immediately want a discussion among *gatekeepers* and contribute a detailed plan, a threat and an offered 'wing' shake respectively. The Triangle of Change demonstrates that these attempts occur too early. Something else must happen first to acquire a position in which the beaver captain takes the animals seriously.

The young dog creates an informal network of *change agents* in which the animals generate energy mutually. He proceeds with this network until a perspective is achieved that represents an acceptable solution for all parties. The fact that it's so difficult to communicate with the beaver captain leads to the suspicion that he is not only a *gatekeeper* due to his actual function, but is mainly a *survivor* who only makes a move if he is convinced that his own position will not be in danger. That is understandable. In fact, tyrants are trapped, imprisoned between narrow margins. His power base is founded on tight and absolute control, which he cannot risk jeopardising.

16.4.4. Which barriers form the limiting factor, and which intervention is suitable?

When you know which connection is lacking, then the Circle of Coherence (Chapter 12) allows you to assess the nature of the barrier and search for an appropriate intervention. The interaction in the *narrow network* in the tale is not the determining factor. The narrow network consists of the animals in the forest who feel collectively involved in the problem of the water shortage. The beavers belong to the *broad network*, even though they are initially unaware of this fact. The connection between these two parties is blocked. Action has to be taken.

There is no question of a non-committal stance from which parties could investigate their mutual relationship. So, it is not a barrier from the first quadrant that can be remedied using a good idea from the *inspirator*. This is where the hippopotamus fails.

The beaver captain is the gatekeeper and the survivor.

There are also no apparent overlapping positions or a contested borderlines between the parties in competition or power struggle with an, as yet, undecided outcome. This is characteristic for the second quadrant. If that was the case, the barrier consisted of a lack of attuning between the efforts of both parties. The goose has the role of *negotiator*, but fails because the beavers were only committed to their own interests and were not prepared to discuss further details.

The *negotiator* makes good progress in the second quadrant, but that wasn't brought up here.

The elephant would have shifted the interaction pattern to the second quadrant with his intervention as *strategist*. His agenda, however, is victory and not the process of manoeuvring each other's positions using a position play that would lead to connection based on respect. With that he would forced the conflict to escalate with severe damage on both sides of the front.

The goose aims for dialogue, but this pattern in the fourth quadrant is not yet apparent or feasible, as it demands mutual respect and a collective sense of responsibility.

The positions are completely rigid and unchanging, with an unequal distribution of power, advantages and disadvantages. This is characteristic of the third quadrant. The broad network is positioned outside the vital space because one party is unsatisfied. There are two options here, specifically, the warm intervention of the *mediator* or the cold intervention of the *warrior*.
The mediator creates space for experiments. The young dog does that by asking the king for permission to start a scouting club behind the beavers' front lines. As far as the beavers are concerned, they have to operate carefully with the space for experiments that can be found there, without a mandate. They gradually learn how to expand their space for experiments. Through this, they start acquiring a position that can ultimately not be avoided by the beaver captain. In relation to the beaver captain, this intervention can also be labelled as an intelligent interpretation of the *warrior*.

When this phase is reached, the positions can be forced to shift, propelling the interaction from the third to the second quadrant. This gives the goose space to do his job as *negotiator*. Consequently, when consensus is reached about activities and task division, we have ended up in the third quadrant again, but this time within the confines of the vital space.

We don't know what happens after the forest is enhanced with a brimming waterfall. But if the animals live happily ever after, that indicates a healthy exchange of vital space among the quadrants.

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More information

- The Network Indicator (in Dutch)
  (www.verantwoordeveehouderij.nl/netwerkwijzer)
- Website about Networks in Animal Husbandry including the Learning History per network 2006 (in Dutch)
  (www.verantwoordeveehouderij.nl/netwerken)

Appendix 1. Example of a Learning History

Network: 'Scharrel Netwerk Veluwe' *[Veluwe Free Range Network]*

Red mites in sight

Jan ten Napel

How far can you progress all on your own?

In the autumn of 2005, on the recommendation of experts from Wageningen UR, three poultry-farmers from a Free-range study group submitted a request for support from the Networks in the Animal Husbandry programme. They were at a loss because chicken red mites were becoming an increasingly uncontrollable problem. Despite precautionary measures their farms had still been affected, just like more than three-quarters of the poultry farms in the Netherlands. Despite the urgency of the problem, they didn't have high expectations about the request. They were therefore very surprised when their request was honoured and was given high priority. They were still sceptical at the initial meeting: "What are we, just a few poultry-farmers, going to do in one year about a problem that is dominating an increasingly growing part of the West European poultry sector?"

Spiral of Innovations: In terms of the Spiral of Innovations, the initiators are in the 'initial idea' phase. Something must be done about this problem urgently, but they are not sure what. Therefore, there is also a search for exactly what the problem is. One 'initial idea' is to start with the darkling beetles. The research group identifies the problem, but does not see what good the network will do. Afterwards, even the initiators state that they did not have the feeling that the network was going to produce something.

Eleven or three, then eleven, but ultimately three

The three initiators had high hopes of involving the whole study group in the network. There was little confidence in the authorities during the first meeting without a network facilitator, and the majority of the participants didn't want to invest any time in it. During the second meeting the expert and the network facilitator from Wageningen UR were present. An extensive discussion followed about the urgency of the red mite problem, and the comment was made that poultry-farmers had to be more observant and researchers had to listen better to find leads which would contribute to finding a solution. The topic of lack of confidence in the Ministry of Agriculture, Nature and Food Quality also arose. At the end of the

Circle of Coherence: When the Wageningen UR experts function as 'inspirator' during the second network meeting (conscious intervention), the members of the study club participate, but they quickly find themselves 'fleeing' again. The three initiators therefore form the core network, but the rest of the study club stays informed about the network's progress. In terms of the **Network Analysis**, they are users. Overall, the three initiators have the same ideas and ideals. When it comes to searching for solutions, they are clearly in the 'dialogue' (4th) quadrant of the Circle of Coherence.

evening, all the study group members, with the exception of one, indicated their willingness to participate. Ultimately, it was chiefly the initiators who demonstrated involvement and committed themselves to the network. The participation by the other members was more or less from a distance.

Measuring is knowing

It appeared in the second meeting that poultry-farmers in general lacked a good impression of the red mite infestation in their flocks. The problem is that red mites only appear in the dark and infest on laying-hens, but withdraw into surface joints and cracks in the day. When they are replete, you can also see them during the day, but then the problem has already become too serious. A monitoring system was developed by Wageningen UR, and its use was explained to all eleven poultry-farmers. Not everyone has actually used it. The experiences with the system were mainly positive, but for a few, the red mites were everywhere except in the measuring tube. In order to call more attention to the problem, the expert also circulated a summary of the relevant literature and a number of specialist journals about red mites. During the evaluation in October, the poultry-farmers indicated to the study group that they were more consciously aware of the red mite infestation thanks to this attention and the method, and that they also entered the barns more often at night with torches after the

Score 0: no red mites

Score 1: few red mites

Score 2: several red mites

Score 3: many red mites

Score 4: extremely many red mites

An expert from Wageningen UR developed a simple monitoring system to determine the extent of tick infestation.

Effect monitor: In terms of the Effect Monitor, the objective of the monitoring system was that the poultry farmers in the study group became aware of the severity of the problem (expanding strategic space). Looking back, we have not explained this clearly enough because some poultry farmers thought that they participated in an experiment from the Animal Sciences Group of Wageningen UR. The strategic space did expand: several of them report that red mite is now more frequently a topic of discussion when the veterinarian or other specialist visits the farm.

lights had been turned off for about two hours.

Not the red mites coming in, but the ones already in!

When the network began, the prevailing impression was that it was particularly important to prevent the introduction of red mites. Everyone had examples of egg trays, trolleys, containers, fertilizer bins and also people who brought mites from other farms. It was then decided to first count, then meet with the parties involved for solutions afterwards. However, the counts provided practically no red mites. Simultaneously, the infestation of red mites that had survived from the previous cycle, despite cleaning and disinfection, rapidly spread. Controlling the entry of red mites therefore only makes sense if there are no red mites present on your farm. This is only the case on a few poultry-farms. We therefore shifted our focus to controlling the red mites. The preferred option would be to eliminate them altogether, but no pesticides are permitted to control red mites that destroy all the stages of red mites everywhere.

Effect monitor: This is also expanding strategic space, this time by problem articulation. What should we spend our energy on? With whom should we be in discussion? Only the initiators take part in a discussion about the change of course.

The darkling beetle

The initiators are not fans of chemical pesticides. They prefer to manage the red mites using biological pest control. They noticed that the red mite population considerably declined when darkling beetles were present in the barn. Could this perhaps be used as a natural predator? Just like red mites, there is hardly any scientific expertise in the Netherlands about darkling beetles. Veterinary parasitologists are a dying breed and agricultural entomologists are mainly occupied with plant breeding. Finally, a retired professor was found in the US who had done a lot of work on the darkling beetle. He regarded the darkling beetle as a greater problem than the red mites themselves. After the summer, a student from Wageningen University was asked to design a system that combated red mites using the darkling beetle as a natural predator, without the darkling beetle being a problem in itself. In the meantime, it has become clear that plenty of time is needed to design a system ready for practical application.

The next step

What next? Dutch experts on red mites in poultry are already debating the issue. Preventing red mites entering farms is not the problem, but pest control. There are very few approved chemical pesticides and the costly registration application procedures

Spiral of Innovations: The network is in the inspiration phase of the Spiral of Innovations in regard to the darkling beetles. The problem is to develop a network of people who can further help with this. They prove to be scarce. So the intervention of a student is introduced who properly charts everything and, while interacting with the network, goes through the steps in the system design in order to bring the impracticalities and knowledge deficiencies to light.

for new agents make it commercially uninteresting for manufacturers. But at the same time, red mites are a huge welfare problem for animals and humans, and cause considerable economic damage.
During this phase, coinciding with the summer, the network almost comes to a standstill. What was our aim? What route should we take towards achieving it? Just before the summer holidays, we decide to concentrate on increasing awareness of the problem in the sector and with the authorities.

Circle of Coherence: Superficially it appears a change of tack, but in retrospect the essence was the question of who the motor is and who steers the network. We failed to explicitly address this issue, which in reflection is a pity. In the 'structure' (3rd) quadrant too much of the initiative relied on the people from Wageningen UR. If these contacts were absent for some reason (holidays, trips abroad) the network almost ground to a standstill.

On the agenda

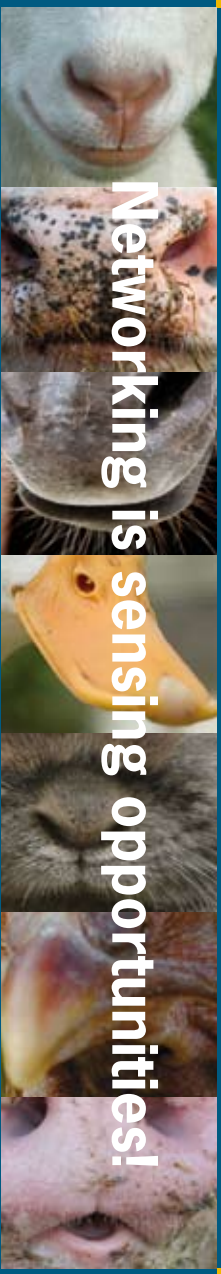
Initially our idea is to invite policymakers from the Ministry of Agriculture, Nature and Food Quality to visit an infected farm to see the problem at first hand. Much to the surprise of the people behind the initiative, they agree to a meeting. The network wants to clarify the extent of the problem using a short film of chickens bothered at night by red mites, and by calculating the financial damage. The message to be put across is a request to temporarily lift the ban in the short term on a certain chemical pesticide in order to win time to develop a biological pest control method.
While the network was busy with this project, the same group of people was also invited by the Netherlands Organisation for Poultry Producers (NOP) and the Commodity Board for Livestock, Meat & Eggs (PVE) to visit a farm. The purpose of this visit was also to call attention to the red mite problem. In the meantime, the NOP and the PVE have initiated a sector wide approach. The network has joined this initiative. The film has been completed and targets the government and society in general, as well as fellow poultry producers. The film emphasises the negative effects the mites have on animal welfare and the frustration felt by the farmers at being powerless to take action. It also shows that a mite infestation is signalled at an early stage by the behaviour of the birds. One of the people behind the

Effect monitor: It is clear that at the moment poultry farmers can do little to tackle the red mite problem themselves. Expanding the strategic space by seeking connections with other networks, such as policymakers, civil society groups, the Commodity Board for Livestock, Meat and Eggs and sector representatives would seem to be the next logical move. This includes contacts with the business community (poultry housing systems, pharmaceuticals, pest control). For the initiators it was quite a revelation to realise this course of action is possible.

In brief: there is no cut and dried solution yet, but the network has succeeded in placing the red mite problem on the agenda. In this way the network has already started to widen the boundaries of the strategic space.

initiative and the network facilitator present the film at a special day for the laying hen sector. Not much later, the Ministry and the NOP decide to invest in a research on this issue with a budget of around
± € 500.000.

Networks in Animal Husbandry 2007



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