Innovation
and
regional development

by

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1 Summary

This paper is based on the knowledge gained from working with two industrial networks from the county of Østfold in Norway. There is a special focus on the creation of networking arenas and the development of these arenas for better co-operation between the companies in the network. Much of the empirical knowledge has been achieved by interviewing participants from the networks, and by active participation in co-operation projects.

The theme is innovation processes in industrial networks, and there is a special attention on how it is possible to enhance the innovation capacity of the networks. It is also important to discuss innovation processes in industrial networks as a part of regional innovation systems because innovation processes in industrial networks can not be fully understood without understanding how this also relates to the surroundings.

Furthermore, in this paper I also discuss how good relationsships, continous change and strategies for knowledge creation are important factors for innovation in networks. This, I argue, could be achieved by following the principles from co-generated learning processes (as a search conference). The principles could be adapted, and specially designed, for each network in a way that increases the quality and efficiency of the co-operation processes.

2 Contents

3   Introduction

This paper is one (of two) mandatory exam papers in the EDWOR PhD program, a Ph.D. program integrated in the research program Value Creation 2010 (VC2010). VC2010 is a nation-wide R&D program with a ten year horizon, starting up in 2001, encompassing R&D institutions across Norway.

I start by taking my research project as the point of departure, with a description of the two networks from which empirical data are collected. Then I make a literature review focusing on perspectives on innovation and co-operation. I also discuss why innovation processes in industrial networks can not be fully understood without knowing something about how the networks and the environment acts together in a regional innovation system. From this I try to contextualize how innovation capacity could be increased by taking the principles from cogenerated learning processes and "search conferences" as a way of departure. Then I present some results from interviewing actors from two network cases, with focus on their perspectives on innovation and co-operation. Finally I put forward som suggestion for further research activities in the networks.

4   The research project

In 2002, Østfold Research Foundation (STØ) acquired support for a Strategic Institute Program (SIP) from the Norwegian Research Council on the topic: "*Network based technological innovation processes in Østfold County*". My PhD project named "*Innovation and business development in networks. A study of innovation processes in industrial networks in Østfold*" is a part of this program and I am using two industrial networks (see below) as empirical material. The PhD programme has from May 2003 been connected to the EDWOR

program. The main purpose of the PhD project is to strengthen the knowledge on substance, critical factors and working methods that can be used in industrial networks to enhance innovation processes. From the beginning, a major challenge for the two networks was to make the network function as a tool for better co-operation between the industry, local authorities and knowledge institutions. From this it was then possible to make the following research question:

How could we increase the innovative capacity of industrial networks?

5   The networks

5.1 Borg ICT Forum

In year 2000 six ICT companies together with the regional research foundation and the local municipalities made an initiative to establish a local network of the ICT industry. The main objective was to establish an open network of knowledge, where the network should work to 1) promote the regional ICT industry and its competence/knowledge, product-/service areas and sheer size to the industry itself, other industry and the municipalities, 2) assist in development processes or other relevant initiatives between members, 3) contribute to competence and knowledge sharing among the members 4) establish informal and more formal meetings points for the local industry and 5) strengthen local education in the area.

The network was established based on the recognition that there was no knowledge about the ICT industry in the area, regarding number of companies and employees, areas of expertise, customers etc. 30 leaders of local ICT companies met at the kick-off for the new network. The members of today range from small local companies to large international firms as InFocus

and CapGemini, and from sales companies to high R&D expertise. The network has established a good relationship to the municipalities and is now their "partner" regarding ICT in the development of the region.

In the beginning the enthusiasm and the interest in knowing the others brought along several meetings with different focus, and with many participants at each meeting. However, with the recession in the ICT-market, the companies more or less seemed to lose their interest in the network; it seemed there was no big enough gain there. Now a new initiative has begun with plans of a mutual profiling with a magazine that will be distributed to all companies in the county, together with project that focuses on innovation in the local ICT industry. This will hopefully result in growth and new projects in the local ICT industry in the time to come.

Even though the members of the board have changed, the board has been a tight group that has gained enough knowledge about each other to trust each other. As a result several members of the board have delivered joint offer documents and some have also developed products together. Borg ICT-forum is also on the web: www.borg-ikt.org.

5.2 Food industry

Late in the year 2000, The Trade & Industrial Development Agency of Fredrikstad County Council took the initiative to bring together representatives from the biggest food industries and research-institutions in the region. The purpose of this gathering was to announce that the county council wanted to encourage growth in the Biotechnology and Food Industries. A network of the participants was formed, sponsored by Fredrikstad County Council for the following 3 years.

It soon became evident that the participants knew very little about each others' activities and that the industrial food companies were so occupied by the daily activities associated with production that they had relatively little time available for activities which did not produce short term profits.

During the following years the companies became much better acquainted. This was achieved thanks to the network meetings that were held at the participating companies' industrial sites. Meetings were held every other month and lasted for a maximum of 2 hours (during working hours). At the meetings, the host company presented themes where they were particularly strong. Examples of the themes presented are: electronic ordering, quality control, GMO, HAZOP, SAP and how to cooperate with the county council on matters like planning permission, water rates, roads and sewage.

The companies also exchanged experiences and resources, like freezing capacity and storage. Fredrikstad County Council has become much better at communicating with the companies, and old misunderstandings have been resolved. Instead of disagreements there is now constructive dialogue, thus preventing conflicts of interest.

During the last year other industries (a brewery and a slaughterhouse in Sarpsborg) have joined the network. Regional development in the food industry has also been politically accepted through a business plan for common interests for three local county councils: Fredrikstad, Sarpsborg and Hvaler. Østfold Research Foundation is acting as secretary for the networks organizing the meetings and carrying out projects related to areas of interest.

6 Theory

6.1 Innovation – concepts and definitions

According to Brulin (Brulin, 2002) different major perspectives from innovation theory has been produced. Innovation can be seen as a result of processes in systems that can be described as

1. **The linear model** (*based on a linear life span of innovations from findings in basic research, refinement in industrial research institutions and laboratories, and then to the big companies' research and development departments and final mass production*)

2. **The innovation system approach** (*an interactive triple helix working system constituted by universities, public authorities, and the business community*)

3. **Relationship-building and networking** (*a relational economy, where the chief asset for innovation is the set of relations*)

The linear model is perhaps the most frequent used, or at least the most known. Both the linear and the triple helix model is built on a system metaphor where a smooth working system, scale, and scope are factors for how well the innovation system works and give growth. The relationship building and network perspective of innovation processes emphasize that competitive advantage, in a global economy, lies increasingly in local things like: knowledge, relations, and motivation. This is an alternative model of successful innovation processes and has a focus on relationship building. A region's chief asset is, in this perspective, not the institutional system but the set of relations. Probably innovation do not happen only as a result of processes in only one of the three, but as a result of processes

within a mixture of the three perspectives. One important observation is that all the perspectives indicate that innovation is a result of social processes.

The nature of innovation might be diverse, but one useful description is the broaden perspective on innovation as given by Levin, Fossen and Gjersvik (1994), where innovation can be divided into four parts:

- **Product innovation** - Any form of development of the products and services of the organization.

- **Process innovation** - Any form of development of routines, procedures, techniques or technology that are used for production of products.

- **Structural innovation** - Changes in how a company organize their business

- **Market innovation** - Introduction of a known or new product in a new market

A mixture of the different kind of innovation will normally exist.

But when do you know it is an innovation? Grønhaug and Kaufmann (1988) define (technology) innovation as: "*A technology innovation is a successful implementation of creative ideas on products or technological processes in an organization or a market. A product or technological process is innovative to the extent that a group of independent observers agree upon that it is innovative.*" This definition also confirms that innovation is a social process. This is also according to Pinch and Bijker's (Pinch and Bijker, 1989) approach on social construction of technology (SCOT), where a process of consensus among relevant participants forms an agreement on a technological innovation.

Another example is from The European Commission who define innovation as: "...innovation is taken as being a synonym for **the successful production, assimilation and exploitation of novelty** in the economic and social spheres." (Green Paper on Innovation, 1995).

6.2 Innovation and regional development

6.2.1 Innovation policy in the Nordic countries

According to the GoodNIP Study (Koch *et al,* 2003) innovation is considered the engine of technological change and economic growth, and therefore innovation policy lays much of the foundation for the future welfare development of the Nordic countries. According to the authours innovation policies in the Nordic countries are all strongly influenced by the so-called systemic approach to innovation where technological advance and competence building is characterized by constant interplay and mutual learning between different types of knowledge and actors, including firms, institutes, universities, sources of financing, relevant public agencies and more (this is is the same as the innovation system approach, see above). This is also according to Ennals (2002) arguing that innovation is not an isolated phenomenon, or peculiar to single enterprises, but arises from "innovation systems", typically operating at a regional level, and successful sustained innovation involves a complex mix of ingredients, with sensitivity to the social, economic and cultural context. In general many Nordic companies seem able to adapt new knowledge and new technologies in a productive way. The Nordic countries have invested heavily in education, investments that, according to Koch *et al* (2003), have effect on the innovative capabilities of firms, basically because innovation is based on learning, and the companies ability to learn rests on the .absorptive capacity of their employees. All the Nordic countries are dominated by small and medium sized companies, often in industries that do not normally invest heavily in R&D.

Although investment in R&D is believed to be an important activity leading to innovation, many companies may thrive without performing their own research, but most of them depend on a surrounding innovation system that does perform R&D. Finland and Sweden has a small number of large technology intensive companies that help bringing the total national R&D investments up to a very high level by OECD standards. But, according to Koch *et al* (2003) these R&D investments do not necessarily lead to a high level of innovation in general. This is because investments in R&D institutions will not help industry, unless there are ways of integrating this new knowledge in practical industrial endeavours. In the Good NIP Study it is suggested that national authorities take a close look at their innovation policies, and see if the following functions are covered:

- Measures aimed at improving the absorptive capacities of firms, i.e. their ability to learn.
- Measured aimed at broadening the activity base of the firms, i.e. their ability to invest in risky, but potentially rewarding, projects.
- Measures targeting "unborn" industries or technologies. Hence policy makers should develop policy instruments that guide radical entrepreneurs to sources of finance, advice and relevant competences.
- Measures aimed at improving the interaction between knowledge institutions and industry, being that universities or colleges or institutes.

According to Koch *et al* (2003) there is a need for further coordination of innovation policies both within the core area (industrial policy, R&D policy and regional policy), and in the broader "holistic" sense. There remains a lot of difficulties in bridging the gap between various interests, cultures and ways of thinking. According to the GoodNIP team there is a need for a better understanding of the innovation practices taking place *within the*

ministries and agencies themselves. These institutions talk a lot about learning and innovation in industry, but many of them neglect to a remarkable extent their own learning. GoodNIP therefore proposes that all relevant ministries and agencies develop strategic plans for policy learning, and that they initiate research that can broaden their understanding of such processes.

6.2.2 Regional development in Østfold

According to Onsager (2003a) there have been new tendencies in regional policy and growth partnerships in the county of Østfold (Norway), resulting in lessons and networks of permanent value. But there is a need to expand the connections with and between the private sector, knowledge organizations, and the central and county authorities that implement the policy instruments. In the past ten years the emergence of a range of joint development ventures has been put in place to buttress developmental capacity and the appeal of the regions and the county as a whole (Onsager, 2003b), where stronger development players and new forms of development cooperation has emerged. The county, county-level public and private institutions and organizations haves played leading roles, with regional 'offensives', cross- border undertakings like INTEREG.

6.3 Value creation and co-operation between companies

6.3.1 Clusters and industrial networks

In the book "Et verdiskapende Norge" ("A value creating Norway" by Reve and Jakobsen, 2001), the authors discuss how the cluster theories of Porter could be a way for Norway to be more competitive in the future. According to Porter, successful industries have self-reinforcing growth, driven by competition, co-operation, pressure on innovation and knowledge development among firms within geographical clusters of industries. In a model,

known as Porters diamond, see Figure 1, the "competitive advantage" is determined by four attributes of the national location (the "home base"): demand conditions, competition, factor conditions, and connections. Connections could be formal and informal contacts between industries, individuals, and authorities. The argument is that the more connections that exists, and the more diverse they are, and the more actors that are a part of the connections the more is the knowledge diffusion. The connections, can be of different nature: vertical connections in product market (buyers and sellers), horizontal connections in product markets (co-producers, complementary producers, rivals/competitors), connections in factor markets (technology and R&D results, human resources, infrastructures, and capital). Cluster theories usually define clusters by their positive effect on value creation. A cluster is defined as industries showing strong upgrading mechanisms. Although the cluster theory of Porter discuss important factors for value creation in regions it is rather silent about how this could be done in practice.
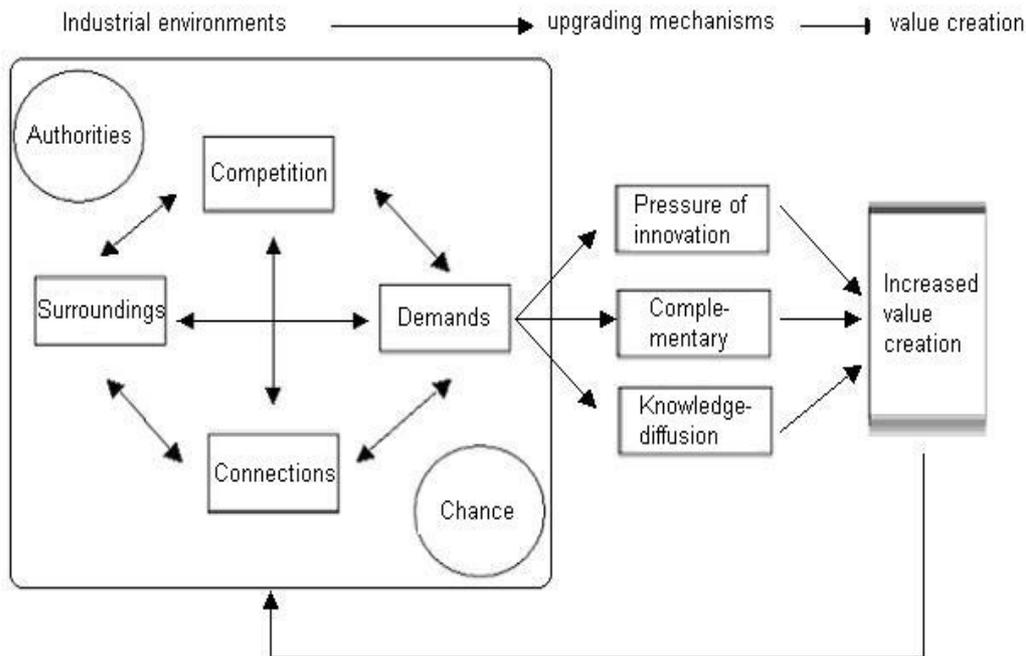
Figure 1: Porters diamond with enhancement factors

According to Porter, clusters are important for a company's ongoing ability to innovate

(Porter, 1998). Companies inside clusters usually have a better window on the market,

because buyers usually are a part of a cluster. Being a part of a cluster makes it also easier to

do site visits and having frequent face-to-face contact, and therefore it is possible for the

members to learn early about evolving technology, component and machinery availability,

service and marketing concepts etc. A company within a cluster can often outsource what it

needs to implement innovations more quickly. You may also obtain a better match with

customer's requirements because local suppliers and partners will be closely involved in the

innovation process. Piore and Sabel, (1984) argue that the development of flexible

specialization in production and industrial districts is the way to develop continuous

innovation. And, according to Sabel, Pyke and Sengenberger, networks are seen as an

important defining characteristic of industrial districts , binding firms together into a coherent and innovative system of relational contracting, collaborative product development and multiplex inter-organizational alliances (Sabel, 1989; Pyke and Sengenberger, 1992; Staber, 2001). But, according to Staber, they are surprisingly silent about the structure of the networks that is thought to stimulate business innovation and regional development.

Another interesting study, showing the importance of relationsships for the success of industrial networks, can be seen in Thoresen, (2001) and his research on network with industrial ecology. According to Thoresen industrial networks must exist on a voluntary basis. This implies that network-participation is a working form that must be profitable (i.e. leading to new solutions either for increasing income, reducing costs and risk or increasing asset utilization) or competence building (i.e. competence synergies may expand individual competence for participants which in turn leads to improved company performance). According to Thoresen, network success rests with its ability to introduce new perspectives in handling problems and exploiting potentials within and between participating companies. Many recently designed networks expect a more proactive role among participants. Under predictable market circumstances some networks may be of permanent nature (stable networks), while others in a rapidly changing market situation (dynamic networks) may be pulled together for a given run and then disassembled (Miles and Snow, 1992). Common for them all is the requirement for each company to share necessary information within the network.

The practical organization of arenas for information sharing and common problem solving may create identification. This in turn may lead to effective and permanent *working relationships* within the network, which are essential for success. According to Thoresen

some vital aspects for the development of effective relationships between network companies and between individual working group participants exists:

- The creation of arenas for information, communication and feed-back through e.g. steering group participation, partnering sessions, intra-company thematic working groups on selected topics, person-to-person dialogue.
- Systematic use of feed-back information loops to spread results from working groups to involved companies and organizations.
- Involvement through identification e.g. by developing common service facilities, web-pages, use of local media and development of common grounds.
- Learning-by-doing. Active participation is required in mapping, problem solving and exploitation of potentials in the individual companies and in the network group(s).
- Focusing on part-responsibility of each group participant for successful group results.
- Involvement of external resources for introduction of working concepts and as drivers for initiation and maintenance of the co-operation process.

7 The innovation capacity of companies

As illustrated in a study in the East of England, different firms have different capacities to innovate and that a firm's capacity to innovate is a function of its culture, resources, competencies and networks (Neely, 1999). According to this study the primary obstacles to innovation are time, money and people. Resource constraints force managers to trade-off between daily operations and making time available for the development and exploration of new ideas. There were also shown that specific obstacles include the resistance to change and the skills of people.

7.1 The need for good relationships

According to (Håkansson & Johanson, 1998) there is interdependencies between social relations, activity and resources. Industrial activities are human constructions both on a practical level and on a cognitive level. In a network there is a web of more or less interdependent activities performed by the use of a certain constellation of resources This are interpreted in different ways by different actors due either to differences in knowledge or intensions. The web is continuously changing due to learning, changes in resources or in the intensions of the actors. Lasting relationships could have important positive effects on the actors' productivity, on their innovative capacity as well as on controlling their environment.

7.2 The need for continous change

By the introduction of the idea of continous improvement in the 1980, "change" moved from being rare, but dramatic, events, to become less dramatic but rather more frequent. With the advent of concept "learning organization" change became the main structure-generating force, and the emergence of "innovation" has placed change in the driver's seat of economic policy. (Gustavsen *et al*, 2001).

Gustavsen *et al* discuss that earlier regional development program often put theory up front, not taking into consideration that it was barely understood by the actors involved (Gustavsen *et al*, 2001). Another approach was to focus on actors concerned (with their motives and other driving forces) to see how social orders can emerge from the interplay between actors. The theory was then believed to be more accessible to the actors because they meet themselves in the theory. None of these approaches takes account of *change*. How then could the industries approach change? According to Gustavsen *et al*, the enterprise has to compete "from within", not by opting out (i.e. forming a new community and setting a completely new course). It has

to be present in the sense that to be successful there is a need to know what other enterpises do and what solutions are possible to meet them on their home ground.

According Gustavsen *et* al, research has to move into relationships with specific other actors to jointly try to perform innovation.

Levin and Klev also argue that creation of effective learning arenas, by using techniques like "search conference" and "dialog conference" (among others), are important for implementation of *change processes* (Levin & Klev, 2002). These techniques could initiate processes that increase the degree of reflection and, because of this, increase the innovation and value creation capability.

7.3 The need for strategies for knowledge constructions

7.3.1 The cogenerative learning processes

Creation of arenas and facilitation of dialogue processes between actors from industry, research and local authorities are trends in regional development policies, both in Europe and in Scandinavia. In Europe, however, there has been a lack of adequate capacity to encourage and resource workplace innovation and work organization on a widespread basis (Ennals, 2002). According to the European Union (Green Paper on innovation, 1995) the most important measures for increasing the innovation capacity of the Union are:

- A need for new business
- A need for knowledge diffusion on methods of open and participative organization and management
- A need to decrease the reluctance to seek information

They also finds it important to make a distinction between dissemination of innovation, as the dissemination of the process (i.e. the methods and practices which make the innovation possible), or to the dissemination of the results (i.e. the new products). The innovation process is not seen as a linear process but rather as a system of interactions, of comings and goings between different functions and different players whose experience, knowledge and know-how are mutually reinforcing and cumulative. This is why more and more importance is attached in practice to mechanisms for interaction within the firm (collaboration between the different units and participation of employees in organisational innovation), as well as to networks linking the firm to its environment (other firms, support services, centres of expertise, research laboratories, etc.). Relations with the users, taking account of demand expressed, and anticipating the needs of the market and society are just as important - if not more so - than a mastery of the technology.

According to Lundvall (Lundvall, 1992), innovation is a ubiquitous phenomenon and has a cumulative character. It is always on-going processes of learning, searching and exploring, which result in new products, new techniques, new forms of organisation and new markets. Sometimes it might be difficult to see them because the activities might be slow, gradual and incremental, but they will always be there. Innovations might also be seen as "new combinations". Almost all innovations reflect already existing knowledge, combined in new ways. Innovations appears as the outcome of processes, not as a single event. According to Lundvall interactive learning and collective entrepreneurship are fundamental to the process of innovation.

According to Gustavsen *et al* (Gustavsen *et al*, 2001) one of the points influencing the design

of the project ED2000 in Norway, was the issue of diffusion: *How to get actors to learn from*

eachother. But earlier experience indicate that this could be a misleading perspective. Instead

a more fruitful perspective could be: joint construction. Joint, or parallell, construction implies

that "mass" is achieved through working together and sharing experience rather than through

some kind of process of linear copying. As a result from this local learning arenas, dialogue

and process were emphasized at the expense of fixed solutions and universal methods.

According to Ennals (Ennals, 2002) the most effective way to get sustained learning, is to add

learning dimensions to existing groupings such as supply chains and networks, which have

their own organic means of sustainability. The European approach is social benchmarking,

otherwise understood as "learning from differences" and to progress the solution of a problem

by comparing how similar problems are addressed by others, and considering one's own

experience against the background of the experience of others. The vital mechanisms for

diffusion are those which enable learning from differences: search conferences, dialogue

conferences, regional networks and development coalitions. The role of research and

methods (as "dialogue conferences") for co-generated learning and the creation of a

"relational landscape" was also a major issue in the "Learning regions" program in Sweden

(Shotter and Gustavsen, 1999).

7.3.2 Search conferences as a way of departure

Although I in this paper have a focus on search conference, and especially the structure and

the practical use of the principles behind it, it is not my intention to present this as a fixed

solution or a universal method. The search conference is for me one of several methods that

can be used to create co-generated learning processes. The strength of a research group

working with action research as a main research strategy, is to master a range of action

research approaches, but also to master the difficult task regarding choice of method and the timing.

So, could then search conferences be used to increase the innovation capacity of industrial networks? Could it be that the core principles behind search conference, as described by Emery and Purser (Emery and Purser, 1996), could by applied on the networks, if the participants agree on doing that?

The complex relation between discovery and practical application is the key issue in the innovation process (Brulin, 2002). Discovering the knowledge that each member of society (or the network) poses, and transforming this knowledge to practical application, should be important factors for enhancement of innovation capacity. This indicates a need for arenas and methods like search conferences. Also, according to Levin and Klev (Levin & Klev, 2002) there is a need for organizations to focus on the creation of meeting arenas, where social exchange and communication can occur. These meeting arenas can be looked upon as an arrangement for co-operative learning, and as a place for systematic trial and error, a place to practice, and to reflect on new ways of action. In this way the arenas will create a possibility for dialog and reflection on collective practice.

According to Gustavsen (Gustavsen, 2001) a democratic dialogue must exist in the relationships as a reference point. However using notions like "democratic dialogue", "broad participation" are rather alien to many in the business community. So, there is a need for "strong carriers" (Gustavsen, 2001, p: 254) of the notions before in the coalition, as well as the experience that these ideas can also pay off in business terms. This is also put forward by Greenwood and Levin (Greenwood and Levin, 1998), when arguing that the main challenge might be to "sell" the concept. However, doing search conferences takes time, usually 2 days,

and are ususaly being done by gathering from more than 15 people at a time, and are heavily

dependent on the skills of the facilitators. This is a relevant problems for the industrial

networks in this study. Why should the potential participants use two (2) working days,

hopefully with as many participants as possible, on something that are not guaranteed to be a

success? Taking into consideration that many of the industries are striving with difficult

processes in tough economical times where the focus are on how to "survive" on a day to day

basis.

Greenwood and Levin argue that the reason for using this much time depends on the

collective learning process, processes that do not move fast. A shorter search, they say, will

violate the basic aims of creating a sustainable learning process and inhibit momentum for the

process. The process of searching is however dependent on trust, and building trust is a

delicate and difficult process.

As described by Greenwood and Levin, (Greenwood and Levin, 1998), search conferences

emerged from the industrial democracy traditions in the United Kingdom, Scandinavia and

Australia. The theoretical and methodological development goes back to key researchers at

the Tavistock Institute in London. In this period some of the major problems with the models

of action research was; domination of the processes by experts in such a way that real

involvement of the participants was limited, and that social innovations, despite the success,

did not spread effectively to broader groups. The development of search conferences at the

Tavistock Institute opened up a line of developments of practices of search conferences,

which today are widespread and respected.

According to Greenwood and Levin (Greenwood and Levin, 1998) searching is not a recipe but a highly skilled, co-generative action research process. The core of pragmatic action research is to respect the combined research, action, and democratization goals of action research and to keep the conversation going with the participants. There is however no right way to run a search conference, and good practitioners are constantly developing and altering their own approaches as they learn more about the processes involved and gain more skills.

One perspective of the search conference could be the "Funnel" described by Emery and Purser. A schematic overview of the search conference principles can been seen in Figure 2.
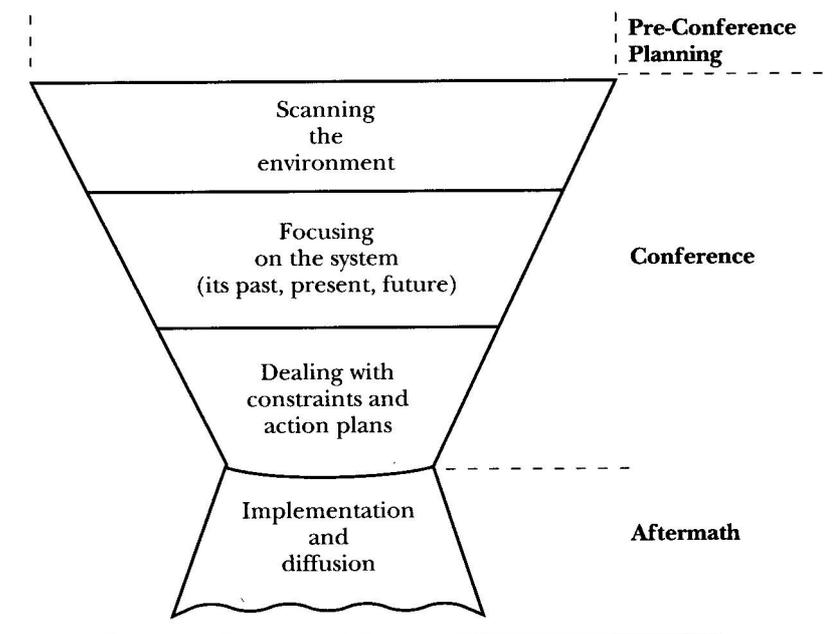

Figure 2: Search Conference Overview (Emery and Purser, 1996, p. 13)

The principles behind search confences are based on:

Open system thinking

The open system thinking is an integral part of every process step in the search conference. A system, defined as any organization, community or network that coheres around a single principle or a set of shared purposes in relation to the external environment, must maintain an open and actively adaptive relationship with its environment. re. If not, they will not remain viable and healthy over time, according to Emery and Purser. Therefore it is of crucial importance that the search conference starts with a scanning of the environment, letting the participants to think "outside the box".

Getting the right system in the room

Scanning the environment contextualizes the immediate system in the room. The participants develop a shared context for the host of changes that present challenges to the future of their system. Getting the right system in the room is to assemble the people whose knowledge is essential to achieving the purpose of the Search Conference. The purpose of the Search Conference determines the criteria for participant selection.

Puzzle solving and direct perception

The learning process and the problem thinking is done in a non-linear fashion (just as in a jigsaw puzzle). Search conferences are not just for experts, and everyone attending a search conference is considered an expert. This is because search conference is based on the ability for direct perception and common-sense knowledge.

Democratic structure

In a search conference those who attend the conference do the planning, the learning and the work, and because of this the system evolves into a cooperative organization rather than a competitive one. In traditional design principles the coordination and control is located on a level above where the productive activity is actually occurring.

Conditions for effective communications and dialogue

Fours conditions are essential for effective and influential communications: openness (*ensuring that things are what they appear to be, and that there are no hidden agendas*), shared field (*by focusing on the environment the participants get a perception that they all live in the same world*), psychological similarity (*sharing of human ideals*), and trust (according to Emery and Purser: *a natural result of openness, shared field and psychological similarity*).

Common ground and rational conflicts

The search conference builds common ground so that groups can safely and rationally discuss their differences. Arguments for this is essential when everybody's future is at stake. The rationalization of conflict is an essential feature of a search conference (clarifying the difference between agreement and disagreement).

8 Further development of the research question

According to the litterature presented above it is reasonable to argue that relationsships, continous change and strategies for knowledge constructions are important factors for innovation. From this it is possible to sharpen the research question into the following:

- Why is it that relationsships are important for innovation?

- Why is it that continuous change is important for innovation?

- Why is it that a continuous focus on working strategies for knowledge construction is

  important for innovation?

9 Methods

This project are based on doing action research as the research method, and the reason for

doing this is because of an understanding that problems are contextual and that the search for

solutions should be based on real problems. It is also because of an understanding that

learning is best achieved in cooperation with the those who owns the problem, and that the

best way of learning is to do this by doing – action oriented learningprocesses. The credibility

and validity of the research are measured by how the activities has contributed to solving the

problems. Defining action research is not easy, but according to Reason and Bradbury

(Reason and Bradbury, 2002) one could, as a starting point, say that "...*action research is a*

participatory, democratic process concerned with developing practical knowing in the pursuit

of worthwhile human purposes, grounded in participatory worldview...", and *"it seeks to*

bring together action and reflection, theory and practice, in participation with others, in the

pursuit of practical solutions to issues of pressing concern to people, and more generally the

flourishing of individual persons and their communities." (Reason and Bradbury, 2002 p:1).

Some also define action research as doing changes, because "*We do not understand the inner*

structure of a social system until we try to change it" (Greenwood and Levin, 1998 p: 149).

One model for action research, called co-generative action research is proposed by Levin and
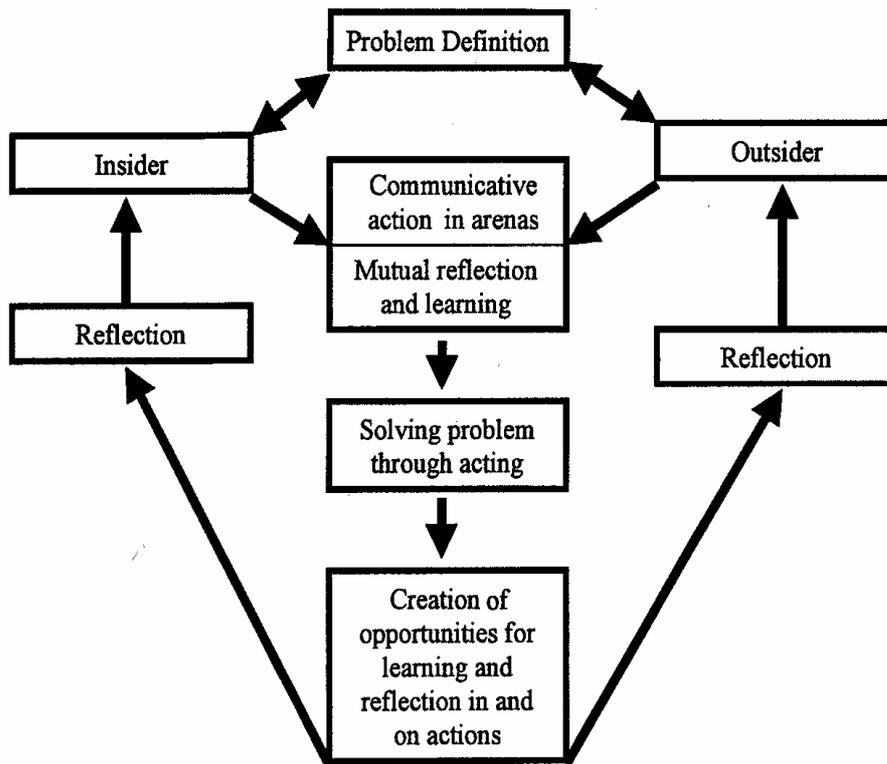
Greenwood, and shown in Figure 3.

Figure 3 Co generative Action research Model (Greenwood and Levin, 1998)

Although reflection is a main issue in co-generative action research, pure reflection will soon run idle for lack of experiental inputs. Action with no reflection will do away with the idleness but the running will not lead anywhere (Gustavsen, 2001). According to Greenwood and Levin (Greenwood and Levin, 1998) doing action research is also about taking the risk of a journey where there are no way to be sure of an outcome in advance. But it is by mutual involvement of local participants and professional researcher that knowledge are gained and results produced.

In my perspective, interviews, mutual sharing and working with documents, and active participation in conferences (i.e. search conferences) can then also be seen as co-generative

actions, but on different arenas. Until now the focus has been on interviews and active

participation in the two networks.

Interviews were done by digital recorder when allowed (of nine informants only one objected

to this), with following transcripts and analysis – purpose: get a deeper understanding of the

different perspectives from the informants on innovation and co-operation in the industrial

network. From this it was possible to map problems relevant for the participants, and doing a

preliminary mapping of alliances and personal relations. The intention from doing interviews

was also to build up trust between the researcher and the informants, hopefully this will give a

good foundation for further co-generative actions. Personal interviews like this gives a unique

access to information that otherwise would have been difficult to achieve. All interviews were

semi-structured and based on an interview guide that was produced before the interviews.

This guide functioned only as a basis for discussions, and other questions were included

during the interviews. The method makes the researcher an active instrument, and the answers

you get from the informants might depend much on the skills and knowledge of the

interviewer.

Participation in network meetings has been done to get an overview of the network and the

way they work. Participating in network arenas also gives us the possibility to try out the

willingness of the participants to use this as an arena for co-generative learning. Give voice to

the principles of action research.. This arena could also function as an arena for co-operative

learning at a network level.

10 Results

The results in this paper are based on empirical data from an ICT industry network called Borg ICT Forum and a Food Industry network. Information on two other network (mould making industry and The industrial network at Øra), which are part of the Strategic Institute Programme, are included as info boxes in the appendix of this paper to give the reader a perspective of the magnitude of the programme. The ongoing PhD work are focusing on the ICT industry network and the Food Industry network as a basis for collecting empirical data.

10.1 Case 1: Borg ICT Forum

When interviewing the members of the board of Borg ICT Forum some perspectives on innovation and co-operation emerged. Some perspectives can be seen as being more general, and related to an open system thinking, but some are more action oriented.

Innovation

According to the informants it is a value of being seen as innovative, and having visionary people is an important element of this. The best innovation happens when groups consist of both visionary and down to earth people. But having good ideas is not necessary the same as being innovative. Topics like; innovation, co-operation and value creation, are not new things, – what's new is that now it is about practical co-operation in network. Today, in many of the companies the focus is usually not on innovation because of bad economic situations for the branch as a whole. And if they have the possibility to focus on innovations, the innovations are not radical innovations but incremental innovations. They do not have the financial possibilities to take chances on radical changes.

Innovations are often customer driven, especially if the customers also strives in difficult economic situations (the innovation could for instance help the client to get more out of available resources) – therefore product development should be done together with the customers. The customers should also give the network more direct challenges by stating their needs. Local authorities, and official services, should use local suppliers – to maintain the industry in the region. Strategic work towards the customers and the market is essential. One of the companies also have good experience by arranging seminars together with their customers where they discuss mutual challenges. This often results in projects in which the customers has an ownership, not only to the final solution, but also to the development process.

Sometimes the customers need complex resources and skills that a single company can not provide – and this could be solved by co-operation with the network. The knowledge in the network companies should be more visible for potential clients and for the other members as well – the board of the network have an important task in doing this. It is also important to visualize strength towards the customers. This could be done by co-operation with other network members in tenders. The board of the network could play an important role in this situation, but the board should not be the ones who always take the initiative. The board should make it possible for the other members to use the network in tenders they come across.

Some customers think that having a supplier that is part of a larger corporation (being big) ensures the quality of the products and services. Selecting a local supplier is also a kind of insurance, but will not be as important as being big. Being part of a local network could be used actively by the companies towards the customers – and maybe function as a insurance for the customers.

There is not always a need for new technology , and for the customers your new product or service might even be <u>to</u> innovative. Then you run the risk of producing something that the customer do not see an immediate potential use for, and if you are lucky the buy it because it is "nice to have". The customer has no need for complicated solutions – it should be easy to use, and easy to upgrade

Innovations often happens in small companies, but the small companies need larger companies to survive – the partnerships should be based on complementary knowledge and market skills

Co-operation

Some of the companies have positive experience from working with other members of the network. For instance, co-operation with other companies makes you more structured and you soon find out that when co-operation with other companies there must be complementary knowledge and skills, and there is a need to know as much about each other as possible

It is easier to build strong relations in local environments, and informal arenas could be very valuable in building strong relations, and because of this open up for problem- and solution oriented discussions. "*One should not underestimate the value of having a beer together...*".

There was a general belief that organizing network projects between members in the network is important. This could be important for building strong relations and trust, and if a project is successful this could also encourage other network members to be more active as well. When

working in groups it is important that the participants feel committed – if not it might be very difficult.

Although several of the members in the board has previous experience from development of products and business – also on an international level, using a project leader could be valuable for the network It is important to focus on concrete problems and at the same time have an understanding that the content of the project could be changed in the process. There is a need for structuring the co-operation processes in projects and make documentation during the developments of the projects, but the project itself should not be complicated.

When doing co-operation projects one should try to make arrangements in a way that lower the risk for competition among the network members for the project leadership. This could be done by giving the project leadership to smaller, not so dominant, network member, or to some neutral actor from "outside". Using a neutral actor cold also neutralize the fear of learning away to others how to take over your business. This neutral actor should have a focus on project management, and do not necessary have to be an ICT company.

Innovation is created together with other people, but it must be active participation. Sometimes it is not co-operation that we are looking for but co-creation. If one manage to establish working groups, the working groups should not be to large. Groups should not be more than 3-5 persons because this will create more effective communication. Small groups makes it more possible to combine other obligations (as directors and managers) in their own company, because time is a scarce resource. This could also ensure progress in the projects.

Financial resources from regional actors should be easier available for this kind of network projects, and financial support from regional development actors is important not only for the product development – but also as a mean for getting alternative financial support.

Mapping the practical competence / knowledge should be a first step, and from this we could make our knowledge visible, and take steps to fill the identified knowledge gaps. One way of doing this could be by establish closer co-operation with the University College. The members of the network could be used more in projects/education activities at the University College. This should not only be on topics related to information technology, but could be based on the members skills in international business and product development. For the companies not having large experience with marketing skills a common/joint projects could give us the possibilities to learn this by doing. We could also make contact with other networks and try to learn from each other.

When interviewing the board in Borg ICT Forum, one of their major concern was: Why is it that most of the concrete activities related to co-operation between members of the forum is among the members of the board, and why is it so difficult to make the rest of the members of the forum participate in seminars arranged by the forum? A major reason that was put forward was lack of time, and that it seems to be a kind of introvert focus in difficult times – and this could be a hindrance of cooperation among the members.

10.2 Case 2: Food industry

By having participated in this network since December 2000 it has been observed that:

- Mapping the needs for the involved industry, is a foundation for further activities and co-operation.

- Not having an arena, and an active networking management (internal or external), seems to stop further activities among the members of the network.

- Initiatives from local regional authorities establishing a working group related to practical use of biotechnology in the food industry, have brought together members from the initial food industry network.

- Invitation to create an industrial network should preferably come from one or two important local industries. Invite a handful of industries for the first meetings and expand the network when it seems natural and there is a need for doing so.

- Base the invitation on companies with common areas of interest. E.g. branches, services, functions or threats.

- In order to cooperate, the network members have first of all to get acquainted.

- Monthly network meetings is recommended to be held at the cites of the industries and should not last for more than three hours.

- The network meeting have to be effective. The agenda has to be agreed upon beforehand and should contain both short time and longtime items.

- The short time items should concentrate on actual matters.

- The longtime items should focus on development; local, regional, national and international.

- Participants from the companies should change. However one person from company management should coordinate the participation based on the actual agenda for the network meeting.

- It is an advantage to have a formal network organization. However it is not mandatory. The most important challenge is to see to it that every network meeting brings new and fruitful knowledge to the participants.

- Projects related to the network are carried out between the network meetings.

- The network can be used for reference purposes in projects related to areas of common interest to the members.

11 Discussion

The findings from the networks in the project indicates the need for concrete projects, joint activities, and the need for continous commitments from the participants. At this point in the research project it is my belief search conference could be a point of departure, and from this "...taking the risk of a journey where there are no way to be sure of an outcome in advance..." as pointed out earlier in this paper.

There is also a need to improve the ability for the network to be more active as an actor in the regional innovation system. This could be done by increasing the co-operation with the knowledge institutions (i.e. The University College, the research institutes and other knowledge intensive companies with R&D departments), being more proactive towards the local authorites, and to increase the networking towards other companies in the region (but also outside the region). In this way it should be possible to increase the local knowledge and skills (formal and informal) relevant for the companies, and use this as a resource and competitive advantage.

To increase the knowledge of innovation processes in these networks even further it might be wise to measure how, and if, there is significant associations between innovation variables and economic performance variables. According to a study done by Sandven (2000), the variables which make the most significant contribution here are especially innovation expenditures, but also the proportion of sales accounted for by product innovations.

12 Conclusion

From this study it can be shown that the network participants usually have no problems in being creative suggesting ideas for possible projects in the network. However, despite their individual experience and skills in projects, they seems to have a need for

- mechanisms that could help them in engaging other members to be more active, and to co-ordinate and lead networking projects.
- functional meeting arenas for building trust between people from different companies
- making actions more specific (concrete projects)
- someone to lead and coordinate the development processes in the networks (someone must facilitate and document the processes)
- learning methods for dynamic and real participation (the members need to improve their skills in using network as a tool, who participate when and how much with what?).

In this paper I took my PhD project as a point of departure, then I presented theories on innovation and regional development which are relevant for the project, presenting some preliminary results from the ongoing project, and then discussing these in the light of the presented theories. Then I argued for the use of "search conferences" as a tool for enhancing innovation capacity in the industrial networks. Hopefully I have also managed to make visible the importance of moving towards an understanding of a "system" with focus on regions, clusters and networks rather than industry, university and government as individual actors, and the importance of innovation as one driving force for sustained regional development..

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