Learning in Collaboration

Academics' experiences in collaborative partnerships

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Academics' experiences in collaborative partnerships with practitioners and researchers

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Collaboration is a balancing act
and
learning is…

To Agneta, Andrea and Emily Linnea

PART ONE

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Jan Karlsson

[1] Högskolor och Samhälle i Samverkan

Introduction

There are a variety of functions academics are expected to perform in our universities today – teaching students, engaging in research, and/or collaborating with the surrounding society. However, these functions have often been regarded as separate entities, and assessed with the dominant view: "…to be a scholar is to be a researcher—and publication is the primary yardstick by which scholarly productivity is measured" (Boyer 1990, p. 2).

For more than a decade, the importance has been stressed for universities to open up their boundaries, to collaborate and engage in knowledge production with stakeholders outside the academia (Boyer 1990; Gibbons et al. 1994; Barnett 2000). Academics in active dialogue with practitioners may, for instance, spot emerging research earlier than their less active colleagues (Gomes, Hurmelinna, Virgilio, & Blomqvist, 2005). However, different perspectives exist and barriers between universities and companies need to be handled by academics involved in collaboration (Gomes et al. 2005; Madgett et al. 2005). For example, the academia is devoted to expanding knowledge and expertise, while the business community looks for profit or competitive advantage (Madgett et al. 2005). Obstacles to collaboration can therefore be "different needs and objectives", "lack of practical knowledge in universities", and "different language/mental worlds", as reported by Gomes. Academics need to *learn* how to deal with these obstacles together with practitioners and fellow researchers, sometimes acting in multidisciplinary settings. This thesis deals with academics' *learning in collaboration*, and how they handle such problems.

The legal framework for Swedish universities' activities is laid down in the Higher Education Act[2], where it is stipulated that they must collaborate with the surrounding society and inform the public about their activity. Sweden has an established tradition of researchers and practitioners collaborating, e.g. using action research in development processes that contribute theoretical knowledge to academia and practical knowledge to working life (Hansson 2003). Support structures exist, such as research institutes and government agencies, with programmes aiming to sustain collaborative activities between academics and leaders of SMEs (Norbäck, Olsson & Odenrick 2006 - see Article I). The multidisciplinary research programmes of the Swedish *National Institute for*

[2] Högskolelagen (1992:1434).

Working Life[3] *(NIWL)* for improving the management of the work environment in Sweden also included collaborative partnerships with practitioners (see Article III).

Aim

The overriding aim of this thesis is to analyse and describe academics' learning as they interact with fellow researchers and practitioners in different forms of collaboration. The focus is on learning, as it occurs when academics[4] bring their fields of expertise into collaboration with researchers from other fields, in particular from the social, economic, and engineering sciences, and work together with practitioners outside the academia, in particular leaders or managers from public and private organisations.

Specific aims and research questions in the thesis are presented in the four articles:

Article I:
The overriding aim of this empirical study is to analyse and describe the learning that takes place in the interaction between academics and practitioners. The research questions are:

- What are the processes the academics engage in to collaborate with small and medium-sized enterprises (SMEs)?
- What are the effects of the university's structures on collaboration with SMEs?
- In what respect do these processes and structures constitute a context for learning for academics and forming the university?

Article II:
This article is a response to Greenbank (2006) *The academic's role: the need for a re-evaluation?.* The primary purpose of the article is to be a contribution to the ongoing debate about the need to develop a broader view of scholarship and different related activities, such as "teaching", "research" and "service to the community".

[3] The government decided to close NIWL in June 2007.

[4] "Academics" is used in this thesis as a synonym for "researchers" and "university teachers".

Article III:
The aims of this empirical study are to analyse and describe the learning that takes place in the interaction between academics from different disciplines and perspectives in collaboration with practitioners, from the researchers' point of view. The research questions are:

- What do academics learn in a collaborative and multidisciplinary context with practitioners in working life?
- How do they experience it?

Article IV:
The intent of this paper is to shed light on collaboration in the academia by: (1) providing examples of the collaborative activities academics engage in and (2) showing how professional learning from collaboration affects academic development, individually and organisationally.

Learning in collaboration

A great deal of policy literature has been written in Sweden in the field of university collaboration with the surrounding society, often including discussions of an ideological nature. However, the literature used in this thesis is mainly based on empirical documentation, both Swedish and international. In this section, the objective is not to give a full picture of academic practice generally, since that would be an impossible task, considering all the diverse facets and complexity of the different disciplines, contexts and traditions that exist. Instead, the intention is to focus a more restricted field in the academic practice of collaboration, with an emphasis on the particular aspects of the Swedish context that are relevant to the aims and research questions of this thesis. The first section summarises some recent studies of collaboration at Swedish universities and university colleges. The second and third section concerns individual learning and a social theory of learning. The fourth part describes informal aspects of the Swedish academic practice, which are often unspoken and neglected. The fifth section is about the different academic functions, while the last part outlines some relevant features of interdisciplinary and multidisciplinary research.

Recent studies of collaboration at Swedish universities

The Swedish government has stipulated that universities and university colleges[5] collaborate[6] with the surrounding society and inform the public about their activity. This requirement is established in the Swedish Higher Education Act[7]. Over the last decade, many universities have developed their collaboration with the surrounding community. They have employed specialised staff and developed structures in charge of "external relations" (Tydén 2005). This collaborative activity was unfortunately given the name "the third task", which is misleading and contributes to the opinion that collaboration is something external or outside the two central academic tasks of teaching and research (Wahlbin & Wigren 2007). Consequently, the internal structures developed by the universities for collaboration have been criticised, since this activity has mostly taken place parallel to the universities' other activities and large sums of money have gone to build structures that are not rooted within ordinary academic activity (Tydén 2005). In terms of the intentions behind the Higher Education Act, it is not appropriate to talk about a "third task", since many authors agree that collaboration is an approach that ought to be integrated into teaching and research, i.e. included in the entire activity of the academia (Lönn 2004; Prop. 1998/99:94; Boyer 1990; Greenbank 2006; Articles I, II, IV).
A variety of governmental structures outside the Swedish academia have been developed to provide support. *Technology Bridge Foundations* were created in the middle of the nineties, to increase knowledge exchange and cooperation between universities and industry[8]. Holding companies were created at eleven

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[5] "University college" is a translation of the Swedish term "högskolor". In the following, I will use the word "university" for both types of higher education institutions.

[6] I have chosen to use the English word "collaboration" for the Swedish "samverkan", although certain Swedish governmental agencies and offical documents use the term "cooperation" to translate "samverkan" instead. The reason for my choice of terminology is that collaboration and cooperation have different nuances. Collaboration is more of a hands-on working together - getting down to the same job; while cooperation can be more remote - giving advice or helping in some way. See also Articles I and II for the discussion of "collaboration" in relation to the concept of "service"

[7] Högskolelagen (1992:1434)

[8] "Teknikbrostiftelserna" in Swedish. The objective of the Technology Bridge Foundations is to increase the exchange of knowledge and co-operation between universities and industry at the regional level. Their aim is also to ensure that research

institutions of higher education[9], with the aim to use research results for commercial applications or pursue commissioned research. The Technology Bridge Foundations received about one hundred million euro of government funding, while the holding companies[10] received between four hundred thousand and one million euro each. Research institutes and government agencies were also established with the purpose of supporting collaborative activities between Swedish academia and industry, e.g. *The Swedish Knowledge Foundation*[11], *The Swedish Agency for Economic and Regional Growth* (NUTEK)[12], *The Swedish Research Council*[13], *The Swedish Council for Working Life and Social Research* (FAS)[14] and *VINNOVA, The Swedish Governmental Agency for Innovation Systems*. Possibilities for co-financing through different programmes of the European Union have also existed (Lönn 2004).

In recent years, a number of empirical studies have evaluated the ability to collaborate in Swedish institutions of higher education. One such study was made by the Swedish National Agency for Higher Education[15] (Lönn 2004) and another by the Swedish Agency for Economic and Regional Growth (Wahlbin & Wigren 2007). A third study was conducted by the Swedish Research Council (Tydén 2005), to evaluate how universities assess researchers' engagement and experience in collaboration activities to count as a qualification for promotion to a professorship. Results and recommendations emanating from these three empirical studies are interesting and of relevance to the aim of this thesis.

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results benefit the society as a whole and to stimulate researchers and students to set up their own companies.
http://www.eim.nl/observatory_7_and_8/fr/orgs/sweden0.htm#24 (08-02-06)

[9] The higher education institutions were: Uppsala universitet, Lunds universitet, Umeå universitet, Linköpings universitet, Luleå universitet, Sveriges lantbruksuniversitet, Stockholms universitet, Karolinska institutet, Högskolan i Halmstad, Göteborgs universitet and Kungl. Tekniska högskolan.

[10] Swedish holding companies have had problems of being sufficiently profitable, (see Brulin 2004, and Article I).

[11] Stiftelsen för Kunskaps- och Kompetensutveckling, KK-stiftelsen.

[12] Verket för näringslivsutveckling, NUTEK.

[13] Vetenskapsrådet.

[14] Forskningsrådet för arbetsliv och socialvetenskap

[15] Högskoleverket (HSV).

According to Lönn (2004), three goals have been set by the Swedish government in documents relating to universities' and university colleges' collaboration with the surrounding society. These goals are: "democratic development", "knowledge development and growth" and "better education". *Democratic development* is achieved collaborative activities and the knowledge people receive in contact with the academia, which can be used for influencing the development of research. *Knowledge development and growth* may result when universities and industry develop new knowledge together, and is essential for innovation, the creation of new businesses and business development in existing companies. The third goal, *better education*, is achieved through the openness and willingness of institutions of higher education to consider the needs of the labour market, in balance with considerations of academic freedom and integrity, as well as by affording workplace contacts to students in the course of their education (Lönn 2004).

According to Lönn, in later years there has been an increase in the Swedish higher education institutions of collaborative activities with different stakeholders and groups. However, the outreach and exchange with the public sector have been less extensive than anticipated, a weakness that does not favour the goal of democratic development. Networking has been a successful strategy, developing contacts between universities and with municipalities. However, very few universities educate their staff in research communication or provide training in collaboration activities. They seldom have internal organisations for this purpose. Another aspect is that collaboration does not count as a qualification for tenure and promotion. The majority of the governing bodies at Swedish universities have not prioritised incitement structures for researchers' collaborative activities. There are also problems with the external financing from research institutes, since researchers experience that too much influence and control is exercised by such institutions. A recommendation ensuing from Lönn's study is therefore to give more financing for collaboration directly to the universities. The report recommends that appropriate steps be taken considering these factors, a conclusion I also agree with.

Wahlbin & Wigren (2007)[16] made a large web-based survey at 30 Swedish universities, answered by 10,000 researchers/university teachers and PhD students. The question addressed in the survey was: "What do academic researchers and teachers actually do and what do they think about cooperating with the surrounding society?"

Two types of questions were asked, in addition to background and follow-up questions:
(1) Whether the respondents had taken part in 34 specific cooperation activities during 2006. Activities covered involvement in all types of participation: media activities, such as being interviewed on radio or TV; cooperation in research and development work; working outside the university; starting a firm; patenting; and cooperation in education. (2) 20 questions covered opinions about cooperation with the surrounding society. All questions had a seven-point answer scale.

The authors summarise the results of the survey in the following way:

> Generally speaking the respondents express positive, or very positive, opinions about cooperation with the surrounding society. Most respondents say that cooperating with the surrounding society has a positive effect on their academic careers. Regarding academic integrity and freedom, the number of respondents saying that academic integrity and freedom increase through cooperation projects with the surrounding society is equal to the number saying they do not. But answers to the questions related to support for cooperation at the university and the economic opportunities the cooperation generates were mostly negative. Furthermore, many say that cooperation with the surrounding society takes time from other activities. (Wahlbin & Wigren 2007, p. 4)

Clearly, a tension exists between positive opinions concerning the benefits of collaboration, on the one hand, and the lack of support provided for such

[16] These authors use the word "cooperation" in the English summary of their report to translate the Swedish term "samverkan", synonymous to the way I use "collaboration".

activities, on the other. It is also interesting to note that most respondents (46 %) say that collaboration has a positive effect on their academic careers. This stands in contradiction to the results of Lönn (2004), Tydén (2005) and Article I, as well as compared to results found in an international context by Boyer (1990) and Macfarlane (2005). Unfortunately, the question asked in the survey does not clarify the word "career". Diverging results may therefore possibly be explained by different interpretations made by the respondents of the question[17]. Some might have answered positively considering their competence development, while others may have been more negative when thinking about tenure and promotion. According to an interview in Universitetsläraren 12/2007 with the authors, Clas Wahlbin says: "Most respondents believe that collaboration should result in better research, but do so on a higher level of principle and general approach – it is a bit like world peace, everyone loves collaboration." However, at more concrete levels, for instance regarding the support structures provided for collaboration, attitudes become more negative. Caroline Wigren adds: "The closer it [collaboration] gets to you, the more difficult it is to know what you are supposed to do" (Universitetsläraren 12/2007, p. 4, author's translation).

In their conclusion, Wahlbin and Wigren suggest how universities may best develop their collaborative and cooperative activities. First of all, specific ways of integrating collaboration better in research and education are needed. Each university should choose its level of ambition, elaborating strategies for collaboration with the surrounding society. Results indicate that if a university wants to increase participation in collaborative activities, structured support is needed more than change of attitudes. The merit and career value of working with collaboration could be more clearly acknowledged and made more explicit, for instance when recruiting. Working outside the university in parallell with academic employment is common in all scientific areas, and constitutes an important type of collaboration. According to Wahlbin and Wigren, it could therefore be acknowledged as such and made more explicit. For individuals, popular science is an important gateway to collaboration, much more important than it might appear at first sight. Popular science could be encouraged and

[17] The question was: "At my workplace at the university …. involvement in collaboration is very … negative (1)/ positive (7) for my academic career" ("På min arbetsplats inom lärosätet…är engagemang i samverkan mycket …negativt (1) / positivt (7) för min akademiska karriär"; Wahlbin & Wigren 2007, p. 40).

given a better merit value, and methods for engaging in such activities could be taught and trained in the course of doctoral education. Individuals who want to work with collaboration are recommended to build personal networks and develop external contacts. An unexpected result is that institutions like technology transfer offices support start-ups and patenting only in a minority of cases. Instead, personal contacts and networks of researchers and teachers are crucial, both when starting a company and in patenting (Wahlbin & Wigren 2007).

One of the central foci in Tydén's report is the question whether collaboration capabilities count as a qualification for promotion to a professorship. The study was conducted at three universities in Sweden: Chalmers in Gothenburg, Uppsala University and Örebro University. A number of advertisements were studied, as well as documents used by expert opinion to evaluate the merits of applicants to the professorships. One of Tydéns' conclusions is that, in spite of the content of the advertisements, university policies - which often are in favour of collaboration - and the Higher Education Act, collaboration capabilities do not count as a qualification for promotion to a professorship. A big gap exists between the rhetoric and the practice at the universities. Although it is 'politically correct' to espouse collaboration, according to Tydén, incitement structures at different departments for exploring, developing and stimulating collaborative activities are insufficient. There is also a major lack of incitement to include collaborative capabilities for researchers' qualifications, an issue which could be addressed by directing financing through decentralised reward systems administrated by university management and departments. A change of attitude is also needed concerning how collaboration should be conducted. Academics tend to believe that the official structures and academia should *help* small and medium sized enterprises. What is needed is instead a *dialogue* between the participating parties that can lead to organised knowledge exchange. However, this type of exchange does not need to be limited to the industry and business community, and should also include the public sector (Tydén 2005).

Despite the enumerated positive aspects of collaboration, another of Tydén's conclusions is that collaborative activities are not always enriching for other academic work. This is an issue that certainly needs to be taken into account. It is important to consider the concrete questions at hand – it needs to be legitimate both to collaborate as well as to choose not to. Furthermore, Tydén

acknowledges the fact that staffs at universities often lack experience of collaboration and can therefore not identify opportunities that collaborative activities might offer to improve and develop their work tasks. This could be handled by educating researchers/university teachers, PhD students and graduate students in this subject, since plenty of documented knowledge about collaboration exists[18].

In conclusion, these three studies, by Lönn (2004), Wahlbin & Wigren (2007) and Tydén (2005), indicate that although improvements have been made over the last decade concerning Swedish universities' collaboration, much remains to develop.

Individual learning – a few relevant theories

In this section, a few relevant theories of individual learning and a social theory of learning are briefly presented. A more comprehensive overview has not been attempted, since such an overview would be the subject of research undertaken in its own right.

Learning as a process based on experience

One of the theories on individual learning that has been used extensively in research on learning in working life derives from the ideas of David Kolb (1984). Kolb considers all types of human learning to be based on experience, and names his theory of learning "experiential learning". There are two reasons for this. Firstly, this type of learning is linked to the views underlying the works of theorists like John Dewey, Kurt Lewin and Jean Piaget, where all three base their theories on learning in human experience and development. The second reason is to emphasize the central role that experience plays in the learning as a process. Kolb summarises his definition of experiential learning in this way:

> . . . It may be useful to summarize . . . the characteristics of the experiential learning process by offering a working definition on learning. Learning is the process whereby knowledge is created through the transformation of experience. This definition emphasizes several critical

[18] Especially in those conference papers and scientific articles presented in the HSS conferences (Högskolor och Samhälle i Samverkan) that started 1999.

> aspects of the learning process as viewed from the experiential perspective. First, it emphasis on the process of adaptation and learning opposed to content or outcomes. Second is that knowledge is a transformation process being continuously created and recreated, not an independent entity to be acquired or transmitted. Third, learning transforms experience in both its objective and subjective forms. (Kolb 1984, p. 38)

Learning is a *process* that takes place through the individual's transformation of experience. Kolb has created a model of experiential learning (see Figure 1. below), which aims at combining and thereby integrating different perspectives on learning, focusing experiences, perception, understanding and behaviour. The model shows four abilities or phases in the individual's learning process: "Concrete experience", "Observation and reflection", "Formation of abstract concepts and generalisations", and "Testing implications of concepts in new situations". The model emphasizes the here-and-now concrete experience needed to validate and test abstract concepts. Immediate personal experience is the focal point for learning, giving life, texture, and subjective personal meaning to abstract concepts, while at the same time providing a concrete, publicly shared reference point for testing the implications and validity of ideas created during the learning process. When human beings share an experience, they can share it fully, concretely and abstractly.

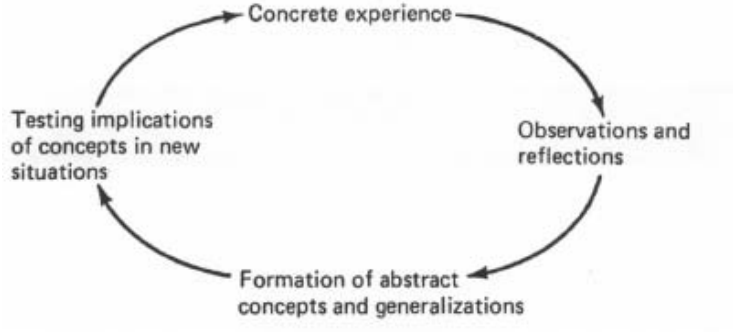

Figure 1. The Experiential Learning Model (Kolb 1984, p. 21)

On a theoretical level, the model requires the learner to be both concrete and abstract, experimenting and reflecting at the same time. In practice, of course, it is not likely that an individual will succeed in mastering all these abilities in any given learning situation simultaneously (Kolb 1984). Learning requires abilities that are opposites, and the learner needs to choose which particular set of learning abilities he or she is bringing into the learning situation. There are two primary dimensions to the learning process. The first represents the concrete experience of events at one side, and abstract conceptualisation on the other. The learner needs to get hold of the experience to be able to perceive it, but also use abstract thinking to understand it. The other dimension is the question of active experimentation, which involves acting and testing, at one side, and reflective observation at the other. In the process of learning, the learner moves in varying degrees from being actor to observer; and from specific involvement to more general analytic detachment (Kolb 1984).

One important aspect of the learning model is that it describes the *integration* and the *action* aspect within the learning process. The emphasis is on: "…learning as a dialectic process integrating experience and concepts, observation and action" (ibid., p. 22). First, action needs to be postponed for observation and judgment to intervene, and then action is essential for achievement of purpose or objective. A learning process is also a process of tension and conflict within the learner. New knowledge, attitudes, skills and new ways of acting are achieved through confrontation among the four modes of experimental learning: concrete experience, reflective observation, abstract conceptualisation and active experimentation. It is through this confronting that the *integration* takes place and new ways of *action* can develop and occur, within the process of learning.

Transformative learning

Another learning theory that also takes the individual's experience into consideration is "transformative learning". According to Mezirow (1997), a researcher in the field of adult education, a defining condition of being human is that we need to understand the meaning of our experience. Here, transformative learning is also regarded as a process:

> The process involves transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one's

> reflective insight, and critically assessing it. (Mezirow 1997, p. 11)

The frames of reference are seen as a coherent body of experience, such as associations, concepts, values, feelings and conditioned responses. They are composed of two dimensions: "habits of mind" and a "point of view". The critical reflection that is involved in transformative learning may occur either in group interaction or independently. The aim of transformative learning in collaborative work contexts is to: "…empower the individual to think as an autonomous agent in a collaborative context rather that to uncritically act on the received ideas and judgements of others" (p. 8). A goal in transformative learing is for individuals to become autonomous responsible thinkers.

Knowledge capability

Learning for an individual, such as an academic in collaborative practices, is also about acting and coping with new situations in this professional context. Bowden (2004) has developed the concept of "knowledge capability":

> … [the] ability to handle previously unseen, real-life situations, to make sense of them, to figure out what the relevant aspects are, to relate them to what you know and to find out what you don't know but need to use … to define the problem and only then solve it, is what I have termed knowledge capability. (p. 40)

According to Bowden (2004) and Marton and Booth (1997), academic research is also a result of learning, since research is about developing knowledge that is new. "Knowledge capability" is the ability to reflect about variation with context, so that principles and contextual elements are differentiated simultaneously, thus enhancing the capacity to apply the principles to new contexts in the future (Bowden 2004). More specifically, knowledge capability is characterised by the ability:

- to work out what are the key aspects to be dealt with in each new situation;
- to relate those aspects to the knowledge already acquired and/or to knowledge the [academic] knows how to access;

- to determine what the underlying task or problem in that situation might be;
- to design a process or solution to deal with the situation; and then
- to follow through and complete the task or solve the problem, either alone or with others. (p. 40)

Academics in collaborative practices are experts within their specific fields of knowledge, and they need to learn how to manage collaboration, which often creates new situations, tasks and problems that have to be dealt with. Bowden sees generic skills, like communication skills, as *integrated* with the knowledge that is being learned, and therefore not separated. He gives the following example:

> Consider a project aimed at cleaning up a river system that has salination problems due to a century of irrigation farming that has continuously diverted water through farmland and then returned it to the river. This is a real situation in my home state. Imagine that two water quality engineers are engaged in the project and need to interact with a variety of people as a solution is being sought. Those people would certainly include other scientists and engineers but also local farmers and perhaps elected officials in the district or local bureaucrats. Most water quality engineers would be readily able to communicate with other technologists in such circumstances. You would hope so anyway. But not all would necessarily be capable of communication with the farmers in a way that helped them understand what solutions were needed and that the short term negative impacts on them are necessary to enable a long term solution. One engineer may be able to communicate with farmers effectively but another might not. Yet both engineers might be very skilled at speaking at scientific meetings.
>
> The difference is not just a question of communication skill as a separate entity; it is related to understanding of the subject matter … If you can explain key issues of water quality engineering in a way that the farmer can understand and if another expert is less effective in such

> circumstances, then you have a more comprehensive knowledge of your subject. Your knowledge is more complex and better linked to other knowledge structures. (Bowden 2004, pp. 44-45)

According to Bowden, the so-called "generic skills", for instance the communication skills described in the example above, as well as the learning of content, are both *integrated* in the notion of "knowledge capability". For example, in relation to this thesis, for academics in collaborative practices it is crucial to *learn* in order to get an understanding of their partners, fellow researchers with different disciplinary backgrounds, or practitioners from working life, and their different perspectives and diverse ways of seeing, so they (the academics) can *learn* how to communicate and be understood in their own expert knowledge, to "…follow through and complete the task or solve the problem, either alone or with others"(p. 40). This requires a more comprehensive knowledge of one's subject; a type of knowledge that is more complex, as well as being well linked to one's other knowledge structures, as in Bowden's example of the water quality engineers. This is similar to Svensson's (1976, 1997) "holistic approaches to learning", described in the following section.

Holistic approaches to learning and transforming parts into a new whole

Svensson (1997) gives examples from his research of two different kinds of approaches when dealing and interacting with complex learning materials, such as academic texts. The first is the "atomistic approach", which is in its most elementary form that the individual learns by memorising very specific details. This is in contrast to the "holistic approach", where the learner adopts principles in organising parts into a *whole*, coupled with an understanding of how different parts are interrelated. However, these two approaches depend both on the learner's past experiences, and the constitution of the material acted upon, it is what Svensson terms a *relational* phenomenon. This means that the same person can use an atomistic approach in one learning situation, while using a holistic approach in another. These results stand in contrast to the perspective of "learning styles" (see Kolb 1984) that stay with the individual, and do not change through different learning situations and contexts.

Svensson (2002, p. 18) has elaborated further on the *relational* aspect in regard to learning in working life, especially between learners and their environments: "The relation between human beings and their environments can only in a very restricted sense be seen as causal and external. Instead the relation has to be seen as dependent on the human being as an agent and as an internal relation". This is also in line with Hager (2004), who views learning as holistic and as a process that changes the learner and the environment. Hager sees the learner as being a part of the environment, rather than a detached spectator: "This view of learning underlines its contextuality, as well as the influence of cultural and social factors. It is holistic in that it points to the organic, whole person nature of learning including the importance of dispositions and abilities" (p. 29). Due to the relational aspect of learning, the learning environment is better described by and of one or more human beings, not only by itself. Thus the learners may describe the learning environment on the basis of their experience of learning: "To the learner the learning environment, the learning activity and the learning outcome may be expected to make up an experiential whole" (Svensson 1997, p. 19). But for individuals in work situations, the learning itself is not usually as evident as the demands, possibilities, problem solving and work tasks at hand, (Svensson 1997; Döös 2004). It is often easier for them to report their experiences of the learning environment, than their own learning (Svensson 2002).

Marton and Booth (1997), Booth (2004), and Booth and Anderberg (2005) have a similar view of learning as Svensson (1997), regarding learning as an experiential whole constituted of different parts. They regard features of the learning process as a matter of discerning new aspects of a phenomenon. When we envisage a phenomenon, whether it is concrete and physical, or abstract and social, we initially see it as a whole constituted of parts. Learning is thus the process of discerning new parts and new relations between parts, and thereby constituting a new understanding of the phenomenon by transforming the parts into a new whole. The phenomenon in this case could be a problem that concerns academics and engineers alike, initially from different points of view. Learning then means coming to see the same problem from new points of view, thereby transforming the nature of the problem, as it is perceived. Learning in its most profound form is a question of coming to "understand" (or see, or conceptualise, or experience) things in distinctly new ways, according to Booth (2004), who has examined learning in an engineering context. For the individual, it is in line with desired goals, and is a matter of expanding

awareness to embrace greater wholes, more parts within wholes, as well as stronger relations between the parts – and in particular, that critical aspects can be brought into focus.

A social theory of learning

Etienne Wenger developed a social account of learning, based on the concept of "communities of practice" (CoP) (Lave & Wenger 1991; Wenger 1998), and elaborated his view on learning by presenting what he called a "social theory of learning". These books have been very influential, and extraordinarily well quoted in international literature related to workplace learning research[19]. The focus of this theory is on "learning as social participation" (Wenger 1998, p. 4). *Participation* here refers to an encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities. The components that characterise "social participation as a process of learning" are ways of talking about "meaning", "practice", "community", and "identity". *Meaning* is the ability to experience life and the world as meaningful. *Practice* is the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action. *Community* are the social configurations in which our enterprises are defined as worth pursuing and our participation is recognisable as competence. *Identity* is about how learning changes who we are and creates personal histories of becoming in the context of communities. Wenger constitutes the concept communities of practice by integrating these four components, while referring to a familiar experience.

Learning in practice is not a separate activity, according to Wenger (1998), in the way he relates to learning in working life. People can claim that they learn continually in their work. However, they do not think of their job as 'learning', since what they learn is their practice. Learning here "…is not a static subject matter, but the very process of being engaged in, and participating in developing, an ongoing practice" (p. 95).

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[19] According to Google scholar, http://scholar.google.se/scholar?q=Wenger%2C+etienne&hl=sv&lr=, 08-29-01 Lave & Wenger (1991) has been quoted by 9454, and Wenger (1998) quoted by 5775. This can be compared to Kolb (1984), quoted by 6275, even though it is an earlier publication than Wenger's.

The constitution of communities of practice - learning and competence

A community of practice is not necessarily friendly or harmonious. There is a possibility of mismatch or conflict among practitioners' viewpoints in situations where learning takes place: "These differences often must become constitutive of the content of learning" (Lave & Wenger, 1991, p. 114). To be a CoP, is it not necessary that all participants interact intensely with everyone else or know everyone, but a certain degree of familiarity and interaction within the community are still necessary to constitute a CoP. The participants also need to have a joint enterprise to some degree, and the repertoire needs to be locally produced to some extent, together with the people involved. The notion of "practice" in itself refers to a level of social structure that reflects shared learning:

> In other words, communities of practice reproduce their membership in the same way that they come about in the first place. They share competence with new generations through a version of the same process by which they develop. Special measures may be taken to open up the practice to newcomers, but the process of learning is not essentially different.
> (Wenger 1998, p. 102)

For learning in practice to be possible, an experience of meaning must be in interaction with a regime of competence, according to Wenger. Competence may drive experience, just as when newcomers to a practice need to do certain things in order to achieve the competence defined by a community or when old-timers need to catch up as the practice evolves. However, the other way around is also possible, where experience may drive competence, as in the case when new members of a CoP can get sufficient legitimacy as members by questioning the current enterprise, through their different experience, achieved from previous CoP. They can change the regime of competence and create new knowledge in the process (Wenger 1998). When peoples' experience develops the competence in a CoP, we are dealing with what Wenger (2007) calls "learning". From this perspective, learning is seen as a "restructuring" between experience and competence, where one pulls the other along.

Brokering and learning

Communities of practice do not exist in isolation from the rest of the world. Their various activities are closely interconnected (Wenger 1998). And it is possible for people to participate in multiple communities of practice at the same time. Wenger uses the concept *brokering*, which refers to "…connections provided by people who can introduce elements of one practice into another" (Wenger 1998, p. 105). Brokers are able to make new connections across communities, enable coordination and can facilitate new possibilities for meaning. Wenger's own experience is that certain people seem to thrive on being brokers – love to create connections and engaging in "import – export". They rather stay at the boundaries of many practices, than move to the core of any one practice. However, brokering is a complex activity and involves processes of translation, coordination and alignment between perspectives. It requires the causing of learning by introducing elements from one practice to another.

Brokering often involves ambivalent relations of multimembership, and uprootedness is one of the occupational hazards of brokering. CoP tend to focus on their own venture, and brokers can therefore encounter lack of understanding from members about what it is that constitutes their competence, which makes it difficult to recognise or asses the value of brokering. A consequence of this is that brokers can interpret their uprootedness in personal terms of adequacy. Instead, reinterpreting their experience in terms of occupational hazards of brokering is useful both for them and the CoP involved. Learning through brokering encompasses dealing with boundaries, bridging and creating them, as well as the art of reconciliation through multiple forms of participation in various communities (Wenger 1998).

Critique of the social theory of learning

The purpose of this section is to make a somewhat more nuanced presentation of the social theory of learning and the CoP approach, by using other researchers' reflections and comments. I will therefore give some examples of recent critique of Wenger's theory. Roberts (2006) aims to identify the limits of the CoP approach in the field of knowledge management. She is critical to the fact that Lave and Wenger (1991) and Wenger (1998) fail to explore the implications of the distribution of power, and how this aspect is "relegated to footnotes". Other problematic issues include trust or competition between

members, and adversarial relations between workers and management keeping strong hierarchical control over a CoP, all issues which Wenger does not consider or elaborate on. The same weakness in the CoP approach is also criticised by Hodkinson (2004), in the context of research communities. In this article, Hodkinson gives the example of a PhD student who had to join another CoP parallel to the one she belonged to, since her qualitative research approach was undermined and seriously attacked from the powerful and authoritative position of her supervisor and director of the research project she belonged to. This example ties to a similar consideration from Roberts, which is that CoP may become static in terms of knowledge base and thus resistant to change. The theory of CoP tells nothing about how members of a community change or innovate their practice. The theory is also ambiguous in relation to scale; in terms of communities' size and special reach, as it is not possible to expand all communities beyond certain limits (Roberts 2006; see also Hodkinson & Hodkinson 2004, for a similar view). Wenger's use of the term "community" has been recognised as problematic, due to the connotations that it carries with it (Roberts 2006). Community is often viewed as a warm, comfortable cosy place with a common understanding, a view Wenger warns against. Wenger (1998) instead defines *community* as the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence. However, Roberts argues that in the USA or the UK, the pursuit of neo-liberalism, with its emphasis on the market and the individual, has eroded the sense of community over the past 25 years. Cox (2005) holds a similar view, and argues that "…most twenty-first century work inhibit sustained collective sense making, leading to fragmented, rather individualized appropriation of tasks…[and] tightly managed work…" (pp. 527, 533). By this Wenger (1998) underestimates the powerful rationalising processes in capitalism and the capability to quickly appropriate and systematise understanding, including the influence of wider discourses to construct local sense making (Cox 2005). However Roberts also concludes: "Notwithstanding its current limitations, the communities of practice approach do provide us with a means to explore the transfer of tacit knowledge in a social context" (p. 637). This approach also seemed to be a suitable analytical working definition of the ways in which groups of researchers relate to each other, often across different universities and different countries, as reported by Hodkinson (2004).

As mentioned above, the CoP approach and the social theory of learning (Lave & Wenger 1991; Wenger 1998) is a very dominant perspective, much referred

to in workplace learning research internationally. However, it has also received certain critique that I at least partially agree with.

Some informal aspects of academic practice

Academic practices are complex in terms of their disciplinary roots, their institutional contexts and their traditions. In this section, focus lies on some informal aspects of the academia that affect academic work, such as the impact of trust, feelings, emotions, and academic rules and norms, as they are discussed in the literature.

Developing trust in the collaborative work of academics

Developing trust is an important element in creating a context that supports learning in collaborative relationships between academic peers and their partners (Saltiel 1998; Boud & Middleton 2003; Phelan, Harrington & Mercer 2004). Phelan, Harrington and Mercer conducted a study that could be described as multidisciplinary research (MDR), promoting peer collaboration between academics from different disciplinary contexts in a university research centre and nurses from a regional health authority. They experienced the value of trust and open dialogue, for successful collaboration between the academics and practitioners involved. There is an advantage in developing close working relationships (Boud & Middleton 2003) and creating a feeling of personal security for academics, so they can trust their collaborators when talking and writing about their own experiences of learning (Solomon et al. 2001).

Newell and Swan (2000) have demonstrated the importance of the development of different kinds of trust for collaborative knowledge sharing and knowledge creation in MDR networks. They studied a research team in a large research project in the area of business and management. The focal university research network consisted of four Principal Investigators (PIs), who wrote the original proposal, four Research Officers (ROs) and one full-time Administrator. Their analysis of empirical data considers the early stages of this focal research network – from the initial development of a research proposal, through the successful funding of that proposal, and the selection and recruitment of the ROs and administrator, to the end of the first-year review of the project by the funding body.

First, Newell and Swan analysed previous research of trust in the literature, identifying three typologies of trust later used for the analysis of their results in

their empirical study. These were: (1) *Companion trust,* which refers to trust which is based on judgements of goodwill or personal friendships. This type of trust will be process-based in that it will develop over time, as people get to know each other personally (and possibly become friends) through continuing, reciprocal exchange. This is slow-forming and resilient, has a strong emotional component, and is important for the maintenance of social networks. Partners are relatively tolerant of others' mistakes. However, if eventually broken, this trust is also likely to cause the greatest rift between the parties involved. (2) *Competence trust:* The development of this form of trust relies on perceiving the competencies of the other partners, and will be important where the skills needed to perform a task cannot be found within one person. Competence trust is based on an attitude of respect for the abilities of the trustee to complete their share of the job at hand. (3) *Commitment trust:* This trust stems from the contractual agreements between the parties, and it allows those involved to believe that others with whom they are working will be trusted to put in the effort necessary to complete the joint work.

According to Newell and Swan, while previous research has identified different forms of trust, relatively little have been said how these forms interrelate: "What is new, however, is the suggestion that different types of trust (here considered as companion and competence trust) interrelate in specific ways, depending upon the particular motives (here considered as commitment trust) holding participants together in the network" (p. 1323). Their results illustrate the problems of developing trust, for example when some participants chose to leave the project, resulting in low commitment trust, which in turn put more dependency on the other two types of trust. The results also indicate the problems with developing competence trust in situations where the participants come from very different epistemological and ontological positions, a situation which is very common in a MDR team. The lower the level of trust is, the more likely the output is to be a compromise, as demonstrated in their study, which is actually less creative and innovative than would have been achieved within a single disciplinary group, Newell and Swan reported.

Learning, emotions and feelings in the social context of an educational setting

One part of academic practice in higher education is the educational setting in its social context. For Boud (1993), individual learning is a social and cultural construction that takes place through the personal experience of social exchange

in the "socio-emotional context". He believes that feelings and emotions[20] are the most underestimated aspects that influence learning, and that there is a big taboo to let emotions and feelings have any influence within educational institutions or organisations, especially in higher education and universities. Feelings and emotions are key factors, both as possibilities and hindrances for learning. Boud argues for a more inclusive perspective in this matter within the universities. According to him, denial of feelings is tantamount to denial of learning.

Other researchers hold a similar view concerning the importance of including feelings into the social context of an educational setting. Dipardo and Potter (2003) argue that teaching is a politically charged work, including both emotional and intellectual investments. They refer to Vygotsky's perspective on emotionality:

> The emotions are not "a state within a state." They cannot be understood outside the dynamic of human life. It is within this context that the emotional processes acquire their meaning and sense. (Vygotsky 1987, p. 33, quoted in Dipardio & Potter 2003, p. 317)

Traditionally in Western society, cognition and emotion are regarded as "hostile worlds apart", and it is assumed that affect cannot be understood as a "state within a state". There is a Western tendency to separate emotions from rationality, and to focus too single-mindedly on the latter: "Educators have been primarily attracted to the cognitive aspects of Vygotskian theory, ignoring the emotional aspects of the "social…" (Dipardo & Potter 2003, p. 326). The affective aspect of teachers' professional lives has a tendency to be very much ignored by policy makers and others involved in education. That denial creates factors of stress, which sometimes leads to negative stress and "burn out". Dipardo and Potter emphasize the importance of providing an enhanced understanding and better support structures for teachers' emotional as well as intellectual needs: "We see the role of emotionality as an untapped vein in this generative and still developing base, representing a conceptual challenge that holds key implications for research, policy and practice…" (p. 339).

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[20] "Feeling" could be translated in Swedish as "känsla", and "emotion" as "stark känsla eller sinnesrörelse".

Examples from the Swedish academic context

The academic work place is an emotionally charged environment, according to Ehn andLöfgren (2004), and Schoug (2004), who have undertaken research of Swedish academics' and PhD students' experiences of their workplace. All three authors are ethnologists who carried out empirical research in the areas of the humanities and social sciences in Sweden.

Traditionally, the academia is regarded by people from outside the organisation as a relatively strict and controlled intellectual and professional workplace (Ehn & Löfgren 2004). Nevertheless, Ehn and Löfgren, as well as Schoug, claim that researchers describe their working life as highly emotionally charged, invested with different feelings and emotions. There are strong feelings of joy, pride, passion of work, sense of freedom, but also negative feelings of frustration, anger, envy, isolation and powerlessness. According to Ehn and Löfgren, feelings influence the academic working life in two main ways. The first is the connection between the person and performance. Researchers are often very committed, curious and passionate about their work. They can encounter strong feelings of joy and pride, when they are successful and are recognised by their community. But this also leads to vulnerability and strong feelings of disappointment when the recognition doesn't appear.

The second way feelings impact academic working life, is through the "system of merit", which is the system of "rules" of how to advance within the hierarchic academic organisation. The academic world is a world where the researchers' qualifications are constantly being scrutinised and ranked by each other. The work gives scope for a lot of personal freedom, but this is linked with a heavy responsibility of being innovative. Many researchers have high ambitions, and the risk to encounter failure in such a competitive environment is great. A common failure that many researchers experience comes with increased competition for research grants and secure terms of employment (Ehn & Löfgren 2004). Those who have had many experiences of set-backs or failure are also the ones who are more inclined to be critical and negative about the academic organisation as a whole, compared to the more successful individuals, who are more positive (Schoug 2004). An organisation where colleagues are both competing and judging each other creates a difficult working environment, especially when it is combined with strong norms that prohibit emotional expression within the social culture (Ehn & Löfgren 2004).

Swedish researchers experience how strong the traditional academic norm is in avoiding any recognition or expression of emotions and feelings, such as pride, frustration, anger, or sadness. The norm is to emanate "control and authority" when involved in social exchange within the different arenas of the academia. "To be vulnerable is not to be strong" (Ehn & Löfgren 2004, p. 42, author's translation). There is a tension between individuals' emotional experiences and the implicit norm of the academic organisation. This type of norm has been questioned by researchers like Boud (1993) and Dipardo and Potter (2003), who suggest a more inclusive and conscious approach to affective experiences and implicit social norms.

Academic rules and norms in Sweden

The academic organisation, not only in Sweden, is famous for its old traditions of rites and symbolic events, such as disputations, and the ceremonial installation of professors or vice chancellors. All these events are a way of confirming and celebrating the established new position for the individual within the hierarchy of the academic organisation (Ehn & Löfgren 2004). For the individual, these events are all preceded by dealing with different rules and regulations on how to get there, sometimes explicit and other times implicit. When evaluations are clear and explicit, the individuals can handle encountered failures and move on, but if they are vague it is more difficult. Ehn and Löfgren argue that a great deal of frustrations among researchers have been documented, especially in their memoirs, due to the fact that judgments about a person's qualifications and research were not based on facts or objectively evaluated:

> In a professional knowledge organisation, where actual merits and an unbiased assessment are meant to play a completely determining role, apparently scope is given to completely different criteria, of a more personal and emotional nature, allowing these to affect the evaluation of other people's capabilities. In certain cases, this informal judgement seems to be just as important as the formal assessment, if not more so. (Ehn & Lövgren 2004, p. 27, author's translation)

These types of implicit norms that stop some researchers in their careers are generally documented when they become the victims of them, but seldom when

these norms are useful to the researchers, and they are not mentioned by the individuals who reach success through these norms.

There are also more explicit attitudes or norms within the academic community. But some are contradictive when put into action. One example is striving for originality in research, which is said to be something positive. But many researchers claim that originality is not encouraged in practice, except within certain very decisive limits. If the research lies too far outside the "normal norm", the researcher encounters the risk of a career failure or of non-recognition within the organisation. Researchers have to learn to be just slightly original, but at the same time also know how to conform (Schoug 2004). It is obvious that adaptability is required for the successful academic:

> Those who reap laurels in the form of degrees, titles and recognition have apparently learned what is expected from them; how to adapt to different situations and master contradictory norms. In that sense they have acquired wisdom at the university. It is a question of following the rules while showing initiative, to be both self-assertive and cooperative, to be loyal and critical in well measured doses. It is also not possible to make a career without having an inkling of what and who counts. (Ehn & Löfgren 2004, p. 161, author's translation)

For the new individuals within the research community, such as doctoral students, a considerable part of their socialisation process for becoming successful researchers consists of trying to figure out many of the implicit norms and rules that regulate social interaction and work within the academic organisation (Schoug 2004).

The different academic functions

In his classic book "Scholarship Reconsidered", Boyer (1990) identified the different functions of the scholar in academic practice, with the intention to give: "…the term scholarship a broader, more capacious meaning, one that brings legitimacy to the full scope of academic work" (p. 16). Here academic work is considered to have four separate, yet overlapping functions. These are: the scholarship of *discovery*; the scholarship of *teaching*; the scholarship of *application*; and the scholarship of *integration*.

The function "scholarship of discovery" is basically research, implying the commitment to new knowledge, freedom of inquiry and of investigation, wherever it may lead. This scholarship at its best contributes both to the human stock of knowledge and to the intellectual climate of a college or a university. Not only the outcome is valued, but also the very process of commitment and passion of the researcher engaged in his or her task. The "scholarship of teaching" in higher education inspires and educates students to become future scholars, as well as enables them to comprehend better and participate more fully in the larger culture. At its best, teaching means not only transmitting knowledge, but "transforming" and "extending" it as well (Boyer 1990).

The third function, the "scholarship of application" means applying knowledge to consequential problems, often through participation and interaction with the larger community and society. The concept of "service" is often used in relation to this type of scholarship, but has also been connected to other administrative and volunteer campus activities, which is something that has confused and blurred the core meaning of the term (Boyer 1990; Macfarlane 2005). In Sweden, this type of activity is called the "third task" or collaboration. In such collaborative activities between the academia and society "…theory and practice vitally interact, and one renews the other" (Boyer1990, p. 23). This type of scholarship is also one of the main foci of the present thesis.

According to Boyer, "scholarship of integration" emphasises the need for academics to put isolated facts into a larger perspective, and get out of the isolation and fragmentation of the disciplines. It means placing the specialities in a larger context in a revealing way, which often includes educating non-specialists. It bears on original research and can take place in interdisciplinary and multidisciplinary research, at the boundaries where fields converge. Academics involved in the "scholarship of integration" move beyond traditional disciplinary boundaries to communicate with colleagues in other fields, to discover patterns that connect (Boyer 1990). These notions are very similar to the study presented in Article III in this thesis. The following section therefore lists some definitions and suggestions for organising interdisciplinary and multidisciplinary research and collaboration.

Interdisciplinary and multidisciplinary research and collaboration

In this section, the academic function of collaboration not only concerns relations between universities and the surrounding society, but also takes place across disciplinary boundaries. There is a growing complexity developing in working life, technologically, socially and economically, which puts new demands on research in this area. Many areas within the filed of working life are by nature interdisciplinary and multidisciplinary (Aronsson 2006). This has prompted scientists to ask broad research questions (Bruhn 1995), and address complex problems that must be attacked simultaneously with deep knowledge from different perspectives, as reported by the National Academy of Sciences (NAS 2005). According to the 2005 NAS report, a very diverse range of activities has hitherto been placed under the heading "interdisciplinary research" (IDR), and no single definition is likely to fit all of these. Nevertheless, the committee for the report developed the following definition:

> Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts and/or theories from two or more disciplines or bodies of specialised knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practise (NAS 2005, pp. 2, 26, 39 and 188).

An important aspect of IDR is the synthesis and integration of ideas and methods. A project doesn't become interdisciplinary just by letting researchers from different disciplines work together, but by the active exchange of theory and methods. The intention of researchers involved in this type of collaboration activities is to integrate their knowledge, and the result can be the development of a new research field or discipline (Aronsson 2006; NAS 2005; Sandström et al. 2005).

A type of collaborative activities between different disciplines is *multidisciplinary* research (MDR). Here, each discipline makes a separate contribution to elucidate a defined and common problem. The efforts are additive, but not necessarily integrative, and the researchers return to their disciplines when the

work is done[21] (Aronsson 2006; NAS 2005; Sandström et al. 2005). MDR is sometimes used synonymous for IDR, as in the Netherlands where the government is trying to facilitate MDR. In fact, the Dutch use of the term corresponds to the NAS committee's definition of IDR (NAS 2005). Similar blending of the terms exists in Sweden, but the Swedish Research Council emphasises the importance of maintaining the distinction between the two terms, since different modes of work are often involved, where IDR is more integrative and MDR additive (Sandström et al. 2005).

IDR and MDR work at their best when they are aimed to solve and respond to concrete problems and demands (Sandström et al. 2005). Research questions that broaden the spirit of inquiry, for example, "how" questions about phenomena, have proven to be useful (Bruhn 1995). Problems and questions that are not confined to a single discipline can be explored (NAS 2005). The ideal culture for IDR and MDR should provide the necessary resources, rewards, administrative encouragement and leadership for scientists to cross boundaries in order to work collaboratively (Bruhn 1995).

At the core of interdisciplinarity is communication – the conversations, connections, and combination that bring insights to every kind of researcher. Academics desiring to work with boundary-crossing approaches should immerse themselves in the languages, cultures and knowledge of their collaborators belonging to different disciplines (NAS 2005). IDR and MDR place greater emphasis on networking that includes familiar person-to-person forms of social contacts and electronic communication (Klein 1996). Learning a new field is always hard work, and must therefore be catalysed by both formal efforts, such as institutional policies that support new programmes, and informal efforts, such as collaborative spaces and common rooms that encourage mingling and conversation. In research programmes with participants from different

[21] The research programme SMARTA presented in Article III is in several aspects interdisciplinary, especially in the exchange of ideas and methods, but is still better described as a multidisciplinary research programme, since the participating researchers were not developing a new research field or discipline. Instead they returned to their disciplines after the period spent working together on their common problems in the SMARTA programme.

disciplines, it is desirable to implement a conscious strategy to promote informal communication (NAS 2005).

Design of the empirical investigations

Two empirical investigations were carried out and reported in this thesis. These have the overriding aim to analyse and describe academics' learning as they interact with fellow researchers and practitioners in different forms of collaboration. The first empirical investigation, presented in Article I, was carried out in the spring of 2005 at a university and two university colleges in southern Sweden. The second study, which is presented in Article III, was carried out in the spring of 2006 at the Swedish *National Institute for Working Life (NIWL)*, in the frame of the SMARTA multidisciplinary research programme.

Data collection

In the first empirical investigation, there were seven participants, all academics with doctorates (except one with a degree of licentiate), comprising a total of five men and two women. Three held a professorship. Participants came from the following disciplines: technology, social science, psychology, and business economics. They had between 5 and 30 years' experience of collaboration with business and industry enterprises, and had recently or were currently involved in the krAft program, in which leaders from SMEs interact with academics and business consultants[22]. My own prior knowledge of researchers and SMEs stemmed from a previous study (Karlsson 2002), where I had studied experiential learning and competence development from SME leaders' perspective in the krAft program. This prior knowledge was helpful for understanding the context and issues related to collaboration between

[22] KrAft is a Swedish abbreviation for *competence*, *reflection*, *business development* and *growth*. The programme is sponsored by the Knowledge Foundation of Sweden in the framework of the programme entitled *Expert competence*. Between the years 2000 and 2005, there were 627 SMEs involved and the programme has had a budget of 6.6 million euro (60 million SKR). The programme has three aims: to help SMEs develop their businesses; to initiate long-term relationships between SMEs and universities; and to initiate and improve networking within the academic system and with private/public actors. See http://www.kraftprov.nu/English.asp? m_m=16&s_m=0 (last accessed 25 January 2008).

academics and practitioners, also when the respondents in the present study referred to experiences outside the krAft programme, which occurred quite frequently.

The second empirical investigation of this thesis was conducted at the *National Institute for Working Life in Sweden (NIWL)* in a research programme aimed at improving the management of the work environment in Sweden. It was called "Strategies and Methods for the Management of Work Environment (with the Swedish abbreviation SMARTA)[23]. The programme had three main research and development (R&D) areas for a sustainable and functioning management of the work environment: "Strategies", "Methods and work processes" and "Communications, actors, intermediaries and networks. The aim was to exemplify how management of the work environment can be run and to propose perspectives and processes as SMARTA (Swedish for "clever") ways to manage the work environment (Christmansson et al., 2005).

I first participated in three joint meetings in the SMARTA programme with all R&D groups present. I was there to observe and participate in some of the discussions, in order to understand the aim and purpose of the programme, and to attain some prior knowledge that might be required to develop the research questions and the dialogues in the interviews. According to Schwartzman (1993), it is useful to create interview questions in the social context in which they occur. The researchers interviewed included project managers from the R&D groups, the management team, and a former programme coordinator/leader from the start of SMARTA at NIWL. Three Swedish workplaces in NIWL were chosen: one in Gothenburg, one in Umeå and one in Stockholm, so that a variation between the different disciplines in SMARTA was represented. Two group interviews were carried out with three R&D participants, and another with the management team. The purpose of the interviews carried out with the programme coordinator/leader and the management team was to gain experienced background information and statements from a leader perspective concerning the SMARTA activities. A total of 19 respondents participated, eight women and eleven men, coming from the

[23] The programme was supposed to run until 2009, but was abruptly ended in December 2006 after the election of a new Swedish government. At that time, the programme involved 44 researchers and a budget of 1.1 million euro per year. The new government also decided to close NIWL completely by June 2007.

following disciplines: psychology, business economics, sociology, technology, medicine and chemistry. In both studies, data was collected in the form of semi-structured interviews (Kvale 1997), framed by a number of themes related to the specific aim and research questions of the investigations presented in Articles I and III.

Interview setting

In both investigations, the interviews took place at the academics' workplaces, and time was reserved at the start to create a relaxed atmosphere by giving detailed information about the purpose of the study and the research interview. It is important to first establish some trust with the respondents, since that is the foundation for successful interviews (Fontana & Frey 2003; Kvale 1997). The research interview is a conversation between two parties with a common theme, where knowledge is developed through dialogue, and it is therefore essential for the interviewer to establish a contact that is deeper than mere polite conversation with a superficial exchange of opinions. The respondents need to feel safe enough to be able to speak freely about their experiences and feelings (Kvale 1997). "The objective is not to dictate …but to provide an environment conducive to the production of the range and complexity of meanings that address relevant issues, and not to be confined by predetermined agendas" (Holstein & Gubrium 2001, pp. 63-64). In the present investigation, a relaxed atmosphere was established by inviting the respondents from the start of the interviews to ask questions or give comments to anything they might experience as unclear about the situation. The interviews in the first investigation lasted one and a half hour each, and in the second, approximately one hour each.

Analysis of data

The analysis of data starts already in the interview conversations, both in implicit and explicit ways, in the terms of an exploration of what respondents mean (Bergman & Coxon 2005). The interviews were recorded and later transcribed into full texts of about 150-200 pages in total. The material was analysed by identifying and organising the interview data in main categories and subcategories, by distinguishing qualitative similarities and differences in the ways the academics described their experiences (Kvale 1997). The interviews were qualitative, with what Kvale calls an "interpretative characteristic of analysis". There are certain arguments in favour of using a qualitative and interpretive approach in studying aspects of learning: "The strength…lies in the

quality of interpretations made. These interpretations draw as much upon our understanding of prior knowledge as from the findings of any empirical investigation" (Hodkinson 2004, p. 23). Hodkinson also argues that a high quality of interpretations provides a rich mix of data, insights from literature, researcher standpoint and prior knowledge. The aim of the analysis and presentation of the two investigations in Articles I and III is to attain such qualities in the results. However, no comparison of similarities or differences between data selected in the each investigation was made, since that would not have been in line with the overriding aim.

For ethical reasons, I have refrained from any naming the respondents in the quotes of the result sections in the articles. All participants in both studies knew each other well, and could have easily identified the excerpts/quotes connected to another person, even if they were given altered names or numbers. For the purpose of this thesis, the individuals as such were not the focus of my interest. Instead, the investigations focused on their experiences of collaboration and aspects of learning connected to this experience. Therefore different experiences could be represented by the same individuals in the manner described by Marton and Booth (1997).

The quotes in both interview investigations presented in the results aim to give some evidence of how the data has been interpreted, and how it has been categorised. The analysis procedures of the transcriptions for both empirical studies were the same, though taking place at different times, depending on when the data was collected. In the foreground of the analysis was the intention of maintaining an interpretative awareness to "…acknowledge and explicitly deal with our subjectivity throughout the research process instead of overlooking it" (Sandberg 1997, p. 209). Finally, "data reduction" (Miles & Huberman 1994), the transforming process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written transcriptions continued until the final report was completed, and is not something separate from analysis, but rather forms part of the analysis.

The first step was to organise the data into main themes in relation to the research questions (see Kvale 1997). The next step was to concentrate the respondents' expressions into more concise parts, showing more of the essence of their meanings. After that, the excerpts were organised into categories created in the process of the analysis, in relation of the aims and research questions of

the study. “Data collection is a process of selectively choosing empirical phenomena and attributing relevance to them with respect to the research question” (Bergman & Coxon 2005, p. 18). This selection was done with consideration to the data’s contextual relationship to the respondents’ specific statements of meaning at focus, and to the aim and research questions of the study. Miles and Huberman (1994) maintain that it is important not to strip the data at hand from the context in which it occurs. An additional consideration was that in research (of learning) it is preferable to use as few categories as possible, so that the critical variation of data can be encircled (Marton & Booth 1997). The categorisation and central foci of the results in relation to the theoretical framework are presented in more detail in the four articles.

Summary of the articles

There is an ongoing debate both in the United States and Europe about the need to develop a broader view of scholarship and the different activities connected with it, including “service to the community”. In Sweden, universities’ undertaking equivalent to service to the community is practice-oriented engagement and cooperation with the surrounding community, as regulated by Swedish law on universities’ activities. This task is additional to the tasks of educating and doing research, hence the name ‘the third task’, or simply ‘collaboration’. Article I presents an empirical study of collaboration between universities and small and medium-sized enterprises (SMEs) in Sweden. The overriding aim of this research is to analyse and describe the learning that takes place in the interaction between academics and practitioners. The results of the investigation reveal that the academics learn different strategies to instigate, to accomplish, and to deepen and develop further collaboration between universities and SMEs. The results show also that academic professionals engaged in this type of activity need to handle the rigid structures of the academic organisation, which neither encourages nor rewards these individuals’ efforts to collaborate. However, this study shows that although academics and people from SMEs come from different working cultures with their various traditions associated with language and interaction, a continuous exchange and dialogue creates trust and competence for all parties, and learning in the form of new knowledge which is useful for both the academia and SMEs. This new knowledge is brought into the academics’ work within the university organisation through their teaching and research, creating possibilities for students’ future working life.

Article II is a contribution to the ongoing debate about the need to develop a broader view of scholarship and the different activities related to it such as "teaching", "research" and "service to the community". It is also a response to Greenbank (2006) *The academic's role: the need for a re-evaluation.* First, a historical background of the concept of service is provided to shed light on the confusion connected to this notion, as well as its low status. An argument is presented for a more nuanced definition of service activities, better referred to as "collaboration". This is a better term for activities involving universities and the community and implies knowledge generated in interactivity during collaboration with practitioners. The author disagrees with Greenbank's argument and model in the way that teaching is prioritised over research and collaboration, since this will not broaden the view of scholarship and will only reduce it to a new hierarchy of functions by trading teaching for research. A holistic view of scholarship is suggested as an alternative, where the integration of collaboration, teaching and research is seen as an interdependent whole, instead of a hierarchy of functions.

Collaboration across disciplines is rapidly becoming an integral feature of research, due to the desire to explore problems and questions that are not confined to a single discipline and the need to solve societal problems. In Article III, the empirical investigation focuses on the workplace learning of researchers in a multidisciplinary research (MDR) programme in at the *National Institute for Working Life in Sweden (NIWL),* and their collaboration with practitioners. The results of this empirical investigation show that what academics learn in this multidisciplinary context is a deepened awareness of the perspectives of their own and others' fields of research, as well as a heightened curiosity to learn more. By acting in the MDR context together with practitioners, academics also learn by gaining insights into new aspects of known entities. They thereby form new and more complete entities by gaining a broader picture, which includes methods of the management of the work environments. The learning also involves gaining new insights about one's own learning and how this takes place, about impact on one's own professional development, and about discovering, sometimes surprisingly, how one's competence can be used in new areas of research. In the interaction, sharing their own experiences with the know-how of practitioners, the academics reported that they complemented each other and generated knowledge which they experienced as both useful and general. This interaction of knowledge and

experience with researchers of different disciplines and practitioners creates a context that demands a different type of learning for the academics, compared to working in their own disciplines.

Article IV is in some ways a synthesis of the first three articles in this thesis, with a special focus on how collaboration facilitates academics' professional development. Development is an intrinsic part of academic work, and is not seen as an activity separate from normal business. It is possible to organise for learning and competence development in daily work situations, but then it is important to understand how peers learn and utilise each others' competence and capabilities. The intent of the article is to shed light on collaboration in the academia by providing examples of thet collaborative activities academics engage in, and by showing how professional learning from collaboration affects academic development, individually and organisationally. This is accomplished by reanalysing existing research and referring to the author's research on academic collaborative practices. There is also a focus on four features of peer learning: "reflection and exploration of ideas"; "communicating and applying knowledge"; "identifying one's own learning needs"; and "interaction and developing skills of collaboration". A conclusion with a future perspective is that it will be a challenge for the academia to handle and support academic development of experiences from collaborative activities and to structurally support them in the academic organisation. This can be done, for example, in inter- and multidisciplinary research and with practitioners outside the academia - integrated into academic work.

General discussion

The overriding aim in the research presented is to analyse and describe academics' learning as they interact with fellow researchers and practitioners in different forms of collaboration. In this section, the results will be discussed regarding learning as a process, the impact of trust and feelings, and as holistic learning of scholarship. Finally, the method discussion and a part of possible future research are presented.

Describing academics' learning in collaboration

Different aspects of learning are presented in the results of this thesis. By using concepts from different theories of learning, the intent is to describe and clarify the academics' learning in collaboration.

Learning as a process and the impact of trust

In this thesis, learning is in one respect viewed as a process based on experience as Kolb (1984) describes in his cyclical model, with the phases or abilities of "Concrete experience"; "Observation and reflection"; "Formation of abstract concepts and generalisations"; and "Testing implications of concepts in new situations". The results in Article I and III do not reveal or exemplify that the academics go through the whole cycle as presented in Kolb's model, but some of these abilities or phases are in fact represented. For example, in the multidisciplinary research (MDR) programme, it was obvious how important it had been for the academics to have a continuity of meetings to be able to share and *reflect* on one another's developmental processes from the R&D groups. This continuity had a great impact on their learning and for their new "knowledge capability" (Bowden 2004), which they could *apply* both inside the research programme and outside in organisations. In these groups they could experience each other's observations and ideas, reflect on them, test their own ideas' validity, and later put their learning/insights into action, which is similar to Kolb's description of the learning process. But learning can also encompass the ability to become aware of one's own learning processes, as the researchers in the MDR-programme who felt secure enough of letting go of their expert roles as researchers. Trusting one's colleagues was also a key factor in this process.

The results reveal the value of trust as a prerequisite for collaboration and learning. In Article I, the results show the importance of trust for successful collaboration between academics and SMEs, especially in the establishing phase, where some of the academics used pedagogical strategies to accomplish this. Here emphasis appears to have lain on developing two particular types of trust between all participants involved, what Newell and Swan (2000) call "competence trust" and "commitment trust". The first trust is about relying on the participants' contribution of different competences and skills to perform a task or project, while the second consists of trust to the commitment of others' effort, needed to complete the joint work. The third type of trust reported by Newell and Swan is "companion trust", which takes longer time to develop, and is based on judgements of goodwill or personal friendships. It has a strong emotional component and partners are relatively tolerant of each other's mistakes. This type of trust in combination with the other two was more apparent for the academics in the MDR-programme, for example in describing the open and trusting atmosphere which they experienced in the mixed R&D

groups. This result differs from Newell and Swan's findings. Their results indicated the problems with developing competence trust in situations where the participants come from very different epistemological and ontological positions, as they did in the MDR networks. Nevertheless, this was not the case in the SMARTA MDR programme, where resluts may have been affected by the timing of the investigation. The researchers in SMARTA had known each other for a couple of years at the time of being interviewed, and therefore might have had more time to build their different types of trust, compared to the researchers in Newell and Swan's study.

The role of feelings, emotions and trust for academics' learning

The results presented in this thesis reveal some informal aspects of the academic practice in relation to feelings and emotions. The interviewees experience feelings of frustration and powerlessness over not having been able to use their collaborative competences for tenure and promotion, as well as expressing dissatisfaction with colleagues' lack of dialogue competence, as reported in Article I. The process of learning deeper meanings of familiar concepts can be time-consuming, demanding and frustrating, but in the end is experienced joyfully as very valuable. A feeling of joy is also experienced when researchers step out of their expert role and discover new competences in themselves as researchers. They describe their feelings of excitement when participating and sharing peers' learning and development (Article III). Finally, results from both empirical investigations show the importance of feeling trust for successful professional learning. It may be concluded that academics' work, including their collaborative activities, is charged with different feelings and emotions (Ehn & Löfgren 2004; Schoug 2004).

Academics' learning seen as a holistic learning of scholarship

Academics belong to a professional community within their own disciplines and academic departments. In that sense they come to participate in "multiple communities of practice at once" when they are involved in collaboration (Wenger 1998). In collaboration, the academics' learning is about developing the art of "brokering", by moving between these different CoPs, making connections and introducing elements from one practice to another. Learning the art of brokering includes finding ways to deal with the academia's rigid structures, as well as scholars' and practitioners' cultural differences, to make collaboration possible through different phases, as described in Article I. The learning itself is based on the academics' different experiences of engaging in

collaboration with SMEs, and is described as their own experience of their "learning environment" (Svensson 2002). The academics' learning activity in collaboration and their learning outcomes have different parts, in the form of different strategies to instigate, establish and elaborate collaboration with SMEs, and these different parts make up an "experiential whole" for the individuals, as defined by Svensson. Learning is thus the process of discerning new parts and new relations between parts, thereby constituting a new understanding of the phenomenon (for example collaboration with SMEs) by transforming the parts into a new whole (Marton & Booth 1997).

What makes this view of learning new from a workplace learning perspective is in the way it relates to the phenomenon of *academic scholarship*, the different functions connected to it (Boyer 1990), and the academics' experiences of developing their *knowledge capability* (Bowden 2004) as scholars. The academics in Article I describe learning about and getting insights into the complexity of the different conditions and contexts in which SMEs operate. This new knowledge, they revealed, is transmitted into their work within the academic organisation through their teaching and research. In the university, they play a role in bridging the theoretical knowledge of their subject disciplines, on the one hand, with personal experiences and insights into the current situation as it relates to students' future working lives, on the other. In this example, the academics use "holistic approaches to learning" (Svensson 1976, 1997) where the three academic functions of collaboration, research and teaching form an "experiential whole". In Boyer's words they: "…dynamically interact, forming an interdependent whole" (p. 25), which I call a "holistic learning of scholarship". This is in line with Boyer's "scholarship of integration" which means placing the specialities in a larger context in a revealing way, which often includes educating non-specialists.

The results show that "scholarship of integration" is also related to the academics development of their "knowledge capability", which is to act and handle new situations (Bowden 2004) as an academic scholar. For example, Bowden maintains that skills like communication are *integrated* in the knowledge capability. In Article I, the academics involved in collaboration with SMEs have had several experiences of academic colleagues who were very skilled and learned within their subject disciplines, but when encountering SMEs in collaborative and interactive settings, it was obvious their communication skills were not integrated enough with their expert knowledge. However, the opposite

was experienced by some of the academics in their own learning (Article III). By being in a multidisciplinary research programme together with practitioners, they learned a refined sensitivity to the practitioners' conditions in different work environments, and new strategies for communicating their academic expert knowledge in different workplaces. This is in line with Bowden's definition of "knowledge capability", and the ability to reflect about variation with context so that principles and contextual elements are differentiated, thus enhancing the capacity to apply the principles to new contexts in the future. Again an example of how the academics integrate their different functions, skills and capacities into an interdependent whole that I would call "holistic learning of scholarship". This is also in line with Booth and Anderberg's (2005) research on university teachers' development of awareness that enables them to identify their teaching practice as a whole, with an integration of parts that is more than a system of elements and components.

The holistic learning of scholarship is important from a workplace learning standpoint. The results give an understanding of how academics experience their professional, learning and development in collaboration with fellow researchers of different disciplines together with practitioners. It shows how the integration of knowledge of the academic functions of collaboration, teaching and research in a holistic manner contributes both within the academia and in working environments outside it. It therefore stresses the importance for university management and other stakeholders of to financially support and view, collaboration, teaching and research in a more holistic manner. This is often not done at universities today, where each academic function and practice instead is treated and financed separately (Gibbons et al. 1994; Barnett 2000).

Method discussion

Both investigations in Article I and III have an explorative approach, using semi structured interviews with open questions (Kvale 1997). The overriding aim in the research presented is to analyse and describe academics' learning as they interact with fellow researchers and practitioners in different forms of collaboration. Interviews with a qualitative and interpretative approach are particularly recommended when studying learning in professional working contexts (Svensson 2002; Mezirow 1997), since they leave more open for discovery. One method that could have been useful for the investigations would have been observations combined with interviews, since it is useful to create interview questions in the social context in which they occur (Schwartzman

1993). The original intention in the investigation in Article I was in fact to make observations in some groups within the krAft program. Unfortunately, there were some access problems, since in existing groups the researchers were reluctant to be observed. Nevertheless, I had some pre-knowledge from SMEs and researchers collaborating from an earlier study (Karlsson 2002) that was useful in understanding the context that the researchers in present investigation referred to. In the second investigation that was carried out at NIWL, I participated in three joint meetings in the SMARTA programme with all R&D groups present. This experience was useful for developing questions for the interviews. However, there was not enough time provided within my own timeframe to additionally carry out observations in the R & D groups in the programme. Despite these difficulties, the present investigations show that the adopted method was sufficient to fulfil the overriding aim of the thesis. The research questions in the two investigations have been answered, with one partial exception, the last research question in the first investigation: "In what respect do these processes and structures constitute a context for learning for academics and forming the university?" Further research is here needed, as reported in Article I.

Future research

For future research it would be interesting to investigate academics learning in collaboration with practitioners using a comparative approach, comparing different international academic contexts in the European Union. Research could also focus the historical development of collaboration with a workplace learning perspective in the Swedish context and/or internationally, investigating how academic specialisation and applied research have changed over different eras. Different types of case studies of academics learning in collaboration and/or this learning's impact on the academic organisation are other possibilities of research, where it would be desirable to combine observations and interviews. Another area of research to investigate further can be the impact of different types of trust for academics' professional learning and development. A field of further investigation could be the holistic learning of scholarship, and the question of what impacts it individually and/or organisationally.

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Appendices

Populärvetenskaplig beskrivning av artiklar I-IV

Denna del av avhandlingen innehåller en populärvetenskaplig beskrivning av artiklarna I-IV. Syftet med den är att ge läsaren en lättillgänglig inblick och beskrivande översikt av artiklarnas innehåll på svenska. Avhandlingens övergripande syfte att analysera och beskriva forskare/universitetslärares lärande i samverkan med varandra och med praktiker. Artikel I handlar om hur forskare upplever och hanterar det som hindrar möjligheterna till samverkan med små och medelstora företag (SMF), samt de olika strategier de utvecklar för att lyckas med detta. Detta är en empirisk artikel och bygger på intervjuer med forskare som har mångårig erfarenhet av samverkan. Artikel II är en debattartikel där jag argumenterar för en holistisk syn på de tre akademiska funktionerna, undervisning, forskning och samverkan och visar på hur de kan berika varandra som en integrerad helhet. Artikel III handlar om vad forskare lär sig när de samverkar multidisciplinärt med andra forskare tillsammans med praktiker. Detta är en också en empirisk artikel och studien gjordes i ett forskningsprogram på Arbetslivsinstitutet. Artikel IV är i flera avseenden en syntes av de tre första artiklarna, där jag diskuterar hur forskares lärande i samverkan ser ut och hur detta lärande påverkar deras professionella utveckling, kompetens, samt dess betydelse för den akademiska organisationen.

Artikel I.

Forskares hinder och utveckling av strategier i samverkan mellan akademien och SMF

Engelsk titel: *Academics' strategies and obstacles in achieving collaboration between universities and SMEs.* Publicerad 2007 i Tertiary Education and Management, 13, s. 187–201.

Det finns en pågående internationell akademisk debatt om behovet av att utveckla begreppet ”scholarship[24]” tillsammans med de funktioner som ingår i detta och ge det en bredare och mer nyanserad innebörd[25]. Traditionellt förknippas akademin med forskning och undervisning, där forskningen bär en högre akademisk status, vilket syns främst genom meriteringssystemet. Det är av tradition lättare att få högre tjänster genom erfarenhet av forskning jämfört med undervisningserfarenhet[26]. I debatten har det höjts röster för att höja statusen på undervisningserfarenhet och att inkludera ”service” eller ”tredje uppgiften” som det kallas i Sverige, som en del av universitetens och högskolornas arbete. Den tredje uppgiften har därför också blivit inskriven i högskolelagen och enligt den skall universiteten och högskolorna samverka med det omgivande samhället och informera om sin verksamhet[27]. De flesta universitet och högskolor har en skriven policy om att göra detta, men i praktiken ges mycket lite stöd till forskare och universitetslärare[28] som vill genomföra samverkan[29]. Det har också

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[24] Fritt översatt handlar termen ”scholarship” om akademiska/vetenskapliga aktiviteter och dess noggrannhet (standard), enligt Wordfinder 7 professional, författarens anm.
[25] Boyer, E. (1990). Scholarship reconsidered: priorities in the professoriate. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching; Rice, E.R. (1992). Toward a broader conception of scholarship: The American context. In T.G. Whiston & R.L. Geiger (Eds.), Research and higher education in the United Kingdom and United States (pp. 117-129). Buckingham, UK: SRHE and Open University Press; Rice, E.R. & Richlin, L. (1993). Broadening the concept of scholarship in the professions. In L. Curry & J.F. Wergin (Eds.), Educating professionals: responding to new expectations for competence and accountability (pp. 279-315). San Francisco: Jossey-Bass; Paulsen, M. & Feldman, K. (1995). Towards a reconceptualization of scholarship a human action system with functional imperatives. *Journal of Higher Education, 66*, 615-640; Macfarlane B. (2005). Placing service in academic life. In R. Barnett (Ed.), *Reshaping the university: new relations between research, scholarship and* teaching (pp. 165-177). Berkshire: Open University Press; Greenbank, P. (2006) The academic's role: the need for a re-evaluation? *Teaching in Higher Education, 11,* 107-112.
[26] För svensk kontext se Tydén, T. (2005). Arbetstitel: Samverkansförmåga och pedagogisk skicklighet som merit vid Professorstillsättningar. Stockholm, Vetenskapsrådet; och för internationell kontext se Boyer ibid., och Macfarlane ibid.
[27] Lag 1996:1392.
[28] I den här populärvetenskapliga sammanfattningen används orden ”forskare” och universitetslärare” synonymt.

funnits en hel del motstånd inom den traditionella akademin mot denna verksamhet, dock har många av de nya högskolorna anammat den och fått statligt ekonomiskt stöd för att samverka med det omgivande samhället och sina regioner[30]. Det är fortfarande svårt för forskare att tillgodoräkna sig erfarenheter från samverkan som merit. I en studie från vetenskapsrådet visar på att samverkans-erfarenheter inte räknas som merit vid professorstillsättningar[31]. Det finns också studier som pekar på liknande problematik internationellt[32]. Trots dessa svårigheter finns det forskare som ägnar sig åt samverkan, t ex med företagsledare i små och medelstora företag (SMF). Det är dessa forskares samverkanserfarenheter denna artikel handlar om. Studien söker svar på tre forskningsfrågor:

- Vilka processer är forskare engagerade i vid samverkan med SMF?
- Vilken inverkan har högskolestrukturerna på samverkan med SMF?
- På vilket sätt är dessa processer och strukturer en kontext av lärande för forskarna och hur påverkar den högskolan?

I studien utfördes djupintervjuer med åtta forskare med olika disciplinbakgrund, som teknik, sociologi, psykologi, och företagsekonomi. Forskarna kom från ett universitet samt två högskolor. De hade alla mellan fem och trettio års erfarenhet av samverkan med både storindustri och SMF, och hade varit eller var involverade i krAft-programmet[33]. Resultatet visade på hur forskarna lärt sig olika *strategier* genom tre olika faser för samverkan: att initiera, etablera och utveckla fortsatt samverkan. I varje fas mötte forskarna också två olika grupperingar av hinder för samverkan. Det var dels hinder *inom* den akademiska organisationen, dels hinder beroende på kulturella skillnader *mellan* högskolan och SMF.

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[29] Tydén, T. & Axelsson, N. (1998). Högskolorna och det omgivande samhället: Den tredje uppgiften i högskolornas årsredovisningar. Rapport. Stockholm, Landstingsförbundet och Tydén ibid.

[30] Brulin, G. (2004). The third task: A challenge for Swedish research and higher education. In W. Fricke & P. Totterdill (Eds.), *Action research in workplace innovation and regional development* (pp. 159–182). Amsterdam: John Benjamin Publishing Co.

[31] Tydén (2005) ibid.

[32] Macfarlane ibid.

[33] http://www.kraftprov.nu (2008-01-21)

I *initieringsfasen* utvecklade forskarna olika strategier för att skaffa finansiering till diverse samverkansprojekt med SMF. Andra strategier handlade om att använda personer med kunskap om SMF för att initiera kontakter med företagarna. Det var konsulter eller kommunernas näringslivskontor. Ett hinder som forskarna upplevde för sina möjligheter till att initiera samverkan med SMF var bristen på incitamentsstrukturer inom akademin. Man kan inte använda sig av denna kompetens för sin professionella meritering och befordran.

> Om vi ser utbudet av efterfrågan av kunskap från akademin så finns det ju naturligtvis självklara incitaments-problem i grunden. Man blir inte professor på samarbete med företag, utan man skriver hellre en vetenskaplig artikel. Du blir inte professor i teknik genom att starta företag eller skaffa patent.

Vissa av forskarna har därför valt att starta egna företag där de kan utnyttja samverkanskompetensen bättre. Ett annat hinder beror på de kulturella olikheterna mellan högskolan och SMFs och här upplevde forskarna svårigheten att engagera kollegor, som av rädsla och osäkerhet inte ville delta i samverkansprojekt med yrkesgrupper utanför akademien.

En viktig strategi i *etableringsfasen* som forskarna lärt sig utveckla är hur man skapar ömsesidig tillit mellan dem och personerna från SMF. Här finns fördomar från båda håll som behöver överbryggas.

> Vi kör på två dagar men det är väldigt intensivt, då släpper de här barriärerna väldigt fort och man kommer nära varandra på ett annat sätt. Det blir en helt annan öppenhet. Där känner jag som jag ser på ett projekt, att fram till vi har tillit, det är dötid helt enkelt. Då när vi har tillit, då kan vi börja utvecklas.

Forskarna betonade också vikten av dialog och öppna diskussioner som fokuserar verkliga och praktiska problem i företagsledarnas vardag. Men här upplevde de även ett hinder i svårigheten att få tag i kollegor inom akademien

som har den typen av dialogkompetens och inte bemöter företagarna med den traditionella ”föreläsningsmonologen”.

I fasen för *fortsatt utveckling* av samverkan har forskarna lärt sig olika strategier för att bibehålla kontakterna med SMF, även genom olika projekt över tid. Ett sätt att hitta nya vägar till finansiering annat än forskningsinstitut, har varit att starta upp självförsörjande holding bolag privat, men även inom högskolestrukturen för uppdragsforskning. Men problem och hinder för de senare är beroendet av det akademiska ledarskapets välvilja och intresse, samt att dessa bolag har haft svårt att gå med vinst. Vid sidan av att utveckla olika strategier och hantera hinder för samverkan, upplevde forskarna att deras arbete inom akademien berikades av samarbetet med SMF, t ex i kontakten med studenterna.

> Under vilka förutsättningar man jobbar [i SMF], förutsättningar för ledarskap, olika typer av verksamheter, hur man organiserar verksamheter, hur komplexa verksamheter är i förhållande till de teorier vi diskuterar. Kopplingen mellan den komplexa praktiken och våra teorier. Så det har jag fört in i undervisningen.

Genom undervisningen och kontakten med studenterna fungerade forskarna som en ”brygga” mellan teori som undervisas inom högskolan och den nuvarande och praktiska verkligheten ute på företagen som är studenternas blivande arbetsliv.

Våra resultat relateras till Brulins modell[34] i jämförelsen mellan den s.k. *Linjära modellen* som innefattar traditionell forskning med målet att utforma teoretiska modeller och som förväntas överföra kunskapen som teoretiskt kodifierad kunskap från forskarsamhället till praktikerna, enligt Brulin[35]. Resultaten

[34] Brulin, G. (1998b). Den tredje uppgiften. Högskola och omgivning i samverkan. Stockholm: SNS Förlag.

[35] Här är viktigt att komma ihåg att den Linjära modellen har annat mål än Beställnings och uppdragsforskning, samt Interaktiv kunskapsbildning i samverkan med omgivningen (se Brulins modell 1998b, s 104), men problemet med den Linjära modellen enligt Brulin är att den saknar nära samverkan mellan forskning och praktik, som har visat sig ha stor betydelse för forskningens användbarhet.

relateras även till två andra aspekter som ingår i Brulins modell, nämligen *Beställnings och uppdragsforskning*, med målet för praktisk nytta och relevans, samt *Interaktiv kunskapsbildning i samverkan med omgivningen*, med mål att stödja olika utvecklingsprocesser och uppmuntra till handling. Sammanfattningsvis visar resultaten i Artikel I på tre viktiga aspekter för att organisera kunskapsproduktion genom samverkan. Det är *Stöd för samverkan*, *Hinder för samverkan* mellan akademien och SMF, samt *Strategier för samverkan*, som finns presenterade i matrisen nedan, Figur 1. Vårt resultat visar på att forskarna initierar olika stöd för samverkan utanför den linjära modellen som befinner sig inom de traditionella universitetsstrukturerna, genom egna nätverk och interaktiva FoU-projekt

Dessa resultat bekräftar Tydéns (2005) svenska respektive Macfarlanes (2005) internationella studie. Även beställnings- och uppdragsforskning möter organisatoriska och finansiella hinder. De strategier som finns för samverkan skiljer sig åt. Våra resultat visar även att samverkan inom ramen för den *Linjära modellen* använder sig av traditionella akademiska undervisningsstrukturer med ”föreläsningsmonologer”, medan *Beställnings- och uppdragsforskningen* gärna imiterar olika typer av strategier från företagsvärlden. Den *Interaktiva kunskapsbildningen i samverkan med omgivningen* sker istället i form av kontinuerlig kontakt mellan forskare och företagsledare inom SMF, samt genom initiering av nätverk och processer för tillit och öppenhet. Ibland kräver samverkansprocesserna att forskarna även startar egna företag för att verksamheten skall kunna fortskrida.

Slutsatserna som man kan dra av vårt resultat är att oavsett forskares och SMFs olika arbetskulturer, så skapar interaktion och dialog tillit, kompetens och lärande för båda parter som är användbart inte enbart inom akademin, utan även i företagsvärlden. Detta är kunskaper som forskarna sedan tar med sig i sin forskning och undervisning. Den akademiska organisationen berikas, och möjligheter skapas för studenterna i deras framtida arbetsliv. Slutligen indikerar denna studie att det inför framtiden behövs mer medvetenhet och praktiskt realiserande av olika stöd- och incitamentsstrukturer inom akademin, för att forskare skall kunna genomföra framgångsrik samverkan och samproduktion av kunskap med det omgivande samhället.

	Interaktiv kunskapsbildning i samverkan med omgivningen	Beställnings- och uppdragsforskning	Den linjära modellen
Stöd för samverkan	-Finansiering externt på forskarnas initiativ. -Forskarnas egna nätverk. -Aktions- och interaktiva FoU-projekt.	- Extern finansiering genom forskningsinstitut och företag. - Passar universitets-strukturerna.	- Passar inom traditionell univer-sitetsstruktur.
Hinder för samverkan mellan akademien och SMF	- Brist på stöd inom akademien. - Brist på incitaments-strukturer för meritering genom samverkan. - Regler inom akademien begränsar samverkan - Svårt att finna "dialog- kompetenta" kollegor. - Brist på mötesplatser för forskare och SMF.	- Svårigheter att komma ut på marknaden - Svårt att gå med vinst.	- Ingen kontinuitet. - Ingen interaktivitet - Förmedlar kunskap genom envägs-kommunikation - Ingen kunskap tillbaka till akademien
Strategier för samverkan	- Kontinuitet genom nätverk. - Skapar processer för tillit och öppenhet. - Forskarna startar egna företag.	- Institutioner tar egna initiativ. - Holding bolag inom högskolor.	- Traditionella akademiska under-visningsstrukturer.

Figur 1. Organisera kunskapsproduktion i samverkan mellan akademien och SMF

Artikel II.

Samverkan istället för service: en integrerad process i forskning och undervisning. Ett svar till Greenbank

Engelsk titel: *Service as collaboration: an integrated process in teaching and research. A response to Greenbank*. Publicerad 2007 i Teaching in Higher Education, 12, s. 283-289.

Den här debattartikeln är ett svar på Greenbanks (2006) *The academic role: the need for a re-evaluation?,* samtidigt som den utgör ett bidrag i den pågående debatten om behovet av att utveckla en bredare syn på begreppet ”scholarship”. Begreppet inbegriper olika akademiska funktioner som ”undervisning”, ”forskning” och ”tredje uppgiften”, som det kallas i Sverige, eller ”service to the community” som är dess internationella motsvarighet[36] (se Artikel I). Greenbank efterlyser i sin artikel en bredare definition av forskning och ett större erkännande av service, samt att dessa integreras med universitetsundervisningen. Jag instämmer i Greenbanks övergripande slutsatser, men är samtidigt kritisk till hans förslag hur detta skall åstadkommas.

Begreppet ”service” har sina rötter i den amerikanska universitetstraditionen och härstammar från tiden på mitten av artonhundratalet, när många universitet grundades med syftet att bidra med forskning omkring praktiska problem under den pågående industriella och agrara revolutionen[37]. Än i dag finns det en tradition i USA med universitet som framgångsrikt samverkar med det omgivande samhället, t ex i Silicon Valley och San Francisco Bay area, med universitet som Stanford och Berkeley. Trots denna tradition finns det bland forskare i USA, men även internationellt, en hel del förvirring kring vad service-begreppet innefattar[38]. Detta faktum är något som Greenbank utelämnar i sin artikel, men som jag anser nödvändigt att beröra för att inte bidra med ytterligare förvirring i scholarship-debatten. I en internationell studie visade det sig att forskare från olika universitet i olika världsdelar hade fem olika

[36] Se Boyer, ibid; Rice, ibid; Rice & Richlin ibid; Paulsen & Feldman, ibid; Macfarlane, ibid;
Greenbank, ibid.
[37] Boyer ibid.
[38] Boyer ibid; Macfarlane ibid.

tolkningar av vad service-begreppet innefattar[39]. Det var administrativa uppgifter, service till studenter och affärsorganisationer, att stötta kollegor, fritidsarbete och studenters praktikarbete.

I den akademiska litteraturen finns en definition av service, som Greenbank använder sig av och där det görs åtskillnad på aktiviteter *inom* de akademiska institutionerna, och bidrag *utanför* som riktas till det omgivande samhället[40]. I begreppet *inom* innefattas administrativa uppgifter, vetenskaplig granskning och bedömning (peer review) och att vara ledamot i olika styrelser och organ. Med aktiviteter *utanför* de akademiska institutionerna menas konsultverksamhet, offentliga föreläsningar och expertutlåtanden. Problemet med den här definitionen är den underliggande innebörden av service av att ”bidra” och ”förmedla” enbart går i riktning *från* forskarna till mottagare/praktiker, och inte inkluderar bidrag som praktiker kan förmedla akademin. Det jag argumenterar för är en mer nyanserad definition av service, inspirerad av Boyer[41], där forskarnas teorier *interagerar* med praktikernas praktik och båda befruktar varandra. Det är en dynamisk och interaktiv process, med tillämpning och problemlösning, som är lärorik för *både* forskare och praktiker. Ett exempel (Artikel III) är från en studie på Arbetslivsinstitutet i ett multidisciplinärt forskningsprogram där forskarna ”verkade tillsammans” med praktiker visade på att det skapades ett ”sammanhang” som krävde lärande, ny kunskap och förhållningssätt. Detta lärande är både praktiskt och användbart och kan generaliseras över skilda vetenskapliga disciplingränser[42]. Att vara engagerad i sådana läroprocesser visade sig vara fördelaktigt för forskarnas eget lärande, och deras kompetensutveckling både inom egen forskning och i undervisningen av studenter. Det rör sig alltså om en samverkande aktivitet som berikar genom samproduktion av ny kunskap. Istället för ”service” är en mer nyanserad benämning då ”samverkan”, (på engelska ”collaboration”)[43]. Slutsatsen som dras

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[39] Macfarlane ibid.

[40] Paulsen & Feldman, ibid.; Macfarlane, ibid.; Greenbank ibid.

[41] Boyer ibid.

[42] Karlsson, J., Anderberg, E., Booth, S., Odenrick, P. & Christmansson, M. (2008) Reaching beyond disciplines through collaboration - Academics' learning in a national multidisciplinary research programme. *The Journal of Workplace learning, 20 (2).*

[43] Min uppfattning är också att på svenska är även ordet ”samverkan” en bättre benämning än ”tredje uppgiften”.

är att detta denna interaktivitet resulterar till ett mer ”holistiskt förhållningssätt av lärande”[44] hos den enskilde forskaren där de tre scholarship funktionerna ”undervisning”, ”forskning” och ”samverkan” integreras genom samproduktionen av ny kunskap.

I sin artikel presenterar Greenbank en modell på förhållandet mellan de tre scholarship/akademiska funktionerna ”undervisning”, ”forskning” och ”service”, där han i triangelform placerar in undervisningen som den översta, eftersom som han anser denna skall prioriteras före de andra två[45]. Han byter alltså ut undervisningen mot forskningen, som idag har den högsta statusen inom akademin (se Artikel I). Skälet Greenbank anger är att ”forskareliten” ändå aldrig väljer att prioritera undervisningen i sitt arbete då den inte främjar den akademiska karriären. Min främsta kritik mot detta är att argumentet inte gynnar någon ”integrering” av dessa tre funktioner, vilket han vill uppnå och som också jag ser behovet av. Dessutom försvårar hans modell ytterligare för forskare att meritera sig på sin samverkanskompetens. Konsekvenserna blir istället en ny ”hierarki av funktioner”[46], där den ena funktionen skall ha större status än de andra två, liknande det som pågår för närvarande. Istället vore det bättre att makthavare, politiker, forskningsinstitut, universitetsledningar, och akademiska institutioner stödjer sambandet och det inbördes förhållandet mellan undervisning, forskning och samverkan, då dessa i praktiken berikar och befruktar varandra. Interaktiv samverkan är ett mer holistiskt och mer pragmatiskt synsätt, som också ligger i tiden, eftersom högskolor och universitet spelat ut sin roll som de enda kunskapsbildarna i form av separerade ”elfenbenstorn”[47] från det omgivande samhället. Genom att erkänna och stödja de tre akademiska funktionerna på ett holistiskt sätt kan en integration ske, där undervisning, forskning och samverkan integreras på ett vis som berikar forskares, praktikers och studenters lärande, samt främjar deras

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[44] Svensson, L. (1997) Skill in learning and organising knowledge, in: F. Marton, D. Hounsell & N. Entwistle (Eds), *The experience of learning: implications for teaching and studying in higher education* (pp. 59-71). Edinburgh, Scotland: Scottish Academic Press.
[45] Greenbank ibid.
[46] Boyer ibid.
[47] Gibbons, M. (1994). *The new production of knowledge.* London: Sage Publications; Barnett, R. (2000). *Realizing the university in an age of supercomplexity*. Buckingham, UK: SRHE and Open University Press.

anställningsmöjligheter på en allt tuffare arbetsmarknad för nyutbildade akademiker[48].

Artikel III.

Samverkan över disciplingränser: Forskares lärande i SMARTA - ett multidisciplinärt forskningsprogram på Arbetslivsinstitutet

Engelsk titel: *Reaching beyond disciplines through collaboration - Academics' learning in a national multidisciplinary research programme*. Publicerad 2008 i *The Journal of Workplace learning*, 20.

Idag samverkar forskare alltmer över disciplingränser, eftersom det finns behov i samhället av att undersöka problem och frågeställningar som inte är begränsade till en enskild disciplin[49]. Mycket av problematiken och behoven i samhället ryms inte inom enstaka akademiska discipliner, utan är mångfacetterad och tvärvetenskaplig till sin karaktär[50]. Detta tog man fasta på inom Arbetslivsinstitutet (ALI)[51], och därför startades 2003 det multidisciplinära forskningsprogrammet SMARTA – *Strategier, metoder och arbetssätt för fungerande arbetsmiljöarbete*[52]. Forskningsprogrammet identifierade tre huvudsakliga forsknings- och utvecklingsområden (FoU-områden) och fokuserade på dessa:
A) Strategier för ett hållbart och fungerande arbetsmiljöarbete
B) Metoder och arbetssätt för ett hållbart och fungerande arbetsmiljöarbete

[48] Alvesson, M. (2006) Tomhetens triumf. Stockholm: Bokförlaget Atlas.
[49] Haythornthwaite, C. (2006), "Learning and knowledge networks in interdisciplinary collaborations", *Journal of the American society for information science and technology*, vol. 57 no. 8, pp. 1079-1092, och NAS (National Academy of Sciences) (2005), *Facilitating Interdisciplinary Research*. National Academy Press, Washington D.C.
[50] Sandström, U., Friberg, M., Hyenstrand, P., Larsson, K. & Wadskog, D. (2005), *Tvärvetenskap – en analys.* Vetenskapsrådets rapportserie 2005:10, Stockholm.
[51] Arbetslivsinstitutet upphörde 070701 på grund av regeringsbeslut.
[52] SMARTA var planerat att pågå till år 2009, men stängdes på grund av regeringsbeslutet i december 2006. Vid den tidpunkten var 44 forskare engagerade och programmet som hade en årlig budget på 10 miljoner kronor.

C) Kommunikation, aktörer, intermediärer och nätverk för ett fungerande och hållbart arbetsmiljöarbete[53]

Forskarna var indelade i ett antal mångdisciplinära projektgrupper inom de olika FoU-områdena. Flera av grupperna hade också knutit referens- och samverkansgrupper från arbetslivet till sig. Denna studie har fokuserat forskarnas lärande och erfarenheter av att arbeta både med kollegor från andra discipliner och med praktiker från arbetslivet inom ramen för SMARTA. Forskningsfrågan vi ställde var: *Vad upplever och lär sig forskare i en kontext av samverkan och multidisciplinär forskning tillsammans med praktiker från arbetslivet?*

Studien är baserad på tretton intervjuer med personer som deltog i SMARTA-projektet vid ALIs enheter i Göteborg, Stockholm och Umeå, som intervjuades på sina arbetsplatser vid personliga möten. Forskarna kom från olika discipliner inom naturvetenskap, medicin, teknik och samhällsvetenskap. Tretton intervjuer gjordes som tog ca en timme vardera, och som sedan transkriberades. Två grupp-intervjuer har genomförts med tre deltagare och en med ledningsgruppen i SMARTA. Sammanlagt har nitton personer medverkat. Under analysen av intervjumaterialet har lärandet urskiljts genom att studera de utsagor av deltagarnas erfarenheter där det har framkommit hur de *utvecklat* och *förändrat* synsätt och handlande i arbetet som arbetsmiljöforskare.

Den teoretiska ansatsen på lärande innebär en förmåga att se nya aspekter av begrepp och situationer, och se nya relationer dem emellan. Det är även insikter om nya delar i helheten man är bekant med eller att kunna se helt nya helheter[54]. Lärande innefattar också att bredda sina perspektiv eller se saker i nya perspektiv, samt att kunna kommunicera om dem med andra. Det är även att skaffa sig förmåga att se nya möjligheter för lärande och att öppna sig för

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[53] Christmansson, M., Hedén, K., Hörte, S-Å., Rydstedt, B. & Östebo, A. (2005), "SMARTA – a research programme in Sweden on Management of the work environment", paper Nordic Ergonomics Society 37th conference, Oslo, Norway

[54] Booth, S. (2004). Engineering education and the pedagogy of awareness. In C. Baillie, & I. Moore (Eds.), *Effective teaching and learning in engineering* (pp. 9-23). London: Routledge Falmer; Karlsson, J. & Booth, S. (2006) *Lärande och Arbetssätt i Arbetslivsinstitutets Tema SMARTA: Strategier, Metoder och Arbetssätt för fungerande Arbetsmiljöarbete* . Rapport. Lund, Lärande Lund & Göteborg, Arbetslivsinstitutet.

nya erfarenheter och sätt att se. Lärande är också att få insikter om sitt eget lärande och hur detta går till, samt om den egna förmågan och kompetensen och hur den kan användas på nya sätt och inom nya områden[55]. Lärande är en process som bygger på individens erfarenheter[56], som sker med växande förståelse[57], och som sker genom interaktion och i lösning av arbetsuppgifter där ny kunskap genereras tillsamman med andra[58]. Lärandet sker mot bakgrund av en kontext eller i ett sammanhang, och detta fungerar framförallt som stöd eller hinder. Syftet med den här studien var att studera vad forskare upplever och lär sig i en kontext av samverkan och multidisciplinär forskning tillsammans med praktiker från arbetslivet. Resultaten visar på fem olika kategorier av lärande (se Figur 2).

Forskarna fick en *fördjupad medvetenhet om perspektiv och begrepp*, både inom eget och angränsande forskningsfält, tillsammans med en nyfikenhet att lära mer inom dessa. Bekanta begrepp, som t ex ”metod”, får en ny mening och innebörd:

> En sak som jag har lärt mig är att vi lägger väldigt olika betydelse och definition på samma ord. I början att vi var tvungna att backa och säga vad menar vi egentligen? Vad är det? Och många gånger sätta upp en gemensam definition. … Det är sådana ord som metod. Vad är en metod? För mig är metod en sak och för en annan person är metod en helt annan sak.

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[55] Bowden, J. and Marton, F. (1998), *The University of Learning: Beyond Quality and Competence,* Kogan Page, London; Bowden, J. (2004), “Capabilities-driven curriculum design” in Baillie, C. and Moore, I. (eds.) *Effective Teaching and Learning in Engineering,* Routledge Falmer, London, pp. 36-47; Booth 2004, ibid.; Karlsson & Booth ibid.

[56] Kolb, D. (1984). *Experiential learning*. Englewood Cliffs: Prentice-Hall

[57] Hager, P. (2004). “Lifelong learning in the workplace? Challenges and issues”, *Journal of Workplace Learning* Vol. 16 No. 1/2, pp. 22-32.

[58] Döös, M., Wilhelmsson, L., Backlund T. & Dixon, N. (2005). ”Functioning at the edge of knowledge”,

Dessa insikter har ofta skett genom en rätt krävande kommunikativ process bland forskarna med olika disciplinbakgrund. Stundtals har begreppsdiskussionerna upplevts som frustrerande och tidskrävande, men i slutändan har man insett nyttan och betydelsen av dem.

Lärande som fördjupad medvetenhet om perspektiv och begrepp

– Forskarna får en djupare perspektivförståelse inom eget och angränsande forskningsfält.
– Nyfikenhet och vilja att lära mer inom det egna och andra forskningsfält.
– Bekanta begrepp får en ny mening i faser av krävande kommunikation.

Lärande som praktisk utveckling – nya strategier och metoder för implementering

– Ny kunskap leder till utvecklande av nya strategier för fungerande arbetsmiljöarbete.
– Förbättrad lyhördhet för både arbetsgivare och arbetstagares förhållanden.
– Lärandet består i bildandet av nya och mer kompletta helheter.

Lärande som ny medvetenhet om den egna kompetensen och läroprocessen

– Forskarna får insikter om hur de kan använda sin kompetens på nya sätt.
– Tillit och öppenhet skapar kreativitet och lärande.
– Genom att släppa ”expertrollen” får forskarna en djupare förståelse av den egna läroprocessen. Man ”lär hur man lär”.

Lärande som flexibilitet och praktisk användbarhet – sammanhangets inverkan

– Interaktion mellan forskarna tillsammans med praktikerna skapar både användbar och generell kunskap.
– Forskarna får en ”ny blick” för förhållandena på arbetsplatser.
– Tekniker och naturvetarna lär sig av samhällsvetarna - men inte så mycket omvänt.

Lärande som insikt i FoU-processer

– Kontinuitet och deltagande i diskussioner om varandras utvecklingsprocesser i FoU-grupperna leder till användbara insikter.
– Forskarna gör om och bearbetar ny kunskap till sin egen.
– Forskarna får en djupare helhetsförståelse om hur organisationer fungerar.

Figur 2. Resultat och sammanfattning av forskarnas lärande i SMARTA.

Forskarna upplevde att lärandet också har påverkat deras praktik som arbetsmiljöforskare i *utvecklande av nya strategier och metoder för implementeringen* av fungerande arbetsmiljöarbete. Man har även förbättrad sin lyhördhet för både arbetsgivare och arbetstagares olika förhållanden och hur hänsyn kan tas till båda. Genom diskussionerna både med kollegor från olika discipliner och med praktikerna från arbetslivet skaffar sig forskarna en större bild av sammanhanget, t ex angående utvärderingskriterier för olika metoder av arbetsmiljöarbete.

> Det är möjligt att det finns någon arbetsmiljöforskare som säger att det är ju jättegammalt, men för mig är det helt nytt och jag ser det i det här större sammanhanget. Jag har ju lärt mig väldigt mycket och fått en större bild. I och med att vi har haft olika kompetenser och olika bakgrunder har vi byggt upp det här pusslet till en större helhetsbild, där vi själva bara har haft bitar.

Som denne forskare gav uttryck för, består lärandet av att bilda nya mer kompletta helheter där metoderna ingår. Forskarnas lärande innebar också att de fick insikter om hur de kunde *använda sin kompetens på nya sätt och i nya sammanhang*, där de inte hade förväntat sig. De beskrev också hur tilliten och öppenheten i de olika FoU-grupperna åstadkom både kreativitet och professionellt lärande:

> Jag tror att det blir så lätt när man sitter och jobbar isolerad så här, att man ska vara någon form av expert, kunna allting. Just det här att gå ut i grupper och visa sin dumhet och sin enfaldighet och begränsning. Det gör man ju inte gärna, men det har jag känt att vi har kunnat göra.

Genom förtroendet för varandra kunde de släppa sin ”expertroll”. Därigenom fick forskarna en djupare förståelse av den egna läroprocessen. Man ”*lär hur man lär”*.

Sammanhanget och utformningen av forskningsprogrammet i SMARTA med forskarnas inbördes interaktion i grupper tillsammans med praktikerna har haft betydelse. Dels för lärandet och förmågan till *flexibilitet och nytänkande*, samt i skapandet av ny kunskap som både är *generell och användbar* i olika sammanhang inom arbetsmiljöområdet:

> Det har varit oerhört värdefullt. … Vi som jobbar med det konkret har tvingats till att bredda vår bild, vilket har komplicerat det hela, för det är lättare att vara smal och koncentrerad. Nu är vi då tvungna att få fram något som är användbart och generellt, och det är inte lika lätt att köra sitt race.

I dessa grupper skedde ett utbyte av erfarenheter och ett sammanhang skapas som krävde ett lärande av bredd och praktisk användbarhet, jämfört med när man verkar enbart inom den egna disciplinen. Forskarna upplevde hur de har lärt sig av varandra och från varandras olika kompetensområden. Dock framkom det att naturvetare och tekniker lärt sig mer av samhällsvetarna än tvärtom.

Resultaten visar också på hur lärande sker genom att ha kontinuerlig och inplanerad tid för gemensam diskussion och reflektion om *varandras utvecklingsprocesser* i de olika FoU-grupperna:

> Det är en sak att gå på ett avgränsat seminarium, ur ett läroperspektiv, men att lära känna personer och deras kunskapsområden, inte en gång utan faktiskt se en utveckling, det är väldigt lärorikt.

Det gav ny kunskap och en djupare helhetsförståelse som forskarna beskrev att de använde i forskning, undervisning och i organisationer där de bedriver arbetsmiljöarbete.

Av slutsatserna som dras av den här studien av det multidisciplinära samarbetet i SMARTA, är att det skapat goda förutsättningar för forskarnas lärande och kompetensutveckling. De fick tillfälle att skaffa sig bredare perspektiv på arbetsmiljöarbete och arbetsmiljöforskning, samt förändrings- och implementeringsprocesser. Forskarna beskrev också en djupare och bredare begreppsförståelse inom arbetsmiljöforskningen. Synen på och kunskaperna om strategier och metoder för arbetsmiljöarbete förändrades, t ex genom större lyhördhet för och medvetenhet om mottagarnas förutsättningar och sammanhang. Forskarna lärde sig använda sin kompetens på nya sätt och inom nya områden, både inom forskning och utbildning, och även på områden där man inte förväntat sig det. Det betonas i resultaten om lärandet att naturvetare och tekniker lär sig mer av samhällsvetarna än tvärtom. Detta bör uppmärksammas, och samtidigt kan frågan ställas hur de naturvetenskapliga och tekniska kompetenserna-skulle kunna användas i större utsträckning, t ex i förmågan att analysera och reducera komplexa problem till de mer väsentliga elementen, eller hur dessa kompetenser skulle kunna utnyttjas på annat sätt i arbetet inom forskningsprogrammet.

I SMARTA träffades deltagarna regelbundet, både i individuella möten och i flera gruppkonstellationer vid de olika organiserade träffarna. Kontinuiteten mellan träffarna och de personliga mötena gjorde att forskarna lärde känna varandra. De kände tillit, gemenskap och öppenhet, vilket gav goda förutsättningar för lärande över disciplingränserna. Gruppdiskussioner, tid för gemensam reflektion och samarbetet i FoU-grupperna fungerade speciellt bra för lärandet.

Artikel IV

Lära genom samverkan – akademin som mötesplats

Engelsk titel: *Learning in collaborative practices in the academia*. Inskickad till Higher Education Research & Development

Många forskare är idag engagerade i olika typer av samverkan med företag och organisationer utanför den akademiska världen[59]. Denna samverkan skapar möjligheter för professionellt lärande och dynamiska relationer för en gemensam lösning av olika problem som parterna inte kan klara på egen hand[60]. Samverkan utmanar forskares tänkande och handlande på nya sätt, jämfört med det individuella arbetet inom en enskild disciplin. Det har dock har visat sig vara svårt för forskare och universitetslärare att legitimera sitt eget lärande, både inför sig själva och inför andra[61]. Det är fullt möjligt att organisera för lärande och kompetensutveckling i de dagliga arbetssituationerna, men då är det viktigt att förstå hur arbetskamrater lär av varandra och använder varandras kompetens[62]. Syftet med denna artikel är att visa på hur den akademiska världen

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[59] Barnett, R. (2000). *Realizing the university in an age of supercomplexity*. Buckingham, UK: SRHE and Open University Press; Gibbons, M. (1994). *The new production of knowledge.* London: Sage Publications; Nowotny, H., Scott, P., & Gibbons, M. (2003). "Mode 2" Revisited: The new production of knowledge. *Minerva, 41,* 179-194.

[60] Saltiel, I.M. (1998). Defining collaborative partnerships. In I. Saltiel, A. Sgori, & R. Brockett (Eds.), The power and potential of collaborative partnerships (pp. 5-13). San Francisco: Jossey-Bass.

[61] Boud, D. & Solomon, N. (2003). I don't think I am a learner: acts of naming learners at work. *Journal of Workplace Learning, 15*, 326-331.

[62] Döös, M. (2004). Arbetsplatsens relationik – om vardagens lärande och kompetens i relationer. *Arbetsmarknad och Arbetsliv*, *10,* 77-93.

fungerar som en mötesplats för samverkan forskare emellan, och mellan forskare och praktiker, samt hur detta har betydelse för forskarnas professionella lärande. Detta görs genom en reanalys av befintlig forskning och av exempel från min egen forskning om samverkan.

De mellanmänskliga *relationerna* i samverkan har betydelse för individens lärande, och påverkar organisationen där denne är verksam. Lärandet sker genom att lösa vardagens arbetsuppgifter, och man kan säga att ”lärandet sker på köpet”[63]. Samtidigt finns det ~~de~~ ömsesidiga förhållanden mellan människor som uppstår genom interaktioner
för att lösa verksamhetsuppgifter. ”Relationik” är den pågående organiseringen mellan människor i arbete, vars handlingar hör ihop genom betydelsen för verksamhetsuppgiften. Kompetens är inte enbart en individuell egenskap, utan ”relationiken” är den ”sammantagna existensen av de interaktiva processer som pågår som relationer mellan människor och som bär arbetsplatsens (organisationens) kompetens”[64].

Ett grundläggande lärande som sker i forskares samverkan och genom de relationer som där skapas är ”peer-learning” (lärande från kollegor)[65]. Det finns olika kännetecken på denna typ av lärande som t ex: ”reflektion och provande av idéer”, ”kommunikation och tillämpande av kunskap”, ”identifiering av eget lärobehov och interaktion”, samt ” utvecklande av samverkans-förmågor”[66].

Reflektion och *provande av idéer* är en viktig del av det akademiska arbetet, och innebär att forskaren kritiskt granskar sitt projekt eller arbetsuppgift från skilda håll, och med olika perspektiv. Genom reflektion kommer kreativitet och förmågan att tänka ut, förutse och improvisera[67]. Men möjligheten för reflektion är beroende av hur peer-learning etableras och hur sammanhanget ser

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[63] Döös ibid.

[64] Döös ibid.

[65] Boud, D. (1999). Situating academic development in professional work: using peer learning. International Journal for Academic Development, 4, 3-10. Peer-learning kan förklaras och översättas med det lärandet som sker mellan arbetskamrater, (författarens kommentar).

[66] Boud ibid.

[67] Glassick, C., Huber, M., & Maeroff, G. (1997). Scholarship assessed: evaluation of the professoriate. San Francisco: Jossey-Bass.

ut[68]. Det har visat sig vara en fördel för samverkansprocesser att organisera forskares tid med utrymme för reflektion både individuellt och i grupp[69], vilket också ger bra förutsättning för forskares lärande (se Artikel III). Andra viktiga förutsättningar för reflektion och möjligheten att våga pröva nya idéer är forskarnas upplevelse av tillit och respekt (se Artikel I & III).

För forskare som är engagerade i samverkan är *förmågan till kommunikation* och *tillämpning av kunskap* av största betydelse, både inom den egna disciplinen[70] och även i förhållande till kollegor med annan disciplinbakgrund eller yrkestillhörighet[71]. Även de dagliga spontana och ”informella” samtalen mellan kollegor på raster och liknande, liksom inplanerade diskussioner vid olika möten, kan påverka forskares reflektionsprocess och leda till professionellt lärande[72]. Men kommunikation med kollegor i olika samverkansformer kan också vara mycket krävande, både tidsmässigt och känslomässigt, samtidigt som den är givande[73] och resulterar i lärande (se Artikel III). Det har visat sig att professionellt lärande sker bäst när kommunikationen sker i dialogform[74]. Dock är forskare och universitetslärare inte alltid vana vid denna form, då man

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[68] Boud, ibid

[69] Solomon, N., Boud, D., Leontios, M. & Staron, M. (2001). Researchers are learners too: collaboration in research on workplace learning. Journal of Workplace Learning, 13, 274-281.

[70] Boud, ibid.

[71] Phelan, A., Harrington, A.D., Mercer, E. (2004). Researching learning at work. Exploring an academic-workplace partnership. Journal of Workplace Learning, 16, 275-283; NAS (National Academy of Sciences) (2005). Facilitating interdisciplinary research. Washington D.C.: National Academy Press; Haigh, N. (2005). Everyday conversation as a context for professional learning and development. International Journal for Academic Development, 10, 3-16; Karlsson, J., Anderberg, E., Booth, S., Odenrick, P. & Christmansson, M. (2008) Reaching beyond disciplines through collaboration - Academics' learning in a national multidisciplinary research programme. *The Journal of Workplace Learning, 20* (2).

[72] Haigh, N. (2005). Everyday conversation as a context for professional learning and development. *International Journal for Academic Development, 10,* 3-16.

[73] Phelan, ibid.

[74] Senge, P., Kleiner, A., Roberts, C., Ross, R. & Smith B. (1994). *The fifth discipline fieldbook: strategies and tools for building a learning organisation*. London: Nicholas Brealey Publishing.

traditionellt inom akademin har undervisat främst med envägskommunikation och monologer vid föreläsningstillfällen[75]. Det har upplevts som svårt av t ex forskare som vill rekrytera kollegor till samverkansprojekt med SMF att få tag i sådan kompetens inom akademin. Det har inte varit lätt att hitta kollegor som har den typen av dialogkompetens, som behövs i samverkansutbytet med företagsledare som har mycket egen professionell erfarenhet de vill och kan bidra med i den gemensamma kunskapsprocessen med forskarna (se Artikel I).

Ett kännetecken i ”peer-learning” är att forskarna gemensamt tar ansvar för att *identifiera de egna behoven av lärande* och hur dessa skall bemötas, vilket innebär att utveckla förmågan att ”lära hur man lär” (se Artikel III) och få kompetens i att *interagera* med sina kollegor[76]. Traditionellt har akademiskt arbete främst varit individuellt, men tiderna förändras och nödvändigheten av interaktion och samverkan blir alltmer påfallande i dagens komplexa akademiska organisationer[77]. För att kunna identifiera och komma underfund med vad man behöver lära sig mer av, krävs det av forskarna ofta att de släpper på sin ”expertroll” och att de öppnar sig för nya erfarenheter i interaktionen med sina forskarkollegor (se Artikel III). Detsamma gäller även i samverkan med praktiker utanför akademin som innebär en ”lärandesituation” för båda parter, och där gemensam problemformulering och kunskapsgenerering bäst sker genom interaktion och dialog[78].

Forskarnas förmåga att skapa bra relationer över disciplingränser och med praktiker har betydelse för fungerande samarbete, och är en nödvändig del i att *utveckla samverkansförmågor*. Att kunna ”komma överens” med andra har stor betydelse för hur framgångsrik samverkan kan bli[79], och utgör en process som periodvis kan vara problematisk då parterna är oeniga i vissa hjärtefrågor[80]. Förmågan att skapa ”tillit” är också en viktig del i samverkansarbete (se Artikel

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[75] Brulin, G. (1998a). The new task of Swedish universities knowledge formation in interactive collaboration with practitioners. *Concepts and Transformation, 3,* 113-127.
[76] Boud, ibid.
[77] Boud, ibid.
[78] Brulin, 1998b ibid.
[79] Solomon et al. (2001) ibid.
[80] Clark, M. & Watson, D. (1998). Womens experience of academic collaboration. In I. Saltiel, A. Sgori, & R. Brockett (Eds), *The power and potential of collaborative partnerships* (pp. 63-74). San Francisco: Jossey- Bass.

III)[81], och att sammanhang skapas där forskare ges möjlighet att delge sina personliga erfarenheter och lärande i tal och i skrift[82], vilket kan vara svårt med tanke på den vedertagna expertrollen, en problematik som redan berörts ovan. En tillitsfull atmosfär öppnar också för möjligheten till ”konstruktiv kritik”[83], vilket har en betydelsefull del i arbetet i forskningsprojekt och i det gemensamma åtagandet att skapa en positiv lärandemiljö för alla som medverkar[84].

Forskares *professionella lärande* som sker i deras arbetsmiljö påverkas av både personliga, kulturella och kontextuella faktorer, precis som på andra arbetsplatser, samtidigt som det också ställer krav på reflektion, blottläggande och risktagande[85]. Resultaten av lärandet kan vara tvär- och multidisciplinära, samtidigt som de är praktiska och tillämpningsbara, som det exempelvis sker i utbytet med praktiker (se Artikel III). Forskarna använder också sitt lärande från erfarenheterna av samverkan inom den akademiska organisationen (se Artikel I, II & III), i sin forskning och undervisning. Det sker genom att forskaren *integrerar* erfarenheterna och använder sig av ett ”holistiskt förhållningssätt” i sitt lärande[86] som ger en helhetssyn och färdigheter i hur dessa kunskaper kan användas i olika kontexter och olika situationer[87]. Utmaningen inför framtiden blir hur den akademiska organisationen bättre kan stödja och underlätta för denna integrering och de interaktiva processer som pågår i form av relationer mellan människor, och som bär organisationens kompetens[88] i forskningsprojekt, på institutioner, fakulteter och liknande.

[81] Saltiel ibid.; Solomon et al. ibid; Phelan et al. ibid.
[82] Solomon et al. (2001) ibid.
[83] Saltiel, 1998 ibid; Clarke & Watson, 1998, ibid; Boud, 1999, ibid.
[84] Phelan et al., ibid.
[85] Solomon et al., ibid.
[86] Svensson 1997, ibid.
[87] Se även Bowdens ibid., ”knowledge -capability”.
[88] Se Döös ibid.