Regional IS Knowledge Networks: Elaborating the Theme of Relevance of IS Research

Mikael Söderström and Torbjörn Nordström
Department of Informatics, Umeå University, Umeå, Sweden

micke@informatik.umu.se atn@informatik.umu.se

Abstract

The purpose of this paper is to elaborate the theme of the relevance of IS research. Based on recent experiments and experiences in the borderland between research and practice and politics we suggest some additions to the discussion of the IS research relevance in Fitzgerald (2001). One addition concerns relevance to whom, where we suggest considering a regional relevance, through cultivation of regional IS knowledge networks. Such networks comprise regional knowledge production in collaboration between researchers and practitioners, and results are made public and tested also in other organizations than the research sites. This is closely related to the view of knowledge and research put forward by American pragmatism. A second addition is to complement Fitzgerald's suggestion to expose researchers to practice with the suggestion to expose practitioners to research. It is just as difficult to learn the 'true nature' of research from reading the executive summary in MIS Quarterly as it is to learn the 'true nature' of practice from a couple of interviews with practitioners. A regional IS knowledge network is an excellent opportunity for such double exposure.

Keywords: IS research relevance, Knowledge, Collaboration researchers-practitioners, Knowledge networks

Introduction

A much debated issue in Information Systems (IS) research is its relevance to practice. Often the debate takes place in debate articles or in panels at conferences, but at times the problem of relevance is also discussed in research articles. Ciborra (1997, p. 69), for instance, accuses IS research concerning IT and business strategy for measuring "…theoretical (and artificial) constructs…" while at the same time virtually hiding the messiness of everyday reality. In a later article, Ciborra (2000), a similar accusation is put forward, but now it is targeted toward IS researchers idealizing IS methods, and hence ignoring what goes on in the daily swamp of IS projects. Ciborra's (1997 and 2000) conclusion is that it is time to leave the high grounds of IS methods and artificial constructs such as geometrical representations of business variables and instead get our hands dirty in the messy practices of everyday life in the organizational swamp.

Leaving the high grounds clearly requires that research and practice become linked to each other in some way. Fitzgerald (2001) suggests six different strategies for linking research and practice. One of these strategies is frequent exposure of research to practice. He argues that the chances that IS research becomes of relevance to IS practice would grow if researchers spent more time in IS departments, and thus learn first hand about issues and problems pressing practitioners. Although we agree with

Fitzgerald we believe that equally important as exposing IS researchers to practice is to expose IS practitioners to research. If research is ever to have an impact on practice, practitioners first need to know the results of research and, second, apply these results in their daily work.

Before beginning to discuss how we should link research to practice we should also inquiry into the question of relevance to whom. Fitzgerald (2001) argues that when this question is discussed within the IS community the assumption is usually that relevance to practice means relevance to IS practitioners. However, he claims that there are indeed several other stakeholders as well, including students, academics in Information Systems and other disciplines, funding agencies and society at large. Among these stakeholders we would also like to incorporate geographical regions. We strongly believe that IS knowledge can be regionally based and as such become a substantial addition to a region's business life. Castells (1996) also emphasizes the importance of region when discussing models, actors and sites of the information technology revolution, and he presents several examples of successful regions regarding technological innovation, for instance Silicon Valley and Paris-Sud. Although our ambition is at a much more modest level than to create a new Silicon Valley, we believe that Castells (1996, p. 57) claim that innovative milieus require "…spatial concentration of research centers, higher education institutes, advanced technology companies…" is valid in a smaller scale as well.

The purpose of this paper is to elaborate the theme of relevance of research to practice, by introducing regional IS knowledge networks as a means to link research and practice. We will do this by discussing a recent development that both present a geographical region as a potentially relevant 'receiver' of IS research and a context in which a more frequent exposure of research to practice, and practice to research, easily can be imagined.

We call the context in which research and practice is linked, and in which a region is an important receiver of IS research for a *Regional IS Knowledge Network*. The main aim of the network is to develop knowledge and to distribute and exchange knowledge and experiences. In the knowledge network researchers are exposed to practice while at the same time practitioners are exposed to research. This means that the knowledge and experience exchange works in both directions. Researchers communicate research results to practitioners, and practitioners present the knowledge and experiences that they have gained in their work to researchers. Developing knowledge is not perceived as solely the responsibility of researchers, rather knowledge is developed and distilled in collaboration between researchers and practitioners. Consequently, the network becomes both a knowledge producing and a knowledge distributing system.

The remainder of this paper is organized as follows. We begin by presenting the idea of a regional IS knowledge network, emphasizing that it has to incorporate both a knowledge producing and a knowledge distributing system. Then, in section three, we briefly describe some activities initiating the growth of a regional knowledge network, stressing the importance of using parts of already existing social networks to establish the new network. In section four we show that the idea of a regional IS knowledge network is based on both the American pragmatist view of knowledge as closely related to practice, and on its view on how to conduct research. Finally, in the fifth section we conclude that there are five items characterizing a regional IS knowledge network: (1) The creation of knowledge is in focus, (2) There must be a working transfer of knowledge in both directions between researchers and practitioners within the network, (3) Knowledge is distilled in collaboration between researchers and practitioners, (4) Knowledge must be made public, and (5) Knowledge should be turned into action.

The Idea of a Regional IS Knowledge Network

The starting point of Fitzgerald's (2001) discussion of the relevance of research to practice is the rigor versus relevance debate in Information Systems. His main purpose is to discuss the failure of IS research

to engage meaningfully with the IS topic itself, that is, he argues that IS research are not delivering any results that are useful to IS practitioners. Although we strongly agree with Fitzgerald, our purpose is not to investigate whether research results are useful or not, rather our purpose is to discuss how research and practice can be linked. Hence we wish to complement, or enlarge, Fitzgerald's starting point by taking changes in society at large as our point of departure.

Knowledge and learning are two concepts forming a lot of the discussions concerning our present society, as well as present discussions of our future society. Quite a few persons, researchers, politicians, executives, intellectuals and common people, argue that we live in, or are about to enter, a new, more information and knowledge intensive kind of society. Among other names this 'new' society can be called the network society (Castells, 1996), the talk society (Dahlbom, 2001) or the post-industrial society (Kallinikos, 2001). We do not argue that these different labels carry exactly the same meaning, but inquiring into their affinities and differences would lead beyond the scope of this paper. For the sake of clarity, we will adopt the term network society for the rest of the paper. In this new society knowledge intensive areas as they are frequently referred to, such as IT, biotechnology, genetics and media are areas with high status. Such areas attract capital and bright young people and are frequently pointed out as the main vehicles for growth in society. Universities of today's society are politically of the same importance for a region as industries were in yesterday's industrial society. Knowledge workers are the heroes as well as role models of our time. Not only because they make a lot of money, but also because they manifest (and possibly create) the sign of our time. They not only create the network society through their work, they also know how to live a good life in this society, to harvest the benefits of the material wealth and the sophisticated services this society has to offer, in their public as well as their private lives. There are some signs of drawbacks in this life, such as cases of people becoming burned out, but in general knowledge workers, particularly young such, stands out as the ones leading the good life both in terms of a job full of stimulating challenges, and a rich leisure time.

At the same time, and possibly related, the interest among companies to participate in and fund research (and not only regarding product development) is growing. A positive, open and occasionally expectant attitude is beginning to replace the earlier attitude towards research, particularly in the social sciences, as esoteric and with little, or no, practical value. Especially in IS Knowledge Management has been a hot topic the last years, and simplistic slogans such as "life-long learning" are used in many discussions about society. This picture is of course a bit superficial, but it corresponds to the one exposed in Castells (1996), which he arrives at after numerous and in depth analyses of what he calls the network society. In this paper we will discuss a fundamental part of a network society, that is, knowledge networks.

During the spring 1999 two parallel activities were going on in our department, both related to the same geographical region. One activity concerned setting up an action research project together with the largest company in the region; the other regarded establishing some kind of IT education in the region. Two of the persons from the company participating in the research project were also members of the region's council for higher education, and the involved researchers were participating both in the research project and in education design and planning.

Stated in general terms the research project was intended to investigate the problems and possibilities for business development, and ways to handle those, that the large company would have after having implemented the enterprise system SAP R/3. The long-term goals of the project were to contribute to a more innovative IT-use through gained knowledge of IT-use and to develop organizational forms and work routines that systematize the gained knowledge of IT-use, and hence are capable of extracting the positive potential of it. We were also interested in developing methods that capture the practices of IT-use, and therefore are capable of creating knowledge of the relation between IT and business processes. These

goals were to be achieved by an approach where researchers, based on knowledge acquired through studies of IT-use in the company, actively participated in change and development work within it.

We regarded the development of organizational forms that systematized the gained knowledge of IT-use especially important as we argue that this knowledge can be transformed into an ability to sustain and further develop the relation between IT and business processes. This will be necessary for organizations to learn, as changes both within the IT-area and many business areas continue to occur. Having this ability furthermore means that knowledge of IT-use can be used as an important starting point for creating new opportunities to conduct business development. The theoretical starting points of the research project are elaborated in Söderström & Nordström (1999), and some of its results are discussed in Nordström, Söderström & Hanseth (2000).

As it became clear that the research project would get both funding from a governmental research program and support from the company in question the idea arose to design an education at master level founded on the questions and theories underpinning the research project. Such an education then were designed and received funding and actually begun in fall 2000. In the middle of this rather hectic period launching two projects, we started to outline a third, related project – a regional IS knowledge network. We in this case refer to the same small group of researchers and persons from industry working both with the research project and the master education. It consisted of three researchers and three persons from the region all working at the large company but two of them also members of the local council for higher education in the region.

The regional IS knowledge network presupposed the research project and the master education, and emanated from reflections regarding the potential for further development of these projects. The basic idea was to see the two existing projects as assets in a regional perspective. What would that amount to? Within the research project knowledge would be produced (presumably) relevant to real, difficult and contemporary problems that companies, such as the large regional one, are facing. At the same time, within both our research-partner company and other regional companies, there will be practitioners knowledgeable about problems faced by companies and how to deal with them in practice. Together these are very valuable resources in a master education. The education could build upon the latest research results, regarding the issues of the research project, mixed with practitioners describing how they deal with exactly those problems. This seemed like the best possible setting for a high quality education. As a result, provided of course that all involved persons make a good job, the region would be holding a number of highly skilled individuals within certain areas of Information Systems, both students leaving the education and practitioners working in or close to the research project.

Assuming that there are both research and education of high quality this means that, from a regional perspective, there will be both a knowledge producing and a knowledge distributing system in place. If this network could be expanded to also include large parts of, or whole, the regional business life in a larger network, where knowledge and experiences are developed and exchanged, the ground for a regional IS knowledge network has been built. So, the next phase was to begin creating such a network.

Creating a Regional IS Knowledge Network

Within the geographical region in question several more or less loosely connected social networks already were in place, but at the time when we began creating the regional IS knowledge network there was no flow of IS knowledge between the nodes in the network. Through one of the local persons that had been active in the education planning part of our work, we gained access to those networks. His ambitious footwork and enthusiasm allowed us to address and 'use' those networks on several occasions in our work.

First of all we presented the rough idea of a master education located in the region, designed for practitioners wanting to enhance their skill and knowledge within certain areas of the IS field. The presentation was done at a large meeting to which we had invited persons from companies in the region, the municipality and the region's council for higher education. About thirty persons attended the meeting. We started the meeting by introducing ourselves, and after that we presented the research project and the idea of a master education located in the region. During the latter half of the meeting we encouraged the participants to give their view of such an education, both in terms of content and in terms of their willingness to have employees from their company to participate in the education. In general we got a very positive feedback. This meeting turned out to be important also in a sense that we had not thought of beforehand. It made us known to a lot of persons in the region. This may seem like a small achievement, but it turned out to be very important in the continuation of the work.

After the first meeting we started to design and develop the education in detail. It got the name *Information Technology in Business Development and Management*. We decided that a requirement to apply was at least three years working experience. In this way we assured that the students would be practitioners. We also decided that it was crucial that the education was based on the same foundations and body of knowledge as the research project, and that research project participants (both practitioners and researchers) should participate in the education in different ways. This made it possible to use the research results developed in co-operation with the large, regional company as study material. After having designed the education we invited more or less the same persons that participated in the first meeting to a second meeting. During this meeting we 'reported back' what the new master education looked like, and that it would begin in the fall 2000. This was also the start of a recruitment campaign in the region. In both meetings the existing local social networks became parts of our design and promotion of the education. So, we can say that in the beginning of the creation of the regional IS knowledge network we used parts of already existing social networks to form our network. This way of forming social networks corresponds to a large extent to the way described in Castells (1996).

Given that most of the accepted students have more than ten years of working experience and are working in different organizations, from small to large enterprises, the education turned out to provide an excellent means for disseminating research results. That so many of the students are quite experienced has also meant that researchers teaching courses have had lot of opportunities to hear about and discuss the problems facing these practitioners. We strongly believe that this knowledge and experience exchange working in both directions can lead to the development of new research projects in the region. But the exchange are not only working between practitioners and researchers, there has also been a large exchange of knowledge and experiences between students. Taken together, this implies that the master education has become a very important part of the regional IS knowledge network in a very short time.

At this stage of time we started to realize that it was obvious that one research project (involving 3-4 researchers and one, although large, company) and a master education was not enough to get a regional IS knowledge network going. So we invited to a third meeting to have some kind of initial discussion, or 'hearing', upon which future co-operative efforts between practitioners and researchers that could be initiated. We invited the persons already part of the regional IS knowledge network and several other researchers from our department. This meeting also became very successful, and its most concrete outcome, Industrial City 2.0, is briefly described in the section "Industrial City 2.0 – the Network Expands".

Two other examples of activities that has been conduced in the within regional IS knowledge network is planning and conducting both a one day conference and a workshop. The conference was a direct result of the many discussions we have had in the network concerning the future of the region and what role IT should, or could, have in that future. Those discussions encouraged one of the 'members' of the network from the region to initiate, co-produce and arrange a conference called "[The region] meets the future". It

was organized as a part of a larger regional development program funded by the European Union and called Vision 2008. Some members of the network have also been engaged in designing and conducting a public workshop for practitioners not participating in the research project. During this workshop results and conclusions from the research project were presented and discussed. Both researchers and practitioners that had been part of the research project participated in the workshop. These two activities may seem small and unimportant, but we believe that they are of great importance to 'inject' momentum into the regional IS knowledge network. They make the network and the results of the ongoing work visible to a larger group of persons, a group that may not have been involved or even heard of the network before.

Some Practical Experiences

The activities described above are important building blocks in a regional IS knowledge network. What we have done up to now is mainly to use parts of already existing social networks to establish a new network – the regional IS knowledge network. However, it will take a few years until it is strong enough to sustain without its creators maintaining it. It is still very dependent on these persons participating in the different activities going on within the network.

The close co-operation between researchers and practitioners in the knowledge network has had both advantages and disadvantages. The major advantage is that the environment has become very dynamic. Practitioners and researchers do not always have the same way of understanding and approaching problems and empirical phenomena, and this tends to encourage discussions in which these differences in perspectives are contrasted against each other. Our experience is that these discussions have been very rewarding with respect to the new ideas they have generated.

One outstanding experience of a more negative kind is the large amount of work needed to keep an endeavor such as this one together, mainly because of the changes in some participating companies. Although there has been a core of persons in the knowledge network, which has remained largely intact since its beginning, a lot of other things have changed. Among other things, this has meant that due to changes in staff and organization in some companies we have had to spend a lot of time on 're-selling' the idea to both new persons and new organizational units.

Industrial City 2.0 – the Network Expands

As said above the third meeting between researchers and representatives from companies in the region resulted in very concrete outcome, the formation of a consortium including both university departments and companies. The core of the consortium is problems, business potentials and organizational issues concerning information technology embedded in traditional heavy industry products, and the relations embedded IT can help create between producers of these products and their customers. This consortium involves researchers from three universities, four different companies from the region and some high tech companies at the cutting edge of information technology.

Industrial City 2.0 is an R&D consortium with the overall purpose of identifying and creating knowledge concerning technical development and new business opportunities related to IT embedded in traditional industrial products. An important part of the purpose is to find and create appropriate forms for the work of identifying and developing knowledge. As said before, knowledge is not only created at universities, a lot of knowledge is also created in other settings such as, for instance, companies. Therefore the consortium is designed to be a co-operative effort between university and industry. Please note, that there is no Industrial City 1.0. The name Industrial City 2.0 denotes a development of the traditional industry in the region into a more technically advanced IT intensive industry, not version two of the consortium.

Initially the collaboration will mainly take place in two different ways. Firstly, university and industry will co-operate in concrete R&D projects into which both parties bring their existing knowledge and experiences to develop new knowledge. Secondly, exchange of experiences, both old and new ones will be facilitated through workshops and seminars planned and conducted by researchers and practitioners together, a website, etc. The ambition of the consortium is that these ways of collaboration will be further developed and expanded during the work of the consortium. In addition to these two main activities there will also be activities targeted toward actors not participating in Industrial City 2.0. The aim of these activities is to disseminate the knowledge and experiences gained to a larger group of researchers and companies. Typical activities of this kind are seminars, workshops and conferences. Knowledge and experiences will also be distributed in handbooks, reports and guidelines.

It is also an important part of the purpose of Industrial City 2.0 to support and develop knowledge that is useful for the geographical region in question. To accomplish this, the participating companies are from the traditional industry, which has a long tradition in the region and accordingly is very important to it. This, of course, also makes the consortium well grounded in the region's business life. By incorporating these companies the consortium is also assuring itself that, at least, some of the existing knowledge concerning embedded IT is at the cutting edge.

The forming of Industrial City 2.0 is clearly an expansion of the regional IS knowledge network. By designing this effort as a consortium we create a platform that is more stable than normal research projects which seldom get funding for more than three years. A consortium also means that we 'tie' researchers and practitioners tighter to each other. Sharing the responsibility for the survival of the consortium means that researchers and practitioners have to work closer to each other than what is often the case in co-operative research projects in general.

The Theoretical Framework: American Pragmatism

Looking at the idea of a regional IS knowledge network from a theoretical, or perhaps philosophical, perspective it is obvious that it is strongly influenced by American pragmatism. The idea of a regional IS knowledge network is based on the pragmatist view of knowledge as closely related to practice. That is, highlighting the priority of the intersubjective, social and communal dimensions of experience, language and inquiry (Bernstein, 1992). By beginning to create the network we have produced a context in which exactly those dimensions are in focus. Research questions and programs are supposed to be based on problems facing practitioners that are of a scientific value as well, and knowledge production and distribution is viewed as the co-operative effort of researchers and practitioners.

It is also obvious that the regional IS knowledge network is based on the pragmatist idea of how to conduct research. This idea is perhaps most evident in Dewey's theory of inquiry which emanates from a view of man as continuously trying to solve experienced problems through inquiry (Levén, 1997). According to Levén (1997) Dewey argues that research should be the creation of knowledge that helps us to escape from problem situations. This inquiry always takes place within a specific context, which in our case of course is a region.

"The pragmatists always emphasized how concrete inquiry is grounded in a specific existential and cultural context, a specific lifeworld, and at the same time endeavors to transcend the limitations of context." (Bernstein 1992, p. 834)

The theory of inquiry put forward by Dewey is further developed in Argyris et al (1985). They call their theory, or rather research methodology, action science. Action science has mainly influenced the regional IS knowledge network with respect to its strong emphasis on knowledge that is actionable. It is essential to close the loop of knowledge development by turning the knowledge produced in the network into ac-

tion. Hence testing it under the conditions in which it is going to be used. However, it is important to underline that the emphasis on actionable knowledge does not mean that action science reject or regard theory as being of less importance. A main property of action science is that the knowledge tested in practice always should be part of a theory, but at the same time it must be possible for people to use the theory in their practice. It is essential to action science that theory and practice are not separated, and that the utilization of knowledge is not separated from the theoretical work (Levén, 1997). By designing the knowledge network we have created a context in which it is theory and practice are interrelated in the same sense as they are forming a unity in action science. Since this unity is so essential to pragmatism the knowledge network perhaps is best understood as a pragmatist way of conducting IS research. That is, at the very core of both pragmatism and the regional IS knowledge network is the presupposition that research and practice are inseparable entities as they both are knowledge producing activities.

Concluding Discussion: Essential Features of a Regional IS Knowledge Network

In this paper we have elaborated the theme of the relevance of research arguing that a regional IS knowledge network is an excellent opportunity for linking research and practice. We believe that this linking is like the famous coin, there are two sides to it. Equally important as exposing IS researchers to practice is to expose IS practitioners to research. It is just as difficult to learn the 'true nature' of research from reading the executive summary in MIS Quarterly as it is to learn the 'true nature' of practice from a couple of interviews with practitioners. Or, for that matter, some quantitative measures concerning, for instance, the ratio of IT projects that did not meet their time schedule. This is not to say that we are opposed to these activities as such. However, they can only provide small and scattered pieces of a very large puzzle, and it is important that we remind ourselves of this at times. We have also argued that region may be an additional beneficiary of research activities besides practitioners, students and academia. We strongly believe that IS knowledge can be regionally based and as such become a substantial addition to a region's business life.

Based on both our experiences of the regional IS knowledge network and our theoretical framework we argue that these networks have some essential features. However, we do not believe that the discussion below of these features is a description of the ultimate aim of our efforts. To us this simply is the sum of our work this far.

The first and most obvious item in a list describing a regional knowledge network is that the creation of knowledge is in focus. This is what it is all about. It is of importance to recognize that knowledge 'production' within the field of designing, utilizing and managing information systems in organizations is not under unilateral control of researchers. A lot of knowledge is created in companies during their dealings with the problems they face daily. However, it is easy to see the difference in knowledge interest between a researcher's and a practitioner's knowledge production. While practitioners often produce knowledge suitable for solving specific problems in particular settings, researchers ultimately aim to produce knowledge concerning general problems in general settings.

A second item on the list is that there must be a working transfer of knowledge concerning IS matters in both directions between researchers and practitioners within the network. Researchers and practitioners have things to tell each other. Together it is easier to see both that certain practices illustrate or contradict certain theories and that certain theories explain or illuminate or improve certain practices.

Third, in a regional IS knowledge network knowledge is distilled in collaboration between researchers and practitioners. The special skill of the practitioner, to know what works in practice and to solve practical

problems, is combined with the essential skill of researchers, to abstract from particulars in order to find general applicability.

A fourth item, and of absolute necessity to 'turn the wheels' in a regional knowledge network, is that knowledge is made public. General features of working solutions should 'flow in the network', and thus become accessible both in terms of presentations of research results, in seminars or reports, and in terms of individuals with experience of the solution.

As a fifth, and final, item of importance characterizing regional IS knowledge networks, knowledge is turned into action. Whatever results that is distilled through the collaboration between researchers and practitioners in the different nodes of the network they are put to use in practice. This is important to 'close the loop' of knowledge production. To make sure that whatever general features are distilled from a company's working solution really are the ones producing the solution, testing is necessary. If some other company in the network attempts to utilize knowledge produced in the network (and reports back their results) you will get an indication whether the solution is characterized adequately.

It is essential that many companies and organizations are 'open' to research in a regional IS knowledge network. Open in this respect means that organizations are willing to have researchers 'on their premises'. But open is also a characterization of their attitude towards research. In a successful knowledge network organizations are willing to adopt research results, to test them in their own organization and to learn from them. A sustainable regional knowledge network can not be built on the existence of one research project involving one company. This of course also means that research must be open to practice in the sense that researchers are interested in the problems practitioners' encounter, and that researchers are interested in testing their results in practice.

However, it is important to emphasize that the openness discussed above does not imply that practitioners or companies should formulate research questions or research programs. As the ultimate aim of science is to develop theories, the formulation of questions and programs has to be done with theory development in mind. And it seems unlikely that practitioners in general have enough knowledge of science and scientific methods to accomplish this. Whether a problem facing practitioners is interesting from a scientific perspective therefore must be judged by researchers. The same goes for companies and organizations adoption of research results. All research results produced in the regional IS knowledge network will not be interesting to all companies and organizations. Whether a certain result is interesting from a business perspective must be judged by companies in that business. To conclude, the co-operation between researchers and practitioners must be based on problems of mutual interest, and it seems probable that some problems will be interesting to both parties and that some will not.

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Biographies

Mikael Söderström is a Ph.D. student at the Department of Informatics at Umeå University, Sweden. He has participated in several research projects in collaboration with industry. His research focuses the character of IT-use and how it can be cultivated and used in business development.

Torbjörn Nordström is a Ph.D. student at the Department of Informatics at Umeå University, Sweden. In general terms Torbjörn's area of research is the role of IT in change work in organizations. In particular he emphasizes the qualitative aspects of this work.