

# **Social capital enhancement through regional co-operation: A study of a Swedish policy program**

Maria Johansson

SISTER (Swedish Institute for Studies in Research and Education), Stockholm, Sweden  
mariaj@sister.nu

Hans Westlund

Department of Urban Planning and Environment, The Royal Institute of Technology  
Stockholm, Sweden

And

Centre for Innovation Systems, Entrepreneurship and Growth (CISEG),  
Jönköping International Business School, Jönköping, Sweden

hans.westlund@infra.kth.se

## **Abstract**

The environment for research and education is rapidly changing with the entry to the knowledge economy. Collaboration between higher education, government, and industry becomes more essential for knowledge production as does the sustainability of the networks between the collaborative partners. In Sweden a Special Committee was established for a three year period to financially support regional collaboration projects that focused on higher education. This study, based on questionnaires as well as interviews, analyse whether social capital was generated between the collaborative partners in the projects. The results show that horizontal networks were useful to the collaboration projects and that social capital increased between partners through frequent contact and indirect spreading of the project to other areas. However, the social capital was not necessarily new but often developed from already established networks. Some policy conclusions for future collaboration projects are drawn.

**Key words:** regional collaboration, higher education, social capital, policy implementations

## **1. Introduction**

Research focusing on technological development and analysis has traditionally highlighted two significant factors, output in terms of research expenditure, and outputs referring to patents. A new framework for analysing development has progressively developed, which acknowledge the importance for interactions between actors involved in technology developments (OECD 1997). Lundvall (1985) was the early theorist to describe the interactions in terms of innovation systems and emphasised that functioning innovation networks was significant for national success in increasing globalisation and competition. A little later, Freeman (1987) published his work on the Japanese innovation system.

A new theoretical framework of cluster development has aimed to encapsulate changes brought with the knowledge society by focusing on the importance for interaction between key actors. Consequently, an international debate regarding the universities role in research and knowledge transfer into a learning economy have progressed, given rise to theories such as Academic capitalism (Slaughter and Leslie 1997), Mode 2 (Gibbons et al. 1996) and Triple Helix (Etzkowitz and Leydesdorff 2000). Triple Helix relates strongly to the concept of regional innovation systems (RIS), the concept based on innovation as a result of social processes, proximity and learning rather than purely technical and economic factors (Doloreux and Parto 2004). Overall, universities need to become flexible institutions that can meet changing demands, which emphasise the importance of collaborative networks.

The interactive process of innovation forces both firms and researchers to acknowledge the importance of being part of an attractive national and international network (Lundvall 1996). Lundvall (1996) concluded that strategies and alliances are significant success factors for Higher Education Institutions (HEIs). Potts (2002) further suggest that the collaborative form of HEIs' industry interactions can be useful for promoting innovation in regions lagging behind due to downsizing of local industry and emigration, which is recognized within the European Union where great efforts are made to develop successful regional policy for growth (Potts 2002). The increasing emphasis on collaborations and networks causes a focus on social capital theory significant for understanding progress and establishment of networks. Landabaso, Oughton and Morgan (2001) have found that network strategies with good results progress social capital formation between various regional actors. Overall, social capital builds on the source and networks that facilitate collective action and the right composition of social capital results in outcomes such as high social cohesion,

economic achievement, and more social capital (Schuller 2001, Woolcock 1998, Field 2004, and Adam and Roncevic 2005).

In Sweden policy makers have also accepted the importance of networks strategies between HEIs and the industry. As a consequence regional collaboration has been on the policy agenda for over a decennium and does often serve as criteria for growth policy projects. Regional collaboration has also been emphasised in policy efforts such as the Special Committee for Regional Co-operation and Higher Education. Still there is not a large body of research analysing practical regional collaboration projects. Instead collaboration between HEIs and other parts of society appears more as a theoretical mantra in scientific journals (Prigge 2005) and working papers.

This article aims to analyse the practical implementation of the abovementioned theories and policy recommendations. Earlier research has investigated knowledge spillovers, R&D collaborations, and triple-helix initiatives by using social capital theory focusing on the creation of links and common values between and among actors from different organisations (Tamaschke 2003). However, there is no previous research that have analysed regional collaboration through practical projects with the focus on educational programmes within higher education. A similar example of practical projects has been the Norwegian Arena projects ([www.innovasjon Norge.no](http://www.innovasjon Norge.no)) that also aimed to improve innovation through collaboration between higher education, industry and the public sector but no research attempted to analyse their results further. Therefore we have chosen to study the abovementioned Special Committee for Regional Co-operation and Higher education.

The following section of the paper discusses social capital theory related to HEIs and links it to regional policy, the third section describes Swedish higher education policy, the fourth section presents the empirical study; the Special Committee for Regional Co-operation, and what methods have been used in the study, the fifth section focuses on the results from the questionnaires and the interviews and the last section discusses the issues of regional collaboration and whether regional collaboration projects result in new social capital between the collaborative actors and further issues for research.

## **2. Social capital and regional policy in the knowledge society**

A large number of scholars such as Putnam (1995), Bourdieu (1986), Coleman (1990) Woolcock and Narayan (2000) have produced significant work on defining and establishing social capital as a theory and framework. The common definition among these scholars is that social capital consists of social networks norms and values. The theory also functions as an appropriate framework for providing insight to the study of individual and organisational change, although few studies have focused on the area, instead the majority of studies focus on civil society.

Organisational social capital has become increasingly important with the progress of the knowledge economy and its dependence on sustainable networks between different actors (Burt 1992, Walker, Kogut and Shan, 1997). Westlund (2003) extended social capital theory to function as a framework for describing change in HEIs. In a descriptive analysis of HEIs' organisation, social capital is split into internal and external parts to encapsulate HEIs' varied organisational body (which does not account for HEIs exclusively but also for e.g. public sector bodies or companies). The internal social capital consists of relations/links based on the attitudes, norms, and traditions that maintain these. More concretely, HEIs' internal social capitals develop through mutual exchange between ideas and knowledge, with peer-review as a clear example of this type of exchange. Such a kind of strong internal social capital has throughout history established the universities' independence from other societal actors. But the entry into the knowledge society has forced the universities to face a new situation with a pressure to either cut down or become more entrepreneurial (Clark 1998). As a result it becomes more important for HEIs to generate new social capital with the industry as well as the government and other actors in the surrounding society.

The type of collaborations that developed between higher education, industry and government has required the organisations to take on additional activities that differ from their traditional tasks. These changes also relate to the development of social capital within the organisations, which becomes essential for holding the collaborative parts together (Westlund 2004). Table 1 illustrates the progress in activities within the aforementioned organisations. The organisations' traditional activities are marked O, and the activities that are connected to innovation policies are marked with (o).

Table 1: Traditional and new tasks for universities, governments, and firms in the knowledge society

Activity	Type of organisation		
	University	Government	Firm
Education and Research	O	(o)	(o)
Public infrastructure and service	(o)	O	(o)
Product development and production for profit	(o)	(o)	O

Adapted from Westlund (2006:9)

### 3. Swedish higher education policy

When attempting to analyse policy changes, social capital serves as a useful framework since it deals with social infrastructure that enables other policies to be effective (Schuller 2001). Further, social capital requires several years to develop; hence it adds a long term perspective to policy making as a potential counterweight to the short-term perspective of e.g. the three-year Special Committee. To better grasp how social capital is significant for Swedish policy a brief background description of Swedish higher education policy is necessary.

During the 1980s Swedish higher education policies had three main areas of concern: the geographical coverage of HEI, the distribution of resources for research, and the evaluation of the content in different educational programs (Fritzell 1998). The political interest in higher education increased in the late 1980s and early 1990s (Wikhall 2001) and the development of the regional colleges was viewed as a response to surrounding regional and political forces (Sandström 2003). In the 1980s a strong political belief was placed on the ability of the regional colleges to function as engines for research and development, which resulted, in the 1990s, in different Swedish governments consciously supporting the development of regional colleges to get more out of the national university system.

In 1996, the Swedish government decided to set aside 150 millions SEK (as at [2008-01-08] 100 SEK was worth approximately 15.6 US\$) annually to support research and development in regional colleges. In 1997 it was decided that regional colleges were to

receive their own block grant (HSV 1998). Comprehensive education actions were also taken to increase the population's educational level and even out regional differences in educational level. The successful establishments of Umeå University and Linköping University inspired many regional policy makers to view research and education as means for boosting regional growth (Olsson & Wiberg 2004). An emphasis on co-operation between the industry and HEIs follows the reasoning and the focus on collaborations became manifested in the higher education law from 1996 (law 1996:1392) stating that all HEIs should co-operate with the surrounding society.

Despite the law enforcement, no earmarked funding had been given to the HEIs for establishing co-operation activities. Additionally, regional actors advocated a political effort on the education side, entirely separate from block grants. Raising the population's educational level and balancing the educational level between the regions were regarded important parts of the regional developmental politics also at a national level. It was in the governmental bill that the regional policy concentration on a Special Committee for Regional Co-operation and Education was launched (proposition 2001/02:4).

#### **4. Case in point - The Special Committee for Regional Co-operation and Higher Education**

A decision to establish a three year working Special Committee was taken on the 10th of January 2002 (SFS 2002:8. Östros). The Special Committee interpreted their mission and established an organisation to initiate projects. The projects were obligated to include "municipalities, county councils, county administration boards or similar organs" to receive the Special Committee's financial support. Private industry was not included as an essential co-operation partner in the first round and was not invited to send applications until the third round of project selection (for project finance), even though one of the purposes with establishing a Special Committee was to "create sustainable regional growth".

The Special Committee had 50 SEK million per year at its disposal and financed 70 co-operation projects. The projects were financed from the committee to a cost of 132 SEK Millions. Co-financing was according to the applications 158 SEK millions. The projects generally worked with establishing co-operation structures and creating new educational programs with the long term goal of enhancing regional co-operation.

### *Implicit goals*

The bill first emphasised that the Special Committee should improve regional human capital in terms of an increase in recruitment to higher education. Second, the bill aimed to create sustainable regional growth. The Special Committee's evaluation team (Deaico, Johansson, and Westlund 2005) further specified the goals and interpreted the aims without receiving any criticism from neither the members of the committee nor the board:

1. Through experimental measures increase selected parts of the human capital level and match it to the needs of the local labour market and through this strengthen the potential for growth in the places and regions in question.
2. To contribute to the establishment of new social capital for the local as well as regional development through connecting, higher education, labour policies and industrial policies and with this create examples of joined forces for local and regional development.

The Special Committee's projects can serve as an example of a governmental initiative promoting collaboration between different types of organisations without further consideration given to different organisational types and cultures, which inevitably results in different possibilities for establishing new social capital. The Special Committee prioritised new established contacts that were to co-operate in a project during a fairly short term period of three years. The intention behind this reasoning was that the funding would serve as a starting grant; the importance being that the co-operation would be established so that the projects could continue after the funded project period. This assumed that the co-operation partners established successful strategies for their project work, which could be a complicated process.

The establishment of new social capital in terms of joint co-operation forces through connecting higher education, labour policies and industrial policies, is an area not well researched. In general there are few studies focusing on social capital in higher education and today's development of regional co-operation. Social capital theory is used as a framework for analysing the network development between the different regional actors. The foundation of the theories -- network building, establishing of common norms and values, and trust enhancement -- are important ingredients for regional co-operation.

### *Working strategy*

To thoroughly analyse the practical results of the co-operation fusion between regional actors such as HEIs and the industry, the analysis has been limited to the Special Committee's second goal as defined in the evaluation. In order to study the goal, the term establishing "new" social capital has been interpreted as establishing new channels for contact between regional co-operation partners. This is analysed with regards to how the co-operating partners experienced the project work and how much interest and time the different organisations have put into the project work, the extent of the dependence on the project leader, and whether the work has been established a continuing process. More specifically: Did the projects result in an increase in social capital between the participating regional actors? Was the social capital new? Did the regional actors strengthen already existing social capital? Did the projects produce continuing co-operation structures?

### **Method**

A twofold method has been used, quantitative questionnaire data and interviews. The questionnaires have been used as a quantitative method followed by semi-structured interviews performed on 18 selected projects with representatives from industry, local or regional government and the project leader. Information gained from the questionnaires served as a base for developing interview questions focusing on the role division between the co-operation partners and the enhancement of the networks. The questions were open-ended inviting the subject to expand on the topic and their experience. The questionnaires were sent out to all project leaders on three separate occasions.

The questionnaires served as the empirical base from which the interview questions were developed. The interview provided more comprehensive analyses of the co-operation issues. Projects selected for interviews belonged to different funding sizes, and were geographically evenly spread over Sweden. The projects also belonged to different sectors, which were previously developed by the Special committee and were also used as guidelines when choosing projects for further analyses in the evaluation.

## **5. Results**

In the data we found that there were three major areas of significance that recurred throughout the study as significant for the research questions, the difference between types of project leaders, the form and content of the regional co-operation, and the continuation of the collaborations. The results follow these three sections.

### **Project leader**

The questionnaire data illustrate that a small group of a few selected people within the projects served as the driving forces behind their project application, and approximately 10 percent of the projects were the result of one single person's initiative that functioned as the project leader. The project leader has been regarded as the project's natural key person and the centre of the project work in the majority of the cases. It is often through him or her, that ideas and norms are spread. The data emphasise how important the project leader is in the initial project phase being the central person in the network and the main builder/maintainer of bonding and bridging social capital.

The questionnaires reveal different types of leadership. Three different methods for appointing project leaders are distinguished in the material and further elaborated in the interview material, the self-appointed project leader, the externally recruited project leader and the changing of project leader between the collaborative partners. Most project leaders have been self-appointed and involved in the project from start to finish and continuously remained as key persons through the project development. The project leader has often been engaged in application writing and regarded the project leadership as a natural continuation of this process, which the following quote exemplifies;

“I am as I said father to the project and been having a lot of support from the principal of the University College”

Differing from projects depending on one key person there have been some cases when the key people behind the projects' initiation agreed on appointing an external project leader to avoid the work from being too dependent on one person. One project team externally recruited their leader and used her as a neutral part or as a mediator between the co-operative partners. This resulted in a well managed network and an easier method for tackling

cultural differences, often occurring between organisations like municipalities, companies and HEI, further described in the quote below.

“A good project leader that early on acknowledged the communication problems between people from higher education and the people from the companies.”

“The companies had another perspective, we wanted more goal oriented work and results while the higher education wanted a long sighted vision. But the project leader saw through this and tackled the issue”

“Another type of leaderships occurred in two projects, allowing the leadership to rotate between the co-operation partners. According to the interviews this enhanced the co-operation climate and the personal dynamics of the project since the responsibility was shared between more partners.”

The questionnaires and interviews conclusively demonstrate that the project leader is a key actor when building and establishing social capital, hence the networks are, especially in the initial phase, vulnerable since they are depending on one single actor. The internal social capital of the co-operating organisation plays an essential role for developing their external social capital. It is also important for partners within the organisations to fully acknowledge the co-operation work that occurs even though not being fully involved themselves in order to avoid a too large focus on the project leader. Still, the dynamic aspect of the horizontal networks is not fully used since most actors are dependent on the project leader leading to vertical bonds. One consequence of such dependence is that the collaborations become more vulnerable and the region in need of new regional innovation efforts might be unable to take full advantage of this type of programs for smaller regional co-operations and the dynamic that is created from such. Co-operation between the project organisations has showed to be essential for the long term collaboration survival. This emphasises that the project must be established on an organisational level and should spread to other project networks during the project continuation to avoid being dependent on one person.

### **Regional co-operation**

The questionnaires reveal that the projects have, overall, established a new co-operative climate with faster contact channels and efficient methods for handling conflicts.

New networks and links between the different actors have been created. The questionnaires demonstrate that most projects are based on ideas developed in previous projects between the participating organisations or informal discussion groups. This results in a shorter introductory session since the partners were able to build on earlier work or earned knowledge about the participating organisation and on previously established social capital. About 50 percent of the projects showed a high frequency of meetings: 12 or more during a year of project work. Partners from industry and public labour market agencies differ in attendance having less attendance level than the partners from HEI. However, the project partners experienced that improved co-operation and interest developed during the occasions.

The project partners also experienced extensive commitment--approximately 80 percent of the project leaders experienced great or very great commitment from their project partners. The improved dialogue between the partners was mentioned as one of the most positive gains from the project work. To a certain extent the improved dialogue overcame the cultural differences between industry and academy, which often was a difficulty in the initial phase of the project. It was expressed that the work had resulted in more trust between the partners. The project partners have established open-mindedness in acknowledging experience and knowledge among each other. Groups within the industry and HEI not participating in the projects also held positive attitudes for the co-operation projects and the project leaders, as well as a great interest for their work, which demonstrates that the work had potential for spreading into new areas if only informally.

The interview material further clarifies critical issues that occurred during the co-operation between the partners. As expected difficulties between different organisational cultures were common but often overcome during the work progress. When the project had established organisational structures between the partners, the building of social capital between the partners could develop independent of a project leader or other key people that played a significant part in the project work. The quotes below emphasise the different issues of concern affecting the practical implication of co-operation;

“No established structure came out of the project; it only consisted of driving forces. Maybe the project would have worked if the project leader had been more structured and established networks on an institutional level but that was not done”

”The project was very depending on the project leader. The representatives from the big organisations worked by themselves and their internal co-operation was poor with vertical and horizontal pipelines! One can co-operate with different people from an organisation without them being aware of each other”

The latter quote emphasises the problems occurring when co-operation between organisations is delegated to a selected few running it as a “sideshow”, not connected to the main part of the organisation. This appears to have occurred often when organisational co-operation is initiated from an external part outside the organisations and not in collaboration between the different partners. A similarly negative effect on the development of social capital occurred in some cases when the co-operation was a result of a single individual’s initiative. At this point, co-operation may be integrated within the organisation or remain on the side for a few individuals to participate in. In many cases the individual is satisfied with creating a platform for her/his own co-operation, which results in co-operation becoming a private “sideshow”. This phenomenon could also be detected in some projects that were initiated by one person that became the project leader, which differs from projects that have recruited an external project leader. Projects that lack a concrete program to evolve the work around could suffer devastating consequences for the projects’ chances for long term continuation.

As discussed previously it is also a challenge to develop new social capital between actors that, within their organisations, develop autonomous forms of social capital to last in their environment since the organisations have different tasks. However, regional colleges have expressively aimed to co-operate with their surrounding environment, which differs from traditional universities that throughout history have focused on research and education for a smaller part of the population. One important task for the regional colleges is to co-operate with regional industry and serve as a generator for the regional growth. Furthermore, regional industry is often connected to larger companies that also have their own research sector. The co-operation projects are results of a minor governmental effort to make different organisations in the regions to overcome their cultural barriers and collaborate for mutual development.

### **Continuation of collaborations**

An important factor for the ability of the project to continue after the funded project period is that the social capital had been established during the active project period.

In the questionnaires the majority of the projects resulted in new networks or the ambition to establish new networks and the majority of project leaders consider establishment of an education or room for the project within the permanent organisation as a continuation of the partnership work. Approximately 20 percent claim to have established networks independent of the project leader, which is a very important factor for the durability of the networks and the possibility for different networks to connect. 96 percent of the project representatives state in the questionnaires that the work will turn into a permanent organisation; however it was only 66 percent that could demonstrate financial support for this.

Marketing the project to external groups is one method that can increase the longitudinal and permanent potential of the project. The likelihood for this naturally varies between the marketing ambition and whether the project has produced something concrete to market, like an education. In some cases the project work has been established within long term larger projects or other co-operational networks between educational institutions. The majority of the projects expanded into paths outside the original project idea. The networks progressed as an indirect effect of the project work when using new contacts as new channels for information and work. The project continues but not necessarily in its original form and the networks often result in further ideas and spin-off projects. Usually new project applications have been produced or spontaneous projects aroused as a new established form of networks.

## **6. Discussion**

The purpose of the new type of regional policy programs is to stimulate a continuous improvement of learning and contact between regional industry, government, and HEIs. Such a type of learning assumes that social capital can be created and developed to a regional developmental resource. It also presupposes that social capital can be stimulated through certain types of planned governance in different forms of networks and partnerships and indirect steering when the system spontaneously becomes self organised. But beneath the use of terms such as partnerships and networking lies complex theories of innovation systems, social capital and governance. Our knowledge of the interrelation and function of these terms is still rather limited. Just a few years ago such theoretical terms were unknown to local politicians as well as to the industry and government but today they have become a part of the common language within institutions mentioned above. With this background, the Special

Committee's projects served as a new concrete example on how to relate the different theories and ideas to clarify future regional collaborations.

### **A common platform appears necessary for successful collaborations**

Experimental regional projects of the type that the Special committee financed proved to establish new social capital to a certain extent. This was achieved through long term secured educational program activities and new educations and infrastructure for educations. The educational programs functioned as a common platform between the partners and made the social capital more sustainable, which also can be interpreted as an ambition to institutionalise the social capital. As described in table 1, the organisations have different types of missions and social capital and accordingly in order for the collaboration to function the common platform must be built on the common denominators of the participating organisations to neutralise the cultural differences.

### **Significance of new social capital**

Experimental policy actions that aim to improve regional networks, such as the Special Committee, serve as governance through collaborative action. Schuller (2001) argues that social capital functions as a complement to instruments of policy analysis and deals with the social infrastructure that enables other policies to be effective. A successful establishment of social capital between regional actors can therefore function as a potential counterweight to the short-term vision used by national policy makers like in the Special Committee that was established for a short term period but with a long term goal.

The Special Committee's long term goal was to create new sustainable social capital, and its establishment is essential in order to view such a policy experiment as a successful example of improving regional innovation networks. In order to fulfil the Committee's goal the projects need to have generated new social capital between the project actors making sure that more than the key person was involved in the project work. The data supports that this have been the case due to the quality and high frequency of contacts between the project representatives, the indirect and direct spreading of the project work and the level of establishment for continuation of the project. Overall, the majority of the projects have both had frequent meetings, acknowledged each others experiences and created new networks as well as established the co-operation project within a permanent organisation. The

majority of projects developed around a concrete program, which decreased the risk for person dependency.

On the contrary, the study also illustrated tendencies that certain collaboration projects transformed into a protected area for separate individuals to develop “their” project without any horizontal contact within the organisation and with few contact persons within the co-operating organisations. In these projects, the representatives were unaware of having other project participants within the same organisation, which also reveals a lack of horizontal internal networks. To enhance the horizontal networks and create a more efficient work environment the collaborative projects focusing on external social capital must look inside their own organisation to avoid that the collaboration becomes a sideshow for a few. The majority of the projects have been heavily dependent on the project leader, which is another factor for creating vulnerable networks between and within organisations, and that diminishes chances for establishing new sustainable social capital.

Another questionable factor when the collaborative partners attempted to establish new social capital was that a large part of the projects built on already existing contacts or served as a continuation of former projects but with a different financier. In this perspective, governmentally financed innovative programs may not always be as inventive and new as first believed. The problematic issue is then that the large number of projects that have appeared to establish new social capital between local and regional actors is a bit misleading. In some projects there are undoubtedly a change in the co-operation partners’ attitude towards each other and established long lasting relations affecting several regional actors, but in several projects no new social capital has been established. The difference between the two types is difficult to detect since new contacts can be established within already existing project structures but it may also be that new projects appear to be new but in fact are reorganisations of previous project structures. This may in fact cause new social capital to establish since the used paths within the networks are dynamic and can create new patterns.

### **Horizontal networks are significant**

Development of new external social capital is also harmed by the participating organisations’ lack of internal social capital. If the work is not well intertwined within the organisation it will establish fewer external connections and become more person-dependent

than problem-related. The Special Committee's projects have mostly aimed at developing external social capital around a specific problem or task, which illustrated that a certain level of co-operation can increase social capital between regional actors despite the different cultures of the organisations. But to enhance the external networks between the actors, the functions need to overlap within the organisations as well as between the collaborative actors. This issue is often referred to as the "pipeline problem". The pipeline policies complicate for new regional collaboration policies and contradict the intention of building networks which requires a new type of reasoning around regional policies that acknowledge the importance for practical establishment of developing networks since it is a necessity for new innovation policies moving away from purely vertical contact channels.

### **Further issues of interest**

As put forward by Walker et al. (1997) social capital has a power to enhance network building, being increasingly important for both the industry and HEI. Further research should focus on how co-operative organisations could enhance their internal social capital to be more efficient when establishing new social capital and avoid the problems experienced when networks are vertical rather than horizontal. Collaboration with educational programs should also be analysed from the perspective of the industry where little knowledge about the phenomenon exists. What a kind of problem does the industry experience when attempting to involve in educational programs and what type of qualifications and collaborative structure are of most value to the industry?

## References

- Adam, F., & Roncevic, B. (2003). Social Capital: Recent Debates and Research Trends. *Social Science Information*, 42(2), 155-183.
- Bourdieu, P. (1986). The forms of capital (R. Nice, Trans.). In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York: Greenwood Press.
- Burt, R.S. (1992). *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University Press.
- Clark, B. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Pergamon, Oxford, Issues in Higher Education.
- Coleman, J.S. (1988). Social capital in the Creation of Human Capital. *The American Journal of Sociology*, Vol. 94 (Supplement), 95-120.
- Coleman, J. (1990). *Foundations of Social Theory*. Cambridge, Harvard University Press.
- Deiaco, E. Johansson, M & Westlund, H (2005). Ju mer vi är tillsammans: Utvärdering av Delegationen för regional samverkan om högre utbildning. *Sister working papers*: 2005:40.
- Doloreux, D. & Parto, S. (2004). Regional Innovation Systems: A Critical Review. *INTECH (Institute for New Technologies). Discussion Paper Series*. Maastricht, The Netherlands, United Nations University.
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research Policy*, vol 29(2), 109-123.
- Field, J. (2004). *Social Capital*. London: Routledge.
- Freeman C (1987) *Technology and Economic Performance: Lessons from Japan*. Pinter Publishers, London.
- Fritzell, A. (1998). Hur styrs den svenska högskolan? *Högskoleverkets skriftserie 1998: 4 S, Stockholm: National Agency for Higher Education*.
- Gibbons, M, Limoges, C, Nowotny, H, Schwarzman, S, Scott, P & Trow, M (1994). *The New Production of Knowledge. The Dynamics of Science and Research in Contemporary Society*. London: Sage Publications.
- Högskoleverkets Årsrapport (the Annual Report from the Swedish National Agency of Higher Education). (1998). Stockholm, Sweden. Retrieved Oct, 2003, from <http://www.hsv.se/download/18.539a949110f3d5914ec800087940/9911R.pdf>
- Landabaso, M., Oughton, C., & Morgan, K. (2001). Learning Regions in Europe: Theory, Policy 33 and Practice Through the RIS Experience. In: Koschatzky, K., Kulicke, M. &

Zenker, A. (eds.). Innovation Networks. Concepts and Challenges in the European Perspective. *Technology, Innovation, and Policy Series*, vol 12. Heidelberg: Physica, 243-273.

Lundvall, B-Å. (1985). Product innovation and user-producer interaction, industrial development. *Research Series 31*, Aalborg: Aalborg University Press.

Lundvall B-Å. (1996). The University in the Learning Economy. *Danish Research Unit for Industrial Dynamics: Working Paper No 02-06*, ISBN 87-7873-122-4.

OECD (1997). National Innovation Systems. Paris:OECD Publications. Retrieved 17<sup>th</sup> of December 2005, from: <http://www.oecd.org/dataoecd/35/56/2101733.pdf>

Olsson B & Wiberg U. (2003). *Universitetet och den regionala utmaningen*. SISTER Skrifter 7. Nora: Nya Doxa.

Potts, G. (2002). Regional policy and the 'regionalization' of university-industry links: a view from the English regions. *European Planning Studies*, Vol. 10, No 8.

Prigge, G.W. (2005). University–industry partnerships: what do they mean to universities? A review of the literature”. *Industry and Higher Education*, vol 19(3), 221-229.

Putnam, R. (1995). Bowling alone: Americas Declining Social Capital. *Journal of Democracy*, 65-78.

Sandström, (2003). Forskningsfinansiering genom regional samverkan. Studier i de nya universitetens och högskolornas ekonomi. *Sister Working Papers 2003:22*. Retrieved 24<sup>th</sup> of March 2004, from <http://www.sister.nu/pdf/Wp%2022.pdf>

Schuller, T. (2001). The Complementary Roles of Human and Social Capital, in The Contribution of Human and Social Capital to Sustained Economic Growth and Well-Being. *International Symposium Report edited by the OECD and HRDC*. Retrieved 23<sup>rd</sup> of November 2006, from <http://www.oecd.org/dataoecd/5/48/1825424.pdf>

Slaughter, S., & Leslie L. (1997). *Academic capitalism: Politics, policies and the entrepreneurial university*. Baltimore: Johns Hopkins University Press.

Tamaschke, L. (2003). The role of social capital in regional technological innovation: seeing both the wood and the trees. In: M. Huysman., E. Wegner.,V. Wulf(Eds) *Communities and technologies*. Deventer:Kluwer

Walker, G., Kogut, S., & Shan, W. (1997). *Social Capital, Structural Holes and the Formation of an Industry Network*. *Organization Science*, vol 8(2), 109-125.

Westlund, H. (2003). *Implications of Social Capital for Business in the Knowledge Economy: Theoretical Considerations*. Conference paper: International Forum on Economic Implications of Social Capital, Economic and Social Research Institute, Cabinet Office, Tokyo, Japan 24-25<sup>th</sup> March 2003.

Westlund, H. (2004). Regionala effekter av högre utbildning, högskolor och universitet: En kunskapsöversikt. *Sister working papers* 2003:28. Retrieved 5<sup>th</sup> of October 2005, from <http://www.sister.nu/pdf/WP%2028%20WESTLUND.pdf>

Westlund, H. (2006). The Social Capital of Regional Dynamics: A Policy Perspective. CIRJE Discussion Paper. [Online] Available at: <http://www.e.u-tokoyo.ac.jp/cirje/research/03research02dp.html>

Wikhall, M (2001). *Universiteten och kompetenslandskapen*. SISTER Skrifter 3, Nora: Nya Doxa.

Woolcock, M., & Narayan, D. (2000). Social Capital: Implications for Development Theory. *The World Bank Research Observer*, 15, 225-251.

Woolcock, M. (1998). Social capital and economic development: toward a theoretical synthesis and policy framework. *Theory and Society* 27,(2), 151-208.