Social Capital in Building Regional Innovative Capability: A Theoretical and Conceptual Assessment

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Abstract:

Innovative capability is widely seen to be the driving force in building regional competitive advantage. The present paradigm emphasises the interactive nature of the innovative processes, which places demands on building a regional innovation environment. Innovation is seen to be as much a social as a technical process. From a regional point of view, innovation is understood as a locally embedded process that takes place within the regional innovation system. The regional innovation system consists of different innovation networks aiming at increasing the innovative capability of the system. In this article, the different conceptual frameworks of regional innovation systems are examined. They emphasise the role of learning and social milieu in the creation of regional innovation capability. These frameworks also reveal the dual nature of regional innovation capability: it combines the innovativeness and creativity on the one hand, and social cohesion on the other.

One of the most promising concepts for specifying this social nature of innovation processes is social capital. However, the concept has been used in very different, sometimes even contradictory meanings. Furthermore, its specific role in regional innovation processes is far from clear. In the article, the concept of social capital, its use and its potential in the research of regional innovation systems are analysed. Certain conceptual problems are examined. It is argued that the definition of social capital must be separated from its individual forms. Social capital is defined functionally as a field-specific social resource of an actor.

Social capital is seen as a necessary element of the innovation capability of the network. Its role is emphasised in so-called multifunctional networks. The relation between social capital and innovation capability is not, however, without its problems. It has been claimed that places with strong social capital are in fact the worst places for innovation and creative processes. In the article, it is argued that while the idea of the complementarity of the concepts of social capital and innovative milieu is important, strong social capital in a network does not, in itself, lead to the loss of its innovativeness. The possible weakness of the innovative capability of the regional network is a consequence of the contingent 'distortions' of the utilisation of social capital, not of the quantity of social capital as such.

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1 Introduction

Innovative capability is widely seen to be the driving force in building regional competitive advantage. The present paradigm emphasises the non-linear and interactive nature of the innovative processes, which places demands on building regional innovation environment. There are certain theoretical frameworks and concepts that are considered to help in analysing the creation of regional innovative capability in the present networked development environment: social capital, regional innovation system, innovative milieu, learning economy, network leadership, creative tension, etc. These concepts are partly overlapping, but each of them contributes in a different manner to regional development strategies.

Regional innovative capability is understood as the firms and other organisations' common innovative capability in a region. Therefore, it is formed from the innovative capability of individual actors and innovation networks taking part in the regional innovation system. This combined innovative capability is, at its best, much more than the sum of the individual parts of the system, mainly because of the achieved externalities in the networks. The network skills of the actors and mutual trust among the actors are often emphasised as assets for regional innovative capability, especially because of the often complex nature of multi-actor, interactive innovative processes.

The concept of social capital is gaining importance in regional research. The concept has no commonly accepted definition, but usually it is understood as a specific form of capital that is derived from social relations, norms, values and interaction within a community. There are, however, different interpretations on how it should be specified and applied.

It is widely accepted that social capital plays an important role in creating regional innovative capability. However, it is still far from clear what this role exactly is, and its relation to other relevant concepts has not been deeply examined. The current article is an attempt to clarify the conceptual framework related to the concept of social capital in the context of regional development. Another focus of the article is on assessing the special contribution of social capital (in comparison with the other related concepts) in increasing regional innovative capability.

Therefore, the main objectives of the article are:

- to analyse the concept of social capital and its relation to other relevant concepts in the context of regional development, and
- to explain the role of social capital in building regional innovative capability.

In this article, we state some preliminary notes concerning these tasks. They will, in turn, raise certain important questions for further research.

We will argue that social capital is best understood as a formation of resources embedded in the social relations of the network. These resources can have their origin in the structural constitution of the network, trust-based relations between actors, or cognitive and emotional commitments to common goals or beliefs. This conception leads us to understand that social capital may play various different roles in the creation of regional innovative capability. It has also important consequences for the understanding of the risks and dysfunctions of social capital.

2 Regional Innovative Capability

In the present techno-economic paradigm, innovation is widely seen as a driving force of competitiveness. As Archibugi and Michie (1995, 1) put it, "the production and use of knowledge is at the core of value-added activities, and innovation is at the core of firms and nations' strategies for growth". The concept of innovation, however, has been understood in numerous ways during the last century. In the early stages of industrialisation, innovations were seen mostly as great leaps of knowledge achieved by talented individuals or research groups. With regard to this, Schumpeter (1942) created his theory of the heroic entrepreneur being the driving force of successful innovation. Innovations were largely seen to be linear processes. This has given a name to the concept of "linear model of innovation".

The traditional linear model of innovation focuses on explicit knowledge developed in research processes. Each level in the linear model produces outputs that are transferred to the next level as inputs. The flow of knowledge is unidirectional, that is, later outputs do not provide inputs for earlier stages (Kline and Rosenberg 1986). The linear model of innovation is often connected with radical innovation processes. These processes are mainly caused by science push or market pull effects. Linear innovation processes are, in reality, exceptions. In contemporary discussion, the traditional approach is seen as too research-based, sequential and technocratic. Many others have criticised the linear model due to its incompatibility with the present techno-economic paradigm (cf. Kline and Rosenberg 1986; Lundvall 1988; Dosi 1988; Asheim 1999). Schienstock and Hämäläinen (2002, 50) have listed the main reasons for criticism as follows:

- innovation processes are seen as exceptional events;
- knowledge creation is understood as a process of reasoning and inference isolated from the rest of human activities;
- problems of uncertainty are not dealt with;
- research focuses only on R&D as the main function in innovation processes;
- collaborative elements are not seen as relevant.

Nowadays, innovation is seen to be as much a social as a technical process. Innovations are seen to emerge as non-linear processes deeply embedded in normal social and economic activities, and as processes of interactive learning between firms and their environment (Lundvall 1992; Asheim 1999). The interactive and non-linear innovation model emphasise "the plurality of the types of production system and innovation (science and engineering is only relevant to some sectors), 'small' processes of economic co-ordination, informal practices as well as formal institutions, and incremental as well as large-scale innovation and adjustment" (Storper and Scott 1995, 519).

In non-linear innovation processes, multi-directional information flows are emphasised in creating and combining knowledge. Non-linear innovation is a consequence of many kinds of learning processes embedded in ordinary economic activities. Many different kinds of actors are involved in innovation processes. The non-linear model assumes that innovations can be triggered by various causes. Instead of understanding innovation as a linear process, we must take into account complicated feedback mechanisms and interactive relationships involving science, technology, learning, production, and demand (Edquist 1997, 1). The non-linear model of innovation also emphasises the incremental nature of innovation processes. Incremental innovations take place in long-term processes, combining different, often rather small-scale, solutions to the relevant problems. These innovations are not easily noticeable. Radical innovations, which are based on advancements in science and technology, are important but only one form of innovative activity.

Evolutionary economics emphasise the uncertain and cumulative nature of innovations (Dosi 1988). Uncertainty is included in innovations because of the manifold risks that are involved in the innovation processes. The uncertainty is especially embedded in the unresolved technological problems and in the impossibility of knowing the future consequences of the decisions made and of the choices. Innovations seldom happen randomly and individually. They follow rather certain technological paths making them cumulative in nature. Thus, innovations are strongly path dependent and they include high risk factors making it important to promote learning processes and diminish unnecessary uncertainty in the innovation environment.

Characterising innovation as a social, non-linear and interactive learning process raises the question of the role of socio-cultural structures in innovation processes (North 1986 and 1990; Asheim 1999). The socio-institutional environment where innovations emerge plays an essential role in successful innovation processes. From a regional point of view, innovation is often understood as a locally embedded process that takes place within the regional innovation system.

A regional innovation system consists of innovation networks (Cooke and Wills 1999) aiming at increasing the innovative capability of the system. These networks have different forms defined by, for example, origin, size, structure and objective of the networks (Harmaakorpi *et al*., 2003). However, most regional innovation networks fulfil certain typical characteristics. They are often formed of heterogeneous groups of actors including representatives of firms, universities, technology centres and development organisations. In comparison with innovation networks within or between individual companies, regional innovation networks are looser structures. The values, goals and ways of acting of the actors in a regional network may differ significantly. This emphasises the role of creating a suitable social and cultural environment for achieving common goals and co-ordination of action.

Following Teece and Pisano (1998), we define ‘innovative capability’ as an actor’s (organisation’s, network’s etc.) ability to sense the changes in the environment and exploit existing resources and competencies in order to create competitive advantage by innovation activities. Consequently, the term 'regional innovative capability' refers to the ability of the regional innovation networks to

- perceive and process the changes in the operational environment
- treat the available resources based on new information
- acquire totally new resources
- combine these resources with the competencies aiming at increasing competitiveness
- transmit and process information and knowledge in large networks. (Kautonen and Sotarauta 1999.)

The development of regional innovative capability is linked to the following dimensions of the innovation process:

- the gradual and cumulative character of the innovation process – developing in a gradual way and proceeding along trajectories or development paths – which is based on a continuous learning process by entrepreneurs, technical experts and workers engaged in the innovation network;
- the integration of different and numerous technological and organisational knowledge inputs, derived from other sectors and regions, which allow know-how to be renewed and new problems to be solved. External knowledge should be combined with the knowledge

and technologies available internally, since the frontier of technology is increasingly at the crossroads of two or more disciplines and traditional cultures; and

- the interactive character of the learning process, which involves groups of individuals, both within individual firms, as well as outside (social networks), and requires the development of linkages, networks and co-operation between different actors, again outside the channels of existing institutional structures. (Cappelin and Steiner 2002, 9, citing Kline and Rosenberg 1986 and Lundvall 1992.)

3 Conceptual Frameworks of Regional Innovative Capability

The recent discussions about developing regional competitiveness and innovation capability have dealt a great deal with regional innovation systems (see Cooke *et al*. 1997, Doloreux 2002). Admittedly, the influence of national (eg. Lundvall 1992) and sectoral (eg. Breschi and Malerba 1997) innovation systems is notably important in developing the regional innovation environment, as well. However, the concept of regional innovation system provides in this case a good framework for assessing technology and innovation policies in the new regional environment. At least three different schools have contributed a great deal to the framework: the Marshallian school of industrial districts, the school of new industrial spaces taking as their starting point the framework of transaction costs, and the mainly European GREMI school emphasising the importance of the concept of innovative milieu.

The approaches mentioned have some differences, but many characteristics are similar. Edqvist (1997) defines nine features that can be found in all the approaches:

- innovations and learning are at the centre
- assessments are holistic and interdisciplinary
- an historical perspective is natural in them
- differences between systems and non-optimality are present
- emphasis is on interdependence and non-linearity
- approaches encompass product technology and organisational innovations
- institutions are central
- approaches are conceptually diffuse
- approaches are conceptual frameworks rather than formal theories.

The common features presented by Edqvist give a good overall picture of the theories of regional environment where competitive advantage is created under the present techno-socio-economic paradigm. Much emphasis is placed on the role of institutions, interactivity and non-linearity of the development processes, collective learning and the different characteristics of innovation processes.

The theory of industrial districts (see Marshall 1916, Piore and Sabel 1984, Beccatini 1990, Pyke and Sengenberger 1992, etc.) has its basis in Adam Smith's (1776) recognition of the benefits of specialisation. Marshall considered the concept of industrial atmosphere describing the characteristics of spatial industrial agglomerations. He found regions where this atmosphere was very beneficial for certain industries. An important observation was that the atmosphere had been developed over a long period and could not be moved. Marshall also saw that the interaction in an industrial district was not just buying and selling. He called the interaction constructive co-operation, describing the multifaceted characteristics of the communication process. In the theory of industrial districts, the co-operation of small and medium-sized enterprises and the transparency of

the regional actors are emphasised, as well as building a real service network for the enterprises. Marshall used the expression "something in the air" to describe the beneficial atmosphere of industrial districts.

The theory of new industrial spaces is based on neo-institutional economic theories (see Coase 1937, Williamson 1979, Storper and Scott 1992, etc). Why do firms exist? That was the question asked by Coase (1937) more than 60 years ago. Even though it is not perfect, Coase's analysis of transaction costs and vertical integration provides a good starting point for the understanding of the existence of different organisational forms. According to the theorists of new industrial spaces, the regional production system is formed by the relation of intra-firm organisational costs and the transaction costs in the network of firms. Assessing only traded interdependencies through the transaction cost theory is not sufficient. Therefore, Storper (1995) has introduced the term "untraded interdependencies" to complete the framework of new industrial spaces. Untraded interdependencies are, for example, regional conventions, norms and values or public or semi-public institutions.

The concept of the innovative milieu (see Aydalot and Keeble 1988, Camagni 1991, Crevoisier and Maillat 1991, etc) focuses on the relation between innovative capability and the regional economic milieu. Camagni (1991, 3) defines innovative milieu as "the set, or the complex network of mainly informal social relationships on a limited geographical area, often determining a specific external 'image' and internal 'representation' and sense of belonging, which enhance the local innovative capability through synergetic and collective learning processes", whereas Kostiainen (2002, 44) defines it as "a whole of relations appearing in a certain geographical area with a high level of quality of life which has also networked beyond the area itself and which increases the unity of production systems, economic actors and industrial culture creating local collective learning and acting as a mechanism alleviating insecurity within the innovation process". Maillat, Quevit, and Senn (1993) suggest that entrepreneurship, the forms of the organisations, the atmosphere for entrepreneurship and the ability to use technology are the basic elements of the innovative milieu. According to this school, economic success in a region depends a great deal on the quality of the internal innovation network in the region. It also raises the idea of collective learning to the centre of the dynamics of innovation networks.

Lundvall and Johnson (1994) use the concept of "learning economy" when referring to the contemporary post-Fordist economy – dominated by the ICT-related techno-economic paradigm in combination with flexible production methods – where knowledge and learning are crucial competitiveness factors. Lundvall and Borras (1997, 29) define the learning economy as "an economy, where the ability to learn is decisive for the economic success of individuals, firms, regions and nations. Learning, in this context, does not just refer to the acquisition of information or access to the sources of information, but to the development of new areas of competence and new skills". In the concept of the learning economy, learning is set even above knowledge in creating competitiveness since "… what really matters for economic performance is the ability to learn (and forget) and not the stock of knowledge" (Lundvall and Borras, 1999, 35). Kebir and Crevoisier (2002), again see knowledge itself rather as a process than a stock. Indeed, we consider knowledge of learning to be the most essential skill at all levels, covering knowledge of the importance of learning, characteristics and ways of learning, as well as limits and drawbacks of learning, and ways to deal with them – the whole process.

The concept of the learning region has emerged under the framework of the learning economy. Learning regions "function as collectors and repositories of knowledge and ideas, and provide an underlying environment or infrastructure which facilitate the flow of knowledge, ideas and learning. Learning regions are increasingly important sources of innovation and economic growth, and are

vehicles for globalisation" (Florida 1995, 528). The frameworks of the learning economy and learning regions emphasise the interactive and collective nature of learning. Collective learning is a process of dynamic and cumulative knowledge creation that has, due to its interactive character, numerous synergy advantages (Camagni, 1995). Synergy advantages emerge because of knowledge spillovers and increasing trust in the collective learning process. An intensive process of interaction is included in the creation of new knowledge (Nonaka and Takeuchi 1995; Nonaka *et al.,* 2000).

Special attention in regional development should be paid to avoiding lock-ins caused by regional path-dependency and on releasing such lock-ins if they have occurred (Maskell and Malmberg 1995). Cooke and Schienstock (1996) have defined three different types of lock-ins in the regional context: functional lock-ins, cognitive lock-ins and political lock-ins. When preventing lock-ins and trying to find new paths out of lock-in situations, the role of leadership becomes decisive. (Tushman and Romanelli 1985, Kotter 1988, Beer *et al.* 1990, Mezias and Glynn 1993.) In the case of regional development, the role of leadership in a network-based operating environment is particularly essential.

Sotarauta and Viljamaa (2002: 18) suggest that certain abilities are especially important in network leadership in regional multi-actor networks. These include the ability

- to involve people and empower them to act as a network
- to make people work to reach joint goals and separate goals and renew the goals in an ongoing process
- to promote interactive processes serving as an intermediary in interaction between actors, as well as steering activities towards seeking goals and enabling co-operation
- to connect various actors to the cluster from their own starting points
- to create and utilise creative tension in development work and create a sense of drama. This means presenting issues so that people become enthusiastic and excited
- to get short-term success so as to sustain motivation
- to form partnerships competently and efficiently utilise informal relations

An important factor in developing regional innovative capability is related to the concept of regional "institutional thickness". Institutional thickness (Amin and Trift 1995) means the number of development-oriented institutions in the region and the interaction aimed at their capability to exchange and search for new information in creating innovations. Institutions can be divided into formal (laws, development agencies, universities, local authorities, etc.) and informal institutions (values, routines, trust, ways of acting, etc.) "Institutions reduce uncertainties, co-ordinate the use of knowledge, mediate conflicts and provide incentives systems. By serving these functions, institutions provide the stability necessary for change" (Johnson 1992: 26). However, institutions may hinder innovativeness in the regions should they become rigid and cause lock-ins.

Most of the frameworks describing the modern innovation environment emphasise concepts like interaction, trust and common values in innovation networks. A certain amount of social cohesion is inevitably necessary to ensure reasonable regional functions. However, Sotarauta sees paradoxes and differences in networks as a driving force of the development process. He presents a term "creative tension" (Sotarauta and Mustikkamäki 2001) as a counterbalance for social cohesion in a networked environment. Creative tension is needed, because regional development is moving toward an insecure and unknown future in a turbulent world. Actually, social cohesion and creative tension should not be seen as competing forces in regional innovation systems. Both are needed and should complement each other in order keep sufficient social cohesion and creative drive in regional innovation networks.

4 Social Capital and Its Problematic Content

The analysis above underlines the overall importance of the socio-structural features of innovation processes. Innovations are not created in a social vacuum; they take place in a certain social, structural and cultural environment, which affects both their nature and their effects. One of the most promising concepts, by which researchers have tried to specify this, is social capital. In the following chapters, we analyse the concept of social capital, its use and its potential in the research of regional innovation systems.

Within the last ten years, the concept of social capital has become a popular term, also used in everyday language. The positive associations connected with it are utilised as part of societal and political discussion (see e.g. Engeström 2000, 2). However, the idea behind the concept is not new in the social sciences: the themes associated with it were already present in classical sociology[1]. As a concept social capital is almost hundred years old. (See Portes 1998, 2.)

The strength of the concept is the way it is used to break the disciplinary boundaries and connect their conceptual frameworks. It pays attention to the non-economic forms of capital and underlines their nature as sources of power and action capabilities. At the same time, it brings sociological and economical discussions closer together. (Portes 1998, 3.) The concept of social capital can be understood as a starting point to the work combining the theoretical frameworks of sociology and economics.

This point of view has had an important effect on the utilisation of the concept of social capital in the context of innovations and innovation processes. For example, in Finland it has been used in the research of inter-firm networks, internationalisation of firms and family entrepreneurship (e.g. Yli-Renko 1999; Arenius 2002; Mustakallio 2002). It is considered to be one of the most interesting concepts in the research of regional innovation processes. In this context, it is interesting at least in the following ways:

- it offers a conceptual framework to specify the processes of non-linear innovations;
- it gives us a tool to handle theoretically the importance of networks and strategic alliances in the modern business environment. (Cf. Lesser 2000b, 9-12.)

However, empirical research on social capital has, at least in Finland, focused on the so-called monofunctional networks (see Chapter 6), while comprehensive studies on multifunctional regional innovation systems are rare.

Before developing these themes further we should examine the concept itself, and the problems connected with it. It is far from clear what exactly we are talking about when we refer to social capital. The concept has been used in various, sometimes even contradictory meanings, because of different theoretical traditions. Bourdieu (1985), whose background is in the classical sociological discussion of capital, is considered to be one of the pioneers of modern research concerning social capital. Other important early theorists are Coleman (1988), who relies on rational choice theory, and Putnam (1993; 2000), whose work is strongly connected to American communitarian discussion. While there have been important theoretical efforts to combine these backgrounds (e.g. Nahapiet and Ghoshal 1998; Adler and Kwon 2000; Woolcock 1998), they are still quite distinct in empirical research. This has been especially the case between the research emphasising economics

[1] On the link between social capital and the classical forms of capital, see e.g. Lin 2001a.

and concentrating on the social capital of individuals and networks on the one hand, and the social political research of communities on the other.

Even if the overall importance of social capital in regional innovation processes has been accepted, its specific role in producing innovations and creating innovation systems is far from clear. This is partly due to the theoretical looseness and unspecificity of the concept, partly the undeveloped methods for empirical research of social capital. We do not yet know exactly how we should measure and estimate social capital (see Simpura 2002, 218-220).

In general, social capital refers to the possession of certain social relationships and membership in certain collectives, and to the resources that derive from these relationships and memberships. Portes (1998, 7) grasps the basic idea behind the concept in the following way: "[w]hereas economic capital is in people's bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships". Unfortunately, the common understanding on meaning of the concept ends here.

One of the most cited contemporary analyses of social capital is that of Nahapiet and Ghoshal (1998). They define social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships" (Nahapiet and Ghoshal 1998, 243). Authors, thus, include in their definition both the network itself and the assets that can be mobilised through the network. Nahapiet and Ghoshal separate analytically three dimensions of social capital. The structural dimension concerns the properties of the network as a whole: the impersonal configuration of linkages between actors – who you reach and how you reach them. The relational dimension describes the personal relationships between the members of the network. Friendship, respect and reputation are a few examples of this. The third dimension of social capital is labelled the cognitive dimension. It refers to the social assets like shared representations, values, interpretations, and systems of meaning. The common characteristics of all these dimensions are: (1) they constitute some aspect of social structure; and (2) they facilitate the actions of individuals within the structure. (Nahapiet and Ghoshal 1998, 244.)

Nahapiet and Ghoshal (1998, 245) identify two important productive effects of social capital in networks. First, it increases the efficiency of action, especially by creating effective ways of distributing information through minimising redundancy, and by reducing the transaction costs through reducing the need for monitoring processes. Second, it creates opportunities for the so-called adaptive efficiency. By encouraging co-operative behaviour it facilitates creative interaction and collective learning processes.

Even this brief overview of the concept of social capital gives us a picture of the problems we have to face when trying to specify and apply it. At least the following questions are relevant in the context of this work:

- Is social capital the property of individuals or collectives?
- What is the relation between social capital and concepts like trust, reputation**,** networks or social positions?
- Can social capital be dysfunctional or harmful? Could there be 'too much' social capital?

Adler and Kwon (2000, 90-93) roughly differentiate two main groups of the definitions of social capital on the basis of whether they understand social capital as a property or resource of individuals or communities. The first group, which is strongly affected by the sociological network theory, is based on the idea of actors utilising their memberships in different networks and their connections to the others. Through social capital these theories explain the differing success of

actors in competition and power structures. This is the view Bourdieu (1985) and Portes (1998) adopt. Burt (2000) advocates the other view belonging to this group: his view underlines the capability of an actor to utilise the so-called structural holes in their social networks. Adler and Kwon (2000, 92) call this group of theories *the external view of social capital*.

This interpretation has been criticised for its neglect of the importance of social capital for the whole network or community. Some theorists want to include an idea of 'public good' (e.g. Putnam 2000, 20) to the concept of social capital. Social capital is understood as a property of collectives or networks, which also makes it meaningful to say that one collective can have more or less social capital than another. Robert Putnam is one of the best-known representatives of this view, called the *internal view of social capital* by Adler and Kwon (2000, 92). In his theory, social capital is formed by such things as associational involvement and participatory behaviour in a community (Portes 1998, 18). According to community-centred interpretation, trust, common norms and shared values are the most central elements of social capital.

We believe that these interpretations confuse the definition of social capital in its specific forms and in the mechanisms that maintain it. Social capital comes from very different kinds of sources. The inclusion of concepts like trust, friendship and networks in the *definition* of social capital restricts us to see only some individual, contingent forms of social capital. This connection between definition and individual forms of social capital also brings us close to the vicious circle: the success of collectives is explained by their social capital, which is, at the same time, the central *criteria* for that success (Portes 1998, 19). Common values and norms, as much as emotional commitments are certainly important sources and mechanisms of social capital, but they should not be confused with its definition.

Another possibility is to define social capital as generally as possible. Thus according to Woolcock and Naranyan (2000, cit. Engeström 2000, 8), "social capital refers to the norms and networks that enable people to act collectively". This definition does not restrict social capital to its specific forms or sources, but – following Coleman (1988) – connects all those social phenomena, that serve a certain function to the concept. The danger in this way of thinking is that it contains all the possible social phenomena and finally loses its theoretical and empirical force. Lin (2001b, 9-10) argues that this is also the central problem in the public-good view: by divorcing the concept from its roots in networking and individual interaction, it becomes merely another term to employ in the broad context of improving social integration and solidarity. It is possible to formulate causal propositions between these features and social capital, but they should not be included in the concept itself. We want to maintain the original idea of social capital as a species of capital, and believe that the strength of the concept lies just in the recognition of this capital-nature.

One relevant problem concerns the dysfunctionality of social capital, its possible risks and disadvantages. Discussion about social capital has focused on the benefits of social capital, while research on its risks is much scarcer (Adler and Kwon 2000, 106). The main problem with social capital is that, in spite of its apparent advantages, it also seems to facilitate a certain closure of a community and restrict its sensitivity to new information and alternative ways of doing things (cf. Nahapiet and Ghoshal 1998, 245). This is the problem we raised at the end of Chapter 3, and will return to in Chapter 6.

When speaking about the dysfunctionality of social capital, we may like to compare the advantages and disadvantages of social capital. This line of thought easily guides us, in turn, to assume that it is possible to value social capital *as such* as 'good' or 'bad'. According to our position, this is misleading: social capital is a value-free concept, even if its utilisation often has positive and

negative consequences. When we analyse the effects of social capital it must be located in a specific context. These effects have value in relation to a certain environment and certain objectives. Social capital can be evaluated only on the basis of how it 'works' or 'doesn't work' in order to reach those objectives. Of course, the use of social capital may well have positive or negative influences in an actor, her environment, or larger society.

5 Conceptualising Social Capital

As a starting point for the definition of social capital, we can draw a parallel with economic capital. On what basis do we call something economic capital? How do we recognise certain objects as money? The answer given by the so-called conventionalist theory of institutions (e.g. Searle 1995, Lagerspetz 1995) is that something is money only if we believe it is money. More specifically, an object counts as money if and only if there is a practice or context, where that object functions as money. In this way, economic capital is an institutional form of capital[2]. Social capital has this same feature. There cannot be social capital without there being some kind of convention or common practice, which defines the relevant forms and scope of social capital.

We will call our interpretation a resource-based view on social capital. According to this view, social capital refers to an actor's resources, the sources of which are located in the social relations of the actor. These resources composing social capital enable certain actions or reachable certain objectives that would have been impossible or unattainable without those resources (cf. Nahapiet and Ghoshal 1998, 244). This view comes close to Lin's (2001a, 29) definition of social capital as "resources embedded in a social structure that are accessed and/or mobilized in purposive actions".

On our view, social capital is connected to the action capacity and action possibilities of an actor. The action capacity of an individual or collective actor consists of different resources that the actor utilises and applies to his or her actions. One group of these resources are the actor's positions and relations in social structures and networks: what is his or her social status, what kind of friendship relationships does he or she have, and what kind of cultural and value-based communities does he or she belong to. We will call this combination of the actor's social resources his or her social capital. Through social capital an actor has the capacity to mobilise other actors and their resources. Defined this way social capital is deeply connected to action. It is 'material' an actor may use in his or her action. At the same time, it can limit some other actions and possibilities. Theoretically, this resource-based view is associated with the so-called critical realist social theory and with its philosophical background, realist interpretation of causality (see Harré and Madden 1975; Bhaskar 1989; Manicas 1993; Archer 1995).

This definition of social capital basically follows Coleman's (1988) functional definition. In the same way as 'chair' or 'money' identify certain objects by their function, 'social capital' identifies certain aspects of social structure by their function (Coleman 1988, 101, see also Sandefur and Laumann 2000, 70-71). This implies that we can examine a given social relation of an actor *as* part of his or her social capital, as well as from the other points of view. A social relation of an actor becomes social capital when it functions by increasing his or her capacity for action and access to relevant resources.

[2] Thus, we disagree with Adler and Kwon (2000) who claim that financial capital does not require social maintenance.

Then what is the relation between social capital as a resource and the related concepts like trust, reputation or shared values? Social capital is a property of an actor. This property is based on different forms. It gets its content – what kind of capacities and possibilities an actor has – from these forms. The three dimensions mentioned by Nahapiet and Ghoshal (1998) – structural, relational and cognitive dimensions, can be considered as the main forms of social capital. These forms become an actor's social capital by intermediating mechanisms like trust (see Ruuskanen 2001). Thus, social capital is in itself purely a formal concept, and its specific content is dependent on a given context.

According to the resource-based view, social capital is not independent of its context. A certain social capital 'works' – is causally relevant – only in certain fields of action. We will call this context-dependence the *field-specificity of social capital*. This simple idea has some important consequences. The concept of field-specificity helps to understand the problems of the utilisation of social capital. There are situations where an actor's social capital is 'worthless'. A simple example of this is a distinguished scholar, who has much social capital within the scientific community. This status does not, however, automatically give him or her social capital outside that community, in fields like the business environment where both the respected actors and the rules of the field differ significantly from those of the university. The scholar's social capital – resources based on a certain social status and relations – is not causally relevant in another context or field.

In our interpretation, those elements of social community often labelled under the concept of social capital (e.g. Putnam's work on modern Italy, Putnam 1993) are not in fact defining features of the concept. A community with a common value ground, strong trust between members and community-oriented atmosphere has not necessarily 'more' social capital than communities with looser social relations. It is possible that the so-called weak ties (Granovetter 1973) of an actor are more fruitful for his or her action capabilities than very tight, strong ties. Putnam also notices this when separating 'bonding' and 'bridging' social capital (see Putnam 2000, 22-24). However, this is the question of empirical circumstances, not of conceptual analysis. We want to separate the concepts of 'tight community' and 'community with strong social capital' from each other.

It can be said that our interpretation of social capital is individualistic. It is true that we emphasise the capacities and action possibilities of actors instead of communities. However, it is important to realise that 'actor' can be collective as well as an individual actor. But does our view make it possible to define the measure of collective social capital of a certain community or network? This is not a simple task: how to compare, for example, social capital based on value unity to social capital based on the social positions of actors. Some of these structures of social capital form the so-called zero-sum game; while in others the social capital of a collective may increase with the individual social capital of its members. However, social capital is produced only at the collective and it can be utilised only through it. Thus, social capital is ultimately a collective phenomenon, despite our actor-focused perspective. This position comes close to that of Bourdieu (cf. Siisiäinen 2000, 11).

For example, Lin (2001a, 20) claims that social capital should be 'conscious': an actor has to be conscious of his or her social capital in order to utilise it. However, this is not necessarily the case. Let us think about trust as a mechanism activating social capital. In a large network of actors we do not necessarily know what kind of trust relations it exactly contains. Despite this, we may try to mobilise the network to reach certain goals. We do not *know* who will trust us enough to act as we hope; we will take a chance. It is, however, possible that the network will actually act for our aims. It may also be the case that the network will act regardless of our actions: trust in us is strong enough to make things happen without our active interference.

Some examinations of social capital have brought up the idea of the 'optimal' level of social: that it is possible to have too much social capital. These contributions have suggested that strong social capital can become an obstacle for reaching certain goals. For example, social capital may in fact *restrain* innovativeness. According to our view of social capital, this line of thought is partly misleading. In the next chapter, we will analyse the relation of social capital and innovative capability in the regional context. We will try to find preliminary answers to some of the questions concerning risks and disadvantages raised in these earlier chapters.

6 Social Capital in Building Regional Innovative Capability

Earlier we defined innovative capability as an actor's ability to sense the changes in the environment and exploit existing resources and competencies in order to create competitive advantage by innovation activities. According to this definition, the basis of innovative capability is the resources and competencies of an actor. These resources can be material, economical, intellectual and social. The innovative capability of an actor is a combination of these four types of resources and the ability to use and apply them. Thus, we can understand social capital as one element in the basis of an actor's innovative capability.

When moving from the individual level to the innovative capability of a community, an organisation or a network, the role of social capital changes significantly. It is not only one resource among others, but is also located at the centre of the whole innovative capability. Social capital is a resource which gives an organisation or a network the capacity to use and utilise the material, economic and intellectual resources of the whole collective – as well as social resources reaching outside the collective. Generally social capital can be defined in this context as a necessary but insufficient part of the innovative capability of the network.

There are four main roles social capital has in developing regional innovation capability. Firstly, it affects the productivity of the network by reducing general uncertainty in specialisation and division of labour. Secondly, it reduces the transaction costs in the network. Thirdly, it affects the coordination costs of the network. These three effects are connected to the internal dynamics and efficiency of the network. Fourthly, and perhaps most importantly, it affects the amount and diversity of knowledge achievable by an actor. (Hämäläinen and Schienstock 2001, 144.) This is an effect that ultimately connects social capital with innovativeness.

Planque (2002, 21-23) separates two main forms of innovation networks: monofunctional and multifunctional innovation networks. Monofunctional networks are concentrated on one, specific objective or task. In these networks, partnerships are typically formed around a certain stage of the innovation process (e.g. R&D) in order to raise the efficiency of the use of resources. They often exist for only a limited time. In contrast, multifunctional innovation networks combine very different kinds of actors from the whole innovation chain. Their goal is not just to utilise existing resources effectively, but also to form a new, continuing innovation process capable of creating new resources. The innovation processes of these networks are typically non-linear. Examples of these networks are local science and technology parks. In this work, the most interesting type of multifunctional networks is a regional innovation system.

Multifunctional networks combine actors, whose aims and ways of acting may differ significantly. This is why the importance of social resources is emphasised in these networks even more than in

monofunctional networks. When specific goals do not bind the actors of the network together, the motives and reasons for acting together have to be found from the benefits of the long-term, resource-creating processes. A central precondition for the recognition and utilisation of these benefits is sufficient social capital among the actors of the network.

However, the relation of the concepts of social capital and innovativeness is not without its problems. In their essay, Florida *et al*. (2002) claim that places with strong social capital are in fact the worst places for innovation and creative processes. They base their argument on large empirical data, which show that areas with low levels of innovation scored high on social capital – and vice versa. They argue that regions with strong social capital become complacent and insulated from outside information and challenges.

Frombold-Eisebith (2002) argues in a similar vein for the complementarity of the concepts of social capital and innovative milieu. She states that the general purpose of social capital is "to sustain elements of stability and reliability in an environment of change", while an innovative or creative milieu is more of a change-oriented concept. This idea of complementarity is an important contribution to the debate on social capital. Innovative processes demand capability to adopt new information and new actors, as well as new ways of acting. The concept of innovative milieu is an effort to grasp these features.

However, we believe that this argument is problematic in its details. The problem is that it equates social capital with stability. It is based on the idea that the stronger the ties in a given collective are, the more social capital there is. If our resource-based definition of social capital is accepted, this is not necessarily the case: the sources of social capital may come from various kinds of social relations – from the weak ties as well as from the strong ones. The apparent weakness of innovative capability that Frombold-Eisebith and Florida *et al*. refer to, is in fact connected to two 'distortions' of social capital: closure of the network and collective blindness[3]. Closure refers to the way a network separates itself from its environment. The members of a closed network have close, interactive relations within the network, but only a few or loose relationships with the actors outside the network. By the concept of collective blindness, we refer to the way a network may collectively set its focus erroneously: it may be misled in its goals and on the appropriate means to reach them. These are risks that can rise with the maintenance and utilisation of social capital. However, they do not *follow* from the development of social capital.

This idea can be explained by the concept of field-specificity. We claimed earlier that social capital is relevant only in certain fields of action and in relation to certain objectives. Let us think about a tight network with strong trust, common values and common ways of acting among the members – a network with 'good spirit'. The actors of the network interact mainly with each other, holding meetings resulting in a common understanding and agreement of the strong trust and exceptionally good spirit of the network. What can we say about the innovative capability and social capital of this network? Frombold-Eisebith and Florida *et al* probably would say that the innovative capability of the network is extremely weak. It is easy to agree with this judgement: the network does not adopt new information, and its creative tension is practically non-existent.

Is there, then, too much social capital within the network? Let us assume that the network in question is a regional innovation system, and thus its main function is the creation of opportunities for innovations. The resources of the network and its members should support this function. They

[3] Apart from these, there are also other important risks of social capital. Among them are the problems of free riding, cheating and moral hazard, as well as the risks of the fragmentation of a broader society (e.g. Adler and Kwon 2000, 106-107).

have to be relevant in the field in question. In this network, this is not the case: the social capital the network offers to its members does not work as a means of reaching the objectives of the regional innovation system. We can say that *either* the network works in the wrong field (the social capital creates action opportunities the actors do not in fact pursue); *or* it works in the right field but in the wrong way (the actors do not in fact have the social capital they would need).

The weakness of the innovative capability of the network is thus a consequence of the closure of the network and its wrong direction (collective blindness), not of the quantity of social capital as such. The mistake in the argument of Frombold-Eisebith and Florida *et al* is their tendency to see social capital in such way that it is – by definition – directly proportional to the tightness of the relations between the actors of a community.

It is true, however, that social capital – more than other types of capital – has a feature that directs and restricts action. The maintenance and utilisation of the social capital presumes that the actor is bound to the social relation in question. Social capital never works unidirectionally: the mechanisms like trust maintaining social capital are relations between two or more parties, and they must be maintained in both directions.

We can say that a region needs the 'right' social capital, not just as much social capital as possible. How do we then know what is the right social capital? Earlier, we stated that the innovation capability also includes, apart from resources needed, the capability to use, apply and renew these resources in an appropriate way in order to create innovations. A rapidly changing environment can make existing social capital irrelevant or even counter-productive (Hämäläinen and Schienstock 2001, 145). This underlines the importance of the so-called dynamic capabilities. The framework of dynamic capabilities (see e.g. Teece *et al.* 1997; Eisenhardt and Martin 2000) focuses on the processes aiming at renewing important regional resource configurations over time. The framework has its origin in the resource-based view of strategic management. According to the resource-based view, a sustainable competitive advantage is mainly caused by valuable, rare, inimitable and non-substitutable resources. At the regional level, dynamic capabilities can be defined as "the region's ability to generate in interaction competitive resource configurations in a turbulent environment. Dynamic capabilities aim at reforming regional resources, capabilities, competences and core competences based on the history of the region and opportunities emerging from the techno-socio-economic development" (Harmaakorpi and Pekkarinen 2003). This paper sees social capital as a valuable regional resource that can be rare, inimitable and non-substitutable. Dynamic capabilities are 'reflective' regional capabilities enabling the continuing renewal of these competitive resources.

This analysis emphasises the importance of leadership in the innovation network. There lie the risks of collective blindness and closure. It is often hard to see the actual causal relevance of existing social relations. The problem of collective blindness is especially crucial to the multifunctional networks, where a common, specific task does not define the relevance of social capital. Thus, there must be mechanisms or processes through which a network sets goals, directs and controls itself. This is the basic function of the network leadership. The type of leadership needed is always dependent on its actual context such as time, place, organisation or tasks. A different kind of leadership was needed in the paper factories of the industrial era than in the lean organisations of the network era. More than anything leadership is a social interaction process, helping a group of people achieve its goals. This means that leadership, like Kouzes and Posner (1996: 99-119) write, is not a place, but a process. Moreover, leadership is an observable, learnable set of practices and leadership is everyone's business.

7 Conclusions

In this article, we stated some preliminary notes concerning the conceptual space connected to social capital and its role in building regional innovative capability. We examined the different conceptual frameworks of regional innovation systems and innovation capability. These theories emphasise the importance of the non-linear and social nature of innovations. We argued that social capital could be understood as a promising concept in understanding the nature of regional innovative capability. However, we saw that the relation between social capital and innovations is not without its problems. Through our brief conceptual analysis of social capital, we tried to overcome some of these problems. In particular, we argued that the weakness of the innovative capability of the regional network is a consequence of the contingent 'distortions' of the utilisation of social capital, not of the quantity of social capital as such. It is misleading to speak about the 'optimal' level of social capital.

This examination leaves certain important questions open. The conceptual framework presented here needs to be developed further. It seems that the context of the so-called multifunctional innovation networks change the way social capital operates and affects innovativeness, and this process has to be analysed more thoroughly. Our arguments also point to the fact that a deeper analysis of the risks and lock-ins of social capital is needed in order to understand the relation of social capital and innovativeness. This, in turn, raises the question of how to lead and manage the utilisation of social capital in multifunctional, non-linear innovation networks.

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