
Organizational Innovations: Some Reflections on the Concept

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Abstract

Organizational innovations have increasingly become a target of empirical research. One reason is that, due to the fact that they represent tacit knowledge, organizational innovations are seen as important means for achieving sustainable competitiveness. While it is widely acknowledged that organizational innovations are crucial for companies' capability to deal with core organizational problems more effectively, conceptual issues have not been high on the research agenda. The concept of organizational innovation is still very vague and no general definition has been reached so far. And there is still little systematic knowledge available about the development, diffusion and economic consequences of organizational innovations.

The article is motivated by the fact that scholars often rush into empirical research while a number of conceptual and methodological issues are still unclear. Besides the fact that a common definition is still missing, it is also undecided what distinguishes organizational change from organizational innovations and whether subjective or objective measures should be applied to identify organizational innovations. Furthermore, is the distinction between organizational innovations related to the production system and those related to the rationalization process still viable, given the fact that organizational change becomes a continuous and open learning process?

There is also a need to develop a classification system that allows us to identify relevant types of organizational innovations. And while it is generally accepted that the effectiveness of organizational innovations increases if developed together with technical or cultural ones, their concrete relationship needs to be clarified. We also have to question the idea of national organizational trajectories being channeled by specific institutional settings, as the latter themselves become increasingly fragile. These are some important conceptual and methodological questions which have to be dealt with before empirical research can produce reliable results. It is timely to take stock of our understanding of the concept of organizational innovation to make research more comparative and to allow for a cumulative development of knowledge in this field.

Introduction

Over several decades innovation research has made major efforts aimed at understanding and measuring technical change. Scholars have put particular emphasis on the diffusion of new product and process technologies as well as their impact on economic growth. Research has thus taken place on a fairly high level of aggregation (Haknes 2000), allowing an only superficial impression about new organizational measures taken by companies to improve their performance and their capability to deal with key organizational problems.

Disappointing experiences with ICT applications have made it obvious that understanding the impact of modern technologies on competitiveness, economic growth and social welfare implies that one has to highlight the central role of organizational change in a cluster of complementary and mutually reinforcing technological and social innovations (Bresnahan et al. 1999, 1–2). Of course, despite the tendency to focus on material artefacts, innovation researchers have always agreed that the concept of innovation cannot be restricted to new product and process technologies but must also be applied to new organization forms (Kimberly & Evanisko 1981; Schumpeter 1934; Whipp & Clark 1986). But scholars gave special attention to organizational and other social innovations (Heiskala 2003) as vital factors for sustainable competitiveness only when it became obvious that the development and absorption of new product and process technologies and their impact upon economic and social performance is conditioned by the organizational context and by the knowledge and competencies of workers and organizations (IPOP 2003).

We will begin with a brief discussion of various approaches which have analyzed organization as a critical dimension of innovation. We will then take up the aspect of multifunctionality of organizational innovations which, as we will argue, makes it rather difficult to develop a coherent restructuring approach. As research is often based on an ad hoc compilation of organizational innovations, we will suggest a classification system which allows us to distinguish between important types of organizational innovations. Furthermore, we will raise the question of how to distinguish between organizational change and organizational innovations.

In addition, we will question the traditional distinction between organizational innovations related to the restructuring of production processes and those related to the rationalization style, as organizational change becomes a continuous learning process. And we will highlight the fact that the effectiveness of organizational innovations is likely to increase, if accompanied by a cluster of complementary changes, including technological, cultural and human resources related measures. At the end of the paper we will challenge the idea that organizational change is channeled by specific national institutional settings, as institutions themselves become fragile due to increasing pressure of change. Instead, the concept of path creation has to be applied, in which organizational and institutional changes interact with each other and become to a great extent a process of trial and error.

Organization as a critical dimension of innovation

Although organizational innovations have only recently been identified as key factors that enhance competitiveness and economic growth, organization as a critical dimension of innovation has already been a target of research for some decades. Interest in the relationship between business organization and technological innovation started growing in the late 1950s, when researchers criticized the Weberian bureaucratic model for not being able to create and absorb new product and process technologies (Aiken & Hage 1971; Burns & Stalker 1961; Litwack 1961; March & Simon 1958; Shepard 1967; Zaltman et al. 1973). Consequently, research was designed to identify those organizational factors that influence a company's capacity to adopt technological innovations such as flexible manufacturing, robots or CNC machines (Gerwin 1988; Jaikumar 1986; Teece 1987). A distinction was made between organizational innovation, meaning the absorption of new technology in organizations, on the one hand, and organizational change characterized as the implementation of new organizational means on the other.

Three research perspectives can be distinguished within the organizational approach to innovation: the structural, the humanistic¹, and the interactive approach. Among them the structural approach, which considers innovation

activities to be determined by organizational structures, has captured the most attention (Pierce & Delbecq 1977; Slappendel 1996). The 'organic model' was characterized as an innovation-enhancing organizational model (Burns & Stalker 1961; Shepard 1967). Research usually focused on rates of technological innovations and not on single events.

Further developments of the organizational approach to innovation have linked the organic model with particular characteristics of the organizational environment. Emery and Trist (1967) have associated the organic model with an environment which they characterize as a 'turbulent field'. Other authors have given priority to firms' organizational choices (Child & Smith 1987). Different judicious and innovative organizational choices are seen as determinants of the competitive advantage of firms.

Evolutionary economics has examined the creation and diffusion of innovations over time and space (Dosi 1988; Nelson & Winter 1982). The development of this discipline is theoretically ingrained in the criticism of neoclassical economics. While the latter understands innovation as external to the economic process, evolutionary economics conceives of innovation as a fundamental and inherent phenomenon of modern capitalism, which plays an important role for the competitiveness of firms as well as national economies (Lundvall 1992). Within evolutionary economics we can distinguish between an institutional and an organizational approach.

'The main benefit of the institutional approach is to indicate clearly the existence of natural (or 'social') innovation trajectories that are largely determined by the social context in which various agents—and primary firms—operate' (Coriat & Weinstein 2002, 273). The national institutional context is seen as channeling technological change by opening up new technological opportunities but also by restricting technological development. While institutional economics focuses on technical innovations in the first place, the trajectory concept can also be applied with respect to organizational innovations (Castells 2000).

The organizational approach within evolutionary economics builds on the critique of conceptualizing the firm as a fully informed rational optimizer. Innovative firm behavior is characterized as a cumulative and localized search and learning process based on inaccurate information and uncertainty. However, this does not take place in a totally unstructured

way but, as Nelson and Winter (1982) argue, firms develop organizational routines to produce innovations more continuously.

In the 1980s industrial sociologists also became interested in innovation-producing organizational models when they began to perceive the malfunctioning of the Fordist production model in an increasingly dynamic and uncertain environment. They claimed the development of a new production model, which would reverse the traditional Fordist production logic of an increasing division of labor and hierarchical control (Kern and Schumann 1984). According to Lash, structural reflexivity is the key element of the new production logic, '[...] where the rules and resources [...] of the shop floor, no longer controlling workers, become the object of reflection for agency. That is agents can reformulate and use such rules and resources in a variety of combinations in order chronically to innovate' (Lash 1994, 19).

However, models such as the 'socio-technical approach' (Berggren 1992), the 'flexible specialization model' (Piori & Sabel 1984) or the 'new production concepts' (Kern & Schumann 1984), which have been claimed as representing the new organizational logic, have concentrated mainly on the problem of functional flexibility at the shop floor. These new organizational elements at the workplace are no doubt innovative, but they constitute only one element of a new and much broader trend in business restructuring. In concentrating on the workplace level, essential points concerning corporate restructuring are overlooked (Schienstock 1998).

When mapping research on organization as a critical dimension of innovation, one must also refer to 'organizational learning', a discipline that developed rapidly in the late 1980s. Traditional research focused on individual learning in organizations, and whether learning can take place on the organizational level at all had been a topic intensively discussed at the earlier stages of the discipline's development (Esterby-Smith & Araujo 1999). The concept of the learning organization (Senge 1990) seeks to explain learning outcomes in terms of structural differences; insofar the concept of a learning organization has much in common with the innovation-producing organizational model and is open to the same critique. More recently the model of the learning organization has been widely replaced by the concept of knowledge management. However, the

dominance of a technical perspective, which relates learning to information processing, and the use of modern ICT in the first place have been heavily criticized for a lack of attention to social factors (Davenport et al. 1998).

The rapidly shifting focus towards work practices represents the latest turn in organizational learning theory (Brown & Duguid 1991). Researchers are becoming increasingly interested in how learning takes place in various work environments and organizational settings (Lave & Wenger 1993) and in how individual learning is linked to organizational learning (Nonaka 1994). Organizational change is no longer understood as a sequence of isolated planned shifts enacted through discrete linear stages but as a continuous learning process.

During the 1990s organizational innovations also became a topic of intensive discussion among business people and policy makers, who both had been startled by the increasing strength of Japanese companies on the global market. In their book 'The Machine that Changed the World', Womack et al. (1990) argued that the superiority of the Japanese car industry over its American and particularly European competitors could be explained by a cluster of new organizational devices, which they referred to as 'lean production model'. This message caused the European Commission to stress the need for modernizing the organizational model applied by European companies to increase their global competitiveness (European Commission 1993, 1997). Recently the OECD (1998) has taken a leading role in encouraging companies to adapt to new organizational concepts such as the 'high performance workplace' model.

There is no doubt that researchers from various disciplines have recognized that organization is a critical dimension of innovation and deserves great attention. From the short overview above we can conclude, however, that the existing literature is very diverse and not well integrated into a coherent framework, as studies have focused on different levels: the individual, corporate, industrial and societal level (IPOP 2003; Lam 2004). More importantly, less emphasis has been given to organizational innovations and their particular function in business strategies and processes. Organizational innovations are not easy to tackle, of course, since these are multifaceted and multi-perspective phenomena. This may explain why researchers have not been able to develop a common understanding of the subject or a coherent analytical framework.

Furthermore, a clear definition of the concept is still missing, although the importance of organizational innovations in improving productivity and innovativeness has been widely acknowledged. The fact that organizational innovations are intangible in nature makes their conceptual and empirical coverage very difficult. 'Organization', as the OECD concedes, 'is a critical dimension of innovation, but its measurement appears to be very difficult both conceptually and in practice. Moreover organizational change is highly firm-specific making it still more difficult to summarize in aggregate, sector or economic-wide statistics' (OECD/EUROSTAT 1997, 43).

Because of this conceptual vagueness it is timely to take stock of our current understanding of organizational change and organizational innovations.² The aim of our conceptual exposition is to develop a better understanding of the nature of organizational innovations. This is motivated by the fact that while empirical research on organizational innovations has grown rapidly in recent years, our knowledge about the phenomenon has scarcely increased because most empirical studies are based on ad hoc developed concepts and hypotheses. Empirical findings are seldom comparable because of the absence of common theoretical grounds and consequently, cumulative development of knowledge in the field does not take place.

Multifunctionality of organizational innovations and the problem of coherence

To approach the phenomenon of organizational innovation we can start with a preliminary definition. Organizational innovations can be understood as new organizational means oriented towards improving the effectiveness of companies and other organizations. We can define effectiveness as 'the degree to which organizational actions lead to the outcome intended' (Duncan & Weiss 1979, 81). The immediate question to be tackled is then: Effective in what respect? What is the intended outcome associated with organizational innovations? The argument here is that organizational innovations are introduced as means to enable companies and other organizations to cope with various organizational problems more effectively. The question that arises next is: What are the key organizational problems companies are faced with?

For further discussion it is useful to distinguish between goal rationality (Zweckrationalität) and system rationality (Systemrationalität) (Luhmann 1968). It is characteristic of companies to strive for goal rationality (Weber 1972), which implies that they aim at developing an apparatus of organizational means that allows the most effective use of available resources. Improving the effective use of these resources can thus be seen as a major organizational problem companies are confronted with. They often deal with this problem by introducing organizational innovations such as downsizing or streamlining their production process or by continuously increasing their production norms.

However, companies not only strive for the productive use of their available resources, they must also improve their effectiveness of acting in an environment of a speed and complexity never before experienced that challenges their capability to survive. This means that, besides goal rationality, companies must also focus on system rationality; they must improve their capability to align with a highly dynamic environment by strengthening their capacity to innovate. One possible organizational strategy to deal with the problem of innovative adaptability is to decentralize responsibility, because delegating decision making to the shop floor may enhance companies' capability to react more quickly to changes by developing innovations.

March, speaking about the exploration/exploitation dilemma, addresses the same kind of organizational problems. 'Exploration' is associated with the development of novel resources/competencies and experimenting with new alternatives while 'exploitation' means the extension and efficient use of available resources or competencies (Levinthal & March 1993; March 1991). The former process may lead to the development of new strategies and knowledge in the long run, while the latter may result in high performance as a consequence but will not lay down the foundations for long-term survival. Companies must focus on both problems; they must find organizational solutions that enable them to achieve an appropriate balance in dealing with the two problems simultaneously (Nooteboom 1999).

So far we have discussed organizational innovations as measures to improve the effectiveness of coping with economic problems; but companies must also deal with social problems. In this respect it is important to note

that companies represent a system of vested interests of different stakeholders and are confronted with different demands (Alchian & Demsetz 1972). An unbalanced representation of different interests can cause major conflicts resulting in a poor social performance, which can also threaten both goal attainment and the adaptability of the company. Balancing the different vested interests can therefore be seen as another major organizational problem which companies may be able to handle in a more effective way by introducing organizational innovations.

An improved balance of vested interests can be achieved by introducing self-organizing work groups, for example, as this organizational innovation shifts asymmetric power relationships between management and workers more in the direction of the latter group. Finally, companies represent societal institutions and they are therefore confronted with and have to react to societal demands. The fulfillment of these demands, for example the provision of new jobs or the conservation of the ecological environment, can also be defined as an organizational problem. Aiming at providing more jobs or at least keeping the existing ones, companies may introduce systems of flexible working hours as an organizational innovation.

In summary, we can argue that companies must deal with a number of organizational problems. We suggest differentiating between the four key organizational problems: making effective use of available resources, improving innovative adaptability, balancing vested interests of stakeholders, and fulfilling societal demands. Companies often introduce an organizational innovation to deal with various organizational problems simultaneously; we can therefore characterize organizational innovations as multifunctional. Group work, for example, can be introduced to achieve both increased productivity and a balance of vested interests.

Multifunctionality, on the other hand, involves the aspect of coherence because an organizational innovation may affect coping with various organizational problems differently. The introduction of a new organizational form may improve a company's capability to deal with a specific organizational problem, while it may have a negative impact on the handling of other organizational problems, a result which may undermine overall effectiveness. For example, downsizing or streamlining the organization may improve a company's performance but these same organizational innovations can

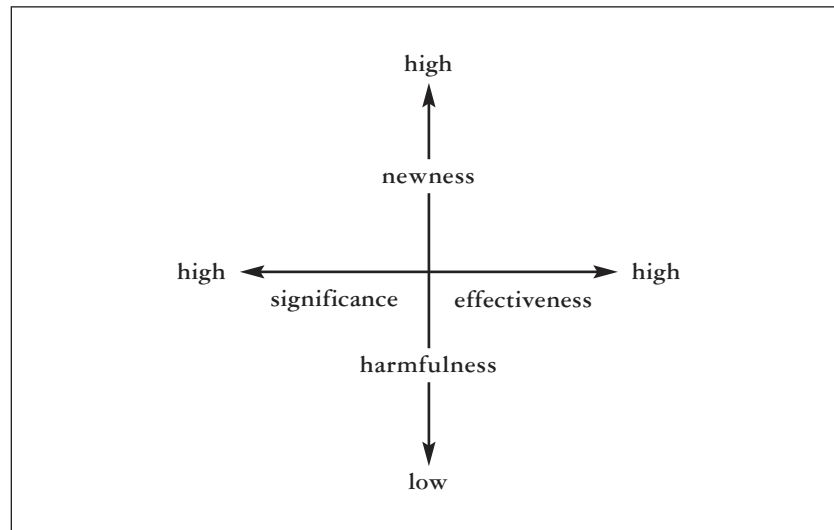
also become a hindrance to achieving a balance between various vested interests and to fulfilling societal demands, as they generally result in individual and social costs and can destruct social capital (Perrow 1996). Companies can also introduce a number of different organizational innovations which may have contradictory effects on their capability to deal with various organizational problems. So far the discussion on organizational innovations has hardly dealt with the aspects of multifunctionality and coherence.

When is an organizational change an organizational innovation?

An important question to be answered is whether all organizational changes should be characterized as organizational innovations. It is widely accepted that newness or novelty is a key distinguishing feature. However, the term 'newness' includes both small changes developed in 'learning-by-doing' processes as well as fundamental renewal processes. Strambach thus adds another criterion by arguing that we can only speak of an organizational innovation if the change is significant (2002). This definition implies that all organizational innovations involve changes, while not all organizational changes involve innovation.

But what if an organizational change does not contribute to any significant improvement in dealing with key organizational problems? Can we still speak about an organizational innovation? Our preliminary definition of organizational innovation includes the aspect of effectiveness. This means that, without having a positive effect on a company's capability to deal with organizational problems, we cannot characterize an organizational change as an organizational innovation. In addition, some authors argue that talk of innovation must imply 'a change for the better' (Anderson & King 1991; Heiskala 2003; Hosking & Morley 1991).

The preceding expositions have opened up a space for defining organizational innovations, as Figure 1 demonstrates. We can argue that an organizational innovation implies a significant change (significance), has a positive impact on the effectiveness of dealing with an organization problem (effectiveness) and represents a change for the better (reduced harmfulness).

Figure 1. Different dimensions of organizational innovation

This definition, however, entails some problems. For example, whether a change is seen as new and significant varies from firm to firm. SMEs, for instance, will probably conceive of the elimination of one hierarchical level as an innovation and a very significant change, while such a change in one of the many departments of a large and highly bureaucratic company may hardly be seen as new and significant. It becomes even more difficult to identify a significant change as far as the organizational innovation concept of guiding principles is concerned. When can we characterize a move towards eliminating waste as a significant change?

Companies may also differ in what they define as an effective change. Some organizational changes may increase the economic performance in low-tech industries, while they may not impact significantly on the knowledge creation process in high-tech companies. Furthermore, because of their multifunctionality, organizational innovations must be judged on their overall effectiveness. But companies may differ in giving priority to specific organizational problems, which of course very much influences their judgement about what is a significant change. Concerning

the aspect of harmfulness, we must take into account the fact that organizational innovations can have contradictory effects. Outsourcing, for example, is often associated with job losses; however, focusing on core competencies may also strengthen the competitiveness of a firm and make the remaining jobs safer.

Because of differences in assessing novelty, significance, effectiveness and harmfulness, some researchers maintain that it is the perception that counts rather than whether the organizational change is new, significant, effective or less harmful to a broader industrial environment or even the world.³ Using this logic we can argue that organizational change can be defined as innovation if it is perceived as being new, significant, effective and less harmful by the relevant unit of adoption (King & Anderson 1995). Consequently an organizational change can be perceived by a company as an innovation even if the company is a latecomer with respect to introducing this change. Relying on the subjective perception of the relevant unit of adoption therefore makes comparative studies rather difficult. Particularly as far as radical organizational innovations are concerned, the adopting units may differ significantly in their judgement.

To overcome the problem of subjective judgement, benchmarking is suggested as a method to identify organizational innovations because it provides an objective standard of comparison (Coriat 2001). Research experiences, particularly from 'humanization of work' projects, have shown, however, that the idea of 'best organizational practice' and 'star cases', which can function as a blueprint and can simply be copied by other companies, does not work (Gustavson 1992). Specific organizational elements are effective as part of the whole organizational structure, which itself emerges out of and is shaped by a specific institutional environment. It is therefore unrealistic to assume that isolating them from the organizational structure of which they are a part and implanting them into a new organizational structure will not affect their performance. As the effectiveness of an organizational innovation depends on the rest of the organizational structure, we cannot know how it would operate in a different setting. Furthermore, if we conceive of organizational change not as a one-off activity but as a continuous process, it becomes difficult to identify organizational structures that represent best practice.

Here we suggest differentiating between mechanistic and reflexive benchmarking (Schienstock 2004). Mechanistic benchmarking assumes that comparison can lead to identification of 'best practice' for each part of an organization, which can then be 'borrowed' by other organizations. The point of reflexive benchmarking or intelligent benchmarking, as it is also called (Schienstock & Härmäläinen 2001; see also Lundvall & Tomlinson 2001), is not primarily to decide who is 'best' or 'what universal truth' can be derived from all cases taken together but to identify functional equivalents (Luhmann 1968). It very much relies on the method of discursive comparison, in which cases are used in alternating figure-ground relationships to enable each participant to gain a better understanding of his or her own practices, when seen in the light of what others do, and what options they see (Gustavson et al. 1996; Toulmin 1991). We can then characterize the function of benchmarking as initiating reflexive learning processes.

How to classify organizational innovations?

Already a very superficial view at a number of empirical studies shows that scholars differ significantly in what they assume to be the most important organizational innovations introduced by companies.⁴ A Finnish study, for example, mentions the following key organizational innovations: teamwork, continuous improvement, balanced score card, statistical quality control methods, problem-solving methods, quality award criteria, and ISO 9000 standard (Tuominen et al. 2000). A German study differentiates between total quality management, lean management/lean production, downsizing, re-engineering, group work and teamwork, continuous improvement, outsourcing, making units independent, mergers and acquisitions (Strambach 2002). And the Danish DISKO project (Lund & Gjerding 1996) enumerates the following key organizational innovations: quality circles, cross-occupational working groups, systems of collection of proposals from employees, job rotation, delegation of responsibility, integration of functions, the capacity to adapt to changing environments, and wages based upon quality and results.

Given the fact that organizational innovations are conceptualized very differently, it has become important to tackle organizational innovations in a more systematic way. At first we can distinguish between organizational innovations that are goal related and those that affect the apparatus of the organizational means (Müller & Schienstock 1978). Goal-related organizational innovations involve the specifying, prioritizing and reformulation of organizational problems. For example, companies for which their low performance is the key organizational problem will probably give high priority to increasing productivity. To focus on their core competencies may then be seen as an adequate goal-related organizational innovation. Companies having a bad reputation concerning environmental issues may become increasingly concerned about their societal responsibility and formulate the 'greening' of their product lines as a new goal. And companies operating in a turbulent environment that have to give high priority to the organizational problem of innovative adaptability may focus on the development of new products as their key business goal.

In the second group we can distinguish between organizational innovations related to the production process on the one hand and those related to the regulation of employment on the other. Group work, the principle of continuous improvement and the capability to manage the competence base can be subsumed under the first category. Due to the increasing knowledge base, organizational innovations are not only introduced to improve the functioning of production processes, but also to make the information and knowledge flows within and between companies more effective (Coriat 2001; Strambach 2002). In an informational economy, information and knowledge flows actually become the main targets of organizational innovations (Castells 2000).

In recent years companies have introduced a variety of different employment-regulating innovations with the aim of increasing flexibility and adaptability. New wage systems, flexible working hour systems, new carrier planning systems, new training methods, or new workforce evaluation practices may be referred to in this context. It is often the case that both types of organizational innovations, those related to the production system and those related to the regulation of employment, are introduced

concurrently. For example, group work does not function effectively without new wage systems or new models of flexible working hours having been introduced concurrently.

Concerning the analysis of organizational changes in the production system, a structural concept is most commonly applied relating organizational innovations to new forms of division of work and new modes of coordination on the level of business functions, firms and firm networks (Alasoini 2003; Brousseau & Rallet 1998). The structural concept of organizational innovation is based on 'new', and supposedly well-identified 'forms' of organization such as quality circles, working groups, flat hierarchies, profit centers or strategic alliances. In the informational economy the focus of organizational renewal shifts from internal to inter-organizational change processes as companies coming under increasing pressure to specialize become more dependent on complementary resources and therefore need to increase the exchange of information, knowledge and materials with other companies and support organizations.

The underlying idea of the structural approach is that the new organizational patterns have proved to be so much more effective that they become 'common sense' for structuring business activities (Perez 1997). They 'constitute an accurate indicator of the firms' move towards a certain organizational state of the art and know-how that, at a given period (the 1990s) characterize a given industry' (Coriat 2001, 198). Castells speaks about a common matrix of organizational forms in the processes of production, consumption and distribution (2000) representing a new organizational logic.

But a common sense about what organizational form is the most effective one to deal with specific organizational problems may be difficult to achieve. This can be demonstrated by referring to the 'lean production model'. In general the model—or most of its elements—is widely accepted as an organizational innovation; however, its character is very much debated. Some scholars characterize lean production as a hyper-Fordist model as it includes a very efficient form of cultural control (Dohse et al. 1984). Tetsuro and Steven (1994) also interpret lean production or Toyotism as an extension of Fordism, as it is designed to increase economic performance by reducing uncertainty rather than to encourage adaptability,

while other scholars see a lot of overlapping with the human-centered model referred to as 'anthropocentric organization model' (Brödner 1985), which is seen as being highly adaptive.

The structural concept is often linked with a direct approach of strategic intervention. It is assumed that an organizational design, which is specified by experts, can be introduced by managerial hierarchies in a top-down process without major resistance (Naschold 1993). This means that change processes are under the control of top management or the dominant coalition within organizations. There is, however, plenty of evidence that organizational innovations do not occur as planned and controlled top-down structural change (Van Ven et al. 1999). They are not enacted through a series of discrete linear stages (concept development, decision to implement, and implementation). Organizational innovations must thus be conceptualized in a different way. We can put a process-related concept of organizational innovation opposite the structural approach, referring to the concept of organizing instead of organization (Weick 1969). The Green Paper 'Partnership for a New Organization of Work' identifies a shift from fixed systems of production to a flexible, open-ended process of organizational development (European Commission 1997). Giddens in his structuration theory has actually questioned the idea of a fixed organization structure; the author speaks of rules and regulations as 'virtual structures', which are continuously produced, reproduced and changed (1993).

When applying a process perspective we can no longer conceive of an organizational innovation as the transformation of a new, *a priori* developed structural concept into organizational reality. Instead, the institutionalization of an organizational innovation must be understood as an experimental long-lasting trial and error process, which in the end may result in more stable organizational practices. In this respect Coriat speaks about a second approach 'that essentially tries to appraise some new 'organizational traits' of the firms without really paying attention to the concrete means and patterns used to obtain them' (2001, 197). In the following we will distinguish between two types of process-related organizational innovations: the 'capacity-based concept' and the 'concept of guiding principles'.

The generative capacity concept (Gustavson 1992) is based on the idea of the resource-based perspective of the firm (Foss 1997; Penrose 1959; Peteraf 1993; Prahalad & Hamel 1990) that a company's ability to innovate depends on specific organizational competencies or capabilities. These must be developed internally, allowing companies to take advantage of technological, market-related or regulative opportunities in their environment. The well-known concept of 'absorptive capacity' relates companies' innovativeness to their capability to exploit external sources of knowledge and related opportunities (Cohen & Levinthal 1990). Absorptive capability is associated with organizational innovations that enable inter-organizational knowledge exchange, such as continuous trans-border consultation or joint research and development teams.

Garud and Nayyar (1994) argue, however, that a firm's ability to exploit external knowledge is not sufficient to sustain innovation in the long run; in general, external knowledge becomes available to other firms as well. The authors therefore reason that firms have to develop another ability, which they refer to as 'transformative capacity'. They characterize transformative capacity as a competence to recognize and exploit available in-house knowledge and related technological opportunities, which forms a more long-lasting basis for competitiveness; contrary to external knowledge, it is not widely accessible. This capability is constituted partly in organizational routines such as project teams or trans-functional design teams.

The organizational capability approach has become increasingly popular and a number of different typologies have been developed. The concept suggested by Bessant and Rush (2000), for example, includes the following innovative capabilities: to recognize the requirement for technology, to explore the range of technological options available, to compare between all the options available, to select the most appropriate option, to acquire the technology, to implement it within the firm, to operate the technology, and to learn about how best to use it. Each group comprises a set of more specific capabilities. The capability concept gives high priority to the problem of innovative adaptability, while ignoring other organizational problems. Referring to the four organizational problems mentioned above we suggest distinguishing between the following capabilities: making

effective use of available resources, developing innovative adaptability, balancing vested interests, and fulfilling societal demands.

Organizational capabilities or competencies represent a very vague concept; there are significant differences in the way in which they have been constituted. Organizational capabilities can be based on routines or heuristics, as well as on incentive systems, corporate culture or skills and competencies and they often have a tacit dimension. The capability to operate a technology can be enhanced by hiring new people, establishing new incentives, changing organizational structures, or improving the skills of the workforce, for example.⁵ Furthermore, the overabundant number of organizational capabilities and competencies mentioned in the literature makes the application of the concept in empirical studies rather difficult.

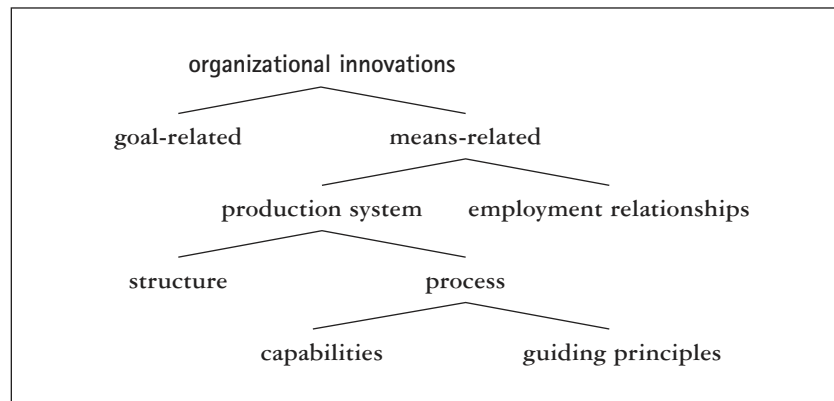
The type of organizational innovations that can be labeled 'guiding principles' can be explained most easily by referring to the lean production model (Womack et al. 1990). Scholars have criticized the model for having a rather vague concept of organizational innovation, although it stresses the importance of organizational matters for achieving and maintaining global competitiveness. The concept, as Jürgens (1994) argues, hardly mentions any concrete organizational structure that contributes to the improvement of productivity and innovativeness.

A closer look at the nature of the lean production model shows, however, that this critique may not be justified. Besides work groups and cross-functional design teams as core organizational innovations of the structural type, Womack et al. (1990) mention the following key dimensions of the lean production model: avoidance of slack and eliminating waste, strict pursuit of the causes of mistakes and drawbacks, transparency of the production processes, a focus on direct productive activities, direct responsibility, stabilization of social relationships, total quality management, and continuous improvement. This enumeration makes it clear that lean production is not a structural concept in the first place, made up of codified and clearly identifiable organization forms, but must be understood as a number of integrated new guiding principles.

Guiding principles have the advantage of not being associated with concrete organizational structures; instead, they function as mechanisms to steer the organizing process within work practices more indirectly. Those kinds

of organizational innovations may become more widespread in a situation where uncertainty over how to design organizations effectively to deal with the multitude of organizational problems increases. Whether guiding principles can function effectively, however, depends on whether organization members have internalized them, which of course causes difficulties in applying these types of organizational innovations in comparative studies. Figure 2 includes the various types of organizational innovations we have mentioned above.

Figure 2. Different types of organizational innovations



A typology of organizational innovations based on the depth of organizational change

In the management literature the image of the 'transformed organization' prevails suggesting that all companies have to undergo fundamental restructuring processes to be able to stand up against global competition. But organizational innovations can vary considerably in breadth and depth (Strambach 2002, 254). Only few attempts have been made to differentiate between various types of organizational innovations based on these criteria.

Tapscott (1995) has distinguished between 'punctual' and 'holistic' organizational innovations (Tapscott 1995), while Alasoini (2003) suggests differentiating between 'isolated' and 'integrated' organizational innovations (2003).

We can speak of a punctual or isolated organizational innovation when only minor changes take place within core organizational elements. For example, job rotation implies that workers can move from one job to another from time to time, but the various jobs contain similar tasks requiring more or less the same skill level. Isolated piecemeal measures are problematic because they will not guarantee companies' survival in a highly competitive global economy. Those restructuring practices cannot produce the leaps of productivity increase and the stream of innovations needed for companies to emerge as winners in global competition (Tapscott 1995). Therefore the single workplace or the isolated work process, on which traditional restructuring practices focused, is less often the target of current transformation processes (Braczyk & Schienstock 1996).

Companies that renew their organizational system in general introduce integrated organizational innovations. For example, the introduction of group work, as we have mentioned earlier, is often associated with the introduction of new wage systems and new models of flexible working hours. We can speak of a holistic organizational renewal approach when the whole organization model is at stake. Holistic restructuring takes place because various dimensions of a production model make up a complex system of interdependent elements.

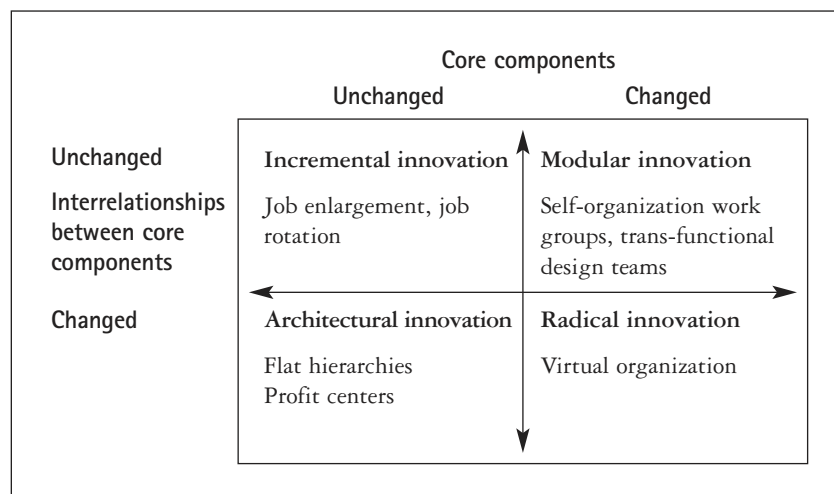
The duality between isolated piecemeal organizational innovations and holistic ones cannot cover the variety of new structures or principles introduced by companies to deal with different organizational problems. We thus suggest distinguishing between different kinds of organizational innovations according to the changes of the core elements, on the one hand, and changes in the relationships between these core elements on the other. On the basis of this distinction one can identify the following types of organizational innovations: an incremental type, a modular type, an architectural type and a radical type.⁶ In the case of incremental organizational innovations the core elements as well as the relationships between the core elements remain mainly unchanged. The modeling of single subprocesses or bundles of activities mainly on the shop floor level, as is the case with job rotation and job enlargement, can be characterized as an incremental innovation.

Modular innovations imply that the core elements of an organizational structure undergo major changes. Self-organizing work groups as well as trans-functional design teams may be mentioned as typical examples in this context.

Self-organizing work groups imply that the core elements of the organizational model are in continuous flux. In the case of trans-functional design teams members from different units and departments form a new core element. Architectural innovations are characterized by a change in the relationships between the core elements, which implies that the bureaucratic decision, information and authority structures are changed. Flat hierarchies and profit centers may be seen as an example of architectural innovations as they organize information, knowledge and authority flows in a new decentralized way.

Radical innovations imply both: changes in the core elements and changes in the relationships between the core elements. Virtual organizations are a good example of this type of innovation. Virtual organizations are characterized by continuous regrouping of the core elements as the members continuously form new subgroups, new members can join the organization while others may leave if they have finished the specific task they have been occupied with. The relationships between the units themselves are also in continuous flux; for example, responsibility within virtual organizations changes continuously among members depending on the specific expertise needed at a particular time. Figure 3 shows how the different types of organizational innovations are constructed.

Figure 3. Different types of organizational innovations



Rationalization style and the community of practice approach

The term organizational innovation is not only used to indicate changes in the production system; instead, the processes of developing technological and other innovations and of coordinating their implementation process can also become the target of organizational innovations. This implies that we can distinguish between organizational innovations related to the production process and those related to the rationalization style. Concerning the latter, Naschold (1996) speaks about 'communicative rationalization', while Schienstock introduced the concept of 'discursive coordination' (1996). Both concepts point to the fact that the traditional 'top-down' process of developing and implementing organizational innovations is increasingly replaced by a new rationalization style which includes participatory elements. Of course the traditional 'top-down' strategy is still in use in companies and, regarding the introduction of organizational innovations such as outsourcing and downsizing, this is the most likely rationalization style being applied.

But also other organizational innovations such as group work or cross-functional design teams are not always developed and introduced in a discursive manner. A study conducted in the Nordic countries shows that while Finnish companies in general introduce various forms of organizational innovations as often as companies in other Nordic countries, they are developed and implemented applying a less participatory rationalization style. The staff in non-executive positions took an active part in restructuring processes more often in Sweden than was the case in Finland (Nutek 1999, 108–112). This can be explained by the fact that in Sweden the idea of 'humanization of work' has a long tradition, which is not the case in Finland. In the latter country companies' efforts to boost their competitiveness overhauling production processes and work organization has an exceptional degree of social legitimacy (Alasoini 2004).

The distinction between organizational innovations related to the production process on the one hand and changes in the rationalization style on the other becomes blurred, however, when we conceptualize organizational renewal as a continuous, open process. In this case worker

participation becomes a constitutive element of organizational innovations. For example, the idea of a dynamic group process (Kern & Schumann 1984) depends on workers' active involvement in the change process in the form of continuous self-organization. Without such a participatory element the dynamic group process cannot be sustained. Consequently, the character of organizational innovations is likely to change; instead of introducing fixed organizational forms, companies will probably focus on controlling the process of self-organization by implementing new guiding principles.

The importance of the participation aspect has also been stressed by Womack et al. (1990), when comparing the Japanese and the Swedish group models. They argue that while the Swedish group model reduces the extensive division of labor and the restrictive definition of working roles, it does not contain the innovative element of self-organization as is the case in the Japanese group model. We will not argue here on the subject of this judgement (Berggren 1992). What we want to emphasize instead is that one cannot analyze organizational innovations without taking into account the degree to which workers participate in the development and implementation process.

The 'user approach' of innovation goes even further (Sörensen 2001). Relying on the concept of 'communities of practice' (Brown & Duguid 1991) one can argue that a new organizational concept becomes an organizational innovation only when it starts playing a significant role in meaningful work practices. Consequently a group model that is not accepted by workers cannot be conceived of as an organizational innovation, as it has no practical implications. Introducing a user perspective is important insofar as management and users often have very different 'frames of reference' comprising a set of beliefs, standards of evaluation, and behavior (Bijker 1987). What from a management perspective may be seen as an organizational innovation that improves the capability to cope with a specific organizational problem, performance reliability or innovative adaptability, for example, may not be seen as an organizational innovation from a user perspective, as users may focus on the dysfunctionality to deal with other organizational problems such as societal demand for environmental protection.

Furthermore, the integration of new organizational means into a work practice in general entails a context-specific reinterpretation and reinvention. This means that the same new organizational concept can develop into different organizational innovations depending on the character of the work practices into which it is integrated. In work practices based on trust, workers may set off a dynamic development process extending the group process to an increasing number of tasks and functions, since for them this organizational innovation has the meaning of empowerment; in a distrust-based work practice, on the other hand, workers may see group work as a new surveillance mechanism and will probably try to boycott the organizational change.

Applying a user approach has major methodological consequences. We can no longer send questionnaires to managers asking them whether they have introduced particular organizational innovations. Instead, we need to apply new methods that allow us to analyze organizational innovations from the user perspective and to understand the meaning that is given to a new organizational concept within a work practice and its reinvention through the practitioners involved.

Organizational innovations in a wider context

Organizational innovations are not isolated phenomena; in general, they occur together with other changes in companies (Schienstock & Rissanen 2002). We have argued above that organizational innovations are introduced to improve the effectiveness of dealing with a number of organizational problems. But the relationship between organizational problems and organizational innovations is not one-sided. Due to their multifunctional character, organizational innovations can also create new problems. For example, an organizational innovation introduced to make the existing production processes more effective may have a negative impact on achieving a balance in vested interests and make the working on the latter problem more urgent.

Furthermore, Luhmann (1964) argued that whenever a new organizational structure emerges it simultaneously becomes problematic and therefore requires new solutions. This can be explained by the fact that

improved effectiveness in dealing with an organizational problem is likely to raise the aspiration level and this will require further changes. In addition, when the effectiveness of dealing with a specific organizational problem has increased, companies are likely to turn their attention to other, more pressing problems. Consequently we can argue that organizational problems can trigger organizational innovations but organizational innovations can also create new organizational problems.

It is typical of organizational innovations that they are closely linked to technical innovations and particular to the introduction of modern ICTs. Modern ICTs, as the OECD (2000, 55) argues, differ from some other general-purpose technologies insofar as their successful integration requires significant structural adjustments. How organizational and technical innovations are related is, however, a controversial issue. Technical determinism, which concedes technical innovations a leading role in the process of restructuring (recently Pavitt 2000), has often been criticized because it treats technological change as being socially exogenous. ICTs are not external factors but they are socially shaped; they develop within organizational practices. They penetrate, as Castells argues, all work processes 'not as an exogenous source of impact, but as the fabric in which such activities are woven' (2000, 30).

Nowadays there is a tendency to replace technological determinism by a kind of social determinism. Organizational innovations are given increasing priority among researchers who state that modern ICTs have to be implemented in the changed organizational framework and formed according to the new organizational needs, which means that modern ICTs are seen as indefinitely flexible (Brousseau & Rallet 1998, 245). However, such a perspective ignores the role that material resources play in shaping and substituting social relationships (Kavangh & Arujo 1997).

Here technical and organizational innovations are understood as mutually influencing change processes. Modern ICTs and organization forms are viewed as truly homologous forms; ICTs create new organization forms and organizational innovations, in turn, provide new opportunities for technology design. Neither technology nor organization is fixed, but both are changing in relation to each other (Lucas & Barondi

1994, 9). ICTs offer opportunities to manipulate, according to the specific organizational problem at stake, both the technology itself as well as the organization contexts in which they are embedded. ICTs provide, as Fulk and deSantis argue, more than traditional technologies, ‘occasions’ for structuring the production process according to other drivers of change (1995, 337). They can therefore be interpreted as enabling technologies.

It is, however, not the modern ICTs themselves but the new practices of applying the technology that enable organizational innovations. ICTs are multifunctional technologies and they can be used to serve different functions and to deal with different organizational problems (Zuboff 1988). The new quality of modern ICTs is that the functions for which they can be used are not rigidly predefined; they are only activated by the specific demand of production processes, which means that they can be viewed as ‘interpretatively flexible’ (Bijker 1987). Table 1 summarizes the various functions of modern ICTs in a schematic way.

Table 1. Various perspectives of ICTs

Metaphor	Function	Aim
tool	support of work processes	to increase quality, to cope with increased complexity
automation technology	elimination of human labor	to cut costs
control technology	control of machines and production flow	to avoid defects and technical breakdowns
surveillance technology	monitoring work process and work behavior	to increase work effort, to correct work activities
information technology	collecting, processing and distributing information	to reduce uncertainty, to model processes, to support reflexive organizational learning

Metaphor	Function	Aim
organization technology	integrating production processes	to save time, to increase organizational flexibility
network technology	technically mediated communication	to exchange information and knowledge, to allow for global reach

When modern ICTs are seen as interpretatively flexible, the distinction between organizational and technical innovations nearly disappears, as the capacity of modern ICTs to deal with specific organizational problems depends on the meaning attached to the technologies in a social practice. If modern ICTs are defined as surveillance technology, they may improve the reliability of the company's performance, but they will probably reduce the capability to balance vested interests. Interpreted as network technology, ICT can increase knowledge exchange and may accelerate the capability of a company to adapt to a changing environment.

Organizational structures are not only interwoven with modern ICTs and specific use practices, but they are also linked to the organizational culture. When organizational innovations and modern ICTs are introduced, they form new paths of acting, but they do not affect the way workers act directly, as their perceptions, interpretations and understanding are influenced by the existing business culture, which in general favors the continuation of the existing work practices and power structures. To change the way in which employees think and to commit them more fully to the new path of acting opened up by technical and organizational innovations, companies must redirect and realign the perception, understanding and evaluations of their employees by establishing a new business culture (Schein 1985; Nooteboom 1999).⁷

For those companies focusing on the problem of adapting to a changing environment by producing and introducing new product and process technologies the establishment of a strong trust-based organizational culture together with new flexible organizational forms becomes crucially important, in order for them to enable and facilitate information exchange, knowledge

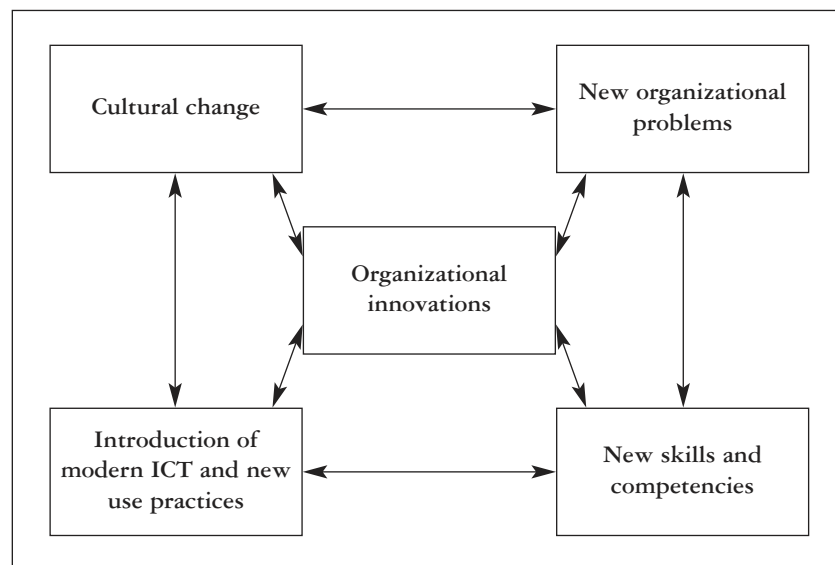
sharing, interactive learning and collaborative innovation activities (Murry & Willmott 1995). Quality circles, total quality management (TQM) or career planning systems can be seen as key elements of a trust-based organization culture. But of course the introduction of particular organizational innovations such as outsourcing or downsizing does not depend on a trust-based culture, such organizational innovations are often introduced by the top management in a culture of distrust.

Organizational innovations in connection with technical innovations also affect the skills and competencies of the workforce. The lack of skilled personnel is often seen as a factor seriously limiting the capacity of companies to introduce organizational innovations (Stahl et al. 1993, 26). The concept of 'skill-biased techno-organizational change' (see Breshnam et al. 1999) argues that organizational innovations combined with complementary use of modern ICTs creates considerable demand for adapting human capital. On the other hand, a skilled workforce may produce organizational innovations that open up new opportunities to deal more effectively with specific organizational problems. But again, while in many cases organizational innovations may increase demand for new skills and competencies, this is not necessarily the case if we think of outsourcing or downsizing. In other cases organizational innovations may only demand the improvement of skills and competencies of specific groups of workers; they may actually contribute to segmentation tendencies within the workforce.

We have argued that organizational innovations are closely linked with other changes taking place in companies. The effect of organizational innovations is likely to increase, if accompanied by a cluster of complementary changes. Companies preoccupied with the problem of adapting towards a rapidly changing environment will probably become more successful if organizational innovations aimed at increasing knowledge creation and application are accompanied by advanced use of modern ICTs, a trust-based organization culture, as well as new learning skills and competencies. On the other hand, these changes can open up opportunities for further organizational innovations that enhance knowledge creation. We can speak of a dynamic process of mutual influence and adaptation between the various elements of the cluster of changes.

Some types of organizational innovations, however, such as outsourcing, are not necessarily linked with a high trust culture, a skilled labor force, new communication enabling use practices of modern ICTs and a strategic reorientation towards increasing the adaptation and innovation potential of the company. In this case a culture of distrust or an unskilled labor force are not necessarily contraproductive. We can conclude that organizational innovations become more effective if they interact with a cluster of additional changes and that the cluster as a whole may develop in different directions depending on the organizational problem at stake. Figure 4 shows the interaction of various dimensions of restructuring processes.

Figure 4. Organizational change as a dynamic process



National organizational development paths

It is a matter of fierce dispute whether companies in all countries must adapt to the same organizational logic and must introduce the same organizational innovations to be able to survive in an increasingly global competition or

whether differentiated spatial development is taking place. While, according to Kogut (1991), countries differ in their organizational arrangements which tend to persist for longer periods,⁸ Womack et al. (1990) have forcefully argued that the lean production model represents the 'one best way' of organizing production processes and that all companies have to copy the cluster of organizational innovations bound together in the model.

The theory of convergence, advocated by Womack et al. (1990), considers the role of current change processes such as globalization and the ICT revolution to be so powerful that they drastically reduce options of organizational change. The external factors mentioned are forcing companies in all advanced countries to follow established paths of organizational modernization. Neo-institutionalism, on the other hand, rejects the idea that there is only one best way of organizing production and innovation processes. The basic idea of neo-institutionalism is 'that pre-existing institutions play a key role in shaping responses to exogenous factors by acting as a filter or intervening variable between external pressures and the responses to them. The institutional context, in fact, provides actors with a set of resources and constraints, which they must necessarily take into account when choosing among different alternatives, and which consequently shape their action' (Regini 2000).

The fact that companies pursue different national paths of organizing their production processes can be explained by the distinct institutional contexts that generate particular kinds of organizational arrangements. Different national business cultures and traditions may lead to different learning processes and due to this companies may apply different organizational innovations (Hedlund & Nonaka 1993; Sullivan & Nonaka 1986). Castells suggests considering—parallel to the notion of technological trajectories—'the development of different organizational trajectories, namely specific arrangements of systems of means oriented towards increasing productivity and competitiveness in the new technological paradigm and in the global economy' (2000, 153). The concept of organizational trajectories implies that organizational innovations are not separated from past structures and principles; instead, a kind of continuity in the process of organizational change is assumed. Organizational innovations line up with earlier ones; they are based on knowledge of organizational effectiveness and performance accumulated in the past. Continuous accumulation of knowledge leads to

the formation of an organizational trajectory, which delimits the options for further organizational change. We can speak of some kind of a channeled organizational change process.

The concept of national organizational trajectories assumes, however, that institutional differences across countries play a crucial role in shaping organizational change processes. While the cumulative nature of the process of organizational development narrows down the range of potential organizational innovations, national trajectories increase differentiation and diversification as offshoots from the main organizational development path. At the same time the fact that organizational innovations are nested in specific national institutional frames makes it difficult for companies to imitate successful ones from other countries (Hämäläinen 2003; Strambach 2002).

There is some evidence from the past. Concerning the Fordist production paradigm, for example, different national trajectories have been identified. Bojer (1991) characterizes a specific German organizational trajectory as flexi-Fordism, which differs significantly from the rigid Fordism that emerged in the car industry in the United States. The fact that German companies never developed rigid Fordist production structures can be explained by the distinctive institutional settings that shaped the organizational change process. In this respect, the dual vocational training system and the consensus-based industrial relations system are mentioned as decisive factors that channeled the organizational change process in the direction of a more flexible production system. Recently the high trust workplace system has been suggested as a new organizational trajectory, which produces various regional offshoots from the main development path due to different institutional settings (OECD 2000).

The concept of path dependency assumes an already existing and rather stable institutional setting in which only adaptive but no innovative learning can take place. Consequently only incremental organizational innovations can be introduced that adapt the organizational structures to the slowly changing institutional environment, but no new radical organizational innovations based on a new organizational logic. Such an assumption may be acceptable in a rather stable techno-economic environment; under the conditions of high uncertainty and dynamic change, however, we can no longer talk about channeled organizational change, as the institutional setting in which the traditional organizational trajectory was embedded becomes increasingly fragile.

The unfolding of a new organizational paradigm within national trajectories which triggers radical new organizational innovations can only take place together with major institutional and cultural changes (Hämäläinen 2003). It is likely that the institutional and cultural framework which is hospitable to one set of organizational forms will not be suitable for radically new organizational innovations based on a new paradigm. We can conclude, for example, that whereas incremental changes which make the Fordist production model more flexible can be accommodated easily by the existing institutional setting, this may not be the case with fundamental organizational innovations deriving from the new network paradigm. The rapid unfolding of the new network logic of organizing businesses depends on major institutional and cultural changes.

Consequently, when analyzing the transformation of a new organizational paradigm into a national trajectory we must also give attention to changes in the institutional environment and processes of de-embedding and re-embedding. But we must proceed even further; we must conceptualize the relationships between organizations and the institutional context as a subject-subject relationship. Organizational innovations must be seen as qualities of relational processes (Hosking & Anderson 1992). Scientific, educational, financial, and legal institutions can no longer be understood as relatively stable, passive formal structures. Instead, they have the quality of collective actors that are actively involved in the transformation of a new organizational paradigm into a national trajectory. When analyzing processes of organizational path creation we have to focus on interaction processes between various collective actors, on how they mutually influence their organizational development processes and thereby re-invent and co-construct each other (Schienstock 1997).

Conclusion

Research on innovations would appear to be in a phase of reorientation. While traditionally a technical perspective dominated by focusing on a rather high level of aggregation, scholars who have become more interested in processes on the micro-firm level give more attention to organizational

measures taken by companies to increase their capability to deal with organizational problems such as the effective use of available resources, innovative adaptability or balancing different stakeholder interests. Particularly the fact that organizational innovations are seen as important measures to sustain companies' competitiveness in an increasingly globalizing economy has contributed to a growing interest in organizational innovations. Therefore organizational innovations have become the major focus of an increasing number of firm surveys and case studies despite the fact that the concept itself has remained quite vague and that a generally accepted definition is still missing. As empirical studies are neither based upon a common understanding of the term nor on jointly shared basic theoretical assumptions, due to conceptual ambiguity, the state-of-the-art of research on organizational innovations is somewhat disappointing.

We sought to demonstrate in this article that much conceptual work remains to be done before we can expect empirical work to become more fruitful and to lead to an accumulation of knowledge in the field. Along with dealing with conceptual shortcomings, more rigorous theorizing is necessary to better understand what factors influence the way in which organizational innovations develop and to what extent organizational innovations affect the capability of companies to become more effective in dealing with various organizational problems.

We have mentioned as a major shortcoming that the aspects of multifunctionality and coherence are scarcely discussed. Multifunctionality implies that organizational innovations can affect the effectiveness of dealing with various organizational problems differently. They may be functional with respect to dealing with a specific organizational problem but dysfunctional with respect to coping with others, bringing up the problem of a coherent renewal approach. In addition to dealing with different organizational problems, companies often introduce a number of different organizational innovations which may have unintended and often very contradictory consequences. We can conclude that it is very important to study the multidimensional and often conflicting relationships between organizational innovations on the one hand, and the capability of companies to deal with organizational problems on the other with much greater care.

We have also criticized research being dominated by a structural conceptualization of organizational innovation. This concept is often associated with an understanding of organizational change as a punctual top-down intervention, while there is increasing evidence that organizational change must be conceptualized as a continuous process of learning, open for a variety of different organizational solutions. This has the consequence that a new type of organizational innovation, characterized as 'organizational principles' aimed at guiding self-organizing processes, is replacing the structural type of organizational innovation to an ever greater extent. The fundamental transformation in the nature of organizational change is scarcely reflected in empirical studies.

We have mentioned that the term organizational innovation is not only used to indicate changes in the production system, it also refers to the process of developing organizational innovations and of coordinating their implementation process. But the distinction between organizational innovations and changes in the rationalization style is blurring when we understand organizational change as a continuous learning process. Applying a user perspective we can speak of an organizational innovation only when an organizational novelty has become a significant element within a social practice and may even have been reinvented. This of course has major methodological consequences, as traditional firm surveys do not take into account the user perspective.

The fact that organizational innovations differ with respect to their depth and breadth is also widely neglected in empirical studies. The introduction of job enlargement, for example, probably has a much more limited impact on companies' capability to deal with organizational problems more effectively than the introduction of the network concept. To take into account the depth and breadth of organizational innovations we suggest distinguishing between incremental, modular, architectural, and radical organizational innovations. In addition, we must take into account that the effect of organizational innovations increases significantly if they are introduced together with a cluster of other changes, including technical, strategic, cultural, and human-resources-related ones.

The last aspect to be mentioned is the development of national paths of organizational change channeled by a specific institutional setting. While such a logic of path dependency of organizational change might

work under the conditions of a more stable environment, we cannot assume an institutionally channeled change in an era of a changing organizational paradigm; instead, the institutional environment itself becomes fragile. Consequently we must analyze organizational change as a process of ongoing negotiations in which institutions, instead of being conceptualized as a stable structure, have to be characterized as actors interacting with companies and mutually creating each other.

We can conclude that conceptual problems related to the concept of organizational innovation must be dealt with and rigorous theorizing must take place in order to enhance the comparability and hence the value of empirical research in this area. In addition there are enormous methodological problems of which the short reference to the user approach and the social practice concept may have given a first hint. It is understandable that the OECD decided not to include organizational innovations in the measures recommended in the body of the Oslo Manual due to significant conceptual and empirical problems (OECD/EUROSTAT 1997). But since the effectiveness of companies dealing with organizational problems such as productivity, adaptability, balancing vested interests and fulfilling societal demands increasingly depends on the development and introduction of novel organizational measures, this phenomenon can no longer be ignored in the field of research.

Notes

- ¹ This term is used by Becker & Whisler (1967, 467–468).
- ² For the discussion of methodological problems, see Sels et al. (2000).
- ³ This is in line with the distinction between innovation and change suggested by Zaltman et al. (1973, 158). The authors argue that while all innovations imply change, not all change involves innovation because not everything that an organization adopts is perceived as new.
- ⁴ It is not possible here to refer to all firm surveys, not to mention other research projects that deal with organizational innovations. Concerning international firm surveys conducted so far, see e.g. Sels et al. (2000).
- ⁵ One can actually argue that an increased or new capability is the result of the introduction of an organizational innovation and does not represent the organizational innovation itself.

- ⁶ This distinction is taken from Henderson and Clark (1990), who use it for defining product innovations.
- ⁷ Culture can be understood as the 'blueprint' of human activity. It determinates the co-ordinates of social action and productive activities, specifying the behaviors and objectives that issue from them (McCracken 1988, 72f).
- ⁸ What is termed as business systems approach argues in a similar direction. '[...] business systems', according to Whitley, 'are relatively stable and cohesive configurations of hierarchy-market relations that have developed, and remain effective in particular and separate institutional contexts' (1992, 36). The development of business systems is influenced on the national level as the nation state 'is the dominant collectivity for organizing so many social institutions which impinge directly on economic activities such as legal, education and financial systems [...]' (ibid., 37). It is only when both the background and the proximate social institutions are distinctive and cohesive within the boundaries of the nation state that separate national business systems become established' (ibid., 37). If a country exhibits institutional pluralism it may either have no dominant business system or a variety of systems.

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