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VTT, Vuorimiehentie 5, PL 1000, 02044 VTT
puh. vaihde 020 722 111, faksi 020 722 4374

VTT, Bergsmansvägen 5, PB 1000, 02044 VTT
tel. växel 020 722 111, fax 020 722 4374

VTT Technical Research Centre of Finland, Vuorimiehentie 5, P.O. Box 1000, FI-02044 VTT, Finland
phone internat. +358 20 722 111, fax + 358 20 722 4374

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Abstract

The main focus of this publication is the different aspects of managing innovative firms and their networks in the future. The premise of our approach is that many new changes in innovation and management area are happening at the same time, which will profoundly influence how firms and networks will compete and prosper in the future. The firms and networks have to be able to renew their management and organization as well as their products, services and marketing practices. The publication will provide new knowledge on the questions of renewal of the management of future innovative organizations.

Innovation is typically linked to business renewal, growth, and competitiveness. The assertion is that innovation is always a complex and uncertain activity. Innovation is more than just one idea or invention. Innovation can be product, process, organizational or paradigmatic innovation as well as network and customer management innovation. Innovation is composed of the new arrangement of existing or new elements of business systems.

The innovation process and management approach offer a means to consider organizational learning processes and the formation of organizational routines by which the firm can manage the uncertain facets of innovation processes. However, innovation processes are not linear processes. They are composed of many phases and feedback loops. There are many factors promoting or inhibiting innovations in organizations. At an organization level, strategy, organizational structure, organizational culture and management practices are the most important conditions for progressing innovativeness in the organization. However, bureaucracy and tight control is argued to inhibit innovativeness. Instead, some freedom and risk-taking might support innovative activities. Open communication at the team level will enhance innovation efforts in the organization, which will also inspire different persons to take responsibility for innovative activities.

The participation of different shareholders is a more important source and condition for innovation. This will promote the co-creation practices between a producer, users and customers. It will also help the implementation and diffusion of innovations in different customer groups. At best, business companies can create new strategic innovations in a market where customers and users do not have any previous experience. This will provide a new basis for competition in the market.

Alliances and networks are even more essential forms for innovative activities as well as the exploitation of network resources and competencies in future firms. Many business networks are established and developed as intentional network forms. Networks can be considered dynamic multilevel systems, because actors are networked at many levels. At the network level, dynamic features depict non-linear characteristics, because the network system is composed of many interconnected elements. On the other hand, the network has some self-organising features, which support the creation of new targets and renewal in the interaction processes between the parties in the network.

Different network forms can be identified ranging from closed forms towards more open or loosely-coupled networks. These forms can be described as four network models. The hub-spoke model aims to use the present operations as effectively as possible. It is based on the subcontracting model. The strategic network model is targeted on some renewal and co-configuration of solutions. However, it is mainly based on knowledge exploitation dimensions. The strategic alliance model is to integrate competencies for new solutions reaching new markets. The model is then oriented to an exploration dimension. The open innovation model is composed of several parallel networks aimed at the future competitiveness of firms.

Furthermore, the open innovation model offers a basis for considering how to strategize and find new approaches within future innovative firm. Business model is one of the essential forms that depict the development of a firm. Strategic renewal and networking is considered through the analysis of medium-sized firms. The framework consists of four forms: growth pilots, strategy making, ramp up, and consolidation. These forms are analysed via main cognitive models, cognitive processes, and networking. This opens up a new way to consider the development phases of firms, from exploration mode to exploitation phases.

In the changing and complex environment it is important to any firm to identify itself. Firms will determine their own position in the competitive field

and environment. How the firm understands its own identity will largely determine its organizing and strategizing efforts. Organization identity will form through manifold discursive and communicative processes going on in the organization. Decision-making is, anyway, a basic operation in the organization through which it is possible to reflect itself as well as the environment opportunities. By this way, the firm can crystallize its business idea as a basis for its resources and competitive success factors.

The main function of organization is to reduce uncertainty and ensure coordination between different function and processes. New flexible organization forms are emerging. New forms are emerging though electronic working models as well as virtual teams who are geographically, organizationally and/or time-dispersed individuals brought together for common goals. Strategies of uncertainty reduction and absorption correspond to the two distinct strategies of learning: exploration and exploitation. To summarize, we present twelve case-examples from seven case companies, how firms could and should have different solutions to cope with uncertainty.

Based on the contribution of previous chapters and lessons learned, the grounds for practice-oriented management research paradigm is presented and analysed. It is practice turn in strategy research. The nature of practice research is process and future oriented research. The premise of practice-oriented research is to look at organizations from the perspective of processual views and organizational change patterns.

Preface

There is wide discussion on the search for excellence in organizing and managing innovative firms and innovation activities. At different times, different aspects have been regarded as important elements impacting innovative firm and networks. Nowadays, there is discussion of innovation and firm renewal as well as innovation activities and renewal points at network level. At the same time, open innovation models are discussed even more.

In recent times, new kinds of approach are being made to the management of future firms. A new promising research approach is based on systemic and practice-based approaches. According to this approach, the question is more strategizing and organizing issues than the tight content of strategy and organization. The question is becoming one of change processes aimed at the formation of steps for the future in the firm context.

Discussion of firm networks is in an active phase. Different forms of networks are distinguished in different approaches. Intentional and more open network models have come under discussion in many quarters. Innovation management and innovation issues have acknowledged as important factors at firm as well as at network level for the renewal and success of future innovative firm.

Our aim in this publication is to deepen the understanding of how the management and organization research and its concepts could support innovation and the renewal of firms and their networks. In this publication we will consider and analyse innovation and renewal issues of firms and networks from different angles.

As the title of this publication states, the focus of our research work is on the management of future innovative firm. Therefore, we connect several research areas from innovation to effectiveness - and from firm to networks and alliances. Based on system thinking, we intend to point out that multilevel analyses as well

as boundary-crossing approaches are required in order to manage future innovative firm.

That means that new theoretical and practical approaches must be introduced for research and development, because the complexity of the development of firms and networks has increased. Our publication is part of the programme launched in the Industrial Management area at VTT in order to serve the future needs of growing firms and their networks that are going international, as well as to advance new management and innovation research and development approaches and models.

This publication largely represents our knowledge in the area of Industrial Management and Organization research at VTT. The publication comprises the inputs of many researchers. This publication is a collective effort of researchers coming from different backgrounds. The authors of the publication are industrial engineers, social scientists, organization scientists and psychologists. Almost all of the authors have a doctor's degree.

The publication is a result of highly communicative and collaborative process of joint working and writing. E.g. the publication is a result of co-creation process and authors have had several joint discussions about the content and structure of the book as a whole. Also chapters have been cross-reviewed. However, the main authors of each chapter are following. Chapter 1 "Introduction" is written by Raimo Hyötyläinen and Katri Valkokari. Chapter 2 "Innovation capability of an firm" is written by Tiina Apilo, Tapio Koivisto, Maaria Nuutinen and Juha Oksanen. Chapter 3 "Networked, open, and distributed business systems" is written by Katri Valkokari and Raimo Hyötyläinen. Chapter 4 "Strategizing within future innovative firm" is written by Tapio Koivisto. Chapter 5 "Strategic renewal and networking" is written by Magnus Simons and Raimo Hyötyläinen. Chapter 6 "Organizational identification in a changing landscape" is written by Tapio Koivisto and Maarit Heikkinen. Chapter 7 "Organizational practices and professional work" is written by Maarit Heikkinen and Maaria Nuutinen. Chapter 8 "Lessons learned: How to manage future innovative firm?" is written by Katri Valkokari and Raimo Hyötyläinen. Chapter 9 "Towards practice-oriented management research" is written by Tapio Koivisto.

Espoo and Tampere, October 2011

Authors

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1. Introduction

1.1 Starting point of the publication

In this publication, the main focus is on the different aspects of managing innovative firm in the future. The premise of our approach is that many new changes in innovation and management area are occurring at the same time that will profoundly influence how firms and networks will compete and prosper in the future. The firms and networks have to be able to renew their management and organization as well as their products, services and marketing practices. The publication will provide new knowledge on questions of renewal of the management of future innovative firm. In particular, the publication considers from different angles how to manage and implement future innovative firms.

However, there has been wide discussion on the search for excellence in organising and managing innovative firm and innovation activities. At different times, different aspects have been regarded as important factors impacting innovative forms. The tradition goes back to Schumpeter (1939) and Penrose (1959). Schumpeter emphasized the role of the entrepreneur and different innovation forms. Penrose stated that the firm can diversify into other products and other markets, to grow and prosper. Further, Penrose considered the role of resources and competencies for renewal and growth of the firm. Furthermore, Chandler (1962) turned his attention to the question of strategy and structure. Later on, this tradition has considered the question of agency and change as well as of the constitution of new structures and acting patterns (Giddens, 1984; Caldwell, 2006). The third tradition concerns how to build an innovative organization and how to manage it (e.g., Pettigrew & Massini, 2003).

Nowadays, the discussion follows three lines. First, the question is, on the one hand of corporate innovation and renewal and, on the other hand, of innovation and renewal at the network level (e.g. Drucker, 1985; Hamel, 2002; Cohendet & Amin, 2006; Apilo, 2010;). Second, there is a far-reaching discussion being conducted on the innovation paradigm. Open innovation and open business models are widely discussed (Chesbrough, 2003; 2006 and 2010). Von Hippel (1998 and 2005) has developed the concept of user-driven innovation, and has constructed the concept of the democratization of innovation. In the same way, knowledge-creating structures and processes have become a new topic for research and development (Nonaka, 1991; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995). A third approach is the systemic and practice-based approach to strategic renewal and innovations (e.g., Lave & Wenger, 1991; Luhmann, 1995; Vos, 2002 Johnson et al., 2007). This is a promising new approach from which to view strategic renewal and innovation issues for research and practical viewpoints. In this publication, we look at renewal and innovation issues mainly from systemic and practice-based angles.

However, innovation and renewal are not easy to achieve. Already Hayek (1945) states that knowledge and know-how is dispersed in the organization, which makes it difficult to achieve concerted efforts in the economic area. In the same way, Loasby (1999) also emphasizes dispersed knowledge in the organization. According to him, the only way to manage that kind of situation is to be able to make decisions when faced with uncertainty in a complex environment.

When management makes decisions and calculates future alternatives, they live forwards. The problem here is that life is only understood backwards. The future is always uncertain. When practitioners live forward, they follow routines, automatic thinking and tend to improvise and make trial error experiments (Weick, 2003). By living forward, management is operating in uncertain conditions. When looking at future action, management can, by reflection, look backward to be able to forecast future action (e.g., Schön, 1983). Normally, theory is detached from practice, aiming at explanation. However, theoretical knowledge aiming at understanding mainly answers questions like know-how rather than know-that. In this publication, our aim is mainly to increase understanding, which will enhance knowledge and know-how on business renewal and innovation patterns.

1.2 Aim of the publication

Our aim is to deepen the understanding of how management and business research and its concepts might support the renewal of firms, and what might be possible future models for survival and continuous renewal. This requires that focus will be postponed from the organization's static efficiency to its dynamic capabilities and ability to renew. As highlighted by Hamel (2007), companies must become as strategically adaptable as they are operationally efficient. According to Hamel, this will enable a continuous renewal and management and organizational innovations.

Despite many assertions concerning renewing and changing firms into agile and continuously renewing firms, there are many indications that there will in the near future stable, be large companies that will become more internationalized and globalized (Vartia & Ylä-Anttila, 2003; Skurnik, 2005). Furthermore, we suggest that understanding the renewal models of smaller and medium-sized firms will open a new infrastructure, which will support the success of large companies and, at the same time, create successful product and production firms for the whole economy (see Simons & Hyötyläinen, 2009). It is acknowledged that, in the current network economy, the success of a firm depends on its strategic collaboration with other organizations that influence the creation and delivery of its products or services. Networked independent firms and their decisions build up the future business environment, and thereby the firm's ability to configure and manage different networks, communities and groups is one of the key success factors.

1.3 Framing perspectives

In order to better understand the present and future challenges it is every now and then useful to look at the history (Table 1). Within economic, social and organizational development, three eras have typically been identified; industrial society (standardization era), information society (customization era) and network economy (innovation era) (Miles et al. 2000). Furthermore, we have named the fourth, emerging phase as the era of hyper-competition[1].

[1] Aveni (1997) introduced the term hyper-competition and argued that industries have changed from slow-moving, stable oligopolies to environments, characterized by intense and rapid competitive moves, in which competitors strike quickly with unexpected, unconventional means of competing.

Table 1. Economic, social and organizational evolution (adapted from Miles et al. 2000).

Economic framework	**Industrial society**	**Information society**	**Network economy**	**Hyper-competition**
Economic era	Standard-ization	Customization	Innovation	Concurrent globalisation and localisation
Drivers of change	Learning curve and economy of scale	Transfer of information and models to new markets	Entrepreneur-ship and openness	Real-time, parallel and connected models Fragmented environment
Competitive advantage	Tangible assets	Information	Knowledge, competencies	Development potential (renewal capability) Empowerment
System approach	Closed	Open	Dynamic	Complexity, concurrently open and closed systems

In the latter part of the nineteenth century, the new combination of exploitable assets revolved around energy sources, capital goods, and semi-skilled manpower. The standardisation era emerged as pioneering individuals and companies designed not only the organizational instrument of mass production, but also the wealth-capturing business model of mass distribution. As firms in general began to master the art of mass production and distribution, some firms began to seek competitive advantage by differentiating their product lines. In this way, the *customisation era* began to emerge in the first few decades of the twentieth century. As the customisation era progressed, the firm's ability to manage and utilize information became a key asset for differentiation and competitive advantage. Particularly during the last two decades of the twentieth century, firms learned to use a wide array of information technologies in order to assemble skills and resources not only within but also across firms. However, knowledge is a key asset within the *innovation era* and collaboration is the meta-capability by which knowledge will be exploited in order to drive innovation and reap its economic benefits.

Although competition nowadays occurs between the business networks or alliances, firms have to cope and choose between several interconnected networks. In order to ensure the renewal of the firm, these various emerging

models of collaboration – in the *era of hy per-competition* – also require new approaches and models of management. Hyper-competition results from the dynamics of strategic manoeuvring amongst competitors, and therefore the key success factor is the firm's ability to *manage dynamic strate gic inte ractions* (Aveni, 1997). Thus, the era of hyper-competition is characterized by uncertainty, dynamic change, connectivity, and complexity. Several authors have pointed out the importance of management innovations within this new era (Perez, 2002[2]; Hamel, 2007, Virkkunen, 2010; Hyötyläinen, 2011), and therefore empowerment of employees as well communities outside the firm are key issues. Furthermore, co-creation processes between independent but interconnected actors and different product and technology platforms as tools and enablers for co-creation are emphasized as management innovations of this kind within this new era.

Naturally, this kind of categorizing a century of business history requires a significant amount of simplification. The actual development of practices and ideas is subject to debate, and eras will certainly overlap. As such, the categorisation presented here should be viewed as illustrative rather than definitive. Miles et al. (2000) point out that the new era achieves fruition when the meta-capability is made explicit, becomes widely understood, and is even taught in various ways across different segments of society. At this stage, most managers can clearly see the value of the meta-capability in creating new business and organizational models.

1.4 Research approach of the publication

In this publication, new platforms and models for innovative firms and networks, as well as their innovation and renewal patterns, will be developed, analysed and assessed. The aim is better to understand the phenomena of innovation and renewal in a firm and network context. Hyper-competition and innovation in the economic model will form a central framework to study new features and characteristics of innovative firms and networks. This context will open new possibilities to develop and assess future innovative firms and networks.

[2] Perez (2002) has proposed the concept of a great surge of development, departing from Schumpeter's notion of long waves in some fundamental aspects.

The solid basis for this publication derives from the fact that the phenomenon of innovation and innovative firm and network continues to attract enormous interest among management scholars (e.g., Hyötyläinen, 2000 and 2011; Tidd et al, 2005; Kim & Mauborgne, 2005; Valkokari, 2009; Apilo, 2010). Beyond the ubiquitous technological and product innovation, a number of subfields have emerged, concerned with aspects of innovation, such as business model innovation, social innovation, service innovations, and process innovation (cf. Schumpeter, 1939; Prahalad & Ramaswamy, 2004; Chesbrough, 2006 and 2010). However, organizational renewal and renewal capability research is not based on a single research tradition, and there is no single generally accepted theory for it (e.g. Kianto, 2008). In this publication, renewal is understood as a firm effort in order to gain competitive advantage through innovation. The problem with innovation research is that literature concerning innovation and renewal is fragmented. For example, von Hippel's (1986 and 2005) user-centred approach and the open-source approach (Chesbrough, 2003) are partly abstract approaches. *It is essential to be able to implement these approac hes and to b e able continuously to make choic es bet ween different innovation and renewal approaches and models* . In this publication, the renewal and innovation at the firm and network level are examined and assessed.

Discussion of networks is actively on-going. Networked independent companies and their decisions build up the future business environment. These business networks have been studied rather extensively in recent years; thus, it is not surprising that several different network typologies can be found in literature. In addition, there is an intensive debate about the most favourable collaboration models and whether networks can be managed or not. Nevertheless, in practice firms manage these different networks daily, and also the theoretical discussion of the question, *how the different kind of networks can be managed* (Järvensivu & Möller, 2009; Valkokari, 2009) should be postponed. Therefore, we would like to point out how, with strategic considerations within a networked business environment *as conc urrently open and c losed system s,* uncertainty about the future can be turned into a success factor for a firm. This requires openness to new choices, constant piloting and renewal capability.

Making sense of emerging opportunities (Weick, 1995), setting agendas, negotiating with targets through strategic network concepts (Valkokari et al., 2004; Hyötyläinen et al., 2005) and co-creating knowledge through exploration dominate knowledge creation and transfer within networked innovation systems. In other words, the role of tacit knowledge or theoretical understanding (know-

why and know-how) is much more pronounced here than in stable business and production networks. Innovation within a network of companies requires deep integration between the companies and a change in culture towards readiness and an ability to share information (Soekijad & Andriessen, 2003; Liao et al., 2003). *Yet, the innovation network must, at the same time, be open to emergent and entrepreneurial strategies in the network companies.* In this publication, innovative forms of networks are under examination.

1.5 Structure of the publication

This publication consists of eight chapters, apart from an introductory chapter. In the following chapters (from 2 to 7) we go through the concepts from the literature and research related to *innovation, networks, management, and organizations* in order to present the new challenges to the management of future innovative firm.

Based on these approaches, our intention is to deepen the understanding of the renewal of firms, and what might be the possible future models for survival and continuous renewal in a complex and networked business environment. In Chapter 8 we summarize the lessons learned from the previous chapters. Finally, in Chapter 9, we will challenge current management research with a new practice and future-oriented approach.

2. Innovation capability of a firm

At company level, innovation and innovativeness are traditionally seen as closely linked to competitiveness. In the economic sphere, innovation is a means to seek competitive advantage, which, depending on the characteristics of the innovation (incremental, radical, etc.) and its effects on the market (a shift in an existing market or the creation of a new market), may provide a temporary near monopoly position, or at the very least a way of differentiating an offering from competitors for a time. This holds true for product and service innovations, but innovation at the level of processes or organization are also equally important for competitiveness, even if often they are less visible to customers.

As implied above, in a market environment gains for competitiveness through innovation are not typically permanent, because competitors are quick to introduce rival versions of new products for which there is a demand, and/or adopt processes and organizational modes which have proved feasible and successful in the case of other firms. In short, in the dynamic and networked market context, innovativeness and continuous innovation may be understood as a way to pull away from competitors, even if temporarily. Innovation in processes and in management often includes such tacit and context-dependant elements, which may make copying harder, and consequently provide a more lasting competitive advantage.

A customer and their willingness play a decisive role for the success of an innovation. As Kusunoki (2006, 50) points out, in the case where "customers do not perceive any new values, innovation cannot result in substantial and sustainable differentiation in the competition", and may result in a situation in which price competition seems to be the only way to prevent between products and services otherwise appearing similar to customers. This phenomenon, in literature referred as commoditization, is associated particularly with a mature market; functional features of a product or a service as well as sophistication of

production and provision are well-known and widely dispersed, and do not any longer provide a competitive advantage in comparison to rivals.

There are good reasons to assume that in a new phase of hyper-competition the pressure for commoditisation is increasing in various markets as a result of intensified global competition and rapid development of competences, especially in emerging large economies, such as China and India. Thus, there is a clear call for innovativeness and continuous innovation to stay ahead of the competition.

2.1 Towards a multidimensional conceptualisation of innovativeness

Innovation is a concept that is understood in many different ways. Many definitions of innovation emphasize novelty and inventiveness (e.g. Utterback & Abernathy, 1975; Galbraith, 1982), but many of them also point out the importance of utilization and being commercially successful (e.g. OECD, 1991; Bledow et al., 2009).

However, the importance of product innovations is emphasized in the literature. Product innovations are considered, for example, to be the primary tools (Dougherty, 1992), engines of renewal (Bowen et al., 1994) and sources of competitive advantage (Brown & Eisenhardt, 1997, 1998). Nevertheless, broader definitions of innovation have started to re-emerge (see e.g. Thomson, 1965; van de Ven, 1980): for instance, Francis and Bessant (2005, 13) present a “four P” model categorising innovations as product, process, position and paradigm innovations. Similarly, OECD has broadened their earlier innovation definition from 2005 from a technology-based view. Moreover, Shawney et al. (2006) in their innovation radar model present the 12 different ways to innovate in business (offering, platform, solutions, customers, customer experience, value capture, processes, organization, supply chain, presence, networking and brand).

Furthermore, innovation is more than just one idea or invention. Instead, innovation is more likely a novel combination of new or existing elements of a solution–customer–organization–value “system”. For example, in service innovation new business models and new network partners may also be needed.

Many innovation process models illustrate innovation as a linear process, or try to bring out the iterative character of the innovation process, as in Cooper’s (1983) stage-gate model. The models do not take sufficient account of the fact that innovation is not usually development of one idea generated at the front end of an innovation process, or not even the development of one invention.

While ideas and inventions are often considered to be the key element of innovations, it is often easily forgotten that an innovation is not simply a refined version of a single idea, but a solution that is a combination of factors each with their own parameters during the innovation process. Hargrave and van de Ven (2006) state that at the team level and the organization level, innovations are created in a process to which various parties contribute and that the end result is different from what each individual contributor originally intended. Chapter 3 considers the dynamics of such networked innovation processes (see Figure 1).

Further, emphasizing the team's and organization's role in the innovation process will lead our thoughts to an important aspect from an innovation management point of view. If innovation is seen only as the creative work of an individual-inventor, it does not' deal with a whole firm, and that is something that seldom happens. In contrast, seeing innovation as a normal, extensive, and frequently repeated event will motivate organizations to develop innovation management practices. Innovations in some of their many different forms should be a part of every employee's work, not only of those working at an R&D department.

Innovation processes and practices concerning product innovation and new technology development are described in considerable detail in most of firms. Instead, service and business model innovation processes and practices are not applied so generally in industry. Thus, a broad concept of an innovation points out the challenges in developing and testing new – more holistic – innovation processes and practices. Further, open and networked innovation increases the need to outline a new innovation management approach.

Like many definitions and concepts of innovation, the same applies to the innovation management concepts illustrated in the literature. Innovation management can be considered an organizational learning process where the firm's purpose is efficiently to discover routines for coping with the challenges of the innovation process (Tidd et al., 2005). Tidd et al. define routines as learned practices represented by structures and processes. Further, they state that these routines are difficult for other companies to copy. Innovation management can also be considered as an organizational competence (Lawson & Samson, 2001) or an organization's dynamic capability (see e.g. Teece et al., 1997; Eisenhardt & Martin, 2000). However, for the most part, the discussion of innovation management is considered as management of a process *creating potential, conditions and context* for the emergence of innovations (e.g. Boer & During, 2001; Drejer, 2003).

The following is a discussion firstly of how a firm can leverage internal sources and the factors influencing in-house innovation. The firm's capacity for innovation manifests itself here as new kinds of solutions and services offered to customers. We then broaden the viewpoint to include issues in the introduction of new solutions, with particular reference to the role of customers in innovation, and joint development. Thirdly, we discuss the question of strategic innovations related to the repositioning of the firm and the solutions it offers, and finally, we address the issue of innovation and uncertainty from a novel angle.

2.2 Internal sources and conditions of innovation

In the debate on the concept of 'open innovation', for instance (Chesbrough, 2003), there has been something of an over-emphasis on the leveraging of knowledge outside the firm in innovation. However, practice has shown that there is often a lot of potentially useful knowledge and competence available within companies themselves, particularly within medium-sized and large firms. Often the question comes down to whether the firm is able to draw on this knowledge in its decision-making and operations. The tacit and explicit knowledge and competence of individuals, groups and units in a firm will not be translated into corporate knowledge and competence until they are leveraged in the firm's decision-making and operations (cf. Kevätsalo, 1999; Burgelman, 2002). As an example, General Motors were not able to draw on new production expertise developed at one of their own units in their investment projects (NUMMI, Saturn). In the 1970s, Xerox did not realise the significance and potential value of the PC, the computer mouse, the Ethernet or text processing applications, all of which were developed at their own laboratories (Menon & Pfeffer, 2003).[3]

Prerequisites for innovations, that is, factors that promote or inhibit innovations in organizations have been studied a lot (see Seeck, 2008). The organization's development and innovation capability can be considered at four levels: 1) organizational level (e.g. structure and size), 2) team or group level, 3) individual level and 4) task level. Seeck (2008) has recently summarised the results of innovation studies from this perspective and the following is based on

[3] Menon and Pfeffer (2003) argue that there is a managerial paradox in that companies over-value and over-use external knowledge compared to rich internal knowledge, from which value can be captured much more easily.

her review. The effects of strategy, organizational structure, organizational culture and knowledge management have been studied as conditions for innovations at the organizational level. For example, the innovation strategy, that is, a clearly communicated target to produce innovations, is important when aiming to enhance innovativeness. Emphasizing the importance of innovations, visions of change and development of the firm's own area and organization and a clear understanding of competitors and partners are essential, as pointed out in Chapter 3 with the concept of networked business landscape.

The effect of size of organizations on innovativeness is not clear, but there is some evidence that bureaucracy, formality and tight control prevent innovations, whereas an absence of hierarchies, control systems and bureaucracy as well as and resilience and adaptation of organizational structure promote them. Organizational culture that is characterised by psychological security, versatility, risk-taking and learning from success and errors promotes innovativeness. Further supporting features are e.g. support from the organization, encouraging risk-taking, a constructive evaluation of ideas, ideating collaboration practises, participatory decision-making, support from managers, encouraging work groups, freedom, autonomy and offering both financial and time resources. The links within the organization and outside the organization are also emphasised, as well as the role of mangers and HR as key positions in creating the prerequisites for and supporting innovativeness in an organization.

Studies of innovativeness at the team or group level are fewer than at the organizational level. Structure (combination) and dynamics of the team have an influence on whether or not the creative potentials of individual members are realized. Further, close relationships are important; a bad community spirit can cause problems in communication and conflicts, which prevent innovativeness (Van der Vegt & Janssen, 2003; Parzefall et al., 2008). Diversity (varied skills and knowledge), heterogeneity of the team (Paulus, 2000), a feel of belonging and the we-spirit (Kanter, 1988) and interconnected objectives (Van der Vegt & Janssen, 2003) are important for innovativeness at the group level. Good relationships among group members and team spirit are also important: safety, trust, openness and learning is needed (Edmondson, 1999; Paulus, 2000; Baer & Frese, 2003). In addition, real and open communication, but not too much consensus-seeking (Möra 2000, 24), have been emphasised. A high quality of innovation activity can be achieved when team members need each other to get the work done, and believe their own targets can be achieved only if other co-workers' targets are achieved (Van der Vegt & Janssen, 2003; Parzefall et al.,

2008). According to Thamhain's study, innovativeness in teamwork is enhanced by low disagreement, efficient problem solving and target setting (Thamhain, 2003).

There are many studies of personality and other individual factors affecting innovativeness (Seeck, 2008). General factors that affect individual creativity are: personality, motivation and expertise (e.g. Huhtala & Parzefall, 2007; Parzefall et al., 2008). The individual variables are interconnected with, or affected by, group level factors such as organizational culture (McLean, 2005). According to McLean (2005), at the group and organizational level, innovativeness is more important that creativity. Innovation is related to the will to surpass and positively experienced pressure (Parzefall et al., 2008).

Creativity and innovativeness should not be considered only as special characteristics of particular individuals. In spite of individual characteristics, individuals who conceive of their work as challenging and leading to accomplishments, recognition and personal growth are more likely to participate in innovative work than are highly creative individuals in unsatisfying work conditions. Recruitment of creative people is not enough – it is important to have both formal and informal mechanisms, e.g. training and a supportive work environment (Huhtala & Parzefall, 2006a; Parzefall et al., 2008).

When considering innovativeness from a work task perspective, it is evident that daily work conditions are important. Workers in demanding and multidimensional duties (tasks) are more likely to produce creative solutions and new ideas than are workers in tasks of a simple and routine nature (Van der Vegt & Janssen, 2003). A sense of having control over one's own work correlates with creativity (Csikszentmihalyi, 1996). Autonomy in task performance is important, and thereby independence regarding both time and method. A feeling of autonomy and control over one's work has a positive correlation with workers' participation in innovative activity (Csikszentmihalyi, 1996; Axtell et al., 2000; Parzefall et al., 2008, Seeck, 2008).

Innovations and creativity are not merely positive phenomenon, but demand mental resources, and can cause exhaustion. Time pressure, workload, uncertainty, lack of control over one's work and a loss of meaningfulness, that will be discussed in more detail in chapter 7, prevent innovativeness and can have serious consequences. If there is no time to try out alternative solutions, think improvements and learn without continuous interruptions, it is useless to expect real innovations. However, a small amount of *real* time pressure together

with some amount of restriction in the scope of the problem and the possibility to concentrate are positive factors. (Seeck, 2008).

Prioritizing, clearing responsibility areas and focusing on the problems with real urgency are relevant aspects when considering innovativeness from a management perspective. This also includes interference when employees themselves take on too many work tasks. Managers should have an *overall picture*, the ability to coordinate and a vision of the target. Managers should also give feedback and encourage employees. Innovativeness is not supported only by giving time, but activity should also be coordinated and have clear targets with support. Seeck (2008) emphasises supporting innovativeness in daily work. This is about balancing between creative freedom supporting innovativeness and productive activity (Seeck, 2008).

Awareness of a need for innovations and the factors affecting them can be raised through developing innovation management. However, there is a risk of (over)emphasising only one aspect of objectives at the expense of others. There is a danger that a developed new "innovation management system" attains its own life and is not conflated with daily management (c.f. quality systems). Enhancing innovation should be part of daily management and leadership, something that is always kept in mind but balanced against other objectives. From the individual, group and organizational perspective, many factors that support overall productivity and the wellbeing of the employees are also those that support innovativeness.

2.3 User participation as source and condition of innovation (co-creation)

In contrast to invention, innovation by definition requires not only some degree of novelty but also an introduction into use. In other words, innovation — a new product, process, concept, organizational model or whatever other form in which novelty shows itself — has to be introduced to the market or adopted into use to qualify as an innovation. If we are focusing only on the innovation process, it may be possible to conclude that innovation has been successful as soon as it has come into being after introduction. Such a narrow view on innovation does not, however, tell us anything about how innovation has been received by actors or the market, nor its success in the longer term.

To decide whether an innovation is successful is to a large degree comparable to an ex-post assessment type of exercise; history knows a large number of

innovations which in a technical or some other way would have been superior to the existing provision, techniques or ways of doing things, but which did not manage to gain a foothold on the market or in use. An often-cited example of a failed innovation concerns alternatives to the QWERTY keyboard layout which has become deeply rooted in use in typewriters and later with computers (David, 1985). The case illustrates well how a new product, despite its alleged superiority in functional terms, may fail to win over an existing practise, i.e. to diffuse.

It is not a great surprise that Rogers (1983, 1) notes "one reason why there is so much interest in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult". According to Rogers (ibid.), diffusion is first of all a *communication process* in which messages concerning a new idea, thing, and behaviour are circulated "through certain channels over time among the members of a social system".

Diffusion of innovation can be seen as a proxy for how attractive, useful and feasible market and target audience and users perceive the innovation itself. In the early 1960s Rogers put forward a theory explaining diffusion of innovation as a process in which successive groups of users adopt a new product or technology. According to Rogers (ibid.), adopters of any new innovation or idea can be categorised as innovators, early adopters, early majority, late majority and laggards. This classification has had a significant impact on marketing, as it brings out the role of other people in information flows and the dissemination of innovations.

Rogers' view of diffusion of innovation was strongly geared towards users and social groups as significant channels of communication, through which information about novelties spreads or fails to spread in a social system. Later on, studies of diffusion have also underlined the importance of other actors which may have an important influence on the diffusion and adaptation of an innovation. For instance, Talke and Hultink (2010, 539), drawing on the stakeholder theory, use the term "firm stakeholders" which includes – depending on the specific context – "customers, competitors, suppliers, sales agents, and further parties such as the public, legal, and political institutions" having a position relevant to the success of a new innovation. As the writers note (ibid.), "these stakeholders differ in their specific interests, needs, and concerns" and "continuing corporate success and ultimately firm survival depend on the firm's ability to create sufficient wealth, value, or satisfaction for all influential stakeholder groups when pursuing one's own objectives". Against this

background, for example, the involvement of customers in the development of new service offerings is not the only way of ensuring a match of service with demand, but also a way of building commitment among the stakeholders. Concerning value creation, users' participation in a specific value creating process is increasingly seen as a vital element of this phenomenon. In other words, value is co-created by a user and a firm together, i.e. value is not embedded in a product as such, but rather defined by a specific user "at a specific point in time and location, in the context of a specific event" (Prahalad & Ramaswamy, 2003, 14).

2.4 Strategic innovation

Markides (2002) has examined several business companies which have succeeded in attacking an established industry leader *without* the help of a radical technological innovation, without riding the wave of technological discontinuities. In fact, according to Markides (ibid.), they broke the rules of the game in their industry. The common element in all successful attacks was *strategic innovation*. Significant shifts in market share and fortunes occur, not because companies try to play the game better than the competition, but because they changed the rules of the game.

Markides (2002) notes that, without the benefit of a new technological innovation, it is difficult for any firm to successfully enter a new market where established players exist. According to Markides (ibid.), the strategy that seems to improve the probability of success in those situations is the strategy of breaking the rules, that is, strategic innovation. On the other hand, if product innovation is to be really successful, and process innovation is to show its true worth, there must be new strategies to help and to encourage them. The creativity will be apparent because the new strategy will typically break some established norm or rule and challenge accepted thinking about how the organization as a whole should behave (Baden-Fuller & Pitt, 1996).

Creativity and innovation have traditionally been associated with areas such as product development and marketing. More recently, there has been a call for greater innovation and creativity in strategy development (Styles & Seymour, 2004). The argument for strategic innovation is voiced by number of academics and consultants. Influential writers in this new strategic innovation movement include e.g. Hamel and Prahalad (1994), Drucker (1998), and Markides (1999).

The theoretical foundations underpinning the new strategic innovation movement come from two sources (Styles & Goddard, 2002; Styles & Seymour, 2004). The first is the resource-based theory of the firm, originally drawing from the writings of Edith Penrose (1959). The second is the work of the economist Schumpeter (e.g. 1939), and his concept of "creative destruction".

Traditional approaches to strategy development are best suited to maximising value from current business models, but are too rigid for developing *entirely new business mode ls*. Innovation requires non-linear creativity, which may be considered the antithesis of normative checklists. In fact, strategies can have lifecycles in the same way that products do. The strategist therefore has two tasks: 1) to deploy value from the current business model; and 2) to develop the new business model that will substitute or even "destroy" the old (Styles & Seymour, 2004).

However, as Markides (2002) notes, it is not enough to proclaim the virtues of breaking the rules and to prompt companies "just do it". It is easy to argue for innovation and to dissect strategic successes afterwards. Over and above deciding when it makes sense to break the rules and when it is better to play the existing game, the real question is, *is t here a syste matic way of t hinking about the issue s that allows a firm to com e up w ith ideas that bre ak the rules*? According the Markides (ibid.), strategic innovation may occur when a firm identifies gaps in the industry positioning map, and decides to fill them. Gaps refers to 1) new, emerging customer segments that other competitors have neglected; 2) new, emerging customer needs or existing customer needs not well served by other competitors; and 3) new ways of producing, delivering, or distributing existing or new products or services to existing or new customer segments. Gaps appear for a number of reasons, such as changing consumer tastes and preferences, changing technologies, changing policies, and so on. Gaps can be created by external changes or proactively by the firm.

How can a firm proactively and systematically think about and develop a new game plan or model of business? According to Markides (2002), five generic approaches by the successful strategic innovators can provide clues: 1) Redefine the business. 2) Redefine the *who*. Who is our customer? 3) Redefine the *what*. What products or services are we offering these customers? 4) Redefine the *how*. Companies should leverage existing core competences to build new products or a better way of doing business and then find the right customers.5) Start the thinking process at different points. For example, instead of thinking "this is our

customer, this is what he wants, and this is how we can offer it", start by asking: "what are our unique capabilities?"

2.5 Concluding remarks – managing innovation

The issue of innovation process management and organization may be approached firstly as the leveraging and mobilisation of knowledge available to the firm. The firm's capacity for innovation in this sense refers to its ability to draw on in-house resources and to create the necessary framework and conditions for autonomous in-house innovation (Bessant, 2003).

A firm's capacity for in-house innovation manifests itself in the offering of new, innovative solutions to both existing and potential customers. However, offering new solutions is not the be-all and end-all of the innovation process. The introduction of new solutions often requires an interactive relationship with customers, up to and including the development and customising of solutions in close cooperation with customers. Externally, a firm's capacity for innovation refers to its ability to communicate with actual and potential customers, and to create the framework and conditions for possible co-creation processes.

Strategic innovations do not emerge simply through innovations in the structure or features of products or services, but also require a repositioning of the firm on the market, and perhaps even the generating of a wholly new market. It is essential to realise that a firm's operating practice, business model, market and niche are not set in stone. Users' and consumers' needs shift and change all the time, thereby creating new gaps and deficiencies (Burt, 2004) and business potential on the market. Strategic innovation is based on the recognition that there is less competition on product markets or even on technology than on concepts and business models that change the rules of the competitive game. In short, companies need to be able to manage their current set of business effectively while at the same time finding and developing new business ideas and models.

The debate on innovation process management often assumes that innovation and innovation management are, at least fundamentally, about both a process that can be *consciously controlled* and the efficient leveraging of *existing* knowledge and competence. This, however, leads to a paradox (cf. Lewis, 2000; Andriopoulos, 2003): if the innovation process and its results and consequences are already known, it is not innovation. If, however, the process and its results are not already known, it is not possible to control and manage the process

consciously from start to finish. The question can be turned on its head by approaching innovation management and organization from the point of view of a *lack of knowledge* and of *uncertainty* and considering how to manage such lack and uncertainty.

In as essential sense, innovation concerns the search for, and the discovery of, experimentation, development, imitation, and the adoption of new products, new production processes and new organizational set-ups. Almost by definition, what is searched for *cannot be known* with any precision *before* the activity itself of search and experimentation, so that the technical (and, even more so, commercial) outcomes of innovative efforts can hardly be known *ex ante* (Dosi, 1988). Certainly, whenever innovative activities are undertaken by profit-motivated agents, they must also involve some sort of perception of yet unexploited technical and economic, opportunities. However, such perceptions and beliefs rarely entail any detailed knowledge of what the possible events, states-of-the-world, input combinations, product characteristics will be.

Putting it another way, innovation involves a fundamental element of *uncertainty*, which is not simply a lack of all the relevant information about the occurrence of known events but, more fundamentally, entails also a) the existence of techno-economic problems, whose *solution procedures are unknown*, and b) the impossibility of precisely tracing *consequences to actions* ("if operation x, then consequence y etc."). (Dosi, 1988, 222).

It is possible to approach many of the issues involved in production and management, and in organization, with completely new insights, if we start with the fundamental uncertainties and the lack of definite information that are instrumental in the generation of innovation. From this perspective, the issue of innovation management and organization can be summarised in an operating issue of compensating for gaps and shortcomings in knowledge (learning) and of reducing uncertainty.

Ultimately, the question focuses on *how quickly* learning can be done and new solutions developed (Siggelkow & Rivkin, 2005). Therefore, the emphasis is on experiments, simulations, pilots, user involvement, co-creation and other similar methodological solutions which are *limited in time* and run simultaneously with and parallel to normal operations. Moreover, companies can correct and compensate for any shortcomings or constraints they may have with regard to the production of new information (cf. Dougherty, 1992; Dougherty & Corse, 1995), as well as risks and uncertainties, by using temporal innovation and creation networks in their development and innovation activities (Pyka &

Küppers, 2002; Tuomi, 2002; Hagel & Brown, 2006). Innovation and creation networks are, in fact, separate *self*-organising and *self*-governing entities, distinct from the formal corporate decision-making systems. They are 'hybrid' or parallel structures as far as the official organization or operations of a firm are concerned (Goldstein, 1985; Lillrank & Kano, 1989; Lillrank, 1990; Koivisto, 1997; Järvinen et al., 2000). Issues pertaining to networked operating environments and the networks themselves are discussed in greater detail in the next chapter.

3. Networked, open, and distributed business systems

As described in Chapter 1, more intense global competition, more complex products and distributed knowledge have increased the importance of networks. Therefore, the success of the firm depends more and more on its strategic collaboration with other organizations that influence the creation and delivery of its products or services. In this way, the knowledge and resources required are distributed to several independent but interconnected actors in networked business systems. This distributed network of actors both explores future business opportunities and influences – with their actions – to the creation of business solutions. The key challenge to the companies is how to support, contribute to and utilize the networked business landscape within and across the boundary of the firm.

The academic literature presents alliances and networks as viable development options to *compensate for internal knowledge deficiencies* as pointed out also in Chapter 2. Such co-operative agreements provide opportunities for knowledge acquisition (George et al., 2001; Soekijad & Andriessen, 2003), knowledge access (Grant & Baden-Fuller, 2004) and learning (Simonin, 1997; Inkpen, 1998 and Larsson et al., 1998), as well as access to more diverse capabilities. However, most of this research focuses on the alliances and didactic relationships between two companies (Inkpen, 1998; Larsson et al., 1998; George et al., 2001; Soekijad & Andriessen, 2003; Grant & Baden-Fuller, 2004) – while the challenge for companies is to manage concurrently several interconnected networks of business exploitation, renewal and innovation. Because each firm has a unique knowledge base and network position, there is no "one size fits all" solution available. Furthermore, each collaboration setting has several operation levels and the elements, like relationships and actors, within these levels cause the dynamics of networked business systems.

3.1 The dynamic elements of networked business

Both in alliance and network research there is an intense debate about the most favourable collaboration models (Wilkinson & Young, 2002; Lazzarini, 2002; Grant & Baden-Fuller, 2004; Hagel & Brown, 2006; Möller & Rajala, 2007; Andersson et al., 2007; Harryson et al., 2008; Valkokari, 2009). Management of *networked, open and distributed business systems* is challenging and not very well understood. The main reason for this comes from the dynamics of networked business: objectives, actors and their roles may change depending on the network's development phases in respect to technology life cycle and development process (Figure 1). Therefore, time is an important component of network models, and organizational scholars are just beginning to understand how networks develop within multi-levels over time (Moliterno & Mahony, 2010).

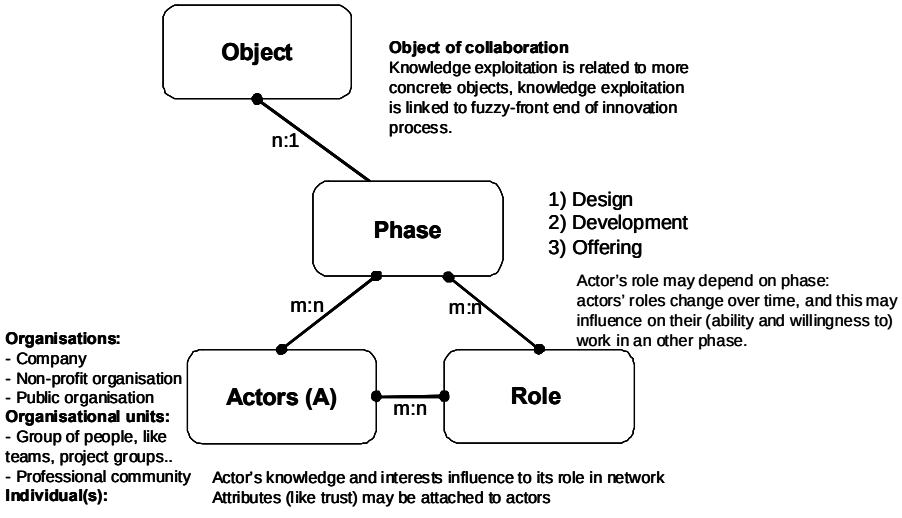

Figure 1. Dynamic elements of networked business.

On the other hand, it is also important to realize that these elements of networked business are *autonomous actors* – like firms – that make their own decisions. Because an actor is a subject that makes its own decisions, it has an internal structure and itself forms a system that has an ability to cause emergent changes to its business environment and innovation networks. These operations can be expected to be nested and interacting, and thereby renewal may also

require the reshaping of the network – an organization, a firm or a community. The network perspective assumes that actors are embedded within networks of interconnected relationships that provide opportunities for and constraints on their actions (Wilkinson & Young, 2002; Andersson et al., 2007). Therefore, system thinking can also provide new understanding to the dynamics of business networks and their connection to boundaries and the competitiveness of a firm. Chapter 6 considers these approaches in greater detail.

3.2 A multilevel approach to the dynamics of business networks

Business networks can be distinguished from firms by their temporariness[4]. Business networks are an organizational form in which actors work together on a joint task for a limited period of time (Kenis et al., 2009). On the other hand, firms are founded for a longer time period and with changing targets. Furthermore, networks are dynamic systems, which are able to adapt and evolve with a changing environment. As self-organizing[5] systems, business networks consist of independent but linked actors – e.g. sub-systems, like companies, functions, or individuals. Complex behaviours emerge as a result of non-linear spatiotemporal interactions among a large number of sub-systems at different levels of organization, e.g. business network. Both networks and organizations are *multilevel systems,* and therefore network theory should also be multilevel in its scope and analyses (Dhanaraj & Parkhe, 2006; Moliterno & Mahony, 2010).

As described below, the previous literature indicates that this kind of dynamic system has a number of characteristics. These basic concepts of system approach and their meanings in the context of business networks are pulled together in Table 2. Self-organization and the characteristics of dynamic systems are

[4] Lifecycles of networks can vary substantially depending on their business objectives; supply and production networks are rather closed and stable systems with a longer life-cycle, while project networks and virtual organizations are founded for a shorter time (several months).

[5] Sometimes the concept of emergence is conflated with the notion of self-organization. Properly defined, however, there may be instances of self-organization without emergence and emergence without self-organization, and it is clear from the literature that the phenomena are not the same. The link between emergence and self-organization remains an active research question.

reviewed at three levels: 1) business network, 2) interaction and 3) network's sub-systems, e.g. autonomous companies, organizations or individuals. Furthermore, the target is to analyse the characteristics of business networks as multilevel systems.

Table 2. Networks as dynamic multilevel systems.

Concept	***Features of dynamic system***	***Characteristics of business networks***
Network level		
Non-linearity	Behaviour in a complex system stems from the complex interaction of many loosely coupled variables, e.g. the system behaves in a non-linear fashion.	The system of the interconnected elements (actors, relations, decisions) makes up the business network and its non-linear behaviour.
Self-organizations	New, unexpected structures, patterns, properties, or processes arise in a self-organizing system.	Self-organizing of a business network can support renewal and create new targets, interaction, processes or functions to network. Yet it can also break down the network, if the shared identity of the network is missing.
Interaction and relationships level		
Connectivity Interdependence	System behaviour emerges from the interaction among agents. Connectivity implies that a decision or action by one part within a system will influence all other related parts, but not in any uniform manner.	The relationships between the actors connect the antecedents and consequences of decisions of interdependent actors. In the literature of social networks concepts of weak and strong ties (Granovetter, 1983) and structural holes (Burt, 1992) describe the connectivity in-side the network.
Sub-system level		
Diversity	Holland (1995) argues that diversity is the system characteristic that enables that self-organization.	The diversity of network actors, their strategic targets, characteristic and decisions produce new unexpected behaviour in business networks.
Variation	According to Ross Ashby's law (1956) about "Requisite Variety": your complexity must be greater than the complexity of environment you are trying to control.	Variation refers to the difference between network companies (sub-systems), reflected by the difference of their attributes. According to Ashby's law, management of a network requires complexity of operations, e.g. networks cannot be managed by hierarchies.

Because of non-linearity, there is no single centralized control mechanism that governs system behaviour. Although the interrelationships between elements of the system produce coherence, the overall behaviour cannot usually be explained merely as the sum of the individual parts. At the business network level, there is no single centralized control mechanism that governs network behaviour – e.g. the network self-organizes through interaction between networks sub-systems. Self-organization usually relies on four basic ingredients:

1. Strong dynamic non-linearity, often though not necessarily involving
2. Positive feedback and negative feedback
3. Balance of exploitation and exploration
4. Multiple interactions (Bonabeau et al., 1999).

Self-organizing of a business network can support renewal and create new targets, interaction, processes or functions to network. Yet it can also break down the network, if some of the above-mentioned ingredients are missing or conflict with the targets, intents and operation models of the network.

At the interaction level, interdependence and connectivity, e.g. the relationship types between the companies inside the network, determines the complexity of the network. Connectivity implies that a decision or action by one element within a system will influence all other related elements, but not in any uniform manner. Therefore, the level of connectivity inside the network determines in part the complexity of the network. A system with very high levels of internal connectivity and interdependence acts like a tightly-coupled system of actors, and its self-organization tends to be active but more easily foreseen. At the other extreme, the behaviour of systems with a low level of internal connections never appears to settle into any discernible pattern over time and this kind of system is described as chaotic. The concepts of weak and strong ties (Granovetter, 1983), structural holes (Burt 1992) and loosely-coupled systems (Brusoni & Prencipe, 2001), apply to the different levels of connectivity and interdependence between actors.

Somewhere in between, the degree of interdependence and connectivity results in a business network with a superior capacity to evolve and respond to complex environments. As pointed out by Wilkinson and Young (2002), “All actors in a network are simultaneously trying to achieve their own objectives while taking into account the effect and responses of other actors. No one actor is in overall control of the networks though pockets of more strongly connected and controlled actors may occur”. This way connectivity and interdependence

are the keys to self-organization and emergence – or chaos and uncertainty in network behaviour. On the other hand, all the network actors also have ties to actors outside the network. Also, the changes in these relations influence actors, targets and relations inside the network and cause non-linearity to development paths of the network and its environment.

At the network sub-system level, variation and diversity of network actors reflect unexpected behaviour of the network. Because of variation, there are significant problems in designing and operating as a business network or within business networks. Networked companies cannot be managed by an internal hierarchy; balance between controlled management and self-organization is the key for dynamic networks. Variation and diversity in business networks can be minimized by control, while self-organization is enhanced by autonomy e.g. high dimensionality indicates complexity.

Another important viewpoint at the network sub-system level is connected to network actors and participation. Within the business networks in general firms are seen as members of a network and targets of business networks should be linked to business targets of member firms. However, based on the Ashby's law about "Requisite Variety" there should be interaction at the various levels of network firms and in this way even the individuals can be seen as network members. Due to this utilization of networked business environment, new thinking on competitive edge and models of management is required. For example, depending on how a firm operates, people have often been asked to tackle problem-solving on their own rather than engaging in team efforts. So, opportunities may be far and few between for building the skills that will make people effective as part of a more open innovation network. Chapter 7 considers in greater detail the new models of management and organization as well as changes in work environment and requirements on individuals

3.3 The continuum of collaboration models

Both in alliance and network research, there is an intensive debate about the most favourable collaboration models. Based on a broad research review, Möller and Rajala (2007) distinguish the intentionally created business nets and macro-level networks of organizations. In their view densely embedded nets with many strong ties are more manageable and beneficial. This finding is in accordance with the systemic analyses of business networks, e.g. the connectivity and interdependence between the actors. Both the closed and the open network types

have pros and cons, and the companies should therefore utilize several parallel network models.

A number of management researchers have highlighted the importance of external contacts, cooperation and sharing of information with users to firms' innovation activities. According to this literature, there is a need to reconsider the roles of firms and users in new product development and value creation; simplifying the focus has predominantly been firm- and exchange value-centric, whereas the role of users and customers in innovation and value-creation processes has been largely ignored.

Since the 1970s Eric von Hippel has written about user involvement in innovation and urged companies to cooperate with users when developing new products (cf. von Hippel, 1978). In his book *Democratizing innovation*, von Hippel (2005) presents examples of how manufacturers can integrate themselves into a user-centred innovation system. Prahalad and Ramaswamy (2003, 2004) discuss co-creation of value jointly by the firm and the customer, which in their view forms, a new innovation practise, no more no less. From this point of view, value is not static, it is not inscribed in the product or service as such, nor in a social system. Rather, value is co-created at a specific point in time and location as a product of user-product interaction (cf. Boztepe 2007).

With the concept of networked business environment, our aim is to systemize the relevant terminologies and their definitions, based on the openness and interaction of business development and innovation systems (Figure 2). Starting from the in-house innovation, the left side of Figure 2 describes those systems that are clearly specified and relatively close. Almost at the other extreme, the right side of the figure illustrates open systems, where partners can be dynamically changing and un-known. These open innovation systems require radical changes in existing value systems and in the creation of new value activities. Moreover, they are characterised by uncertainties related to value activities and the actors' roles, business models and commitment.

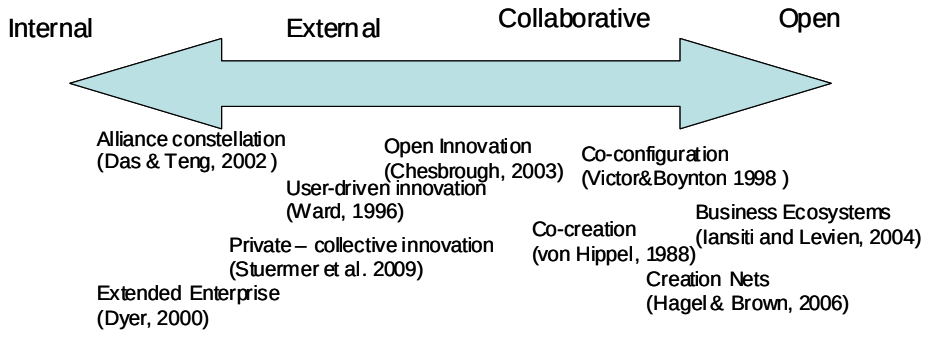

Figure 2. The continuum of collaboration models.

As Figure 2 shows, there are several partly overlapping concepts for collaboration systems and models based on different approaches[6]. Based on their approach, the concepts emphasize the vertical relationships with customers (von Hippel, 1988; Victor & Boynton, 1998) and suppliers (Dyer, 2000), or horizontal co-operation even with competitors (Das & Teng, 2002). Whereas private-collective innovation (Stuermer et al., 2009) focuses on relationships between individuals and companies and user-driven innovation (Ward, 1996) to a systematic adoption of user's needs.

Most firms have experience in hierarchical supply chain networks established to sustain client satisfaction. As these closed supply networks or so-called extended firms are usually led by large multinational firms or their system suppliers, knowledge management as practiced by the network companies has received little attention so far. The strategic nature of these networks can also be questioned, and the challenges to management are limited to the distribution of explicit knowledge and practical understanding (know-how). Hence, the asymmetric relationships of traditional supply networks probably require external agents as information carriers to mediate the conflicting interests related to the exploitation of confidential information such as that on costs (Jarimo et al., 2005).

[6] The chronological order of the concepts also emphasizes that ideas, related to a discussion about border-crossing innovation, are not new. Yet, in a knowledge economy networked, distributed and open innovation is going to find further grounds and changes within competitive edge as pointed out in Chapter 1.

In the middle of the continuum are the enhancing networks which are relatively well-defined, but which can be renewed through incremental and local change processes. From the knowledge perspective, enhancing networks must perform both knowledge exploitation and exploration. The capability to bridge different communities of practice[7] is essential in creating new specialized knowledge in these networks (Araujo, 1998; Dyer & Nobeoka, 2000). Another important issue related to these networks is the commitment of network members and their readiness to share knowledge. In his study, Soh (2003) argues that firms with a more efficient networking strategy gain access to potential information about new technological opportunities ahead of others, which translates into better new product performance. Only firms that succeed in developing organizational routines that co-ordinate the learning process and transform diverse individual and organizational knowledge resources into strategic capabilities or core-competencies will be able to use knowledge as a source of sustainable competitive advantage.

The current emphasis on distributed business development and innovation processes and users' role in innovation and value creation processes should have an impact on organizations' practises. Key questions from a firm point-of-view concern access and how it is gained to distributed sources of innovation and communities of practices. There is no 'one size fits all' solution available to these questions, as each firm is in a unique position and has to define if and when tapping into distributed sources of innovation make sense for it.

Discussion between the open and close collaboration models is related to their manageability and fit to different strategic targets. Other authors emphasize how the collaboration within closed networks generates trust and cooperation between the actors (Ahuja, 2000), facilitates the exchange of high quality information (Gulati, 1998) and tacit knowledge (Qvortrup, 2006). For other authors, however, more "open" networks with many weak ties (Granovetter, 1983) and structural holes (Burt, 1992) have greater advantages, deriving from the fact that individuals can build relationships with multiple unconnected actors and explore brokerage opportunities. In this open network configuration, actors use connections to obtain non-redundant information, which can be particularly important in the identification of new opportunities (McEvily & Zaheer, 1999).

[7] The concept is initially created and described by Lave (1991); Lave and Wenger (1991) and Wenger (1998). The communities of practice are considered in Chapter 6.

In order to emphasize the practice-oriented approach of this publication, the typical collaboration models and their key characteristics are described further in Figure 3 based on the continuum of networked business (Figure 3)

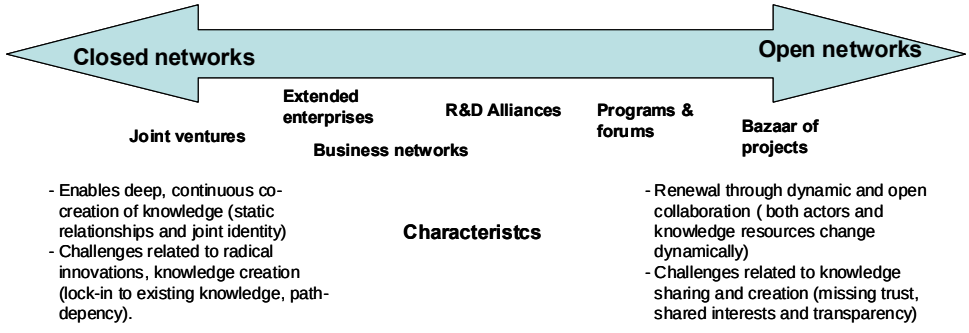

Figure 3. Characteristics of collaboration models.

In next two sections these two basic models will be discussed: 1) strategic, intentional business networks (including also strategic alliances) in Chapter 3.4, and 2) more open loosely coupled innovation networks or platforms are brought together in greater detail in Chapter 3.5. Case studies in Chapters 3.4 and 3.5 show that interaction with network partners, users and user communities provide companies with a potentially highly valuable source of know-how and ideas for companies as well as a sparring partner in the development of innovation. Furthermore, Chapter 4.1 points out how a firm's business model can serve as a tool for strategic decision-making between the different collaboration models.

3.4 Strategic, intentional business networks

The two basic models for network governance are a hierarchical hub-spoke model and a multiplex model (Doz, 2001), and in this way similar models can be distinguished in network development (Eccles, 1981; Kulmala, 2003; Hyötyläinen et al., 2005; Hagel & Brown, 2006; Valkokari 2009). As described in Chapter 3.1, the network structure influences the complexity of the network and network members' willingness and ability to participate in co-creation. In our framework, we distinguished between two main types of complexity of networks, e.g. bilateral relationships of independent actors and multilateral relationships between interdependent actors. As described in an earlier chapter,

the previous literature of both networks and alliances has several – partly overlapping – typologies. While our focus was on the business development of firm's, we distinguished the exploration of new knowledge from the exploitation of new knowledge[8]. This forms the other dimension of our theoretical framework (Figure 4).

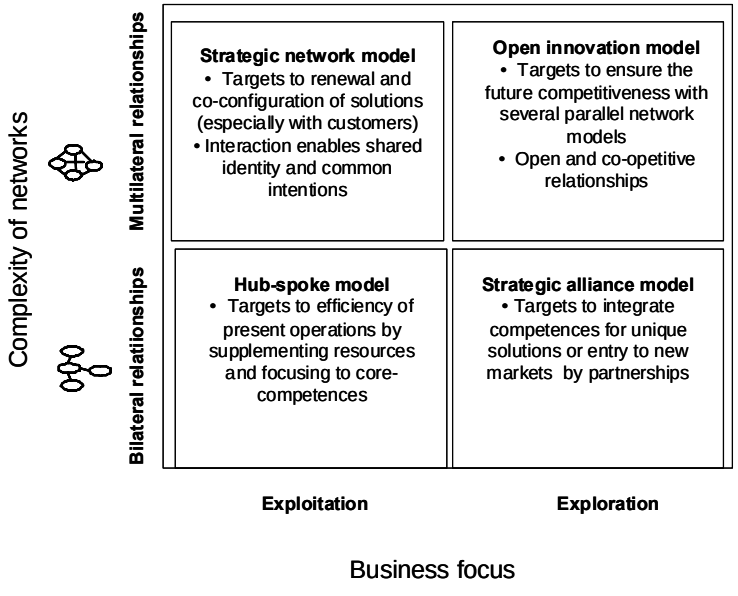

Figure 4. The models of business networks.

[8] Building upon March's (1991) distinction between knowledge generation ('exploration') and knowledge application ('exploitation'), Grant and Baden-Fuller (2004) reviewed the different approaches of network and alliance literature and show the differences between two collaboration models: knowledge acquisition and knowledge accessing alliances. In their view, this distinction of knowledge generation corresponds to the difference between "the alliances-as-learning" and "the alliances-as-knowledge-accessing" approaches observed in previous studies of alliances. In accordance with the Grant and Baden-Fuller's approach, Harryson et al. (2008) have pointed out that exploration and exploitation of innovation rely on fundamentally different types and structures of networks. Based on these differences between network focus, they describe how the networks are phased in time. Concurrently, firms have to pass from analysis to synthesis in order to be able to create new opportunities. Still, the value of this new solution can be evaluated only within its environment. For this reason, the firm's competencies, business model and its position in value networks are important elements of evaluation.

The hub-spoke model is based on the activities of the core company. The core company has normally built its own supply chains and partner networks. The major target is to increase the efficiency of the present operations of the core company. Within the hub-spoke model, the core-company focuses on its core competencies as described in case-example 1. Similarly, according to a resource-based view, specialization to core-competencies has been one of the key arguments about success factors of business networks. Typically, the development responsibility belongs only to the core-company (Hyötyläinen, 2000, Hyötyläinen et al., 2005; Hyötyläinen & Valkokari, 2009). The main point in the model is to use the present resources of networks and therefore the model is labelled by exploitation dimension.

Case-example 1. The hub-spoke model of a small metal industry firm and its network.

The case company is an SME offering industrial services, metal products and subcontracting to global product companies in the technology industry. Over the last ten years its customers have been outsourcing their production and the case company has taken on larger responsibilities. In order to gather an even broader area of customer needs and offer life-cycle services, the case company has built relationships to partners with complementary resources. The target was *exploitation* of the partners' complementary resources and their integration into business solutions.

The partner companies are a small engineering company, an electrical installation company and a maintenance service company. The companies have previous experience of co-operation but they started the collaboration with joint strategy process. Within this process, the companies co-created the joint business concept and defined the roles, the responsibilities, sharing the risks and the benefits of the collaboration. The co-development was founded on *bilateral partnerships* between the case company and partners and case company's strong governance and coordination of joint processes. The case company wanted to ensure that the commitment of partners and interdependence was strengthened with cross-ownerships between the case company and partners. Therefore, the network model also has characteristics from the strategic alliance model.

The strategic network model is by its nature normally a multilateral network where several firms co-operate and collaborate with each other. The target is the renewal of businesses in the network context. That kind of network can also have collaboration at several levels of network participants. The firms in the network can set common goals and objectives for businesses targeting to find new solutions together. They co-operate with customers. Thus, it is possible to create a shared identity and common intensions in this model (Valkokari, 2009). However, it the main emphasis is to exploit strategic assets to a great extent.

The strategic alliance model is based on integrating different competencies as described also in case-example 1. The aim is to achieve new markets and customer groups. It could be composed of companies which have different technologies. By combining these technological bases, it is possible to acquire new customers (Hyötyläinen et al., 2005; Hyötyläinen & Valkokari, 2009). It is possible that some network partners are also competitors with each other, which makes it difficult to discuss further measures and agree on common targets. However, the main dimension is to explore new business opportunities.

The open innovation model, originated by Chesbrough (2003) is presently under intense discussion. It is and even more theoretical model – and as pointed out within network models in general there is not one specific open innovation model, which would be appropriate to all situations. However, some companies apply at least some principles of open innovation. Targets are aimed at ensuring the future competitiveness of networks partners. Typically, there are many parallel loosely-coupled networks as described in the next chapter (2.3.) and in case-example 2. It is possible that only some network partners can join together and start new businesses. In this kind of situation, it is normal that new business opportunities are forming step-by-step when network partners can agree on business areas and boundary conditions to co-creation.

Case-example 2. Open innovation model of a small software company.

The case company is a small firm offering software products and services, e.g. consulting related to software products. IT-services to both industrial and public markets form more than half of its turnover. Its software products are partly based on open source software and its employees are participating in certain open source communities. Thus the firm has actual business partnerships with core companies of these communities. These core companies offer commercial products based on the OSS and the case company utilizes also these solutions. In order to *explore new business opportunities,* the CEO and owner of the firm has also lead the employees to participate in certain discussion forums. From these connections and interaction with potential customers, the firm has found opportunities to offer its services to new customers, who have been looking the knowledge related to utilization of new IT-tools. Although case company A operates continuously in different open communities and social networks with *multiplex relationships*, its CEO has a clear vision about knowledge-sharing and protection in business network. That is why the case company also has several models for co-creation within business networks, and they vary from co-operation with larger companies to collaboration in communities.

3.5 Open innovation communities

Firms need to interact with a growing range of actors in order to gather and develop information, resources and knowledge for their products and services. Furthermore, the value of their offering is connected to a systemic solution provided by themselves and by network actors. This sort of fragmentation can also lead to the necessity to face up to the incompatible expectations of different actors in the network, as described in Chapter 3.1.

Organization research distinguishes between 'tightly coupled' and 'loosely coupled' networks and systems (Weick, 1976; Orton & Weick, 1990).[9] Brusoni & Prencipe (2001) emphasize that a loose coupling network is a situation whereby organizations exhibit the properties of both decoupled and tightly coupled systems, which are the extremes of the organizational continuum. Furthermore, they argue that loosely coupled systems will become even more important in future, as the continuing growth and specialization of knowledge production will make firms' external knowledge relations even more important (ibid.). Consequently, the present intensive debate on open innovation has the same message as pointed out by Chesbrough (2003) "There are too many good ideas held by people who don't work for you to ignore"; growing complexity and dispersedness of knowledge requires companies to learn how to utilize external knowledge sources.

The open source software communities are the most often referred examples of more open collaborative innovation communities (Lee & Cole, 2003; Haefliger & von Krogh, 2004; Demil & Lecocq, 2006)[10], while there is only scarce literature about the utilization of open innovation communities in the B-

[9] The interpretation of loosely coupled systems was first proposed by Orton and Weick (1990). In their view, the extent of coupling across organizational subunits is determined by their degree of responsiveness and distinctiveness: If there is neither responsiveness nor distinctiveness, the system is not really a system and it can be defined as a non-coupled system. If there is responsiveness without distinctiveness, the system is tightly coupled. If there is distinctiveness without responsiveness, the system is decoupled. If there is both distinctiveness and responsiveness, the system is loosely coupled. (Brusoni, S. Prencipe, A. & Pavitt, K. 2001)

[10] Open source software community is a frequently cited example (cf. von Hippel 2005, 124). Many skilled programmers participate in their spare time in free-software projects in order to use their creativity to program to the full, to show and share what they have found with a community of peers to whom the secrets of programming are understandable. It is also well-known that pc and console game developers are often themselves enthusiastic gamers, meaning that they are well immersed in user experience.

to-B sector (Valkokari et al., 2009). It is important to notice, as Bauwens (2009) points out, that the open model of co-creation of immaterial products, like software, cannot directly adapted to physical production. Furthermore, although there are several levels of openness in collaboration, firms typically prefer the more closed forms, where they can influence other network actors.

Demil and Lecocq (2006) propose how open source projects illustrate a new, more open governance structure, which they label as bazaar governance. They distinguished bazaar governance from other networking models with three criteria: anonymity, absence of a partner selection process and no requisite long-term engagement. First, bazaar is made up of anonymous agents who do not know each other. Second, the major difference between network and bazaar concerns the selection of members. In bazaar, membership is open (Lee & Cole, 2003), because nobody can prohibit access to an open source community and no one can appropriate property rights over the open source product, resulting in a principle of non-excludability, even though a small number of well-known agents may emerge. The third main criterion that distinguishes bazaar from network relates to the different time frames of actor relations. Where a network calls for long-term engagement to minimize opportunism, bazaar does not presuppose any long-term engagement or strong ties among actors.

The next two case studies show that firms and their employees are inventive when looking for ways to make a link with users and communities of practise, though.

Case-example 3. Development of lures in close collaboration with user community.

The case company producing fishing gear well-known among fishermen worldwide, has found viable ways to integrate user-born ideas and the lead-user approach into its product development processes. Over time, the producer of fishing lures and other fishing equipment has built close contacts with users of its products both on the national and international market. Consequently, the user community has become a valuable partner in the development of new lures, all the way from ideation to testing of prototype models.

Ideas for new lures usually originate either from professional fishermen with whom the firm co-operates or from the firm's employees. A network of fishing guides and sponsored professional fishermen are particularly important contact points as lead users and have a major role to play in development and testing of new lures.

Global market sets high requirements for a lure producer; the firm has to offer an array of different kinds of lures adapted to highly variable conditions, environments and locally differing fish populations. The typical ways of using lures also differ from market to market, and cultural differences and preferences have to be taken into account in development. In this challenging market environment,

intense interaction with the user community is one of the means by which the case stays tuned with fishermen's demands for novel lures around the world.

It seems fair to conclude that, in addition to professional interest there is a devotion to fishing which unites large number of people involved in lure development at the firm.

Case-example 4. A new type of playground platform linking users in geographically distant locations.

The case company is a playground equipment manufacturer. The company has continuously developed and added new elements into its product family. In recent years, Lappset has looked for opportunities through which it could further extend its offering by means of technology, while staying loyal to the founder's original vision, underlining the importance of an attractive, pleasant living environment for people. These efforts resulted in the introduction of an interactive playground concept onto the market. The new concept combines information technology solutions with playground equipment to attract games console generation to the parks and playgrounds to participate in playful physical activities with others.

Use of information technology enables networking of playgrounds and the formation of an online community around physical activity taking place in geographically distant locations. A website on the internet provides users such as school-age children an opportunity to extend borders of playground virtually, to connect with other players, and to participate in online games linked to activity of players on playgrounds installed in different cities and countries.

The concept is an illustrative example of an innovative combination of elements and technologies to form a qualitatively new type of product which takes into account users' need for communality and doing things together, as well as co-creating the content of play. The evolving user community may in future turn out to be a source of new ideas for product development. Simultaneously, the case emphasizes the riskiness of the development of more radical innovations diverting from the established product line – a radically new type of product diverging from the existing offering is very much a step into unknown territory which may challenge ideas of proper products that have been taken for granted as well as the proper roles of the firm and its customers in the development of new offerings.

The relationship of a firm and innovation networks can be described with reference to both internal links and the links between them. A firm itself is a network that is relatively tightly coupled, formed from interlinked decisions. On the other hand, innovation networks also constitute a relatively tightly coupled network in thematic terms. By contrast, the relationship between a firm and innovation networks could be described as 'loose'. The firm does not need to adapt its operations to those of the innovation networks or vice versa.

3.6 Concluding remarks

By leveraging temporal, self-organising networks, a firm may generate complementary knowledge on alternative technologies and on business solutions, strategic solutions and operating solutions. Dynamic networks may be employed as forum, contexts and media for developing alternative solutions and for increasing complexity. With these, the firm may improve its knowledge of alternative solutions in a *temporal perspective,* in fact *before* it has to make a formal commitment to such solutions. In other words, the firm may use networks as part of its *proactive* strategy. The following chapter describes a firm's strategic decision-making in a networked operating environment.

Networking may also be used as forum and social platforms for input to the development of alternative solutions. Networks may provide a new type of avenue for testing and experimenting with alternative solutions while acting as a tool for complexity and for absorbing and reducing uncertainty. In order to create new business opportunities in a complex and networked business environment the firms and their managers have to open their knowledge and networks. Specifically, to manage distributed and networked innovation, it is necessary that managers 1) clarify the roles and the responsibilities, 2) consider conflicts of interest, 3) anticipate comparisons between networks and other forms of collaboration, 4) create and manage contracts in a mutually beneficial manner, 5) share and recombine knowledge in order to build unique intellectual properties to all network actors, and 6) continuously evaluate collaboration and partners. During all the stages of such networking processes, a firm has to deal with explicit and tacit knowledge needs, the search for competencies, and the use of available intellectual property.

4. Strategizing within future innovative firm

Strategic management can be defined as an attempt to proactively direct the future development of a firm and thereby maintain and extend competitive advantages over rivals in an ever changing arena of competition and cooperation. According to the two established views of strategy, competitive advantages result either from attractive positioning (Porter, 1985) of the firm in an industry or from distinctive resources, competencies and knowledge bases of the firm (Penrose, 1959; Wernerfelt, 1984; Eisenhardt & Santos, 2002).These views should not be seen as conflicting, but more as complementary in the sense of two sides of a coin (Zahn, 1999; Vos, 2002). Attractive market positions can only be occupied and maintained with an adequate knowledge base, and this alone will not' be of benefit if there is no opportunity for their application and exploitation.

Because competition is basically a dynamic phenomenon, competitive advantages will erode over time, if not cyclically renewed (Zahn, 1999). As pointed out in the introduction (Chapter 1), at times of rapid change and hyper-competition (D'Aveni, 1994), the recursion of these cycles shortens. Because of this, *the successful development of a firm rests upon its ability to continuously create new sources for competitive advantage*. In such a context, corporate renewal turns out to be the main task of strategic management, and strategizing (Whittington, 2002) as a core process of strategic management becomes a critical exercise for sustained corporate success.

The purpose of the present chapter is to develop the idea proposed by Henry Chesbrough (2003) concerning open innovation from the point of view of a firm's *internal* strategizing and organization. The focus here is not, as with Chesbrough, on whether a number of American companies (IBM, Intel, Lucent) were actually involved in 'open innovation' in the early 2000s, but instead on how to render the concept of open innovation feasible from the point of view of

a firm engaged in business in the 2010s, and how to introduce it in strategic development, operations development and organization. Furthermore, in Chapter 5 we will trace the strategic renewal process of two case companies even in more detail.

4.1 Open innovation and strategic thinking

The issue of open innovation is here approached from the viewpoint of *strategic thinking* (Heracleous, 1998; Liedtka, 1998). Strategic thinking is built on the foundation of a systems perspective (Senge, 1990; Liedtka, 1998). A strategic thinker has a mental model of the complete end-to-end system of value creation, and understands the interdependencies within it. This mental model incorporates an understanding of both the *external* and *internal* context of the organization. And, as writers in the field of strategy have argued, a perspective beyond the boundaries of traditional industries is fundamental to the ability to innovate (see also Chapter 3). A firm should be viewed not as a member of a single industry but as part of a *business ecosystem* that crosses a variety of industries (Moore, 1993, 1996). In addition to understanding the external business ecosystem in which the firm operates – or could be operated – strategic thinkers must also appreciate the inter-relationships among the internal pieces that, taken together, comprise the whole.

Strategic thinking is fundamentally concerned with, and driven by, the shaping and re-shaping of *intent*. Within this intent-driven focus, there must be room for intelligent opportunism that not only furthers intended strategy but also leave open the possibility for *new strategies to e merge* (Liedtka, 1998). This requires that an organization must be capable of practicing "intelligent opportunism" at lower levels (Burgelman, 1991). Strategic thinking is thinking *in time*. This means that strategy is not driven by the future alone. Instead it is the *gap* between today's reality and that intent for the future that is critical (Liedtka, 1998). Besides time-awareness, strategic thinking is *hypothesis-driven*. In an environment of ever-increasing information availability and decreasing time to think, the ability to develop a good hypothesis and to test it efficiently is critical. Because it is hypothesis-driven, strategic thinking avoids the analytic-intuitive dichotomy that has characterized much of the debate on the value of

formal planning. Strategic thinking is both creative and critical, in nature (Liedtka, 1998).[11]

4.2 Notes on Chesbrough's open innovation model

"Open Innovation is a paradigm that assumes that firms *can and should use external ide as as w ell as internal ide as*, and internal and external paths to market, as firms look the advance their technology. Open innovation combines internal and external ideas into architectures and systems whose requirements are defined by a *business model*. The business model utilizes both external and internal ideas to create value, while defining internal mechanisms to claim some portion of that value." Chesbrough, 2003, xxiv.)

Figure 5 (cf. Chesbrough, 2003, xxv) is a stylised schematic of Chesbrough's conception of open innovation. The left side of the diagram represents the search for and acquisition of ideas outside the firm (upstream networking).[12] The right side of the diagram represents the internal or external leveraging of ideas and solutions already existing in the firm (downstream networking). The diagram shows that the firm may leverage its ideas either internally, as part of its own business, or externally, by sharing or disseminating its ideas and embryonic innovations to actors outside the firm. The term 'inbound' refers to the searching for and acquisition of ideas and information from sources outside the firm, while the term 'outbound' refers to the distribution and channelling of ideas and solutions to actors outside the firm.

[11] Strategic thinking can be seen as double-loop learning, and strategic planning as single-loop learning (Bateson, 1972; Argyris & Schön, 1978; Heracleous, 1998). Single-loop learning involves the development of cognitive associations which facilitate incremental organizational adaptation, but without the questioning of central norms and frames of reference (dominant logic) of the organization. Higher-level learning occurs when these norms. logics and frames of reference are challenged and altered, and more complicated understanding (Bartunek et al., 1983) of strategic alternatives and options exists.

[12] The use of the terms 'upstream' and 'downstream' here is akin to that of Bruno Latour (1987) and Robert Chia (1996). *Upstream* refers to the 'fuzzy origin' of new information, while *downstream* refers to the (rational) systematic use of existing information. This is closely related to the exploration/exploitation distinction coined by March (1991).

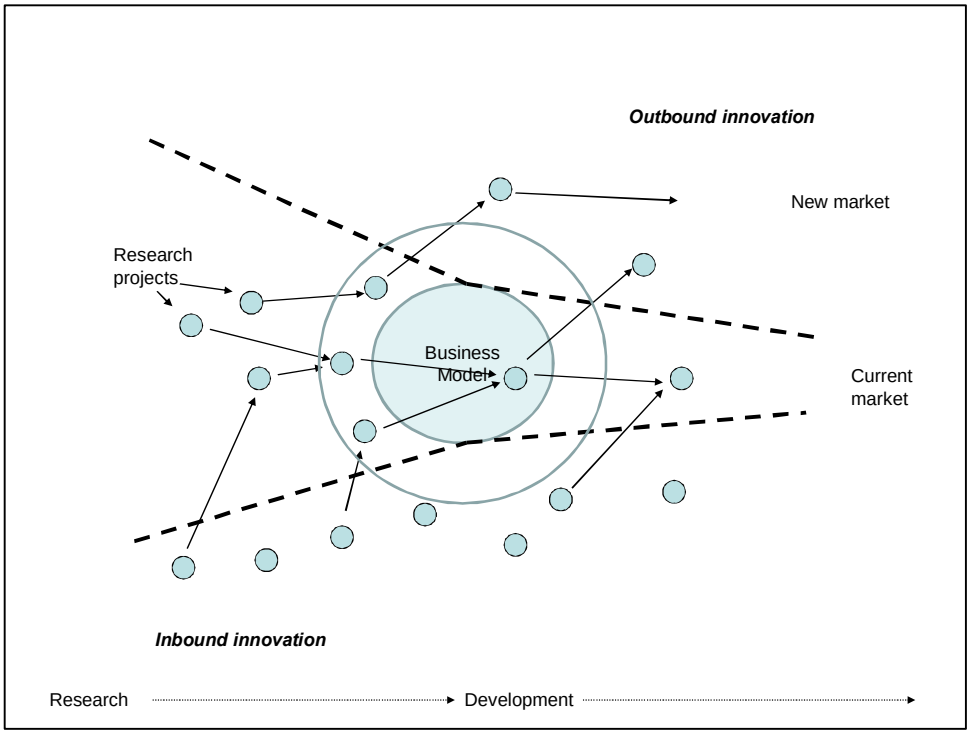

Figure 5. The open innovation model of Chesbrough (2003).

The business model of the company is a key factor in mediating and controlling the search for outside information (inbound innovation) and the distribution and channelling of new solutions (outbound innovations). The company's business model may either promote or inhibit the search for new technological information in R&D on the one hand and the sharing of existing expertise, for example in emerging markets on the other. Indeed, the company's business model should be updated from time to time; in other words, the business model should develop and evolve in tandem with actions for gathering, linking and channelling new ideas. The importance of the company's business model is discussed in more detail in section 4.3.

As several critics have noted (Hagel & Brown, 2006; Dahlander & Gann, 2007; Koivisto, 2011a), it is unclear in many respects what novelty and information value Chesbrough's open innovation concept actually possesses. The concept of open innovation relies on an idealised and normative distinction between 'closed' and 'open' innovation devised by Chesbrough himself. In

reality, however, scarcely any firm has ever been able to manage and organize its R&D in complete isolation without input from, say, key customers and contexts of use (cf. Asdonk et al., 1991). As noted above in Chapter 2, it has long been understood in innovation research that innovation is generated through learning processes related to the actions of producers, users, developers and so on (learning by doing), to usage (learning by using) and to interaction (learning by interacting) (see e.g. Lundvall, 1985; von Hippel, 1986; Lundvall, 1988; Rothwell, 1992a).[13]

On the whole, research has shown that innovation and product development in European firms is at least traditionally more or less interactive and 'open' with regard to their operating environment, beginning with the fact that users play a significant role in product development (Rosenberg, 1976 and 1982; von Hippel, 1986 and 2005). Secondly, the creation and development of innovations typically involves an interactive process of mutual learning between firms, customers, suppliers and other outside actors (Lundvall, 1985; Lundvall, 1992). Thirdly, the interaction between firms and their environment has been clearly described in several studies of the actions of various bridge builders, 'gatekeepers' and brokers operating on the boundary between a company and its environment (Tushman, 1977; Tushman & Katz, 1980; Tushman & Scanlan, 1981; Ancona & Caldwell, 1992; Conway, 1995).

The question of the relationship between a company and its environment has been discussed for quite some time on the basis of what is known as the open systems theory (see e.g. Katz & Kahn, 1966). A company could be described as an open system that utilizes social resources (cf. Pfeffer & Salancik, 1978; Scott, 1987). For instance, the professional knowledge and competence possessed by employees in an employment relationship with the firm is mainly information that has been produced outside of and independently of the firm. This is information that people have acquired in the course of their life history and through various social institutions such as training institutions. Similarly, the

[13] As Dahlander & Gann (2007) have noted, Chesbrough's open innovation concept contains nothing particularly novel compared to the 'fifth generation innovation model' ideas proposed by Rothwell back in the early 1990s (Rothwell, 1992a; 1992b; 1994) or in relation to the fact – long acknowledged in innovation system research – that the development of innovative solutions often requires collaboration with key customers, suppliers, scientists, consultants and other actors outside the company (see for example Lundvall, 1985, 1992; von Hippel 1986, 2005).

majority of technologies and devices that a firm uses in its functions are, as a rule, bought outside the company and 'imported'. In practice, this applies to just about every resource that the company uses in its business, whether material or immaterial.[14]

Nor is there anything new as such in a firm 'distributing' ideas or innovations developed in-house to outside actors and firms, for instance in exchange for a licence fee. It has long been established on the 'output' side of the model that firms are systems that provide services for their environments (albeit for a fee) (Ansoff, 1981). Over time well-established companies have spawned new start-up companies around their core business. To take a random example, the development in Finland of imaging devices based on X-rays began with ideas developed at Valmet (for details, see Koivisto & Koski, 1998)

The open innovation model could be described as a model with a new strategic approach addressing the dynamic capabilities of a firm (Teece et al., 1997; Eisenhardt & Martin, 2000) *insofar as it focuses on the company's business model and considers the component dimensions (inbound, outbound) in relation to each ot her.* The novelty of this model for the strategic management of a firm is negligible if these three elements are separated from one another, which is what has largely happened in the debate on the open innovation model. From this perspective, the open innovation concept consists of three mutually complementary component dimensions:

a. sourcing new technological information outside the firm (inbound innovation)
b. distributing 'extra' competence and information which the firm already has, and
c. redefining the company's business model and refining it so as to support the sourcing of new technological information outside the company on the one hand and the leveraging of existing knowledge in the firm's business environment on the other.

[14] A distinction has been drawn, on the basis of the input-output ratios between a company and its environment (cf. Thompson, 1974), between supplier-dependent enterprises (agriculture and traditional services), scale-intensive enterprises (paper and steel industries), specialised supplier enterprises (components, software, instruments, devices), science-intensive enterprises (chemical industry, electronics industry, biotechnology) and information-intensive enterprises (finance, insurance, publishing, tourism) (Pavitt, 1984 and 1990; Tidd et al., 1997; Kautonen et al., 2002).

The following is a more detailed discussion of a company's business model as an element in its strategic positioning and decision-making.

4.3 The question of a firm's business model

Historically, the business models of firms[15] tend to evolve through *differentiation* (cf. Luhmann, 1989; Loasby, 1999) as new companies are founded. Typically, new technological solutions and service models emerging within established companies are developed and introduced by setting up a new, *competing* firm alongside the existing firm, the business of the new firm focusing on the new customer solution(s) and new business model(s).

In other words, as traditional companies are locked into their traditional operating models, setting up a completely new firm is necessary for progress to happen (Yu & Hang, 2010; also Lehenkari, 2006). Established companies thus acquire satellite companies which are in direct competition with them and which explore new business concepts. The conventional evolutionary path to new technological innovations and business models thus runs through the setting up of new companies and the differentiation of companies and business models. The business model of a company often involves implicit premises and structures that govern and control the firm's decision-making. It is often difficult to influence such premises and assumptions, which are often of a cultural nature (Chesbrough, 2003; Prahalad, 2004). It is much easier to set up a new firm than to attempt to change traditional, well-established ways of thinking and doing things.

Revenue logic as referred to by Keijo Räsänen (1997) comes close to the concept of the business model. Business, be it of whatever kind, is undertaken by people who engage in organized cooperation and whose *conceptions, skills, competence* and *mutual re lations* contribute fundamentally to the business (Räsänen, 1997, 36). Key factors in revenue logic include (op.cit.): the service mission of the business, i.e. the significance of the work performed to the

[15] Empirical and theoretical research on corporate business models did not properly start until the ICT boom of the late 1990s (Mäkinen & Seppänen, 2007). By comparison, research on corporate and business strategies has been going on since the 1950s. In practice, there is no conventional wisdom regarding the content, dimensions and elements of a business model (Mäkinen & Seppänen, 2007). Indeed, every company has its own unique business model.

community of customers; the strategic competitive advantage, i.e. the technological and financial strengths of the firm relative to the competition; business competence, i.e. the skills that are needed for the various functions of the firm and for combining them. A well-functioning revenue logic combines a profitable investment for the owners, a useful service for customers, a rewarding workplace environment supportive of competence improvement for employees, and a superior strategy for competitors.

The business model of a firm describes the *actual way in which the firm conducts its business* and also includes the *implicit conceptions and assumptions* that have emerged in the course of that business (Francis & Bessant, 2005) regarding competitors, customer needs, feasible and possible technologies and the special expertise that sets the firm apart. A firm's business model often evolves on the basis of experiential and tacit knowledge (Polanyi, 1966). Similarly, the *business idea* of a firm is an *explicated and reflected description* of actual or future operating procedures. A business model manifests itself as patterns in established routines and practices and at the customer interface. The actual business model and *descriptions* of that model (Vos, 2002; Seidl, 2003) are, in practice, two different things. Generalised statements concerning business models, abstracted by researchers from actual companies and actual business environments (e.g. Chesbrough, 2003, 63–70) are 'third-order' generalizations, being abstract summaries of features that are considered central to the business ideas studied.[16]

The development of a firm's operating practices and business model is linked to the business context (cf. Tikkanen et al., 2005) – see Figure 6. Even attempting to describe and define the actual business model of a company may be a relatively challenging thing to do, since that business model will have evolved in interaction with the expectations of customers and other interest groups.[17] On the other hand, it may be quite possible in practical terms to secure

[16] For instance, according to Chesbrough (2003) the business model of a company consists of six generic pillars: value proposition, market segment, value chain, cost structure and target margins, value network and competitive strategy.

[17] In terms of their content, business models often tend to shape themselves in accordance with sector-typical templates or 'recipes' (Spender 1989; Whitley 1992; Koivisto 2005; Tikkanen et al., 2005). Sector templates are acknowledged codes of conventional and accepted behaviour in the sector. They have to do with expectations vested in operations and operating practices. From a more general systemic perspective, we may say that a company is, through its business model, linked to (Von Krogh & Roos, 1995) or immersed in (Jack & Anderson, 2002) its specific business environment.

the business and continuity of the firm even without a reflective, comparative description of the principles governing that business (cf. Vos, 2005a; van der Meer, 2007). Describing the business model of a new firm entering the market may actually be an easier task for the simple reason that it is unconventional and different. For instance, the business model of Ryanair may be described on the basis of how it differs from traditional airlines (cf. Casadesus-Masanell & Ricart, 2009).

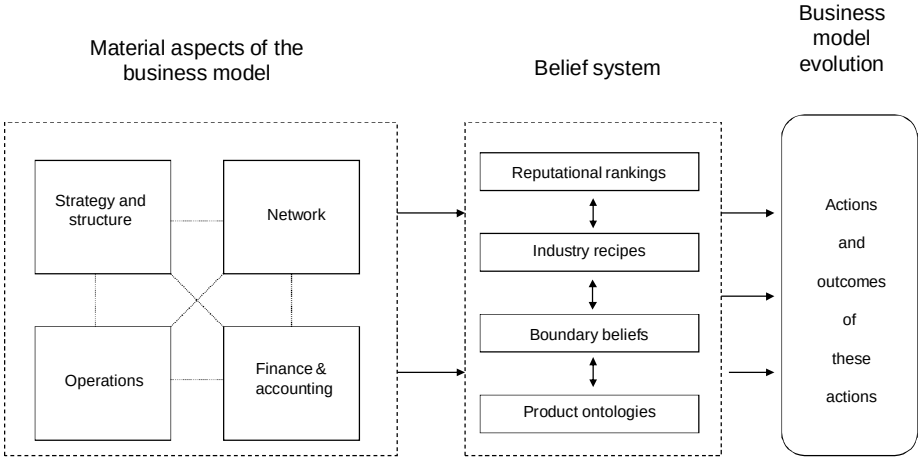

Figure 6. The business model of the firm (Tikkanen et al., 2005).

As Chesbrough notes (op.cit.), the defining and redefining of a firm's business model is in practice a highly complex challenge. Constructing a business model requires managers to deal with significant complexity and ambiguity. We know from earlier research that managers cannot – and do not – exhaustively evaluate every alternative when they confront such situations. Instead, they apply *cognitive filters to reduce this complexity to manageable level*s (Simon, 1982a). Managers include information that *fits with the logic of their c urrent business model and fi lter out information at variance with that mode l*. Such selection is helpful and even necessary in order to make sense of the tremendous amount of information that comes in every day. But in the process of using these filters, *biases* creep into managers' decisions, precisely because they *screen out information that conflicts with their current business model*. This bias can lead

to a *cognitive trap, in which the firm misses a better business model because it conflicts with the firm's current model* (Chesbrough, 2003, 70.)[18]

Issues related to the construction, accumulation and evolution of a firm's business model can be rendered in concrete terms by examining a closely related concept, the *dominant logic* of a firm, which governs its operations and decision-making (Chesbrough, 2003; see also Prahalad & Bettis, 1986; Bettis & Prahalad, 1995; Von Krogh & Grand, 2000; Prahalad, 2004).

The dominant logic is the prevailing wisdom within the firm about *how the world works* and *how the firm competes in this world to make money*. This logic helps to *reduce ambiguity* and *make sense of complex choices* faced by firms, and helps new employees learn how the firm operates. As the term implies, the logic dominates alternative forms of logic that take a different view of the world. People within firms do not re-evaluate their logical approach every time new information new information comes in. On the contrary, they search for ways to apply the dominant logic to interpret the new data. The shared assumptions behind the dominant logic will also help disseminate the meaning of the new information to others. (Chesbrough, 2003)

Although dominant logic is useful and beneficial in coordinating actions and decisions in a variety of situations – it comes at a *cost*. The choice of business model *constrains other choices, removing certain possibilities from serious consideration*. Over time, the business becomes more entrenched in its current model and is not able to recognize the information that may point the way to a different and perhaps better model. For established firms the new kind of business model does not emerge from a clean sheet of paper. Instead, the model that will be applied to a new opportunity will bear a strong resemblance to the established business model already in use. And the more successful the current business model has been over time, the stronger its influence over how to commercialise (or not to – see Koivisto, 2011a) the new opportunity that arises. This means that the future commercial development of a firm's technology will depend on the firm's *history* and *experience*. (Chesbrough, 2003, 71).

[18] According to modern systems theory (Luhmann, 1995; Vos, 2002), the information environment of any given company is more complex than the company itself. Consequently, the company must necessarily make choices, for instance regarding what is relevant information and what is not. Conditional and situational choices always carry risks.

To put this another way, the development and evolution of a company's business model is a history-dependent and path-dependent process (see e.g. Garud & Karnoe, 2001). In fact, a firm can be described as an *open* system with regard to the use of resources but as a *closed* and self-referential system cognitively and with regard to meaning structure and fundamental premises underlying decision-making (Luhmann, 1995 and 2000; Von Krogh & Roos, 1995; Baecker, 1999). 'Closed' and 'self-referential' here simply mean that companies and organizations tend to make decisions in accordance with decision-making premises that have evolved over their history. Traditional companies in particular have a strong tendency to follow their 'dominant variables' (Argyris, 1990; Baecker, 2003) and 'dominant logic' (Prahalad & Bettis, 1986; Bettis & Prahalad, 1995; Prahalad, 2004) in their operations regardless of actual changes in their environment. A firm itself determines what is relevant information and knowledge for that firm. It depends largely on the firm's identity (Seidl, 2003), cultural assumptions (Schein, 1989) and business model (Tikkanen et al., 2005) what the company considers relevant and new information at any given time.[19]

The process of adopting and learning a new business model is a challenge firstly because learning a new model requires *unlearning* the old one (Hedberg, 1981; Hamel & Prahalad, 1994). Another reason why learning a new business model and unlearning the old one is challenging is that often the old model is contextually rooted for instance in the expectations of key customers or key investors as to what constitutes appropriate behaviour and operating practices for the firm (cf. Spender, 1989).

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[19] Because information is selected according to dominant logic and established decision-making premises, the boundary between 'inside' and 'outside' information does not necessarily coincide with any physical boundary or membership/non-membership or ownership/non-ownership of a particular organization (for more on organization boundaries in general, see Hernes, 2004; Santos & Eisenhardt, 2005). For instance, the personal knowledge of the employees of a company does not constitute knowledge available to the company until this knowledge is actually available for and used in the company's decision-making and operations (cf. Kevätsalo, 1999; Burgelman 2002). As an example, General Motors were not able to draw on new production expertise developed at one of their own units in their investment projects (NUMMI, Saturn). In the 1970s, Xerox did not realise the significance and potential value of the PC, the computer mouse, the Ethernet or text processing applications, all of which were developed at their own laboratories (see Menon & Pfeffer, 2003). Any knowledge not leveraged in the company's decision-making and operations is by definition *outside information* as far as the company and its business functions are concerned.

4.4 Innovation, strategy and business model

For an individual firm, the open innovation concept may be considered and used as a heuristic model (Eloranta, 1974) contributing to the firm's strategic thinking (Liedtka & Rosenblum, 1996; Liedtka, 1998) and innovation management with the specific purpose of *distancing* the firm from its existing operating practices and business model. In other words, its aim is to help develop *alternative* strategic opportunities in generating new information (upstream), in leveraging existing information (downstream) and in developing the business model. We may describe this as an *ecosystem* approach to corporate strategic development and innovation/information management (e.g. Moore, 1996; Iansiti & Levien, 2004; Kodama, 2007).

The basic idea here is that development of a business model may lay the groundwork for a new type of networking. On the other hand, networking 'upstream' and 'downstream' may open up potential for developing and varying the company's business model. In the latter case, the open innovation concept can be construed as a heuristic *dynamic networking* concept contributing to the firm's management and strategic development. (Figure 7.)

The link between networking and developing a business model emerges from the officers of the company or the companies concerned also being members of networks outside the company (for more details, see Dahlander & Wallin, 2006). Individuals may have many different roles (managing director, developer, citizen, environmental activist, and so on) and may be members of many different social systems (cf. e.g. Strauss, 1993).

With regard to strategic networking and 'opening', we should ask how the company's business model relates to the company's strategy. We may assume that the company's actual business model and *implemented strategy* (Casadesus-Masanell & Ricart, 2009) are largely one and the same. In other words, the current business model of the company may be seen as an implementation and manifestation of emergent (Mintzberg & Waters, 1985) strategic choices and decisions in the present situation. The strategy is seen "as consistency in a pattern of firm actions" (Araujo & Easton, 1996). The actual, implemented strategy may be described for instance in terms of the environment, business area, added value offering, core competence, resources, capabilities and performance of the firm (Vos, 2003 and 2005a). The perspective is different but the elements are the same.

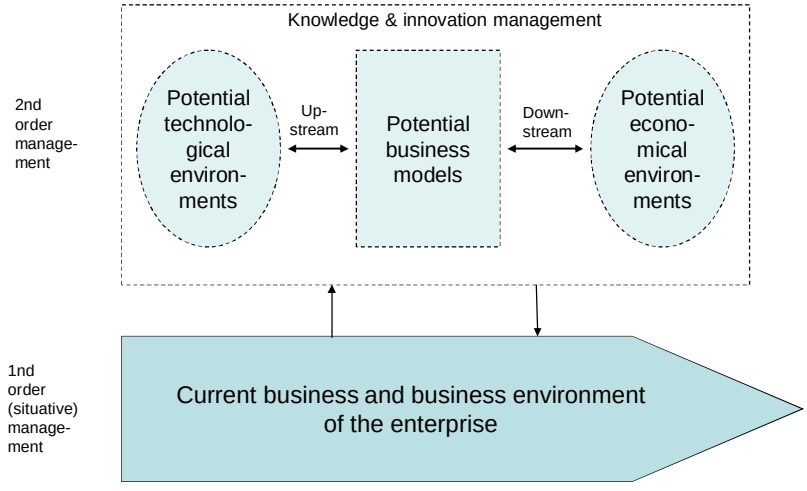

Figure 7. The open innovation concept as a heuristic model of strategic thinking.

Applying the open innovation concept to the operations of a firm that has already established itself leads to a chicken-and-egg paradox (Quinn, 1988; Quinn & Cameron, 1988; Lewis, 2000; Rasche, 2008).[20] The resources available to the firm (March, 1991; Laursen & Salter, 2006), its historical competence and absorptive capacity (Cohen & Levinthal, 1990) and technological and organizational path dependencies (Garud & Karnoe, 2001; Sydow et al., 2009) largely determine to what extent the firm is capable of taking new information on board, i.e. opening up in the 'upstream' direction. The core of the problem, however, lies in the fact that the business model – i.e. the content of the company's present and implemented strategy – is in practice *the same as the*

[20] As noted in section 4.1, this problem derives from the fact that there are three interlinked dimensions involved. Whether it is feasible and possible for a company to 'open up' towards its business environment or 'downstream' depends on the company's level of expertise and its business model. On the other hand, whether it is feasible and possible for a company to seek new, complementary knowledge 'upstream' depends on the company's business model and its potential for exploiting new knowledge, i.e. the 'downstream' dimension.

company itself in operation. There is no outside control centre beside, above or below the company to govern its operations. A company governs itself through its own actions, its own choices and solutions, descriptions of itself and its environment, and its own understanding of itself and its environment. A company is an autonomous system that adopts solutions on the basis of, and within the confines of, its own, historically evolved decision-making premises.

However, it is possible to render this stalemate of three interdependent factors *dynamic* and *asymmetric* by focussing either on opening up in the 'downstream' direction (developing a new business environment) or on opening up in the 'upstream' direction (seeking new, complementary knowledge). In other words, the model can be made dynamic and unsymmetrical through an experimental, operational, 'in the beginning there was the action' principle (Vos, 2002). Strategic networking and opening up may contribute to strategic repositioning, which in turn may contribute to the reshaping of the company's business model.[21] In this way, it is possible to link together the reshaping of the company's business model on the one hand and networking 'upstream' (inbound innovation) and 'downstream' (outbound innovation) on the other, in terms of both timing and content (Figure 8).

[21] According to the modern system conception, the relationship between a company and its environment(s) is never predetermined or invariable. Traditional open systems theory treats a company and its environment as givens. However, modern system theory (Smircich & Stubbart, 1985; Luhmann, 1995; Vos, 2002 and 2005b; see also Weick, 1979; Weick, 2001) asserts that a company basically defines itself and its environment through its own strategic choices. With regard to the future, this means that a company can reposition itself and redefine both itself and its environment.

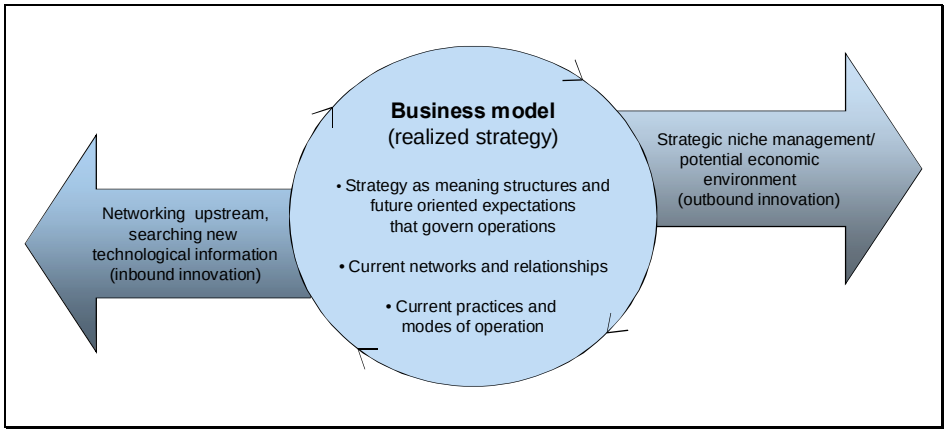

Figure 8. Business model and networking upstream and downstream.

Firstly, a firm may network and possibly reposition itself in a given ecosystem context. Networking downstream may cater to radical business model redesign needs. Secondly, a firm may improve its knowledge base by networking upstream. This may cater to incremental business model redesign needs. In other words, networking downstream may be associated, for instance, with Porter's view (Porter, 1998) of a firm's potential for strategic networking and (re)positioning.[22] Similarly, networking upstream may be associated with a discussion of the firm's potential for resource-based, expertise-based or knowledge-based development (Eisenhardt & Santos, 2002) and for information management (Swan et al., 1999).

Networking downstream can thus be associated with Porter's positioning strategy (Porter, 1980), the *ecosystem* approach (Iansiti & Levien, 2004) and, in particular, the niche-building strategy contributing to the development of new business opportunities (Luksha, 2008). What is essential to realise is that an ecosystem is not a static and pre-existing thing. On the contrary, a company, a group of companies or some other initiator may provide the initial impulse for what is to some extent a self-nourishing development process. This is not so much about adapting to an existing ecosystem and context as about adopting an

[22] We should note at this point that strategy research is divided into three rival schools of thought. One of these focuses on content options (strategy content research), another on the strategy process and strategic resource development (strategy process research), and the third on strategic positioning and context (strategy context research) (for more detail, see Pettigrew et al., 2002).

approach geared towards the creation of a business community and ecosystem that generates new business opportunities. The ultimate aim is to generate new business opportunities through the 'positive external effects' created outside the company (cf. Conner, 1995; McEvily et al., 2000; Lado et al., 2006).

4.5 Creating new information through innovation networks

The above was a discussion principally of the issue of strategizing the concept of open innovation. The issue of organizing and operationalizing the open innovation concept has not yet been addressed. The issues of strategizing and organizing are in practice interlinked (Whittington, 2002). Strategizing is not very useful if the chosen strategy cannot be operationalized and organized in some way.[23] The issue of organization in open innovation could, in principle, be discussed on the basis of micro strategies (Johnson et al., 2003; Kodama, 2007) or social systems theory (Seidl & Becker, 2005). The following discussion is based on social systems theory.[24]

The above discussion depended on the notion that this is always about the business model, strategy and networking *of a company* (see also chapter 2). Chesbrough (2003) also binds the open innovation concept rather one-dimensionally to a company. However, the feasible thing to do would be to consider the open innovation concept as a model with at least two levels. In this

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[23] At the same time, we should note that the relationship between strategization and organization is traditionally one of the perennial problems in management research (cf. Virkkunen et al., 1998). Such perennial problems include where to draw the line between planning and implementation (of strategy), between strategic management and day-to-day operations, and between the company and its environment.

[24] The underlying idea is that a company is a specific type of system that engages in communication through binding decisions. Interaction systems that are based on the immediate interaction and physical presence of participants are qualitatively different systems (Kieserling, 1999). Interaction systems communicate in an 'ordinary' fashion. A company is, from the social point of view, a formally organizeorganized institutional system capable of making binding and authoritative decisions (Flam, 1990). From the point of view of system theory and decision-making theory, it is a system that operates on *decisions* (March & Simon, 1958; Barnard, 1966; Simon, 1982b; Luhmann, 2000). When a decision-making situation is unclear or uncertain, it is possible to draw on *creative and innovative social networks* inside or outside the company in the *preparation* of decision-making (for more on innovation networks, see Pyka & Küppers, 2002).

two-level model, the open innovation concept is *linked* to the company and its business and requires that company employees are *involved* in innovation and that the process as a whole *provides a service* for the company. However, this is not to say that all stages of innovation are under the direct control of the company or that innovation is directly linked to the formal decision-making of the company. Indeed, further development of the open innovation concept requires a better definition of the *locus* of innovation, i.e. the context and location of where the actual, concrete development work is undertaken (see Powell et al., 1996; Fredberg et al., 2008). Are reforms and new information created in the context and framework of companies, i.e. formal organizations and decision-making systems, or of practice-oriented communities (cf. Constant, 1987), or of social learning networks (Powell et al., 1996) and similar informal networks? The key factor here is to draw a line between the formal decision-making organization and social networks. The thinking behind this is that the formal decision-making system is not particularly conducive to innovation and the creation of new information and that a company should utilize innovation networks to reduce uncertainty and to create new information.

Chesbrough implicitly assumes that information that is *relevant* to a specific firm in technological and business terms (embryonic innovations) *already exists outside the com pany.* In practice, however, this is rarely the case. Typically, there are *too many options* (cf. Simon, 1982a), most or many of which are *uncertain.* In the case of proactive strategic initiatives, the situation is usually completely new, meaning that decisions have to be made without reference to comparable experiential information and knowledge from previous similar situations. Secondly, the benefits and costs incurred by the developer of new solutions may depend crucially on the attitudes, solutions and actions of other parties (cf. Latour, 1987; Gomez & Jones, 2000). There is no automatic guarantee of success.

This is not to say that the firm is completely excluded from the creation of new information. The company (decision-making system) and networks may overlap, for instance by the corporate management or company officers being members of, and participants in, these networks (cf. Dahlander & Wallin, 2006).

Similarly, it is possible to convey information from the company to a network and from a network to the company. The overlapping of the company and networks creates a situation in which the company's operations provides a context for the networks and vice versa (cf. Willke, 1989).

It is only possible to consider and discuss a limited number of technological and business options within the confines of the company's formal decision-making and functions. In other words, companies are systems with bounded rationality (Simon 1982a) and a bounded capacity to observe (Ocasio, 1997; Hoffman & Ocasio, 2001) and to adopt and absorb information (Cohen & Levinthal, 1990; Van den Bosch et al., 1999).

The limited nature of resources and observational capacity may generate what is known as an exploration/exploitation dilemma in the search for new knowledge. This search draws on the same resources that the firm could use for leveraging existing expertise in its business. In other words, the time and resources spent in seeking new knowledge may in terms of cost be described as an alternative to leveraging existing knowledge (Nelson & Winter, 1982; March, 1991; Laursen & Salter, 2006). However, in the long term a preference for leveraging existing knowledge may backfire in the form of path-dependencies that restrict competitiveness development (Leonard-Barton, 1992, 1995; Schreyögg & Kliesch-Eberl, 2007).

Formal organizations (decision-making systems) are by their nature systems that *decrease* uncertainty (Luhmann, 2000) and complexity. For instance, a consumer who orders a specific product assumes by default that it is certain that the product will be delivered. In any case, the consumer has a specific name and address to turn to for compensation in case of any error. Companies and formal organizations reduce uncertainty by communicating through *decisions.* Decision-making is a fundamental uncertainty-reducing mechanism in companies and formal organizations¸ an issue or commitment on which a decision has been made is relatively certain. However, this peculiar mode of communication is not without problems. Decision-making is above all a mechanism for *reducing* options, uncertainty and complexity – not for increasing the range of possible solutions and options. In formal organizations, this may easily lead to a situation where it is difficult to communicate critically about the *content* of decisions without questioning the overall validity of the company or organization as a system capable of making decisions and thereby reducing uncertainty.

The following is an illustration relative to the open innovation concept and the 'innovation agenda' of Francis and Bessant (Bessant, 2003; Francis & Bessant, 2005) of temporal networks that firms may employ as structures for developing alternative solutions, for learning and unlearning and for testing new ideas

(Figure 9). This is thematically delimited cooperation, and firms may apply these learning structures at least in the following thematic areas:

- generating knowledge for alternative *technological* solutions
- generating knowledge for alternative *business models* and options
- generating knowledge for alternative *strategic options*, or
- generating new product and service improvements at the operative level (*cross-functional network*).

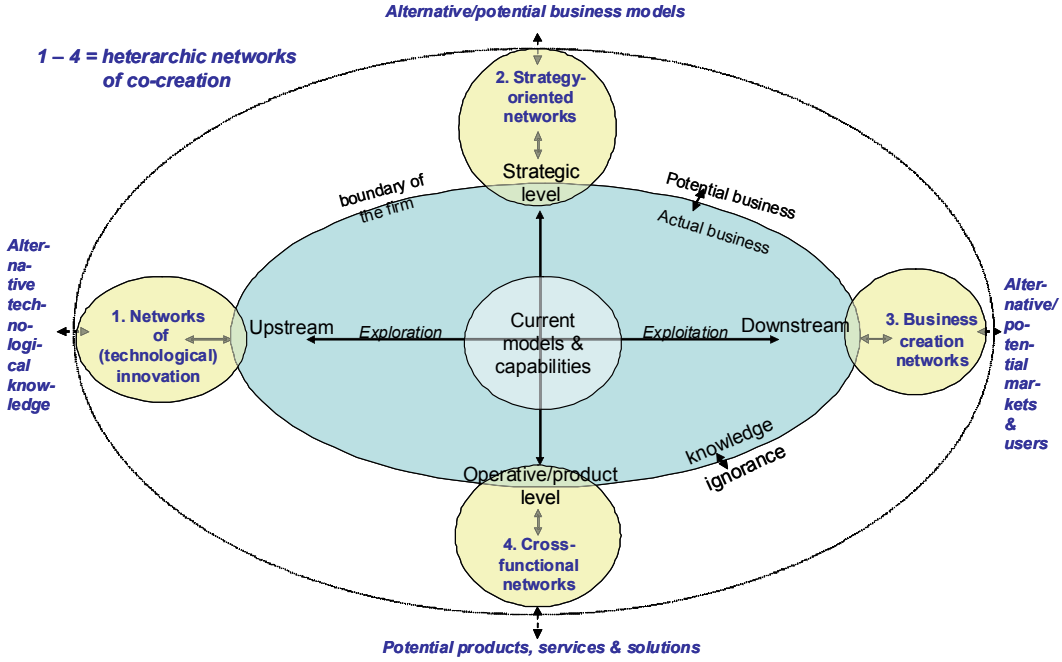

Figure 9. Networking of future innovative firm.

There is not very much literature available on innovative and creative networks in the sense discussed here (but see Kowol & Krohn, 1995; Pyka & Küppers, 2002; Tuomi, 2002). However, it is possible to give certain specifications. Firstly, this is thematically delimited and thematically oriented cooperation. It is not just about 'hanging out together' or about tossing ideas around any which way. Secondly, this involves temporal networks, akin to projects. Like projects, they have a thematic focus and a limited period of time. Thirdly, this is about networks that are separate from official systems, parallel and self-organising. What this means in practice is that the operation of these networks can only be

influenced indirectly. We may here refer to the concept and methods of the 'government of context' (Teubner & Willke, 1984; Willke, 1989). It is inherently impossible to control or manage the generation of novelties and new information directly. What we can do is create the potential, the context and the framework enabling the emergence of self-organising innovative and creative networks. Thereby, we can increase the probability of serendipity and improve the potential for generating expertise and knowledge that is relevant to the firm, for customers and for other interest groups.

4.6 Concluding remarks

We may note in summary that it is not feasible to approach the open innovation concept from the perspective of existing information *outside* the company, i.e. the search for and distribution of existing ideas and solutions. Firstly, we cannot simply assume that technological information relevant to the company's business already exists outside the company. Secondly, the sharing of embryonic innovations unsuitable for the company's own business presupposes that the company already has a surplus of ideas, solutions and innovations. Sharing is only possible if the company has information that is valuable to others and superfluous for the company itself. It is more feasible to consider the open innovation concept from the *internal* viewpoint, considering what it means for the company *itself* (cf. Nonaka & Takeuchi, 1995; Nonaka et al., 2000; Lee & Cole, 2003). The key issues emerging here are *double-loop learning* (Argyris & Schön, 1978; Bartunek & Moch, 1994) and the *generating* of new, technologically and commercially relevant information.

As noted in Chapter 2, innovation processes are by their nature processes that increase uncertainty. Mechanisms of variation, selection and establishment are typical of innovation processes (Campbell, 1969; Weick, 1979). Reforms often begin with someone being dissatisfied with an existing solution and beginning to develop alternative solutions and variations to existing products, services, techniques, and so on. An innovation process begins with someone distinguishing between an existing solution and a new potential solution.

The strategizing and operationalizing of the open innovation concept requires that this idea is linked to the operations, strategic thinking and strategic innovation of the company (Markides, 2002). To conclude this chapter, we may note that the open innovation concept may have strategic relevance insofar as it is understood as a concept for *dynamic networking.* As we noted in Chapter 3, in

practice this involves exploiting networks in the company's innovation pursuits. Networking may be oriented 'downstream', i.e. towards the leveraging of existing knowledge and expertise in a new kind of business or a new kind of ecosystem, or 'upstream', i.e. towards the seeking of new technological solutions to replace the company's existing ones. Networking, whether downstream or upstream, may serve as a motor for changing the company's existing strategy and business model.

Firms can correct and compensate for any shortcomings or limitations they may have with regard to the production of new information (cf. Dougherty, 1992; Dougherty & Corse, 1995), as well as risks and uncertainties, by using temporal innovation and creation networks in their development and innovation activities (Pyka & Küppers, 2002; Tuomi, 2002; Hagel & Brown, 2006). Innovation and creation networks are, separate *self-organising* and self-governing entities distinct from the formal corporate decision-making systems (cf. Chapter 2). They are 'hybrid' or parallel structures as far as the official organization or operations of a firm are concerned (Goldstein, 1985; Lillrank & Kano, 1989; Lillrank, 1990; Koivisto, 1997; Järvinen et al., 2000).

5. Strategic renewal and networking

In research, networks are described as structures of co-operative links between a set of organizations or actors, and different structures are often identified and compared (see Chapters 3 and 4). In this chapter we will look at networking as a dynamic phenomenon changing over the phases of strategic renewal of a business. We strive to show not only that networking is changing due to different business objectives in different phases, but also that, as network structure changes from open co-development to a more hierarchical production network, the focus of the mental processes also involves changes from abstract, conceptual business frameworks to the development of explicit and tacit models guiding every day operations in the network.

Managing the changes needed in strategic renewal is crucial to business success. The firm has to renew its strategy and its mode of operation to fit the new situation as described also in Chapter 4. We will use the concept of the business model as the dominant logic of the firm to describe how this change is managed. Firstly, the dominant logic has to be challenged introducing new ideas on what business the firm is in and how it should manage it. Secondly, a new logic has to be defined and thirdly, the new logic has to be implemented. In this chapter we focus on how a new business model is formed and implemented in a business ecosystem, where co-operative activities and networking is changing from open innovativeness in the customer interface to controlled development of the value network in the phases of the life cycle of the business.

Firstly, based on the more detailed discussion in Chapter 4 we take a look at the theory behind business models and strategizing openness. Secondly, based on empirical studies of medium-sized companies, we describe how these companies form their strategies and how they renew their business model using different models of networking in the phases of the life cycle of a new business. In the third section we present a model for business renewal in medium-sized

companies. Finally, in the concluding section we evaluate what the finding from the medium-sized case companies can tell about networking and learning during strategic renewal.

5.1 Business models and strategizing openness

Strategic renewal in a firm means that old patterns and behaviour have to change. This requires the creation of new models or patterns, unlearning of old ones and implementation of the new ones throughout the business network involving the firm as well as its customers and suppliers. March (1991) calls this exploring and exploiting new business opportunities. A business model is a framework describing what business the firm is involved in, and how the firm manages its business activities. It is used either in a descriptive way to define the dominant logic of the firm (Chesbrough, 2003; see also Prahalad & Bettis, 1986; Bettis & Prahalad, 1995;Von Krogh & Grand, 2000; Prahalad, 2004), or in a normative way to describe how the firm should or will operate in the future (Normann, 2001). Renewing a business actually means challenging implicit, dominant logic using explicitly conceptualized models to envision the new activities to the organization. We will strive to show that the business model is a central pattern or frame to be revised at the early stages of strategic renewal, but as the change process proceeds from early exploration to exploitation of the new business model, the focus of cognitive processes changes to levels closer to daily operations – at this stage change and development is targeted on costs, routines and processes. A central idea of this chapter is to study how networking is changing as strategic renewal proceeds from exploration to exploitation.

The business model can be described as the dominant logic for what business a firm focus on and how it manages know-how and resources to carry on the business. Renewing business means changing both the “what” and the “how” of the business model. As a dominant logic the “what” and the “how” are mental structures firmly anchored in the minds of people in the organizations involved. Changing the dominant logic means changing the mindset of people already involved, but in many cases it also means involving people with a different mindset from outside the existing business ecosystem.

To put this another way, the development and evolution of a company’s business model is a history-dependent and path-dependent process (for more details, see Garud & Karnoe, 2001). For established companies, a new business model does not emerge from a clean sheet of paper. Instead, the model that will

be applied to a new opportunity will bear a strong resemblance to the established business model already in use. And the more successful the current business model has been over time, the stronger its influence on how to commercialise (or not to Koivisto, 2011a) the new opportunity that arises. This means that the future commercial development of a firm's technology will depend on the firm's history and experience. (Chesbrough 2003, 71).

The process of adopting and learning a new business model is a challenge firstly because learning a new model requires unlearning the old one (Hedberg, 1981; Hamel & Prahalad, 1994). Secondly, the firm is, through its business model, structurally linked to (von Krogh & Roos, 1995) or embedded in (Jack & Anderson, 2002) its specific business environment, and revising the business model requires revising these links. Creation and acceptance of new frames or concepts requires identification and understanding of the prevailing dominant logic. Argyris and Schön (1978) calls it double loop learning, when new patterns are drawn from feedback to the mental model governing the behaviour of the organization.

We proposed above in Chapter 4 that the open innovation concept may be employed heuristically as a model contributing both to the acquisition of new technological information and to the development and dynamization of the company's business model. The feasibility and possibility of the company 'opening up' is fundamentally linked to the company's business model (Koivisto, 2011a). What is essential is that the company's business model governs and control decision-making in the search for, and generation of, new information and in the leveraging of existing information (Chesbrough, 2003; Prahalad, 2004).

While open innovation and innovation networks help challenging dominant patterns in an organization, they do not help a company benefit from the new situation. March (1991) argues that a company focusing merely on exploring new opportunities will suffer the cost of exploitation but will not gain many of the benefits. To do this, the organization also has to exploit the results of exploration. While exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation, exploitation includes such things as refinement, choice, production, efficiency, selection, implementation and execution. According to March, there needs to be a balance between exploration and exploitation that is affected by the organization's internal ability to learn and its external need to compete.

Williamson (2003) describes firm renewal as a strategy innovation pipeline consisting of four phases or main activities. These are imaging, testing, launching and investing. He describes the phases as management of a portfolio of ideas, experiments, ventures and businesses (see Figure 10).

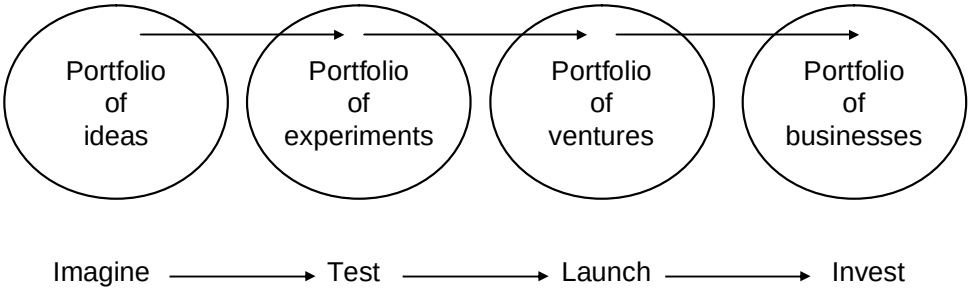

Figure 10. The strategy innovation pipeline (Williamson, 2003).

Managing a portfolio of options involves actively creating and managing a pipeline of options as different stages of development. As we move forward in the pipeline, the cost of development efforts will increase. In the phase of ideas, it is already important to articulate a viable business model around the idea. In the experiment stage, it is the objective to test the viability of the option and to assess preconditions. The aim of the venture phase is to refine and to prove the scaling of the option and to evaluate profitability of the business. In the full business phase, investments in the new business model are made and it is implemented in the organization and markets.

5.2 Evolution of new business

Based on the theoretical concepts and models introduced in Chapter 1.1 we have defined a framework for analysing how the focus on cognitive models and networking changes during the phases of strategic renewal. We define an explore-exploit cycle for a growth firm in which each main phase is divided into two sub phases each (see Table 3). The exploitation phase starts with the testing of ideas in growth pilots and ends in strategic decision-making, where resources are committed to explore new business opportunities. The exploitation phase starts with a ramp up phase. This mean involving increasing numbers of people in accepting the new business model and in developing the cognitive models needed to implement it. After this phase follows consolidation, which we see as

an intensive organizational learning phase in which operative action models and the cognitive models they rely on are developed to achieve the business objectives of the firm.

Table 3. Framework for analysing business evolution in the exploration-exploitation cycles.

	Exploration		Exploitation	
	Growth Pilots	Strategy Making	Ramp Up	Consolidation
Main Cognitive Models				
Cognitive Process				
Networking				

In this chapter, each phase of the exploration-exploitation cycle is described based on empirical experience from a large set of medium-sized companies. In each phase we also present findings from three case studies. The first one is a Finnish company producing components for the building industry. We call it the Building component manufacturer. The second company is a producer of metal fittings and the third a producer of sailing boats. We call them the Fittings producer and the Yacht manufacturer.

Growth pilots

Growth pilots aim at identifying plausible opportunities for developing and renewing a business. The pilot can focus on improving the existing business activities, or it can strive to find new opportunities and new markets. Improvement of an existing business may, for instance, mean implementation of new, improved but commercially already available technology in the company's products. It may also mean developing new versions of a product in order either to reach a new market segment or to improve the competitive position in a market. More radical pilots strive to identify growth markets or market areas new to the company. Most challenging are the innovative pilots, which strive to create a completely new demand among users and customers not even aware of a need for the product or service. Major efforts are needed to envision the need and the solution for the potential users and customers. In a piloting phase, this may require, that the pilot solution is put to use in a situation where the user is directly confronted with the need in an authentic or otherwise realistic way.

Medium-sized companies have limited resources for development and have to focus them in areas where they have at least some indications of opportunities for new business or improved competitiveness. In more radical pilots, these companies often rely on outside resources and know-how. In many countries, especially in the EU, medium-sized companies can have public funding for development of radical pilots and the development is often supported by resources and know-how from universities and national research institutions.

Often pilots are born outside the organization or in collaboration with external experts or other knowledgeable actors. A company or organization focusing attention only within the borders of their own business has limited opportunities to meet with these kind of new ideas. Identifying new opportunities requires an open attitude towards the surrounding environment and resources to scan what is going on, and also a step outside the comfortable, familiar zone of present business activities.

A growth pilot typically involves developing new offerings, and identifying customer needs and understanding of a mental model governing their behaviour through empirical testing. The new offerings can include development and implementation of new technology or it may focus on developing new services around existing products, services and technology.

In the growth pilot, new knowledge is developed and resources have to be dedicated for the task. In medium-sized companies, striving for growth, development resources can be found in-house in many departments and functions. Most of them are workers or middle management participating in daily operative activities, but dedicated development resources are also found in, for instance, product development, production and ICT departments. Here we can see a clear difference from lean manufacturing companies, which have no or very limited resources outside the operative organization. Still, we are not looking at dedicated development departments common in large or high-tech companies. Managing development resources in a medium-sized company is a mix involving dedicated management, allocating time for operative personnel to participate in development work and networking with outside organizations and resources.

Developing new knowledge in the growth pilot also means involving outside resources. Networking with customers and suppliers is an increasingly common way to understand what is required to achieve new business and what is needed to realize it. Developing the necessary skills and know-how often also requires involving research institutions or consults.

The development work done in growth pilots in medium-sized companies can often be described as technology transfer. These companies do not have the resources for long-term research and development. Instead, they apply technology developed elsewhere to create applications new to the market. These give the company a competitive edge for some time, but due to limited protection of the technology and IPR, the competition can copy any successful solutions.

Case-example 5. New customer service of building component company.

In the Building component company, a new customer service was developed and piloted in a close network involving company management, researchers, potential customers and a service provider. The initial spark for the development came from corporate management involving the researcher in developing the service business in the companies. The idea of the new service was introduced by company management who had met with the idea working for a former employer.

The idea was conceptualized in discussions with the researchers. First a service portfolio was set up to combine existing and new service into service packaged based on customer segments. After this the focus was set on detailed concept planning of the new service. The service concept was then tested in discussions with some trusted customers and potential users of the service.

A major challenge in piloting the idea was finding a partner to perform the service. Many of the potential partners contacted had their hands full with work and they felt no need for building partnership relations with the company. After some searching, though, a partner was found. A common understanding and a framework for the cooperation was then developed between top management of the two companies. Later the researchers were involved in developing the service concept and marketing material for launching the new service in the pilot market area.

Case-example 6. Yacht company.

The Yacht company had for years tried to find a solution for the profitable production of small yachts, which were a crucial part of their product portfolio. Efforts to make a standard yacht had always stranded on a market demand for customized products. In order to avoid this belief with a new yacht model, the company decided to try a new way. By defining the yacht as a one-off racing class, they focused the customer's' interest on competing instead of focussing on the yacht itself. This idea had previously been successfully introduced by competitors and was well accepted by the prospective buyers of the first yachts.

Benefiting from standardization also meant separating the production of the small yacht from production of customized products. In order to achieve this component production was outsourced to a network of local suppliers. Only assembly was done in-house in a building separate from other production.

Defining strategy

From growth pilots management can learn about customer needs, technical potential and restriction, economic feasibility and restrains, etc. Based on this a strategy for further exploitation of the products and services is prepared. Defining a growth strategy for the new business area means planning for what to do and how to do it on the new market. The strategy defines firm objectives in the market and what resources will be needed, where the resources will be found, and what major steps are needed to achieve the objectives.

Defining the growth strategy based on growth pilots is a task for top management and the management team. To be able to do this, they need to be closely involved in the pilots. Participating means learning on many levels – both tacitly and explicitly. Collaboration both within one's own organization and with outside actors like customers, technology providers and suppliers is crucial in order to achieve an understanding of the emerging business. To explore this knowledge and to make the core body of knowledge explicit, many successful medium-sized companies have active management teams working on a monthly basis on formulating and developing growth strategies. In a dynamic firm this task cannot be given to strategy specialists in a staff office, nor can it be left solely as part of the yearly strategy cycle.

Defining a strategy means making choices and decisions. A firm may have several growth pilots operating in parallel, and within each pilot there are always the possibilities to focus in different directions. Creating a strategy means focusing on the most plausible opportunities identified during piloting. The scope of opportunities chosen is limited by the resources the firm can provide to perform the activities. Choosing a strategy means committing resources to the chosen business activity, usually for a longer period of time.

A strategic plan is usually a multilevel, detailed description of how the planners – often company management – want the company to act and develop. While a business model focuses on the main structures of the business activities, the strategy also includes more detailed information on, for instance, products, markets, resources and financing. A strategic plan can be formally documented, but in medium-sized companies it is common to have the main points documented in a set of slides.

Case-example 7. Supporting strategy process of the fitting producer

The Fitting producer had for several years used excess machine and human capacity for subcontracting production to a small number of customers. As the company was looking for growth opportunities, this area was recognized as a potential source for increased turnover. In order to plan for scaling up activities in this area, top management involved researchers to support strategic planning of the new business activities. A planning process was set up to solve both strategic issues as well as practical challenges in management and on the shop floor. Several work groups were formed around key persons in middle management positions. The role of the researchers was to support these key persons in managing their planning and development task and the group work.

The work was co-ordinated by the strategy group responsible for defining the business strategy for the new business area. This group was headed by the production manager, who had been chosen by top management to lead the new business activities. The CEO of the company was also a member of the strategy group, and so was the co-ordinator of the researcher team.

The definition of the strategy was managed by the group, but the main part of the job was carried out by individual group members. Here the production manager was the key actor, but the research co-ordinator was also instrumental in forming business models and operative concepts for the new activities. The CEO's role was that of a mentor critically analysing and commenting on the plans presented in the strategy group.

A major challenge in defining the strategy was the very question whether there was any business for the company to found in the chosen market. Competition was tough and margins were small. Initially also key persons had doubts about the strategy, but after reworking and refocusing it was accepted by a reorganized strategy group. The production manager, who could not commit to the idea, left the group and a new leader was appointed.

Case-example 8. Building component company.

The Building component company had operated for several years in the export market, serving several customer segments with different concepts. To increase sales and market share, top management decided to copy the service strategy used domestically to the export market. In order to do this a foreign subsidiary was formed, and a local CEO was hired.

Based on the CEO's experience from the export market, a growth strategy was established. Due to differences in the markets and in the market position of the companies, the strategy was slightly altered from the domestic strategy.

Based on his knowledge of the industry in the export market, the CEO formed a network structure slightly different from the domestic network. In the export market, partners were given a little more responsibility than the domestic partners had. The reason for this was to be able to grow at the speed set in the strategy.

Ramp up

When a growth strategy has been set up, one of the major challenges is to commit, recruit and train resources to perform the activities needed to realize growth. The human resources are crucial. They can be found in-house or they can be recruited outside. In the initial phase, key personnel, like middle management and key operative personnel are employed to get the new business activities and related development activities started.

In the initial growth phase, achieving a critical mass of operation is crucial. This means that investments and the formation of the organization are carried out before the final structures, processes and procedures are defined. This affects how the new business activities are organized in the initial phase. For instance, employing existing outside resources can be a faster way to achieve the critical mass in resources and know-how than recruiting and training one's own personnel.

Committing a growing number of people to a new business activity means that they have to adopt to the new conditions and to the models of business and operation developed in the previous phases. This requires adoption and unlearning of old patterns and the development of the new models to fit the varying situations during a dynamic ramp up phase.

A growth strategy like the one described above requires slack in human and financial resources (March and Simon, 1958; Kuitunen, 1993). Thus, the ramp up phase cannot last long, but it has to be turned into consolidation as soon as possible. However, identifying the two stages of the exploitation cycle as separate phases means recognizing that no real change can take place unless there is time and resources enough for creative and iterative organizational learning and implementation of new activity systems.

Case-example 9. The growth strategy of building component company.

The Building component company wanted to achieve higher volume and turnover through an increase in export sales. To strengthen its position in a central market, it decided to enlarge its sales organization in the area by employing experienced, local entrepreneurs in creating a new sales and service network in the export market. In the initial phase, key management personnel, with a thorough understanding of, and wide contact networks on, the new market, were employed to start up the activities on the new market. They in turn contacted known entrepreneurs to form a sales network responsible for both sales and services in the market. The sales entrepreneurs then employed small local service companies to perform the service activities. In this way the activity network in the

new market grew from three key people to a network of eighteen people within less than a year.

A central principle in the choice of entrepreneurs was that they had operated in this market before and they knew both the ways of the industry and the customers. Employing people with previous experience meant that they could start up sales activities quickly. They only had to learn about the products of the Building product company and how the sales and delivery processes and related tools worked. Employing people with whom key management had worked previously helped achieve trust and common understanding rather quickly. Management could, through brief discussions, convince the entrepreneurs, that getting involved in the sales and service activities of the Building product companies network was worthwhile in the first place.

A prerequisite for fast growth in the initial phase was giving the sales entrepreneur a free hand in the choice of operation model. Involving several independent experienced actors meant forming a network in which a variety of operation models were applied. Basing the new business activities on the existing operation models meant that activities could be started almost instantly, as the actors were committed. This lead to a fast increase in the level of sales, and also the service activities grew rapidly.

We can call this growth strategy, applied by the Finnish building product company, networking for market presence. The main features of this strategy were:

- Fast networking with knowledgeable people in the new market area
- Selling the idea and building on enthusiasm
- Listening and adjusting to local needs
- Building on private assets/experience/contacts of key personnel for rolling out the network
- Building links and trustful relation ships
- “Loose strings” in choice of initial operation models.

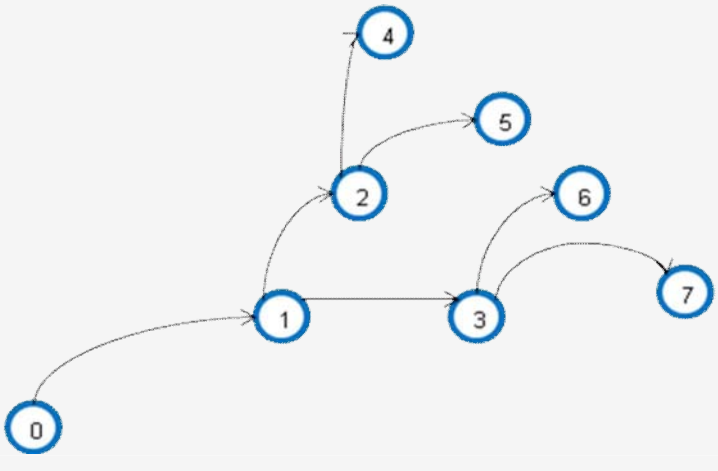

Figure 11. Networking for market presence.

Case-example 10. Supply network development of the Yacht company.

The Yacht company decided to outsource component production of the small yacht. Since component production so far had been carried out in-house there was no existing network of suppliers for these components, but the company started a process of identifying and evaluating potential suppliers. A consultant was hired to map potential companies and to conduct an economic evaluation of these firms.

Based on the initial evaluations, a set of suppliers for the different components was chosen for further negotiations. The central topic was the existing technical resources and know-how in the companies and the possibilities for the companies to invest in the necessary development of skills and in production technology. After these negotiations, five suppliers were chosen as the first tier supply network.

To develop the necessary skills, the supply network companies participated in prototype production and a support network of Yacht company key personnel was set up for hands-on support in developing production routines and processes. A researcher was hired to map the need for support and to organize the supply network.

A major job in the ramp up phase was to create a common production schedule for the supply network. Since the Yacht company had produced similar yachts earlier, they had the necessary information to form an initial schedule. A local expert was employed to conduct the planning together with key production personnel from the Yacht company and with the supply network companies.

Consolidation

As the activities are up and running, the work to make the business profitable starts. This means levering on the learning process induced in the initial growth phase, but it also requires systematic development focused on activity processes and infrastructure. Increasing customer value relative to the competition and cutting costs are main objectives of the consolidation phase. Achieving this requires close monitoring of customer satisfaction and of the operations performed to serve the customers. This means monitoring and developing both activities within one's own organization as well as the activities performed by suppliers and partners in the business network.

Achieving the quality in products and activities expected by the customer and the profitability expected by the owners requires development of both working routines and cross-functional business processes. *Routines* worked out in the initial growth phase are consolidated through the development and implementation of dedicated tools, devices or automation. *Business proc esses* like the delivery process are defined and integrated in the information systems

infrastructure used in the company. The activities are also increasingly being monitored through *economic analyse s* and by use of business and operative *indicators*.

Standardizing best practice activities and the means to perform them requires systematic implementation to become the de facto standard in the organization. This calls for training of workers and personnel in using the tools available, in performing routines according to firm standards, and in understanding how other people work in the same business processes in order to be able to manage changes and deviations due to external or internal factors.

In medium-sized companies the workers and middle management are at the centre of development and organizational learning. As new business activities are introduced, new business processes and working routines are often defined in work groups involving both workers and middle management. The results of this work are often presented to the personnel and discussed in personnel or smaller group meetings. In the end, though, learning how to operate in the new environment is typically left to the worker or team to do on-the-job.

While task instructions and especially process descriptions are abstract models for how a worker is expected to act, the indicators are usually used to indicate whether or not work is done well. The choice of indicators is a strong signal to the personnel of what management considers important. At the same time, an indicator is a simplified measure of the activity and the result of the indicator can often be affected through actions that do not support the objectives of the firm. In this way, the indicator can be manipulated if there is a conflict between the objectives or mental models of different parties within the organization.

Developing in-house activities and infrastructure is not enough for a specialized company, where purchasing volume stands for a large part of the turnover. In many medium-sized industrial companies, purchases can amount to about half of the turnover. Focusing development efforts solely on in-house activities means leaving half of the development potential unused.

Managing the development in medium-sized companies is usually the task of middle and top management. In many medium-sized, dynamic growth companies there are dedicated development managers responsible for managing larger and smaller development projects. In some companies, there are also people responsible for networking and development of co-operation and activities in closely related, partner and supplier companies. Co-development and networking means setting common objectives and forming common projects for development. Networking is a dynamic activity involving those actors in the

business network with the most influence on the aspects of business activities being developed.

Active, close networking with suppliers and sub-contractors means that some of the activities performed in other organizations can also be developed to achieve common goals and benefits. In the terms of cost management, we can say that some costs hidden in other organizations in the value chain or network can be made transparent and can be affected through active co-operation and co-development.

Networking in this phase of development is often based on operational objectives. The efforts are made where they can be seen to have to best effect on operations; where there are high costs, quality is poor or processes are slow or unreliable. In this environment, networking is often project-based and focused on a selected subset of outside actors chosen based on the operational objectives to be reached.

Case-example 11. Service network development of the building component manufacturer.

In the Building component manufacturing company mentioned before, strengthening competitiveness and ensuring the profitability of service business meant involving service entrepreneurs in the development of the service activities. Although the companies own added value and own cost of the service activity was limited, it could model major activities and their effect on total cost through networking with suppliers.

As the core company in the service network, the manufacturing company had resources and know-how not accessible to the small service companies. Based on these resources, the company developed and tested new concepts for service activities and processes in pilot projects and later implemented these in the whole service network.

The new methods and technologies developed in the pilots affected both cost structure and the earnings logic in the business network. Some of the methods developed brought about changes in the division of labour and responsibilities in business network. Work previously performed by the service companies became the task of subcontractors. The Building component company also planned investments in productivity increasing technology to make the work of the service companies more productive. In this way, costs were cut in the business network, but at the same time the distribution of cost between the companies changed. This affected pricing of services between the companies in the business network.

Case-example 12. Joint-quality development work within the supply network of the Yacht company.

Having produced similar small yachts earlier in-house, the Yacht company had a thorough understanding of the cost structure of the product, and they set up a cost level goal for the production of standard yachts. Realizing that reaching this cost level would require learning and development of working methods in the business network, a stepwise decreasing price strategy was set up and negotiated with the supplier companies.

To help suppliers in reducing cost, the Yacht company set up a system for managing quality deviations between companies in the production network. The company quality manager was employed to help suppliers handle quality-related issues. Quality deviations documented in inspections of deliveries were handled monthly in a network management team involving the Yacht company production management and management from all supplier companies.

5.3 Strategic renewal in a medium-sized firm

Based on the theoretical analysis framework in Table 3 and the empirical experience from medium-sized firms, especially the three case studies described in Chapter 5.2, we have drawn up a business renewal model for a medium-sized growth firm (see Table 4). As anticipated, we can see the dynamics of networking as it changes from phase to phase. Furthermore, this development process can be connected to the business network model presented in Chapter 3.4.

Opening up towards external markets and networks is crucial in the early pilot phase. In the medium-sized companies studied, not only the resources but also the need for open networking is limited, however. While these companies are definitely going beyond their own organization to look for new ideas and to test them, they are looking for partners in a rather limited, regional or national environment. International contacts were the base for envisioning growth on the export market in the Building product company, but otherwise these contacts were rare.

The search for ideas for new products or business opportunities is clearly the responsibility of top and middle management. They have multiple external channels for searching for new ideas. They attend national and international fairs and seminars, they have collegial networks of contacts in their own and related areas of business. Dynamic growth companies also use contacts with consultant and research organizations to find new business opportunities.

To some extent, in-house know-how is spread out in the business network as suppliers are let in on secrets and trained in how to produce certain parts or sub-assemblies. We have seen examples where suppliers are trained to develop their own products in order to achieve economy of scale in producing a non-critical part for a medium-sized firm. In this way the medium-sized company forms an innovation network that extends far beyond its own organizations borders. The network is dynamic, as its actors and their roles change from growth pilot to the next one. Some key actors are involved in different roles in many pilots; other actors with special skills are involved in one or a few pilots.

Table 4. Business renewal model for medium-sized firms[25].

	Exploration		**Exploitation**	
	Growth Pilots	Defining Strategy	Ramp Up	Consolidation
Main Cognitive Models	Vision of business and product, user needs, collegial feedback, user feedback	Business model, growth model and business strategy	Network and role models, initial activity models	Control models, revised activity models, empirical feedback
Cognitive Process	Breaking/unlearning cognitive models and patterns, double loop learning on how business is performed	Creating new business model, decision-making	Sense making,managing resistance to change, training and unlearning	Organizational learning, double loop learning on how activities are performed
Networking	Open network models	Informal networks of key persons (targeting to strategic alliances/ networks)	Building strategic networks	Supply chain network, learning networks "Hub-spoke models"

Analysis of the cognitive models addressed and the cognitive processes involved in networking in the various phases shows, that the exploration phase is central in learning the core of the new business. During experimentation, new solutions

[25] Within the row "Networking" the renewal models are connected also to network models presented in chapter 3.4.

are tested in a real situation with real users and partners. Collegial feedback is a central means of testing ideas. In this phase, the company listens carefully to signals from the pilot users and evaluates their relevance as representatives of a market. Medium-sized companies seem to be very much dependent on historic bonds. Even more radical business changes are, like growth efforts, based on known business models or existing technology. Individuals are carriers of ideas and the ideas travel with people from one organization to the next!

Strategic decision-making is clearly a task for a limited group of people. Mainly this is a task for top and middle management, but to some extent also outside consultants – researchers in these cases – were involved. It seems that successful companies, like the case companies, build new business around or based on identified, existing core competence. Strategy making can be a formal process of writing a business strategy, but more often it is a set of objectives and rough concepts of a business model.

Ramp up of a new business required the involvement of operative resources. These are found both in-house and in a business network. Committing these resources to the business means selling the idea that participating in the business activities makes sense also for them. Networking in the ramp up phase in the Building component case we can call semi-open as the new resources was recruited from a market limited only by the experience of the key personnel, not from a predefined set of actors. The openness of the network was bound by the experience of key people identifying and contacting and recruiting people for the new sales activities.

Resistance to change is a phenomenon every manager has to face, and a central means to manage the situation is the choice of people to involve in different phases of the process. While in the initial phase of mapping new ideas management requires contacts with people with new and different ideas and mental models, later on in defining and building a chosen strategy for the organization or network management needs people around them, who can help build and communicate the vision of the new business. In the Building component case, resistance to change was reduced through a careful choice of partners. Only actors with a prior experience of the operating model were chosen. In this way, the actors did not initially have to learn new ways of operation, only new ways of doing business with a new partner. From the case-example 9 we can identify the power of choosing individuals to participate in organizational learning activities as a central means in managing organizational learning. Here is a connection between power and organizational learning not

often discussed in theoretical work, but which is a means that is common to any manager in daily life. Normann (2001, 262) describes the process of using power to redistribute power and to change the power system. In doing this, a manager has to stand for their own visions themselves or act as midwives, able to put together fragments already existing within people in and outside the organization into a new coherent direction.

As the business activities are up and running in the consolidation phase, the main objective is to make the business profitable through development and organizational learning. Here we can identify two different ways of networking. First, in a limited network, development activities can be managed centrally. A network team consisting of representatives of each firm in the network who meet regularly to evaluate performance and decide on actions. Secondly, in larger supply chain networks networking can be organized as development projects focusing on a sub-network crucial for achieving central business objectives of the core company.

The medium-sized companies in our studies are mainly operating in highly cost-sensitive markets. This means that introduction of new service and products alter the competitive scene only slightly and for a short period of time. Cost-efficiency will eventually be needed to make the new business profitable. In this situation, networking is mainly hierarchical, focusing around a main contractor, who sets the objectives and manages development. The main contractor often also controls the benefits of development activities, but the enlightened contractor can see the benefit of creating a win-win situation in the network.

5.4 Concluding remarks

Studying strategic renewal in medium-sized companies shows that the model and role of networking is varying in different phases of the evolution of a new business. These companies do open up their networks in the search for new opportunities, but often in a limited way. Strategy is often defined based on experience from pilots, and it is usually made in a small group of key personnel. The defined strategy is shared with personnel to achieve acceptance for changes in operative activities and division of labour. Ramp up of new business activities requires involving a growing number of resources both within and outside the company. This means overcoming resistance to change and gaining acceptance of the new strategy. In theoretical terms, the resources have to make sense (Weick, 1995) of the models the strategy is based on.

The cognitive processes involved in strategic renewal also vary in different phases of the process. In the pilot phase, there are few empirical findings on which to base decision or model building. The actors have to achieve credibility of a concept through peer reviews and by copying models used elsewhere in similar settings. The learning process can be described as a double loop learning (Argyris & Schön, 1978) process since there clearly is refection on the basic principles guiding the activities. Yet, this process seems to differ from the learning process in the consolidation phase where models are challenged through empirical feedback and experience. Here the process can either be single loop reaction to problems or double loop reflection on how work is done and how it affects business performance. In the ramp up phase, the business model and related operational models are presented to a growing number of people, who initially in a negotiation phase or during training have to reflect on or make sense (Weick, 1995) of given models based on their prior experience and the mental model they have formed based on it.

To understand the dynamics of networking and cognitive learning of the organization in strategic renewal of a firm and business network, we need to learn more about the factors affecting learning in the different phases and network setting. We also have to look at what kind of know-how a medium-sized firm needs to overcome the challenges of growth and internationalization.

6. Organizational identification in a changing landscape

Identity and identification are root constructs in organizational phenomena and have been a subtext of many organizational behaviours. Part of the power of the construct comes from the need for a situated sense of an entity (Albert et al., 2000). Whether an organization, group, or person, each entity needs at least a preliminary answer to the question "Who are we?", "Who I am?", "Where are we?" and "Where are we going to?" in order to interact effectively with other entities over the long run. Similarly, other entities need at least a preliminary answer to the question "Who are they?" for effective interaction. Identities situate the organization, group, and person.

Another part of the power of identity and identification derives from the integrative and generative capacity of these constructs (Albert et al., 2000). Identity and identification are terms that travel easily across levels of analysis. They simultaneously convey the distinctiveness and oneness of an organization, group and individual, while allowing for blurring, multiplicity, and dynamism in identity content and process. As noun (identity) and verb (identify), they can be used as versatile concepts, frames, or tools that open up possibilities for theoretical development and revelation.

Issues of corporate identity and individuality are interesting not just as an independent and isolated research theme. Indeed, it is difficult to discuss issues of corporate management, organization and development in any systematic way without having some sort of conception of a company as an integral, individual and identifiable entity and system. Fundamentally, a company is not just a random occlusion of isolated events and market transactions. For instance, the core competence or distinguishing competence of a firm derives from a 'systemic' and system-specific expertise evolving through the interaction of many different actors and factors.

6.1 The interface of a firm and its environment

The 'character' of a firm, information concerning the firm and the acquisition of information concerning the firm are to a large extent one and the same. A firm is what various actors see it to be and how they define it. More generally, the identification of any object or entity requires that it is possible to separate that object or entity from its context, its environment or meaningless 'noise'.[26]

Conceptions about the character, features and identity of firm and organizations, and differences between them (e.g. differences in competitiveness), also have practical significance as orienting ideas and basic concepts that govern concrete research, management, organization and development pursuits. On the other hand, as Morgan (1986) has convincingly shown, it is possible to comprehend an organization in many different ways.[27] It is possible to conceive of a company *internally* as a complex and many-layered system and *externally* as an actor and body operating in a specific context (sector, market) and capable of making binding decisions with real and legal meaning. Distinguishing between internal and external raises the question of determining the *boundary* between the company and its environment (for more, see Santos & Eisenhardt, 2005). Boundaries are the demarcation between an organization and its environment. As such, they speak both to why organizations

[26] "Separating entities from their surroundings is what allows us to perceive them in the first place. In order to discern any "thing", we must distinguish that we attend from that which we ignore. Such an inevitable link between differentiation and perception is most apparent in color-blindness tests or camouflage, whereby entities that are not clearly differentiated from their surroundings are practically invisible. It is the fact that it is differentiated from other entities that provides an entity with a distinctive meaning as well as with a distinctive identity that sets it apart from everything else. Like most cosmologies, the biblical story of the Creation is an allegorical account of the process through which we normally create order out of chaos. These theories of the origin of the universe almost invariably describe the formation of essences (the heavens, the earth, life) out of a boundless, undifferentiated void. *Distinctions*, they all tell us, are at the basis of any orderliness" (Zerubavel, 1991.)

[27] A company or organization may be considered for instance in the following ways: *organization as machine* or machine-like system; *organization as organism*; *organization as brain*, i.e. a system processing data/information; *organization as culture* with a specific evolved cultural construct; *organization as political system,* controlled by specific interest groups (e.g. shareholders) and/or based on the harmonisation of the interests of various groups in a political system or alliance; *organization as psychic prison* or other repressive system; *organization as instrument of domination*; or *organization as flux and transformation*, being in a constant state of change.

are unique and advantaged, and why they fail. At the same time, boundaries necessary address what is outside the organization, not just what is inside. Thus, the study of organizational boundaries offers a unique lens on how environments relate to organizations. Perhaps most significant, the study of organizational boundaries is foundational. It is the study of why – and how – organizations exists (Santos & Eisenhardt, 2005).

On the other hand, in today's networked operating environment the interface between the firm and its environment can be considered to be a dynamic one. In any case, it is clear that comprehending and understanding the character of a company or organization – its identity, differentiation and identification – has practical implications for management, organization development and interventions.[28] It is, of course, possible to discard all generalizations and abstractions about 'companys' and 'organizations' as metaphysical and irrelevant, and to focus instead on what the management and employees of an organization actually do and say on the shop floor, at the workplace or in the office. Nevertheless, it is difficult to ignore the fact that what people say and do is inevitably linked to the specific *context* in which they say and do things: the operations, strategies and decisions of the company/organization in question (Simon, 1961; cf. Goffman, 1986). This notion of things being context-bound and context-*specific* is further strengthened if we compare different workplace organizations. Typically, the things that members of an organization say and do have characteristics specific to that particular workplace, having evolved in the course of its history.

Companies and organizations are to a large extent products – and often prisoners – of their own decisions, histories, corporate cultures, practices and philosophies, not to speak of their operating environments, which they largely shape and control themselves (Smircich & Stubbart, 1985; Weick, 2001). This fundamental notion may be translated into an R&D directive (Luhmann, 1995, 178): if there are several different views and interpretations concerning the specific social system under discussion, it is feasible to focus on the *distinctions,*

[28] It is well known that Taylor's conception of 'rational management' (Taylor, 1911) stems from an understanding of an organization as a machine-like system that can be mechanically taken apart and reassembled. By contrast, understanding an organization as a cultural unit is conducive to an approach that respects cultural meanings and the self-awareness and involvement of the members of that organization (Schein, 1987b), and so on.

views and interp retations w hich the syste m holds conc erning itse lf. It is important to understand not just how external experts and parties view company X; indeed, for practical purposes it is more important to understand *how company X views itself and understands its specific operating environment.* For a researcher, this requires a company or organization to be viewed as a relatively independent (decision-making) system that processes meaning and is capable of making observations about (distinguishing between) itself and its environment.

> "Observation is merely the management of a distinction – for example, that between system and environment. It is not a specialized operation for acquiring knowledge, not analysis. In this sense, *all the systems* with we deal are *capable of se lf-observation*. When one observes such systems, one can grasp how *they* manage the distinction between system and environment *within themselves*. (…) It would seem (…) reasonable to require that a scientific theory (and especially theory and practice of intervention, consultation, co-operation etc. TK) brings its own observation schema into *congruence with* the one at work *in a system itself*, and thus identify the system in agreement with its *own way of doing so*." (Luhmann, 1995, 178.)

There is as yet relatively little research into the self-awareness, identity and self-observation of a company or organization and the shaping, evolution and development of its identity (Albert et al., 2000). By contrast, there is a considerably longer tradition in research into individual identity. The following section (6.2) begins with a discussion of the personal identity of a living, thinking and feeling individual. The idea is that the fundamental characteristics of an individual and an organization can be charted on the basis of formal similarity and analogous interaction processes. 'Formal similarity' should not be taken to mean that the identity of an organization and its development could be exhaustively discussed on the basis of individual history, psychology, group psychology or occupational/functional psychology of individuals or (occupational) groups. In other words, it would not make sense to construe an organization's identity and its development with the psyche of a human individual. However, both sentient individuals and organizations are independent, autonomous systems that evolve according to their own specific mechanisms. In a normal case, individuals and organizations are only 'loosely coupled' to one another (Orton & Weick, 1990). The identity and operating environment of organization X may change without having any radical impact

on the individual, professional, social, etc. identity of any individual employee. On the other hand, the identity of individuals and occupational groups (e.g. project researchers) may change through the acquisition of new qualifications without this necessarily having any immediate impact on the identity of the company or organization (e.g. university).

Moreover, we should note that it may actually be easier to implement significant organizational changes if the members of that organization are *not* closely identified with and committed to the organization in its current form; in other words, if they have a personal and professional identity independent of the organization in question (cf. Fiol, 2002). For the identity of an individual to become too closely linked to the identity of an organization may be detrimental to both. The evolution of bureaucratic structures and 'bureaucratic personalities' (Merton, 1957) and the mutually reinforcing strong bonds between them are an example of such a trend. The same is true of the relationship between a company and its environment. Path dependencies and lock-ins are examples of ties that are too tight and act as an obstacle to renewal (Grabher, 1993; Garud & Karnoe, 2001).

6.2 The conception of identity at the personal level

The terms "identity", "personal identity" and "social identity" as well as "cultural identity" emerged in the humanities and social sciences in 1950s, though corresponding terms have been used previously. Although the concepts behind these terms are used and defined in numerous ways (see early studies of identity e.g. Mead, 1962; Goffman, 1978), the term *personal* identity is mainly used to describe a person's personal *understanding of self* and *the ways it differs from that of othe rs*. *Social* identity, on the other hand, refers to people who cluster together and form different kinds of groups. Social identity is a combination of special features that makes a person similar to other group members. Social identity thus means the individual's knowledge that he/she belongs to certain social groups together with some emotional significance to him/her of the group membership. In summary, social identity is about people defining themselves as members of social collectives (Tajfel & Turner, 1979; Turner, 1985; Ashforth & Mael, 1989).

Social identity theory originates from Henri Tajfel (Tajfel, 1978; Tajfel & Turner, 1979; Tajfel, 1982) and relies on the idea of *categorization*. In short, individuals categorize the world into comprehensible units and recognize their belonging or desire to belong to one or more of these defined categories.

According to social identity theory, group membership is developed through a categorization process which includes one to three components. The sense of knowing that a person belongs to a group is called the cognitive component. This membership can then either have a negative or positive connotation, which can then be labelled as an evaluative component. Furthermore, an emotional component refers to the emotions a person has towards his own group and towards others. The emotional component is therefore related to both cognitive and evaluative components, since a person's membership as well as the value of that membership can be accompanied either by like or dislike or something in between (Tajfel, 1978).

As a form of social identity, cultural identity typically refers to the collective part of the identity, a person who identifies himself with different communities and groups. Cultural identity is about social relationships, inside a certain cultural, ethnic or national group (Sevänen, 2004). Cultural identity is constructed in relation to one's membership of these groups. The main source of cultural identity has traditionally been nationality. As people are born into a certain nationality and its principles are seemingly clear and visible, it is commonly considered to be the very basis of an individual's identity construction (Hall, 1999).

As the discussion above indicates, an individual and his/her identity are traditionally seen as more or less fixed entities; identity is an internal and individualistic phenomena and will remain immutably so from birth to death. Identity is essentialist in the sense that it is something that is acquired either by birth or by joining a group. Besides, identity is realist as there is assumed to be a correspondence between identity and social reality (Kuusipalo, 2008).

The growing ambiguity of the world and organizations, has, however, lead to a notion that identity cannot be an independent and isolated entity, but is constructed in relation to others and society. Self-confirmation is no longer secured through collectivism and related values such as family status or religion, but is shaped by more individualistic values as well as individuals' achievement and success (Berger & Luckmann, 1966; Offe & Wickham, 1976). The notion of human beings and their identities as fixed, unitary, coherent and autonomous has thus been challenged. Identities are not isolated islands, which are separable from social identities and organizations (Hearn, 2002; Collinson, 2003; Alvesson, 2010).

Ultimately, the debate of individual's identity construction has ended up to a post-modern thought, where an individual has no solid and stable identity.

Instead, an individual adopts several identities at the same time, which causes identification to be in continuous change and evolution. Identity thus is a process of becoming as well as being (Hall, 1999). These arguments of identity construction will be discussed next in terms of social constructionism.

Social constructionism's view of identity construction offers useful insights into identity construction. As people's lives are interwoven with the social world around them, society and individuals cannot be separated (Giddens, 1979). Social constructionists argue that identity is being constructed as social processes, where it is also retained, transformed and reformatted. The role of society in the identity formation process is to define those processes in which identity is being modified and sustained. The identities produced in these processes are, at the same time, sustaining and modifying the structures of society. To illustrate this, this dialectic relationship can be described by indicating ways in which the history of a society produces different identities, but this history is at the same time created by people with various identities (Berger & Luckmann, 1966).

The view of social constructivism has challenged the traditional functionalist and psychodynamic models by treating identities as phenomena based on narratives and discourses (Hall, 1999; Kuusela, 2001). Identities are seen as discursive and communicative constructs, which means that they are communicatively and discursively produced, reproduced and transformed (De Cillia et al., 1999). It is thus apparent that discourses do not include only a single identity connecting all the individuals in the sameness. Instead, they build different kinds of meanings and representations, in which people can either be identified or not, change those identifications and adapt them in a way that is appropriate for different kinds of situations (Hall, 1999).

In identity construction, people develop representations of themselves in relation to others. Social identities are embedded in social relationships, where people are continuously situating themselves and each other within various social categories. A person's social identity is consequently an ensemble of all those social identifications at a certain time. As individuals seek to distinguish themselves from others, there is a constant need for a redefinition of their identity. Identity building is thus a situation-specific process, where images of the self are built in relation, in particular to others, and needed to adapt to new situations (Risberg et al., 2003).

Watson (2002) has labelled his non-essentialist view of identity construction as the *process-relational* view of individuals. Watson suggests that the most

helpful way to understand each others is to see identity as emergent, social, strategic, situationally sensitive as well culturally, linguistically and discursively located. These ideas come close to the ones of social constructionism as they indicate that identity is in a continuous process of *becoming* and always *emergent*. Besides, an individual's identity is only possible through their *relationship* to others in relation *to the specific context*. Furthermore, cultures contain discourses and narratives which provide resources to be used in making sense about the self and the world. People are both enabled and restricted by those cultural and discursive resources available to them.

As Tsoukas (Tsoukas, 2005, 178) notes, a key feature of social practices is their *self-referential character*. Members of social practices interact not with an objectively given environment but rather with perceptions of the "environment". Those perceptions are derived from the way a practice is organized, from the set of cognitive categories, values, and interests by which it is historically constituted. The manner in which the members of a social practice relate to their environment is conditioned by their historically developed appreciative system. They act the way they do because they think the way they do; and they think the way they do because they act the way they do.

6.3 Concepts of organizational identity

Over the last few years, interest in concepts of *organizational* identity has grown[29]. However, although the idea of organizational identity has been subjected to much scrutiny and debate, definitions and conceptualisations of the topic remain essentially contested (Seidl, 2005). On the basis of theory of organization as an autopoietic system, it is possible to obtain a new understanding of organizational identity, in which other concepts of identity can be integrated (ibid.). According to this view, identity is conceptualised as constructed by the organization in a dynamic self-referential process. This is a "genetic" perspective on identity that is primarily concerned with the process of production of self-description and only secondarily with its form and content.

The literature on organizational identity can be divided into three groups (Seidl, 2005): corporate identity, substantive identity, and reflective identity. Each of them is concerned with a different identity question. The concept of

[29] An example of this is the theme issue of the Academy of Management Review, 1/2000.

corporate identity addresses the question, how does the organization present itself as a unified and distinguishable system to its various audiences. The concept of corporate identity is mainly used in the practical discourses of marketing. The concept of *substantive identity* poses the questions: what keeps the different parts of an organization together as a unity, how are the various actions of an organization related to each other, and what makes the organization different from other organizations. The concept of *reflective identity* tackles the question: how does the organization itself perceive its unity and uniqueness. Albert and Whetten (1985) were among the first to pose this particular question in their seminal article of the mid-eighties. Reflective identity refers to an organization's "beliefs" about itself, or "claims" which it makes about itself. There are two important points in this concept of identity (Seidl, 2005). First, the formal-logical aspect: as in the case of beliefs about the organization, identity is also located on a higher logical level than the organization itself. To illustrate this point with a metaphor, if the organization is the territory, then the organizational identity is the map (cf. Korzybski, 1933). The second important point concerns the content of identity statements. Organizations define who they are by creating or invoking classification schemes and locating themselves within them (Albert & Whetten, 1985).

6.4 Organization, autopoiesis and self-reference

Traditional approaches to organization theory have been dominated by the idea that change originates in the environment (Morgan, 1986, 235–236). The organization is typically viewed as an *open system* in constant interaction with its context, *transforming inputs into outputs* as a means of creating the conditions necessary for survival. Changes in the environment are viewed as presenting challenges to which the organization must respond. As Morgan (ibid., 236–240) notes, this basic idea is challenged by the implications of a new approach to systems theory developed by the Humberto Maturana and Francisco Varela. They argue that living systems are characterized by three principal features: *autonomy*, *circularity*, and *self-reference*. These lend them the ability so self-create or self-renew. The term autopoiesis refers to this capacity for self-production through a closed system of relations. Maturana and Varela contend that the aim of such systems is ultimately to produce themselves; their *own organization* and *identity* is their most important product. Systems are not, however, completely isolated. Living systems close in on themselves to maintain

stable patterns of relations, and it is this process of closure or self-reference that ultimately distinguishes a system as a system.

We have learned to see systems as distinct entities characterised by numerous patterns of interdependence, both internally and in relation to their environment (Chapter 3 discussed the networked business environment as a dynamic system). Maturana and Varela argue that this is because we insist on understanding these systems from *our* point of view as observers, rather than attempting to understand their *inner logic*. The theory of autopoiesis recognises that systems can be recognised as having environments, but insist that relations with any environment are *internally* determined. These theoretical insights have important implications. For, if systems are geared to maintain their own identity, and if relations with the environment are internally determined, then systems can evolve and change only along with self-generated changes in identity (Morgan, 1986, 238–239).

The theory of autopoiesis has manifold implications for our understanding of organizations (Morgan, 1986, 240):

- It helps us to see that organizations are always attempting to achieve a form of self-referential closure in relation to their environments, enacting their environments as projections of their own identity or self-image.
- It helps us to understand that many of the problems that organizations encounter in dealing with environments are intimately connected with the kind of identity that they try to maintain.
- It helps us to see that explanations of the evolution, change, and development of organizations must give primary attention to the factors that shape an organization's self-identity, and hence its relations with the wider world.

Organizations enact their environments (Weick, 1979). The ideas on autopoiesis add to our understanding of this enactment, in that they encourage us to view organizational enactments as part of *self-referential process* through which an organization attempts to tie down and reproduce its identity (Morgan, 1986, 241, emphasis added). What business are we in? Are we in the right business? Questions such as these allow those asking them to make representations or descriptions of themselves, their organization, and the environment, in a way that helps orient action to create or maintain a desirable identity (ibid.). The figures and pictures that an organization produces on market trends, competitive

position, sales forecast, and so forth are really projections of the organization's own interests and concerns (ibid.).

Within the theory of self-referential social systems, each system has its own environment. As Vos (2002, 26) notes, this is a different conception of the system/environment -distinction because within open systems theory, on which the paradigm of adaptation is based, systems and their environment are inclusive, while within self-referential systems theory they are exclusive (Figure 12).

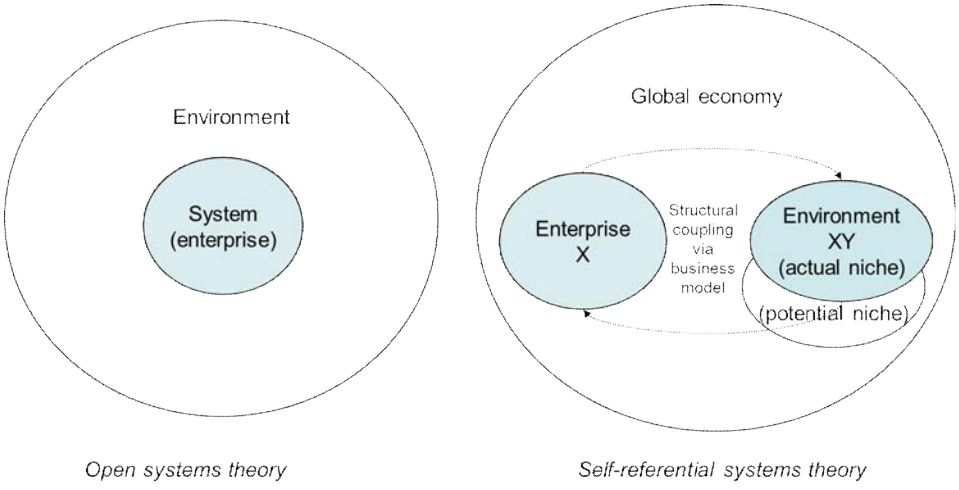

Figure 12. System/environment distinctions of OST and SST.

The implication of this new conception of the system/environment-distinction is that systems are no longer part of their environment (Vos, ibid.). Self-referential systems have their own environment, and the unity of the distinction between system and environment is regarded as "World" – or in the case of firms as "global economy". For self-referential systems, "world" or "global economy" relates to the ultimate form of complexity they need to deal with in becoming existent. Self-referential systems are autonomous with respect to their environment, which means that the environment cannot influence a self-referential system causally, unless the system willingly co-operates. This does not mean that self-referential social systems do not have to deal with their environment. Self-referential systems are autonomous with respect to their environment, but at the same time are forced to deal with their environment. Adaptation towards the environment is only possible by means of self-management and self-adaptation.

The fact that self-referential systems experience their environment exclusive to themselves implies that they can give primacy to neither their environment nor themselves to become existent (Vos, 2003, 7). Instead, they need to make sense self-referentially of *both* their environment *and* themselves. Sense-making involves unfolding or "asymmetrizing" the circularity between oneself and one's environment. Thus, strategic sense-making can be defined as seeking solutions to solve the chicken-and-egg problem in making sense of the reciprocal relationship between one's environment and organization. Dealing with self-reference involves *acting naively* and, as a result, each choice made by these systems to become existent is contingent, because they could have chosen otherwise (Vos, 2003, 8).

The concepts of autopoiesis and autonomy enable us to consider companies and organizations *in general* and collectively, as systems functioning in a given operating environment. The concept of autopoiesis does not in and of itself provide sufficient tools for discussing the character and development of a specific, empirically existing and historically evolved company. The concept of organizational identity[30] may be discussed from the perspective of distinguishing between the organization and its environment.

The concept of organizational identity has often been connected to research into sense-making. It was argued that the organizational identity served the members as a lens for their observations. Organizational identity serves as a cognitive scheme for interpreting organizational and environmental events (Seidl, 2003).

The issue of organizational identification and identity development may also be discussed in a non-psychological sense and without drawing too close parallels to sense-making issues of individuals. This can be done by focusing not only on functions and processes but also on the *decision-making* of the organization. Decision-making is here understood to mean a specific form of

[30] According to Seidl (2003a) three fundamental questions underly the concept of organizational identity: First, what it the unity of the organization, or what holds the organization together as a *unity*? Second, what distinguishes one organization from another organization? The question is one about the *distinctiveness and individuality* of an organization. Third, how does an organization perceive itself, or how do the members perceive the organization? The third question is not about the unity and distinctiveness of the organization as such, but about the *observation* and perception of it. While the first two questions concern the "substance" of the organization, the third question is a *reflective identity* or organizational *self-description* (Seidl ibid.).

influence and communication peculiar to and typical of organizations (and only them). Individuals and groups can make choices, but organizations make specific decisions (binding upon many).

6.5 Decision-making as the fundamental operation of an organization

The key insight of Herbert Simon (1961) was that an organization or organizations may be considered systematically as *decisions* and *decision-making proce sses.* Decisions and decision-making processes are the key to understanding organizational phenomena. An organization may be described as a system of interlinked decisions or a network of decisions affecting one another.[31]

Instead of traditional role theory (a role explains everything but does not explain deviations), the influence exerted by an organization on its members can be feasibly discussed as a process related to and affecting the *premises* of decisions. A role is a collection of premises that guides some but not nearly all the choices of an individual (Simon, 1982b, 32; more detail 249–255). Other premises (personality differences, personal history) affect the same decisions. It is possible to *anticipate* behaviour insofar as *the premises underlying decisions are known.*

One of the ways in which Simon broadened the perspective was to note that decisions are not just made at the 'top level' in an organization but at all levels and at all points of a process. Simon (1982b, 248) describes the operation of an organization as a complex network of decision-making processes where the purpose of every decision is to affect operative decisions and actions, i.e. the actions of those who do the actual physical work in the organization. The 'physiology' of an organization reveals itself in the processes through which the

[31] In the pages of this book, the term organization refers to the *complex pattern of communications* and other relations in a group of human beings. This *pattern* [of decision communications] provides to each member of the group much of the information, assumptions, goals, and attitudes that enter into his decisions, and also provides him with a set of stable and comprehensible expectations as to what the other members are doing and how they will react to what he says or does. The sociologist calls this pattern a "role system"; to most of us it is more familiarly known as an "organization". (Simon, 1961, xvi)

organization affects the decisions made by all of its members by laying down the premises or grounds for those decisions.

Simon notes that obviously the physical execution of the aims of an organization remains to be done by personnel at the lowest level in the administrative hierarchy. A car (as a physical object) is built by a mechanic on an assembly line, not by an engineer or the managing director. A fire is not put out by the fire chief but by the team of fire-fighters aiming their hose at the flames. In terms of physical cause and effect alone, a rifleman wins the battle and not the major, even if the major probably has a far greater impact on the outcome of the battle than any individual rifleman. The non-operative personnel in an administrative organization contributes to the attainment of the goals of the organization by influencing the decisions of the operative personnel, i.e. employees at the lowest level in the hierarchy. (Simon, 1982b, 45–46).

With regard to the decision-making hierarchy, we may say that the major can influence the outcome of the battle insofar as he can influence the decision-making *premises* of the riflemen and thereby the decisions that the riflemen make in battle. However, for the understanding of organizations and organizational phenomena it is also important to realise that 'major' is one of the roles defined internally by the military organization and forms part of a wider hierarchy of roles which is also defined by the organization itself. The role of the major and his position and authority in the given hierarchy, and also the appointment of a specific person to that position, are all the result of internal decisions made in the military organization. Similarly, the aims, operating strategies, operative decisions, unit structures, appointments and deployment are all the result of internal decision-making. The chaining of decisions to other decisions also works in the time dimension. The organization makes decisions at given times concerning its mission statement, strategy, organization structure and deployment. These then become historical facts that bind and limit subsequent decision-making and render it a path-dependent process. Naturally, a company or organization can redefined its mission, strategy, units, etc. But these redefinitions too require a decision. The inevitable conclusion is that an organization *as a whole* is systemically and historically the product of decisions and decision-making processes.

Simon's view of organizations as decision-making systems has been augmented by Cyert & March (1963) and particularly by Niklas Luhmann. Luhmann's innovation (2000) has to do with fine-tuning and 'perfecting' the decision-making perspective and with the analysis of decisions as a specific

form of communication. The crucial insight for perfecting the decision-making perspective was that decisions occupy a central role in any organization and at all stages of organising that organization, and that an organization actually creates itself through its own decision-making. On the one hand, we may say that decisions are the products of an organization, of organising and of organizational actors. On the other hand, and at a deeper level, we may say that organizations, organising processes and organizational actors are in themselves the products of interlinked decision-making processes. We may also say that organizations become independent, autonomous and differentiated as social systems and actors specifically through their decision-making processes and distinctions.

Organizations as distinction generating and processing systems (Seidl & Becker, 2006):

i. Organizations are processes that come into being by permanently constructing and reconstructing themselves by means of using distinctions, marking what is part of their realm and what is not.
ii. Such an organizational process belongs to a social sphere sui generis processing its own logic, which cannot be traced back to human actors or subjects.
iii. Organizations are a specific kind of social process characterized by a specific kind of distinction: decision, which makes up what is specifically organizational about organizations as social phenomena.

Organizations are not treated as different from each other only in that they are different operative units. There are also qualitative differences between them. The concrete realisation of the autopoietic reproduction – and connectivity of operations – is unique in every organization. This uniqueness refers to the *individuality* of the system (Seidl, 2005). This individuality is itself a result of the autopoietic reproduction. Every operation has to connect to the momentary system state, which is the product of previous operations. Thus, the reproduction of the system at any moment depends on the particular development of the system in the past history, as represented by the particular momentary system state. In order for two organizations be identical they have to share the same history. This is extremely unlikely, as even small differences between organizational operations can lead to completely different developments precisely because of *historicity*. Thus, the dependence on its own history individualises the system (Seidl, 2005).

It is important here to make a distinction between operations and structures. In general, organizations operate and sustain themselves through decisions. By contrast, organizations differentiate and identify themselves with and through the structures and premises that emerge through their operations and actions. Premises are what govern concrete decision-making in changing and shifting situations. There are many kinds of premises underlying decision-making. Action plans ('manufacturing high-quality convertible automobiles to order'), personnel ('competent and committed personnel') and decision-making hierarchies and channels are examples of premises and structures that govern decision-making. Another way of looking at this is that a particular firm may be committed to specific action plans (March & Simon, 1958), employees, decision-making hierarchies or any combination of these.

We may also distinguish between premises that the firm can control and those it cannot (Luhmann, 2000; Seidl, 2003 and 2005).

Regarding action plans, for instance, the company can make conscious decisions and choices; action plans can be revised (March & Simon, 1958). An example of revising an action plan is to add services to the offering of a traditional manufacturing company (Hyötyläinen & Nuutinen, 2010). By contrast, the corporate culture of an organization produces and generates premises over which the organization cannot exercise conscious control. The corporate culture of an organization emerges spontaneously from its operations and involves a wide range of premises which govern operations and cooperation but of which the organization is not normally aware. The corporate culture of an organization is understood as a collection of largely unconscious basic assumptions developed by the members of a particular organization or unit in dealing with issues of external adaptation and internal integration (Schein, 1987a).

6.6 The business idea as a form of reflective self-description

When a firm is set up, it is based on a specific, consciously formulated business idea and business model, which both then develop incrementally as the firm operates. Because of their evolutionary nature, it is necessary at times to revise them, and a shared map (identity) is needed in order to be able to navigate effectively in complex terrain. While the identity and functioning revenue logic

of a company may be the result of a lengthy process of development, it may also become a 'blind spot' hindering the company's subsequent development.

A company's or organization's descriptions of itself and its operating context are referred to as 'reflective identity'. This third-level activity is based on the notion that the operations of a company in and of themselves do not necessarily require a reflective description of the company itself and its operating context. The main requirement is that the company is capable of operating and of making decisions. Reflective observation of the self and the environment is not absolutely necessary for a company to operate effectively.

Instead of complicated theorising, it is also possible to improvise solutions (Weick, 1993). Operatively and functionally, the company may rely on the basic principle: 'in the beginning there was the action'. A company may simply start producing a certain kind of product or service and see what happens. If these products or services find favour with customers and the market, the company may then continue producing them. In fact, undue contemplation of the terms and consequences of decision-making – or of chicken-and-egg issues – may stifle decision-making.

Reflection on the company's business idea and identity typically becomes necessary when the company grows, its operating environment changes or the company needs to make changes to its operations and context in order to maintain its competitiveness. Normann (1983) refers to 'territorial' control and choices. If, however, the basic idea is that both companies and customers are autonomous actors operating according to their respective premises, it would be more feasible to speak of 'structural coupling' (Simon, 2007) between the company and its environment rather than territory or control.

Similarly, in a change situation the focus might be on the potential for generating new structural couplings. Structural couplings between the company and its environment emerge when the expectations of both the company and its customers with respect to its products or services are aligned. A doctor and a patient are structurally coupled with regard to their expectations if the doctor can offer what the patient expects and the patient receives what he/she went to the doctor to get. We may also note that the Saab company and Saab enthusiasts are structurally coupled in terms of their mutual expectations. Structural couplings do not last for ever; they materialise in practice (if they do) in each separate purchase and sale or similar transaction. Structural couplings are typically produced and maintained through various media. Media typical of the business

world include money and formal agreements (employment agreements, purchase agreements, cooperation agreements).

What Normann (1983) and Jahnukainen et al. (1988) had to say about the business idea and Räsänen (1997) about revenue logic come very close to the idea of reflective identity.[32]

> "What we want to include in the concept of the business idea is not just views of the market and the role of the firm in the external environment – *what the firm should manage* – but also *how this should be done* and how these views are translated into concrete actions. It is not enough just to say that we are in the transport business – whether that is even true at any given moment, for a start. A company has no business idea until it also has a formula for how to 'make money in the transport business' and until it has found a way to translate this formula into organizational and other arrangements."

The importance of the business model (or idea) in guiding strategic decision-making was discussed above in Chapter 4.

6.7 Conclusions

The identity of a company and an organization has many levels and many dimensions. At the most general level, we may use terms such as operative integrity and unity. The theory of self-generating and self-renewing systems focuses on analysing the basic mechanisms and operations through which companies and organizations self-generate and differentiate themselves from their environment. The capability to make (binding) decisions can be described as the basic operation that sets organizations apart from all other systems.

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[32] A business idea can be described as a description of the company's success factors (Räsänen, 1997) or as a structural link to the company's environment. A business idea consists (op.cit.) of three interlinked factors: determining the market segment and its needs; describing the products and services offered by the company; and the organising of the company's functions, its operating practices, resources and competence. A business idea rests on an integrated and coherent system whose components are mutually supportive. A business idea refers to concrete operating practices and is based on concrete expertise in each contributing factor. The diverse expertise underlying a business idea is usually the result of a lengthy development process.

The uniqueness and identity of a firm derives from its history and from the specific context or ecosystem in which it operates and in which it has established itself and been acknowledged. In this sense, every empirically existing company and organization is unique.

7. Organizational practices and professional work

Traditional management models and designs of organizations are argued to be ill-equipped to handle the uncertainty, unpredictability, and complexity of current environments. It can be claimed, that new organizations should be able to continuously renew themselves and develop new competencies matching, or anticipating, the changes. The active adaptation and influencing the environment and future potential development are essential. But what does this mean in terms of managing and organising?

In simplistic terms, literature on "new organizational forms" advises managers to remove old bureaucratic practices and to aim towards flexibility (Willmott, 2003, 97). There are, however, plenty of speculations on the characteristics of those new organizational forms. The new organizational landscape is conceptualized for instance as virtual organization (Davidow & Malone, 1992), hollow corporation, dynamic network form (Miles & Snow, 1986) or hypertext organization (Nonaka & Takeuchi, 1995). Moreover, new ways of organizing everyday work arise thanks to adaptation of information and communication technologies. Information systems and electronically linked work groups, such as virtual teams, make it possible to utilize and empower the employees in a more effective manner (see e.g. Sessa, 1999; Rad & Levin, 2003).

The main function of an organization is to reduce uncertainty and ensure coordination between different operations and processes. Consolidation of the processes and operations is a basic challenge of management. Different management paradigms have offered various means of tackling this challenge. Traditionally it is solved by different structural solutions (such as silos) but new information technology has created new ways to coordinate geographically and operationally divided activities (see e.g. Virkkunen, 2010). This alone is, however, not enough. The challenge of consolidating multiplies in networks. In

addition, several changes in work and workplace dynamics are going on that define demands for new ways of organising and managing.

As mentioned above, there are descriptions of the new forms of organizations in the literature that are supposed to offer better changes for coping with uncertainties and ensuring renewing. What we are, however, discussing in this chapter, is whether we have something to learn from those old, bureaucratic, organizations or the old management paradigms. In addition, we are exploring the concept of identity in order to understand individuals' means to cope with uncertain and discontinuous organizational environment. Our aim is to give insights into *how bureaucratic ways of organizing could help future's organizations to cope with uncertainty* and furthermore, *to explore identity as a promising perspective for opening new insight into managing and management models development.*

As an introduction, we will take a glimpse at the history of the management paradigms. After that, we take a look at on-going changes in the workplace in order to see how individuals are affected by the new organizational environment and related uncertainty, and what kinds of challenges they pose for individual employees. Finally, we move on to exploring the uncertainty and discontinuity in post-bureaucratic organizations and the (professional) identity construction inside of them.

7.1 A glimpse of the history of the management paradigms

The various histories of management theories and models are very strongly present in daily management practices. Although we can recognise different phases in the management paradigms, that is, main prevailing trends in what is regarded as a good management, their impact on management practices can be found long after the golden phase. The management practises in a company can reflect many, partly conflicting paradigms at the same time.

One management paradigm usually dominates or prevails for about 20–30 years (Barley & Kunda, 1992, 364). During this time there are several rounds of different management models. Seeck (2008) has made an extensive study of management paradigms in Finland, and according to this study the historical continuum can be divided into five paradigms: scientific management, the

human relations school, structural theory, organizational culture and innovation theories.[33] The paradigms have developed as a reaction to different perceived problems in work life, each of them with their own emphasis on offered solutions and also how to regard employees (Seeck, 2008, 34–35). Furthermore, different paradigms have emphasized different capabilities and organizational models (see Table 5). Different business models describe how these different approaches also have an influence to competitive advantages of companies.

Table 5. The key capabilities, organization and business models within different eras.

Framework of economy	**Industrial society**	**Information society**	**Network economy**	**"Hyper competition"**
Key capabilities	Coordination	Delegation	Collaboration	Communication
Organization models	Functional	Matrix	Alliances, spin-offs	Business ecosystems, configurative networks
Business model	Encroachment of markets	Market segmentation	Creation of markets	Concurrent models

The prevailing paradigm is an innovation paradigm within the network economy (see also Table 1 in Chapter 1). The impact of innovation theories can be dated as early as from the 1960's, but more in the 1990's and 2000's (Seeck, 2008, 262). The problem that it tackles is the need to renew and continuously bring new better products and services onto the markets in order to remain competitive in rapidly changing markets (Seeck, 2008, 243), and thus it is the most important one when considering means to cope with uncertainties.

However, as already noted in former chapters, there are still several challenges. Within the innovation paradigm, *communication* seems to come up as a key capability, and thereby *business ecosystems* and configurative networks form the ground for organization models. Seeck (2008) further noted that different management traditions express and maintain a certain image of the actor and often favour a certain kind of actor (Seeck,, 2008, 319). Furthermore, the different management traditions are based on a different kind of power. For

[33] The evolution of these management doctrines demonstrates the increased focus on complexity, starting with simple models, taking the human angle into account, and so on.

example, systematic management is based on force (must) and human-centric management on social power (persuasion or reward).

To conclude, different management paradigms have emerged as solutions for particular challenges and have inspired a wide range of different models and tools. Those challenges, as well as the traces of the different solutions, can still be found in organizations. The origins of the solutions or their "background philosophy" may be long lost, thus causing a confusing mix of rules, ideals, logics and conceptions of everyday management with which both the managers and the employees should cope with as best they can. Next, we will review changes in the workplace and how they challenge ways of organising and managing before moving on to discuss the features of post-bureaucratic organizations and identity construction inside them.

7.2 Changes in work and workplace dynamics

It has been argued that current work processes as well as employment conditions have undergone a drastic change. Increased uncertainty, unpredictability and personal risk are widely recognized and discussed themes in workplaces (Smith 2001, 7). These will be reviewed in this section to give an overview of the employees' challenges in the current organizational environment.

The contemporary workplace can be labelled as "divided" as three evident divisions in current work environment have been identified. Firstly, the movement away from mass production and standardization has led to a movement toward *flexibility and flexible specialization*. This basically means that the decentralized and less hierarchical structures allow the employees to learn new skills and find new ways to perform their jobs. However, these new structures have also been claimed only to hide the power employment and the inequalities in the organization (Gephart, 2002; Smith, 2001). This would mean that the hierarchical structures have only been replaced by other control mechanisms and that the forms of control have been changed into more invisible ones.

Secondly, there is arguably an apparent *divide into good jobs and bad jobs*. In good jobs, workers are located in flexible/specialization production models and their work is knowledge- and information-intensive. They are well-paid and highly educated. Bad jobs, on the other hand, are low skill, low pay and low training opportunity jobs (Gephart, 2002; Smith, 2001). This division can also be investigated from the internationalization point of view. It has been argued that,

despite the globalization of business, knowledge intensive jobs tend to remain in the organization's home country, while low-skilled jobs are moved abroad. This tendency is, consequently, increasing the demand for good jobs workers and diminishing the need for others in organizations' home countries (Ekholm & Hakkala, 2005; Ylä-Anttila & Kulmala, 2008).

Lastly, the literature identifies *a division between a stable and a contingent workforce*. Contingent, and often temporary, employees are experiencing insecurity and risk whereas permanently employed workers have guaranteed jobs and wages (Rogers, 2000; Smith, 2001; Marler et al. 2002). Contingent work is argued to be the fastest growing form of work and the problems related to it should thus be given the attention it deserves in the organizations (Beck, 2000).

Despite the divisions in the workplace, work, work roles and occupational membership are dominant aspects of individual's lives. Work is a source of social identity and a base for different lifestyles. Work is even agued to become a larger proportion of life as the demands and cycles of work increasingly shape the way we live (Hochschild, 1997). Workers thus adapt to and accept the uncertainty and contingency in work and desire to be attached to the organization (Smith, 2001).

The movement to flexible production and digitalization of business, as well as globalization have lead to a decentralization of work systems and to a diffusion of power and decision-making. Consequently, *self-control and self-management* has become a defining feature of today's organization. Employees control and monitor their own, as well as their co-workers', work and behaviour. They are given responsibility, authority and accountability (e.g. Gephart, 2002). This is one aspect of the flexibility and flexible specialization described above, which makes the hierarchical structures more invisible. The line between management and the employees becomes blurred, and it is difficult to know who actually has the power (Gerphart, 2002; Smith, 2001).

Together with the increasing need for self-management, the ethic of individualization has arisen. Company or product success may not be the key focus for the employees, but they focus on completing individual deliverables instead. This has been argued to be typical especially for technical labour and professionals, who expect personal advancement and rewards based on their performance (Perlow, 1997).

The ethic of individualization also has consequences in the conception and *use of time in organizations*. Many work tasks are complex and technical and thus

require interaction with others. The emphasis of individualization, however, means that helping others is seen to be a waste of time, as it will not bring anything for me. Employees are thus encouraged to interrupt others, but to avoid interruptions in their own work (Perlow, 1997). Besides, there is a time risk related to long work hours and extended work presence, which are more a norm than an exception, especially in today's knowledge-intensive and technical tasks. The working day is fragmented, as only short blocks of concentration are typically experienced between the interruptions (Perlow, 1997; Gephart, 2002).

Another major change in workplaces is the increasing cultural diversity of the workforce. It is necessary to pay attention to cultural diversity in organizations, as it is likely to cause various problems for instance in communication. Besides, cultural diversity may generate attitudes and prejudices towards other cultures; it may shape the understanding of cultural differences and it may have an effect on the satisfaction and participation of the employees. It also forces individuals to adapt to other cultures, accept the differences and commit to solving any possible conflicts (see e. g. Cox, 1993). Furthermore, cultural diversity can lead to exclusion, which means that certain individuals or groups are implicitly or explicitly excluded from job opportunities, information networks or team membership, for instance (Mor-Barak, 2005). These problems might ultimately have consequences for the efficiency of the organization (Cox, 1993; Triandis et al., 1994).

To prevent these problems and to cope with diversity and co-workers with different backgrounds, individuals are forced to look beyond stereotypes and to *step aside from their comfort area* (Kulik & Bainbridge, 2006).By successfully managing diversity, this can also generate some benefits for the organization, which is also good reason to take a look at this theme. It has been argued, for instance, that a culturally diverse organization might be more innovative and tolerant if it has been able to create a good atmosphere for diversity (see e.g. Cox & Blake, 1991; Chrobat & Ruderman, 2004).

7.3 Challenges of electronic work and virtual teams

The extensive use of computers and telecommunications media is one of the most important aspects of the new work. Computer-mediated communications and information systems are central to the electronic workplace and they have a remarkable role in everyday work of individuals. The new communications media transforms the nature and temporal aspect of work. They affect the

structure and meaning of the workplace and impact human relations (see Rice & Cattiker, 2001).

As discussed in the previous chapter, the new communications media has also led to changes in power and authority. Computer-mediated information systems support people in sharing information and facilitate employee participation. Power, on the other hand, is traditionally defined to be based on the access to information and on control over it. Therefore, the influence of a formal hierarchy is diminished and at the same time informal authority becomes more important (Gephart, 2002; Rice & Gattiker, 2001).

The increase in electronic work also affects the nature of work. Work is moved out of offices and transformed into teleworking. The research into teleworking has discussed the major benefits and disadvantages of teleworking. As advantages, they mention schedule flexibility, freedom from interruptions and time saved in commuting. Professional and social isolation, on the other hand, are seen to be the major disadvantages (e. g. Turban & Wang, 1995; Baruch & Nicholson, 1997).

Despite the possible advantages typically found in teleworking, Bailey and Kurland (2002) have argued that even though teleworkers might have fewer interruptions than their office-based colleagues and this might thus boost short-term individual productivity, teleworking might not enhance overall organizational productivity. They argue that office-bound employees have to take some of the teleworkers' duties and that "teleworkers' interruptions become theirs". Therefore, it is important to evaluate the effects of teleworking by investigating all the employees of the organization, not just the teleworkers themselves.

Electronic working is also enabling work in virtual teams, which are by definition "groups of geographically, organizationally and/or time-dispersed individuals brought together by information and telecommunication technologies to accomplish a common goal" (Powell et al., 2004). Besides, virtual teams are commonly defined as temporary as they are often used in projects which only last for a certain period of time (e. g. Rad & Levin, 2003).

As virtual teams are staffed by members who are physically dispersed and who interact primarily through the use of computer-mediated communication technologies, they typically include a high level of international interaction. Therefore, besides the lack of face-to-face communication, an important feature for virtual teams is their diversity in cultural geography and other cultural features. (Järvenpää & Leidner, 1997).

Today, virtual teams are widely implemented, as they offer many opportunities for organizations. First of all, they increase the organizations' ability to respond to the rapidly emerging needs and changes in the markets. They can be built quickly and the most suitable people can easily be found for each need despite their physical location. Virtual teams enhance effective information gathering and extend the length of the working day up to 24 hours as the members may locate on different continents. They may also generate both direct and indirect cost benefits for organizations due to above mentioned issues. Besides the organizational benefits, virtual teams have also argued to have some positive effects for the employees. They have been proven to improve employee satisfaction and motivation, as the work in teams can be formulated flexibly. Furthermore, they are also flattening the organization hierarchies, as they are based purely on the skills of the team members, not on their formal position (Edwards, 2004; Rad & Levin, 2003).

The development of information technologies has been facilitating the growth of virtual working, but there still remain a number of problems related to the efficiency of virtual teams. The problems caused by cultural differences are definitely not the least of these problems, as they affect basically all aspects of work in a virtual team (see e. g. Shapiro et al., 2002). Zeitoun (1998) argues that the key difficulties in virtual teams include differences in culture, laws, time, language, trust and the use of technologies. For example, when developing and evaluating the communication efficiency of a virtual team, attention should especially be paid to the cultural differences and language difficulties. The lack of face-to-face contact easily leads to misunderstandings, even when the members speak same language, as people tend to rely on non-verbal clues in a communication situation. When the cultural and language differences are added to this difficulty, it is quite obvious that communication in a virtual team context is very challenging (Rad & Levin, 2003).

There are also problems relating to the use of information technologies, as choosing the appropriate communication technology for the task at hand might be difficult. Besides, the overload of information must be handled, and the interaction of the virtual team should be constructed in a way that would remove the members' sense of isolation from other team members (Davison et al., 2006). Information technologies should thus support the communication and team building of the virtual team. Due to cultural differences, the early phases of team building tend to be especially difficult, and the information technologies should

be chosen to make those early phases easier, not more complicated (Adler, 2002).

One example of successfully solving some the problems relating to the use of information technologies in virtual teams is the case of Vaisala Instruments, where new information systems were developed to support knowledge creation and distribution in virtual teams. Virtual knowledge distribution portals, where team members could discuss freely, increased the amount of available information and its adaptation and thus supported the virtual teams in their actual work (Apilo et al., 2009).

Building trust in virtual teams is commonly seen to be one of the most severe threats to the effectiveness of a virtual team (e.g. Järvenpää & Leidner, 1997; Gignac, 2005). It is harder to gain trust of the other team members, as they never meet face-to-face (Rad & Levin, 2003). Cultural differences are also likely to increase the lack of trust, which make it a more severe problem.

The solving of these problems is especially crucial as virtual teams are typically expected to be formed quickly and to be productive in a short period of time. This is demanding as the members of a virtual team typically represent different cultures and thus have different thoughts, values and norms. Besides, the members might work in various functional areas and in different organizations and might have conflicting priorities and different procedures for work (Davison et al., 2006).

7.4 Uncertainty and discontinuity in post-bureaucratic organizations

The term post-bureaucratic organization is used to refer to new organizational forms and to describe an organization which is not bureaucratic. Central characteristics of post-bureaucratic organization are employee participation, self-managing teams and cross-functional tasks as well as minimal status differences In addition; sharing of information, the importance of trust in relationships, coordination predicated upon broad principles instead of specific rules and consensus through dialogue are typical features of post-bureaucratic organizations (Heckscher, 1994). Most of these characteristics were discussed in detail in previous chapter.

The features of post-bureaucratic organization capture a diverse range of recent developments in organizations and in the environment with which they have to cope (see Table 1 in Chapter 1). Besides, as mentioned above, the

concept of post-bureaucratic organization is used as an umbrella label for all the new organizational forms. Therefore, the post-bureaucratic organization can appear in various different forms, of which the most important is networked business systems, discussed in Chapter 4. All these organizational forms are characterized by the diminished meaning of boundaries, which enables cooperation and knowledge transfer both inside and between organizations. The rise of network and virtual organizations is also facilitated by the availability of sophisticated information technologies (Valkokari et al., 2009).

Despite the creation of new organizational forms, we still might have something to learn from bureaucracy and bureaucratic organizations. Even in the future, adopting some aspects of bureaucracy could help organizations and their employees to cope with increasing insecurity. If we consider the role of bureaucracy in today's and tomorrow's organizations, we can utilize the four interpretations presented by Peltonen (2007):

a. The time for bureaucratic organization is over; it is being replaced by new, flexible post-bureaucratic organization. The bureaucratic organization cannot respond to today's operating environment.
b. The bureaucratic organization survives parallel to or inside the post-bureaucratic organization. As an example we may mention the ambidextrous organization described by Charles O'Reilly and Michael Tushman, where bureaucratic and post-bureaucratic organising practices work together within the same organization, supporting each other. An ambidextrous organization has two units: an innovative one and an executive one. Both are subordinate to top management. The flexible, innovative unit is responsible, say, for product development, while the bureaucratic unit is responsible for day-to-day routines.
c. The principles of bureaucratic organization manifest themselves in new forms. For instance, in personal performance evaluation the aim is to describe the characteristics of an individual employee as comprehensively as possible, so as to be able to support the development of that employee and encourage the employee to self-improvement. The employee being evaluated should be aware of the evaluator's criteria in order to be able to improve himself/herself as desired. While the ideal bureaucratic organization model seeks to outline job descriptions as precisely as possible, the aim in personal performance evaluation is to apply this approach to the employee's personal characteristics. Another example is McDonaldization, meaning that the operating principles of fast-food

restaurants are increasingly being applied in other sectors around the world. The trend is to increase the predictability and efficiency of the operation of organizations by harmonising functions.

d. Bureaucracy as a fair system of organization. This perspective concentrates particularly on the future development and potential of bureaucracy. The underlying idea is that in the future bureaucratic structures and rules could increasingly help lay the groundwork for fair decision-making in both the private and the public sectors. An organization would have uniform practices, and the aim would be to eliminate personal preferences. In such a situation, the customer could be certain of being treated equally with other customers. Employees would also be treated equally, as rewards would be based on objective criteria only, and employee appointments would be independent of the personal preferences of management. (Peltonen, 2007)

At least if we consider the role of bureaucracy in existing and near future organizations, every above mentioned interpretation mentioned above expect the first one, seems possible. The role of bureaucracy as well as (present) demands for change can be quite different in companies acting on different business environments and industries. Further, there are also signs of how there are attempts to transfer old “control mechanisms” e.g. from traditional industries to services and expert/knowledge work. In addition, belief in indicators as a main tool of management seems to be becoming even stronger in many global companies, although agility and renewal are emphasised in the same time.

It is safe to suppose that future organizations are of different kinds, and thus also that different forms of organising them are needed in different kinds of environments, industries and situations. As Johnson (2009, 29) argues, demands for various forms of flexibility may result in a mixture of bureaucratic and post-bureaucratic models of control within one organization.

Learning more about the role of bureaucracy in coping with uncertainties is important. In post-bureaucracy command is at least partially replaced by feelings of mutuality and commitment as well as employee empowerment (Heckscher 1994). Bureaucracy, on the other hand, stands for structure, control and consistency, which are still important in the consolidation of activities and may also be seen as positive when supporting coping with uncertainties and thus creating more tolerable or ‘humane’ work environments in hyper-competition. There is not enough understanding of how to reach a positive balance between freedom, coaching leadership and self-organising teams etc. on the one hand,

and control, structure and coordination on the other. A central question for future research is: what kind of management and leadership is needed in post-bureaucratic organizations?

We claim that elements of continuity are needed in order to provide a counterbalance to uncertainties, information overflow and complexities of future work. These elements can be old or new modes of bureaucracy as a part of more or less post-bureaucratic organization activities. Therefore, a further important research area is: what we can learn from the bureaucratic organizations? In addition, one particularly interesting research area is identity and its role in the future organizations when trying to understand the balance between continuity – discontinuity, uncertainty – certainty and change and unchangeability.

In the Chapter 6 we discussed the individual's identity construction as well as its organizational and social consequences. The main argument was that specific identities must be understood in their cultural and historical context. Identities are social constructs and are continuously changing and adjusting to the world. These notions also have their implications for organizational continuity and discontinuity in terms of insecurity, uncertainty and precariousness, which will be discussed next. First, we will take a look at how insecurities and discontinuity in organizations can shape the identity construction of an individual. After that, we will discuss the professional and expert identity more deeply to give an overview of how professional identity construction can help in coping with uncertainties.

7.5 Professional and expert identity construction in post-bureaucratic organizations

As the nature of work and organizations are changing, people need to adapt to this ever-changing environment. The concept of identity offers one viewpoint for investigating individuals' means to adapt and to keep up with the organizational and work-related changes at a personal level. Individual identity has an enormous influence on the employee's connection and commitment to the organization. Besides, it has consequences on how compliant or resistant one is to existing organizational arrangements (Foldy, 2002). As employees' identities can affect their motivation, satisfaction, performance and commitment, attention should also be paid to them in management practices (Ashforth & Mael, 1989; Dutton et al., 1994).

When identity is seen as a social construct, it is admitted that identity can be modified and changed in different situations and contexts. It can, therefore, be seen as a means for an individual to adapt to change and to tolerate organizational discontinuity. On the other hand, it can create additional discontinuity if the bases of identity are often changing. As Alvesson (2010) puts it, "human existence is characterized by the uncertainties that follow from a dependence on social relations, but social trends and contemporary society add heavily to this uncertainty". Postmodern identities thus both allow more freedom and choices and increasing insecurity and uncertainty.

What is also interesting is how this insecurity is coped with. In terms of discontinuity and continuity, it is roughly about whether to fight through the contradictors to pursue a (temporarily) coherent sense of self or to reinforce insecurity by increasing self-doubt and pessimism in the attempts to create security. Alternatively, identity can be seen as a process, where identity is not defined primarily in terms of insecurity and struggle, but the self is seen as "an element in the flow of events", which is adaptable by varieties of social identities to which it is compliant. (Alvesson, 2010).

Collinson (2003) also suggests that the increasing number of material and symbolic insecurities and discontinuities in work can shape the construction of identities and selves. He argues that there are three survival strategies with the construction of identity in the (surveillance-based) workplace characterised by various uncertainties.

First, the organizational power and discipline produce conformist selves, as individuals want to make themselves valued in the eyes of the authorities. This can mean either the pursuit of a successful career or distancing oneself from the organization. In the former case, a career is seen as a meaningful project of the self, one can talk about careerism, where all organizational, social and even personal relations are treated as instrumental to career progress. Work and organization thus become the number one denominator for all identities. For the employees, mainly in subordinated work, who see little opportunity for personal development, the strategy is to build a psychological wall between the public and private self. This might end up as an identity divided into "indifferent me at work" and "the real me outside work" (Collinson, 2003; Cohen & Taylor, 1992; Watson, 1994).

A second survival strategy is to construct dramaturgical selves, where individuals try to present themselves in a favourable light by manipulating self, reputation and image in the eyes of others. These kinds of identities are typically

constructed in workplaces where employees feel highly visible, threatened, subordinated and insecure. As monitoring tends to intensify employees' self-consciousness, employees develop alternative dramaturgical identities by choreographing their own practices and managing their reactions to the ways they are monitored (Collinson, 2003).

Resistant selves, on the other hand, are a means of expressing employees' discontent about the workplace processes. These identities typically help the employees to survive in the organization, as they are constructing an alternative, more positive sense of self compared to that provided by the organization. For instance, in Collinson's study (1992) the working-class men, who were treated as "second-class citizens" in their own organization, constructed a shop floor culture and related identities, which celebrated the manual work they were doing and redefined their senses of selves as respected workers. These identities negate the management, office workers and women and emphasize masculine values such as practicality, productivity and honesty. Aggressive, sexist and derogatory humour also has a great meaning in constructing these identities. These kinds of countercultures can either enable the employees to accommodate to their position or actually reinforce their insecurity (Goffman & Helmreich, 1968; Collinson, 1992; Collinson, 2003)

Research on professional or occupational identity has been dominated by studies of professions such as psychologists, therapists, doctors and teachers. A certain detachment or control of one's feelings is supposed to be needed when facing human suffering or acting as a role model for the younger generation. Identifying with a profession (e.g. Kari, 1988) or adopting a specific career or professional role are assumed to be essential, thus also demanding changes in the subjective self-conceptualisation associated with that role. Also, the need to construct a particular professional or expert identity seems to be essential in work tasks where a person has to cope with uncertainties and is responsible for making decisions with potential risks (Nuutinen, 2006). When occupational careers are more and more characterised by twists, turns and breaks, one could wonder if there still is or should be some particular professional identity in 'normal' work tasks. As noted before, there are many kinds of uncertainties in the object and content of work related to changing business and activity environment. Nuutinen (2006) suggest that constructing a particular work- and expertise-related identity is an essential way of coping with uncertainties and responsibilities of work (Nuutinen, 2006). Coping with uncertainties is a central challenge in safety-critical contexts and has generated lots of studies from which

we can learn more about uncertainty, its effects and how to cope with it. In addition, uncertainty, dynamics and complexities are part of many kinds of technologically mediated work (e.g. process control), and they have attracted a great deal of research interest in these domains (see e.g. Norros, 2004). Thus, we should also try to interpret some of the results from these domains in a broader sense.

Although professional identity, as well as the other aspects of identity, is under construction all the time, it is strongly based on previous experiences, and the effect of identity on action taken in a particular situation can be strong. Weick (see Weick, 1993; Weick, 2001 p. 465) has illustrated the strong impact of the role of professional identity by describing a situation where fire-fighters got into danger in the Mann Gulch disaster. The fire-fighters refused to drop their tools and change their "status" from fire-fighters to victims. This can be seen as evidence of a professional "role", to which certain ways of acting and fulfilment of one's obligation are strongly related. In the classical book The Age of the Smart Machine, Shoshana Zuboff (1988) has also demonstrated the importance of tangible entities, such as a piece of operating equipment, marking a worker's sense of occupational identity and experiences of continued opportunities to master new objects (p. 62). In that transition case of the older paper and pulp mills, it was the immediate knowledge one could gain of these tangible objects that engendered feelings of competence and control (Zuboff, 1988). When the mills were automated, the basis of the expertise was lost and also related identity. The book illustrates the various problems to humans resulting from the profound change caused by automation. The new tools of modern technology increased mediatedness of the work changed the skills and competence needed and thus also threatened one's occupational identity. These examples also highlight the close connection between work-related identity and competencies and experiences (Nuutinen, 2006).

One of the best theories on expertise development, that is, learning and construction of identity, is Lave and Wenger's theory on situated learning (Legitimate Peripheral Participation, LPP and Communities of Practices, Lave, 1991; Lave & Wenger, 1991; Wenger, 1998. It takes into account the social or collective aspects of the development of expertise together with identity construction in "a real world". Identity is "a way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities" (Wenger, 1998).

The LPP theory emphasises that the mastery of knowledge and skill requires newcomers to gradually move toward full participation in the socio-cultural practices of a community. The legitimacy of the mode of participation is a requirement for being able to learn, and it also determines the content of the learning. 'Peripherality' emphasises that there are multiple, more or less inclusive ways of being located in the fields of participation. The aim is to move from peripheral to full participation. Deeper participation in the community requires increasing use of time and skills, and a sense of the 'identity of a master practitioner'. This process is very easy to understand when thinking about traditional apprentice-master model, e.g. in tailoring, but Lave and Wenger also illustrated it in a context of AA. According to Lave and Wenger, the development of identity, knowledge and skills is a part of one and the same process. In practical action, both the individual and the community shape themselves and each other. In this process, the effort of developing an identity serves the development of skills by providing motivation, formation and meaning. The purpose of the development is the 'identity of a master', which gives full membership in the community. Peripherality may be regarded as positive in comparison with unrelatedness or irrelevance. Learning means becoming a member. (Lave, 1991; Lave & Wenger, 1991.)

The primary focus of the above theory is on learning as social participation. Participation refers to a process of being active participants in the practices of social communities and constructing identities in relation to these communities (Wenger, 1998). The LPP theory and the communities of practice concept offer a good framework for considering identity development together with expertise development. The theory is, however, criticised e.g. by Kivinen and Ristelä (2001) for being too generous to offer a basis for viable and practical solutions for promoting learning. Further, Yrjö Engeström (1995) has made an important point that a characteristic of qualitative change in work is "a leap into the unknown" (p. 87). This kind of change forces the work community to learn something new which does not yet exist, and this aspect is not reached well by the theories focusing on communities of practice. For example, Virkkunen (2010) shows how organizations can be supported in this challenge[34].

[34] The other developed approach based partly on the same theoretical background is A LIFE process (Saari & Kallio, 2010).

But a community of practise might serve as 'safety net' if it were only recognised and purposefully utilized. For example, practise to 'teach' young managers by circulating them between positions around the world could be more effective if they had clear 'community' which they felt to belong. Utilising the LPP theory systemically as a frame of reference for supporting those on project secondments all over the world. One of the greatest human resources-related challenges for globally acting Finnish companies is where to get personnel prepared to travel abroad. As noted by a HR manager: 'It is not a question of money, but how to get anyone to go on a project assignment. We would need very experienced guys, but only newcomers are ready to go.' It is clear that some new ideas are needed in order to make the assignments more tolerable also in the long run. Yet again, one more possible way is to learn from safety-critical and industrial process environments: the way work is organized in shifts, when there is a real free period after e.g. three weeks on duty on a ship.

Studies on safety-critical work can enlighten a further aspect related to uncertainty and expertise. That is, what might happen, if someone does not have competencies matching the demands of the situation and coping with its uncertainties. The danger is to develop something which can be called 'super-human belief' or super-ego, when someone believes that he or she is capable of handling different kinds of situations alone or better than anyone else (Nuutinen, 2006)[35].

Thus, there are some potential problems in being exposed to uncertainty which are easier to discover in these, more limited, surroundings than in 'an office work' or 'expert' type of work which does not mean they are missing there. There seem to be a tendency to invest more and more in different tests and

[35] This belief becomes critical when the demands of the situation exceed the level anyone could handle alone, not to mention the fact that we are all prone to errors. Although collaboration and error prevention have been key issues over many decades in safety research, there are still only a few studies vaguely related to this belief widely recognised by practitioners (see Nuutinen, 2006). An ethnographic study of the cultural context of air traffic control (ATC) work made by Christine Owen (2001) may demonstrate some possible reasons behind the 'super-human belief'. She identified three collectively held beliefs in the three ATC centre studies. The first belief was that innate ability, sometimes associated with attributes such as arrogance and egoism, is the foundation of expertise in ATC. The second belief was that a necessary but not sufficient element of good controlling is confidence in the way one is performing the job. The third belief was that performance is the way to demonstrate capability and self-worth. Experience was regarded as the most valuable, even the only way, to learn air traffic control (Owen, 2001).

pre-evolutions in recruitment process. This certainty partly reflects the limited time of managers to contribute to the recruitment or orientation process by themselves. However, there might be somewhat similar beliefs as those described above.

A possible explanation for "the super human" belief might be that this kind of thinking is a result of the previous theories of expertise and the practical solutions related to these theories. Moreover, if mastery of work, and particularly coping with uncertainty as a part of it, were innate, then it would be natural to walk a newcomer "through the fire" as soon as possible in order to test whether she or he has that ability or not. If the newcomer then scrambles or sails through the test, he or she would hardly call one's abilities or this belief into question. If the newcomer has succeeded without having any or only little preliminary training in a real or close context etc. but he or she has already passed e.g. different psychological evaluations, the belief might appear also to be a promise of success, that he or she must then continuously prove for him/herself and others. If he or she continues with success in situations where the demands exceed the competence and the skills reached, could this help strengthen the belief and promote the development of "a skill" to ignore one's own uncertainty and show off confidence? (Nuutinen, 2006.)

Owen's (2001) study also resulted in the notion that confidence is essential in human performance, particularly in co-operation. The necessity of displaying confidence was recognised for smooth operation of the air traffic system, but also the problems of exuding confidence or believing one should always prove one's ability and never display doubt (Owen, 2001). An interview study of emergency decision-making on an offshore platform made by Flin et al. (1996), also refers to the importance of displaying confidence. The offshore installation managers interviewed (who have experience of real emergencies) reported that they were aware of being observed by the crew, who paid more attention to the manager's reactions than listening to what was being said during an emergency. Owen (2001) also demonstrated the role of organizational structure and socialisation and the importance of cultural norms such as "the lone ranger" (in comparison with team-based culture) sub-culture, also when adopting exuding confidence. The dangers of total confidence are recognised and fought against in CRM training emphasising e.g. the necessity to open one's decisions to criticism from the other team members (see e.g. Helmreich & Foushee, 1993).

There is a danger of burn-out in work if an imbalance between the work demands and individual capacity lasts a long time. A Finnish study based on data covering more than a 10-year period in the wood processing industry found

that individual resources were more important than the work conditions when identifying the differences between workers managing well and those who were critically burnt-out (Kalimo et al., 2001). The sense of coherence (Antonovsky, 1988) predicted the best of any of the measures (self-esteem, sense of competence, working conditions) used in the study how the worker was managing at work. (Kalimo et al., 2001.)

7.6 Concluding remarks

The current changes in the society affect organizational environment quite drastically. New organizational forms are adapted to cope with these changes and to handle the uncertainty related to the future. Furthermore, the nature of work is changing, which poses new kinds of challenges for the employees to cope with the requirements related to their work.

In this chapter we discussed the possibilities of post-bureaucratic organizations for handling the uncertainty by adopting some lessons from the past. Furthermore we offered some insights into individuals' means to cope with continuous uncertainty in terms of professional identity construction.

By successfully managing diversity, it can also generate some benefits for the organization, which is also a good reason to take a look at this theme. As pointed out in Chapter 6, it has been argued, for instance, that a culturally diverse organization might be more innovative and tolerant if it has been able to create a good atmosphere for diversity (see e.g. Cox & Blake, 1991; Chrobat & Ruderman, 2004).

In conclusion we argue that some continuity is needed both in organizational practices and in management. Moreover, we claim that some elements for this continuity and security might be found in the past and from the old organization structures such as bureaucracy. Also, the concept of identity can offer new perspectives into exploring and understanding the challenges of post-bureaucratic organizations and their management. We thus argue that recognizing the questions of (professional) identity in organizations may offer new insights into the management of uncertainty and discontinuity, which are evident in current organizations.

8. Lesson learned: How to manage future innovative firm?

In Chapters 2–7 we have outlined concepts from the literature and research related to *innovation, netw orks, manage ment, and organizations* in order to present the new challenges to the management of future innovative firms and their networks. Our aim was to deepen understanding of how the management and business research and its concepts might support the renewal of organizations, and what could be the possible future models to survive and continuously renew. This requires that focus will be postponed from an organization's static efficiency to its dynamic capabilities and ability to renew itself (Hamel, 2007). With several case-examples we have tried to connect the theoretical frameworks with the practices of companies - and thereby guide the discussion towards practice-oriented management research (see Chapter 9).

New products and services are more complex and their value creation is dependent on other products or services within a value system. Furthermore, the development and commercialisation of innovations requires considerable specialisation, and the economic success is increasingly dependent on acquisition and application of both internal and external knowledge and related intellectual property. In contrast to a traditional innovation cycle, where the knowledge used by the company has been developed, commercialised, and utilized only by itself, intangible knowledge assets are increasingly traded between companies and developed together with multiple companies. Despite the potentially conflicting interests and competition between companies in the final products and services, investments in R&D and co-operation in the development in new technologies are essential for generation of future markets for technology products and services.

Knowledge and future-focused organizations seek opportunities to maximize **communication, coordination and interaction** among actors in order to create knowledge synergies and new business opportunities. It is important to understand how the targeted, future, innovative knowledge is constructed through the choices and decisions, e.g. strategizing (Chapter 4), made by the actors within present value systems (see discussions about networked business environment (Chapter 3). Hence, this knowledge related to future business opportunities and competitive edge cannot be owned or protected by single companies as the present core-competencies. Furthermore, only those innovative companies with the best learning capability and the greatest capacity for absorbing external knowledge will benefit the most.

8.1 Management in the era of hyper-competition

The era of hyper-competition is characterized with uncertainty, dynamic change, connectivity, and complexity. As pointed out already in Chapter 1 hyper-competition results from the dynamics of strategic manoeuvring amongst competitors, and therefore key success factor is firm's ability to *manage dynamic strategic interactions* (Aveni, 1997).

As described in Chapter 2, innovation is more than just one idea or invention. Instead, innovation is more likely a new combination of new or existing elements of a solution-customer-organization-value "system". For example, service innovation may also require new business models and new network partners. Furthermore, seeing innovation as a normal, extensive, and frequently repeated event will offer new approaches to renewal and also motivate organizations to develop innovation management practices. Innovations in some of its all different forms should be part of every employees not only those working at a R&D department. Innovation diffusion is first of all a *communication process* in which messages concerning a new idea, thing, behaviour are circulated "through certain channels over time among the members of a social system" as stated by Rogers (1983).

Innovation involves a fundamental element of uncertainty, which is not simply a lack of all the relevant information about the occurrence of known events. Uncertainty is a typical characteristic of all innovation and reform – and all genuine entrepreneurship. Therefore, future innovative organizations must be

able to embrace and leverage uncertainty rather than eliminate it.[36] A key mechanism for absorbing uncertainties and generating information is *dynamic, multi-level networking*, which we discussed above in Chapter 3.

According to modern system theory, the environment of any finite system is overcomplex in relation to the system itself. It is, therefore, impossible to eliminate uncertainty finally and completely (Luhmann, 1995). It is, however, possible to cope with complexity and uncertainty through methods of uncertainty *absorption* and/or uncertainty *reduction* (Boisot & Child, 1999). The absorption mechanism suggests that, when facing external uncertainty, firms should complicate their systems in order to create a variety of compound options and risk-hedging strategies. The reduction mechanism suggest that firm should standardize its internal processes and simplify organizational systems so as to decrease the number of alternatives and relations that it has to face (Tang, 2009).

8.2 The summary of case-examples

To sum up, future innovative firms must be able to cope with uncertainty – instead of aiming to avoid it. Thus, strategies of uncertainty (complexity) reduction and uncertainty (complexity) absorption correspond to two distinct strategies of learning: exploitation and exploration (March, 1991; March & Levinthal, 1993). Similarly, in section 3.4 we analysed the differences between enhancing existing business (exploitation) and creating new business (exploration) in networking. Further, in Chapter 4 we distinguished between upstream and downstream networking from the point of view of using existing knowledge and generating new knowledge.

In practice companies could – and should – have different solutions to cope with uncertainty. Thus, the case-examples presented in previous chapter also demonstrate how different strategies offer each company a unique solution

[36] Traditional strategic planning concepts assume that before any decisions can be made, all existing alternatives and all conceivable outcomes of each alternative must be known (Simon, 1982a; Mintzberg, 1994; Tsoukas, 1996). In practical terms, this is of course impossible. An alternative approach is to exploit the uncertainties typical of all types of entrepreneurship – including that of competitors – and all types of innovation while aiming to compensate for these uncertainties with available means. One way of compensating for uncertainties is to network with other actors.

(Figure 13). As Figure 13 illustrates, each of the case companies still has work to be done in order to be *both strategically adaptive and operationally efficient* (Hamel, 2007) at the same time. Respectively, Apilo (2010) pointed out that for continuous renewal, future innovative firm must implement both -and management.

The case examples presented (1–12) were from seven companies from different industries and sizes. Case-examples 1–4 were presented in Chapter 3, and case-examples 5–12 in Chapter 5. The case-company in case example 5 was the same as in examples 8, 9, and 11, and the case company in case example 6 is same as in examples 10 and 12. Next, to sum up the case- examples and explain their position within the dimension of renewal, a short description of each case is presented here:

1. Case company 1 is an SME offering industrial services, metal products and subcontracting to global product companies in technology industry. In order to gather an even broader area of customer needs, case company 1 has built relationships targeting *exploitation* of partners' complementary resources and their integration into business solutions.

2. Case company 2 is a small company offering software products and services, e.g. consulting related to software products. Its software products are typically developed with open source software communities and companies around these communities. In order to *explore new business opportunities,* the CEO and owner of the company has also convinced the employees to participate in certain on-line discussion forums and open communities.

3. Case company 3, producing fishing gear well-known among fishermen worldwide, has found viable ways to *explore and exploit* user-born ideas and the lead-user approach into its product development processes. Thus, intense interaction with the user community is one of the means by which the case stays in-tune with the fishermen's demands for novel lures around the world.

4. Case company 4 is a playground equipment manufacturer, which has continuously developed and added new elements into its product family. In order to *explore new opportunities* and develop a radically new type of product diverging from existing offerings, case company 4 has created a new concept based on an on-line user community.

5. Case company 5 is a manufacturer of building components, which offers also services related to the assembly of its products. In order to pilot a new service, the company looked for a new partner to *exploit* its resources. In order to *explore new opportunities* and increase exports and market share top management decided to copy the service strategy used domestically on the export market. Furthermore, it aimed to strengthen its position in a central market and expand its sales organization in the area by employing experienced, local entrepreneurs in creating a new sales and service network in the export market.
6. Case company 6, a yacht producer, had for years tried to find a solution to the profitable production of small yachts, which were a crucial part of their product portfolio. In order to benefit from standardisation, it outsourced the component production of small yachts to a network of local suppliers. In order to better *exploit the produc tion netwo rk* and to help its suppliers in reducing cost, the yacht company set up a system for managing quality deviations between companies in the production network.
7. Case company 7, a fittings producer, had for several years used excess machine and human capacity for subcontracting production to a small number of customers. In order to explore new opportunities, this area was recognized as a potential source of increased turnover, although competition was tough and margins were identified as being quite small.

Naturally, these descriptions are always simplifications of the real-life situation, and companies even now have conflicting interests and parallel collaboration models.

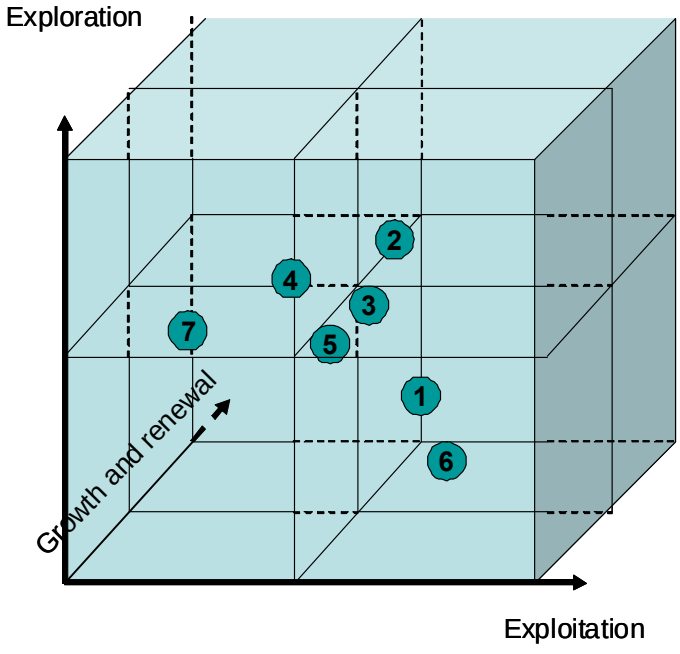

Figure 13. Strategies of case companies within business exploitation versus exploration.

However, exploring and exploiting are associated with different and inconsistent organizational architectures, logics and processes (Smith & Tushman 2005). Where exploration is rooted in variance-increasing activities, learning by doing and trial and error, exploitation is rooted in variance-decreasing activities and disciplined problem solving. Where exploitation builds on an organization's past, exploration creates futures that may be quite different from the organization's past. Moreover, products born of exploration are often in direct competition with existing products.

The conflict and opposition between generating new information and leveraging existing information can be approached in a number of different ways (Nooteboom 1999): separation or differentiation in place, differentiation in time and differentiation in strategic orientation. Traditionally, companies have separated their R&D units, which generate new information, from production and other units that use existing information. This, however, does not resolve the issue of how to coordinate the operations and outcomes of units operating with different logic (Lawrence & Lorsch, 1967).

Secondly, the diametrically opposed requirements of exploration and exploitation may be separated in time, in accordance with the life cycle concept:

the company focuses on exploiting existing information at one point in its history and then, during a recession or crisis, focuses on learning new solutions and models. The third option is to reorient the company's strategy, focusing on either exploration or exploitation instead of what the company was doing before. For instance, a company may reposition itself strategically by shifting from production expertise to R&D expertise (Nooteboom, 1999). In practice, however, companies tend to favour exploitation (the use of known solutions) at the expense of exploration because exploitation provides more immediate and certain returns.

Changes in the operating environment of firms (increased complexity of products and services, decentralisation of information, time pressure) have led to traditional differentiation in time and in place no longer being satisfactory in many cases. By differentiation in place, we mean specialisation between units within formal organizations (R&D, production, etc.) and externally between companies. Producers of existing products and solutions must also develop new manufacturing and operating schemes, and companies at the fuzzy front end of R&D must likewise enhance their routines and functions.

8.3 Future innovative firms and multidimensional collaboration

Networked, but independent, firms and their decisions build up the future business environment, and thereby the firm's ability to configure and manage different business ecosystems, value networks, communities of and working groups is one of key success factors. In order to be successful within a complex and networked business environment firms need parallel collaboration models in several levels. Furthermore, the complex environment, dispersed knowledge and growing uncertainty necessitate co-creation and more open collaborative renewal models (Figure 14).

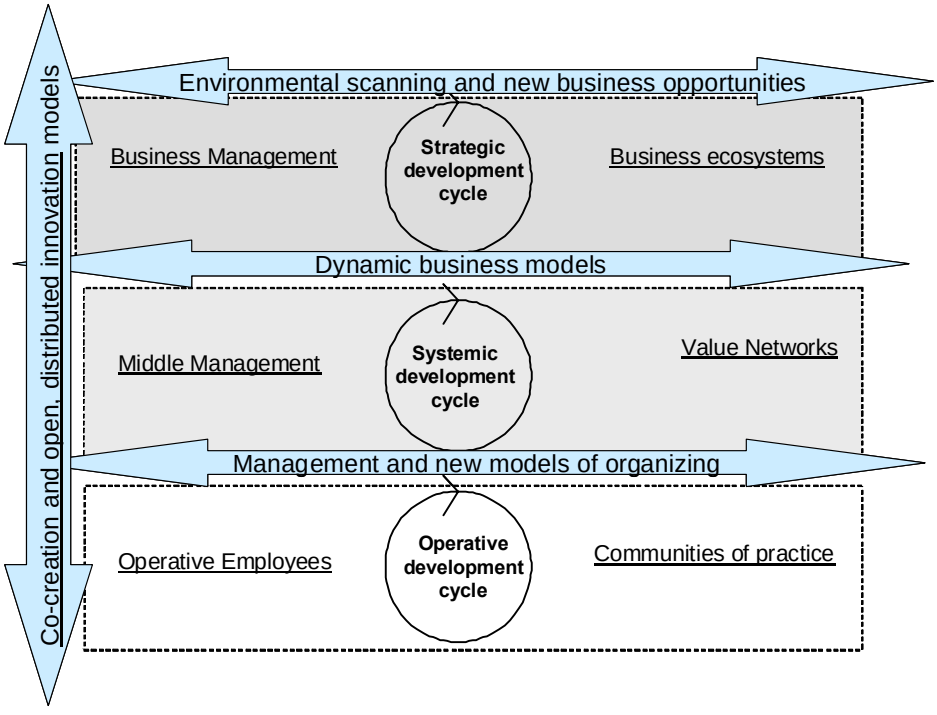

Figure 14. Strategic levels of development and collaboration.

First, environmental scanning and search for new business opportunities call for the business management of firms to understand business ecosystems. Furthermore, business managers must consider the innovation agenda and dominant logic of different industrial sectors in order to connect and motivate the actors of business ecosystems. According to Iansiti and Levien (2004), business ecosystems are characterised by a large number of loosely interconnected participants who depend on each other for their mutual effectiveness and survival. According to Moore (1993, 76), members of a business ecosystem "work co-operatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations". Therefore, understanding the business ecosystems helps the firms to go beyond the present value networks and explore future business opportunities as well as possible network partners. Thus, business ecosystems base their success on both competition and cooperation.

Secondly, strategizing between dynamic business models requires the business and middle management of a firm to have a clear picture of present value networks. The strength of a value network originates from cooperation and interaction among the participating companies. In order to motivate and ensure the commitment of business partners, managers should understand the co-creation of value and how it influences the business models of each partner. Still, the operation of value networks focuses on present business deliveries and in this way the discussions about renewal and innovation are often missing from the collaboration between the value network actors. An important precondition of co-evolution within value network would be the interconnectedness of the firms. In other words, feedback loops and more horizontal collaboration between network actors could improve the innovativeness of value networks.

Thirdly, new models for management and organizing necessitate the managers as well as employees utilizing the social networks and different communities of practice for the exploration of new knowledge. Within the constantly changing organization and networks, these new models of collaboration may also offer important stable elements and frames for individuals.

Still, it is safe to suppose that future organizations vary and thus different forms of organising them are also needed in different kinds of environments, industries and situations as described in Chapter 7. As Johnson (2009, 29) argues, demands for various forms of flexibility may result in a mixture of bureaucratic and post-bureaucratic models of control within one organization. The role of bureaucracy as well as (present) demands for change can be quite different in companies acting in different business environments and industries. Further, there are also signs of how old "control mechanisms" are tried to transfer e.g. from traditional industries to services and expert/knowledge work. In addition, belief in indicators as a main tool of management seems to be becoming even stronger in many global companies although *agility and renewal* are emphasised at the same time. Despite the divisions in workplace, work, work roles and occupational membership are dominant aspects of individual's lives. Work is a source of social identity and it is a base for different lifestyles.

9. Towards practice-oriented management research

According to several observers traditional academic, 'normal scientific' research on organizations and management has detached itself to a worrying extent from everyday problems and practices (Daft & Lewin, 1990; Mohrman et al., 2001; Bennis & O'Toole, 2005). Scientific reports and articles feature detailed descriptions and analyses of phenomena and causal relationships whose practical relevance remains unclear. Moreover, academic scientific study has differentiated into subdisciplines and an endless number of internal discourses. Although economic, social and mental issues related to the thinking of, and cooperation between, various parties are of vital importance in business management, it is very difficult to draw practical relevant conclusions from discourses in economics, sociology or psychology, or to read them in ways that would feed into practical decision-making. A large percentage of scientific studies focus on the relationships of a limited set of variables. Corporate decision-making, by contrast, necessarily involves the simultaneous discussing and consideration of numerous mutually dependent variables (cf. Mason & Mitroff, 1981).

The differentation of academic research internally and externally has created a market niche for the development and dissemination of popular management fads and business management doctrines (Starkey & Madan, 2001). Such management doctrines may offer fresh insights into corporate development but often have a brief life span. Lean management and business process re-engineering are examples of 1990s doctrines that are now largely forgotten. Few Western companies managed systematically to take the practices of Total Quality Management on board for the long term before outsourcing became the guiding principle in business management. In discussing management doctrines, we should also note that the development of a company's unique expertise and

competitiveness is neglected if all businesses apply exactly the same recipes. It is qualitatively doing different things and/or doing them in qualitatively different ways from other companies that creates a company's unique expertise and competitiveness (Bessant, 2003). Universal strategy and management doctrines typically ignore the question of a company's own identity, unique characteristics, historical development path and attachment to a specific niche and operating context.

Dissatisfaction with specialisation in academic research has sparked a debate on solutions that would better serve the needs of generating new information and of dialogue between research and practice, and also alternative avenues of research. One of the focal points of this debate rests on the ideas proposed by Gibbons et al. (1994; Nowotny et al., 2000) concerning what they call Mode 2 research. They note that Mode 2 research is often undertaken in non-academic and non-subject-specific contexts, in interaction with practical operations and under quality criteria broader than the traditional truth criteria required of rigorous research.

> "Our view is that while Mode 2 may not be replacing Mode 1, Mode 2 is different from Mode 1 – in nearly every respect (…). It is not being institutionalized primarily within university structures … (it) involves the close interaction of many actors throughout the process of knowledge production … (it) makes use of a wider range of criteria in judging quality control. Overall, the process of knowledge production is becoming more reflexive and affects at the deepest levels what shall count as "good science" (Gibbons et al., 1994, vii.)[37]

Closer interaction and dialogue between research and practice does not mean or require that the goals and interests of the parties involved should be the same. An understanding may be reached in the course of a process or joint development (cf. Valkokari, 2009). Indeed, joint development is possible and

[37] These themes are further refined as the key features of Mode 2, which are contrasted with the features of Mode 1. According to Gibbons et al. (1994, 3), Mode 1 problems are set and solved in a context governed by the – largely academic – interests of a specific community. By contrast, Mode 2 is carried out in the context of application. Mode 1 is disciplinary while Mode 2 is transdisciplinary. Mode 1 is characterized by homogeneity, Mode 2 by heterogeneity. Organizationally, Mode 1 is hierarchical and tends to preserve its form, while Mode 2 is more heterachical and transient. In comparison with Mode 1, Mode 2 is socially accountable and reflexive.

feasible precisely because the parties involved have mutually complementary views, expertise and knowledge. This new type of dialogue is not about negating the independence of the participants or about instrumentalizing one party as a trouble-shooter of another party's day-to-day problems. Innovative solutions frequently emerge from a pluralist, constructive yet critical dialogue (Alvesson et al., 2004; Jarzabkowski & Fenton, 2006) in which the independence of the participants is respected. It is feasible to consider that new information is generated in a broader context, an ecosystem consisting of researchers, developers, various consultant and mediator bodies, and companies (Seidl, 2003). What is typical of this ecosystem is that new ideas and concepts can emerge in practical everyday operations just as well as from scientific theories and observations.

9.1 Practice turn in strategy research

Strategy research has taken a "practice turn" in recent years (Whittington, 2002; Chia, 2004; Johnson et al., 2007; Golsorkhi et al., 2010). Against the external perspective, the practice notion implies close attention to the work done, solutions chosen and selections made *inside* organizations (Tsoukas & Chia, 2002). The practice perspective is interested in *situated, concrete activities and operations*. The research opportunity is to discover more about how to structure and intervene effectively in situated activity, both for strategy-making and organizational design (Whittington, 2002).

Making strategies, designing organizations and inventing new solutions are laborious and expensive activities, often drawing on a wide range of participants and extending over long periods of time. The work of strategy, organization and innovation needs to be organized. For strategy, we have the impression that the large central planning departments of old are now defunct. But how companies might organize strategy and development work in the centre and periphery of contemporary organizations remains obscure (ibid.).

Practice-oriented research may mean reflectively learning from innovative operative solutions evolving in practical operations and from problem-solving methods and strategies that have been proven in practice. For instance, decentralisation and dispersion of knowledge (Hayek, 1945; Minkler, 1993; Tsoukas, 1996; Becker, 2001) is a problem that affects all companies and is a general problem in the management of companies and organizations. This being a universal and ubiquitous problem, there is reason to assume that it has already

been solved in practice in some way somewhere. This translates the issue into an empirical question, and the effectiveness of various existing solutions may be compared (for more, see Becker, 2001).

Practice-oriented research does not mean that research should stop at or limit itself to empirically surveying existing, observable practices and routines. One of its key tasks is to develop, analyse and evaluate *new, alternative* and *potential* schemes and solutions to problems. The significance of alternative solutions often does not become apparent until they are analysed from a broader temporal or systemic perspective. For instance, in order for an idea or solution to be described as 'strategic' or 'innovative', it must have special significance relative to a larger systemic context (cf. Chia, 2004).

Practice-oriented explorative research distances itself from the traditional academic notion that information acquired from the perspective of a dispassionate outside observer is inherently superior to that acquired through practical operations (cf. Winograd & Flores, 1988; Weick, 2003). Practice-oriented research does not seek to replace practical knowledge, instead augmenting it with a broader angle and often drawing on comparative data. Practice-oriented research also distances itself from the traditional approach in strategy and management research that emphasises the superior rationality of an external observer and *means-ends models* (Chia, 2004; cf. Luhmann, 1968). In order to really get closer conceptually to the scene of everyday action, practice-based research advocates the need to deal with a set of theoretical baggage that has been the underlying cause of high abstraction in strategy theorizing. This is the overwhelming predominance of a *means-ends analy tical logic* and conceptual stance that presupposes deliberate intentional action and presumes a practitioner reliance on instrumental reason and cognitive representations (Chia, 2004). One major consequence of this rationalist attitude is that practice is portrayed in a way that distorts its true character. To truly understand the world of practice, we have to resist the tendency to impose *our observer-led causal logic* and the vocabulary of intentions, rules, plans and laws that constitutes the operating discourse of the academic researcher.

It is an academicism of the social "art" of living that obscures the logic of practice in the very movement in which it tries to offer it. From this remote stance of academicism, caused not so much by physical distance as by intellectual distance, strategy practices are seen as logically coherent actions emanating from deliberate intentions and purposes: the acting-out of prescribed roles, the performing of routines and the implementing of plans. One major

consequence of this academic orientation is that it directs attention onto the visible, tangible routines and observable practices of significant individuals within an organization and takes that to be the appropriate content of what is meant by strategy-in-practice. (Chia, 2004)

The concept of practice-oriented research may be deepened and expanded through modern *system theory* and research. Firstly, system research is not much focused on means-ends rationality but instead on rationality of a system (Luhmann, 1968). System's rationality is system-specific and company-specific. For instance, system-rational solutions in a company's operations are those that have a positive impact on the development and continuity of the company's competitiveness. System rationality also means that it is not possible to define from outside the company which solutions would work in a specific corporate or business context. Solutions and options must be explored from within the company, from an internal perspective (cf. Winograd & Flores, 1988, 42; Vos, 2002).

The key motif in modern system theory thinking (Wiener, von Neumann, Shannon, McCulloch, Pitts, W. Ross Ashby, Bertanlaffy, Gordon Pask, etc.) is the aim to analyse diverse systemic entities and their special characteristics with regard to internal and external connections and interactions. System theory research is more interested in *relationships* and connections than in discrete objects, variables or factors. Niklas Luhmann's social systems theory (Luhmann, 1995) focuses on the relationship between a system (e.g. an organization) and its environment. From the first, system theory thinking and research have employed a critical approach to traditional mechanistic, deterministic and linear-causal philosophies.

System theory discussion is characterised by the conception that the differentiation of sciences and traditions has led to the emergence of communication gaps that hinder pluralist interaction and thereby a need to augment and compensate for this differentiation with a systemic, interdisciplinary or transdisciplinary approach. The idea is that system theory can provide a framework for communicating and mediating between various perspectives, approaches and disciplines. The purpose of system theory research is to support cross-discipline dialogue and to promote comparisons, for instance concerning what characteristics different systems share and where they differ. System theory research is, by default, comparative research.

One of the main research areas in system theory research and cybernetics research involves problems and solutions in system control, self-regulation and

self-organization, and also efforts to analyse in more detail the conditions, factors and mechanisms that affect the design, control, controllability, organization and self-organization (see e.g. Ashby, 1952) of various systems. The very term 'cybernetics' is derived from the Greek word for 'control'. Issues related to the design, self-regulation and self-organization of complex systems are closely related to issues of information, communication and evolution.

New system theory thinking focuses on issues of information and its use and exploitation. Indeed, modern system theory thinking and constructionist information theory are closely linked (Watzlawick, 1984; Steier, 1991; Simon, 2007).

9.2 Outlines of practice, process and future-oriented research

There has been an intense debate amongst scholars on how to increase the practical relevance of research. Although the notion of relevance is frequently mentioned in the literature, it is hardly ever defined and may have different and even contradictory meanings in different contexts (Nicolai & Seidl, 2010).

In general, managerial behaviour revolves around decision-making (Nicolai & Seidl, 2010). This does not mean decision-making is all there is to managerial behaviour. However, a particular feature of formal organizations is that every activity or solution can be perceived or referred as a decision (March & Simon, 1958; Simon, 1961; Luhmann, 2000). Against that background, the practice relevance of management science can be conceptualized as the impact of management science on managerial decision-making or on decision-making situation (Nicolai & Seidl, 2010).

Generally, any kind of knowledge would be considered relevant to managerial practice to the extent that it makes some kind of difference to decision-making, whatever that difference might be. Hence, the term "relevance" as such does not imply a particular kind of difference. However, if we take decision-making as a main point of reference, we can distinguish different forms of practical relevance according to the three different phases of decision-making: the definition of the decision situation, the selection of one of the alternative and the enforcement or legitimation of the selected alternative (Nicolai & Seidl, 2010). First, knowledge affects how we perceive or construct a decision situation. To the extent that scientific knowledge or research modifies our understanding of decision situations, it possesses what one could call "*conceptual relevance"*. Second,

knowledge can influence what courses of action we select within particular decision situations. In that respect, one can speak of *"instrumental relevance"*. Finally, knowledge might be used to legitimate or enforce a chosen source of action. To the extent that this is the case, one can speak of *"legitimative relevance"*.

Research can connect with practical decision-making and management at various levels and in various ways. We may distinguish between strategically, operationally and technically oriented research, for instance. Generally speaking, practice-oriented research focuses on problems and solutions in the operations, management, development, planning and re-planning of companies and organizations (Van Aken, 2004; Van Aken, 2005; Van Aken & Romme, 2009).

The purpose of practice-oriented research is to produce practically relevant, viable and generally applicable knowledge. Practice-oriented research may provide impulses for the development, introduction and implementation of alternative solutions as part of the operations of companies and organizations. However, it is up to the companies and organizations themselves to decide what they do with these impulses and how they utilize them. Making situation-specific decisions requires local and situation-specific knowledge. Practice-oriented research can never replace situation-specific, experiential information or the responsibility involved in making situation-specific decisions. The issue of leveraging information is in part connected to the responsibility relationships between researchers and implementers. For instance, a researcher cannot assume responsibility for business management decisions, and the company management cannot assume responsibility for the theoretical or methodological solutions underlying the generating of research information.

In management, one needs, apart from description-driven research programmes, also prescription-driven research programmes in order to develop research products that can be used in designing solutions for management problems. This does *not* mean the actual application of scientific knowledge to solve a specific managerial problem – this is the domain of practitioners – but the development of scientific knowledge to solve a class of managerial problems, in other words, the development of abstract knowledge. Nor is it a plea to develop recipes, but rather a plea for the development of field-tested and grounded technological or methodological rules to be used as design exemplars of managerial problem-solving (Van Aken, 2004).

In many cases, information problems related to management, control, organizing and strategic and operative development stem from the fact that

companies and organizations are inherently *internally complex* systems (Perrow, 1986; Stacey, 1995; Anderson et al., 1999) and, on the other hand, systems operating *in an increasingly com plex and ch anging environme nt.* It is typical for technology and market environments (Koivisto, 2011b) for the complexity of products and services to increase (Hobday, 1998; De Laat, 1999), for time pressures to grow (D'Aveni, 1994) and for products/services to be increasingly produced by decentralised networks of expertise consisting of independent actors (Coombs & Metcalfe, 1998; Coombs & Metcalfe, 2000; Becker, 2001; Lee & Cole, 2003).

The problem of managing complex systems can be presented in a general form as follows (Luhmann, 1995, 23–28): i) The environment of any system is more complex than the system itself. Any given system has only limited potential to connect to its environment. ii) One must choose and make decisions in a selective manner. In other words, complexity must be reduced. iii) Selection leads to making specific and conditional choices and decisions. A conditional choice is one where another selection or solution would have been equally possible. iv) Conditional choices always carry risks. Risks which are consequences of conditional choices and solutions, for instance the risk of restricting the company's domain of expertise, must be compensated with new and complementary management and organization models (Schreyögg & Kliesch-Eberl, 2007). Generally, as the environment becomes more complex, the company must employ increasingly sophisticated management and operating practices; complexity can only be controlled with complexity (Ashby, 1958).

As David Seidl (2003) states, companies and organizations are complex systems. They possess more elements than can be practically or even conceptually related to each other (Luhmann 2000). They possess more possibilities than can be cognitively or practically realized. Any action within the organization is thus necessary *selective*. It actualizes some possibilities, leaving other ones unactualized. The greater the complexity the more difficult the selection becomes. If the complexity is too great, action becomes paralysed. In order to make action possible, complex situations have to simplified; the complexity has to be reduced. There has to be a *pre-selection* of possibilities. This pre-selection is the function of *structures* (Giddens, 1984; Luhmann, 1995), for example, rules, norms, or goals. A norm for example structures the possibilities into norm-conform and norm-deviant possibilities. The norm transforms the original situation with many possibilities into one with two possibilities.

Research results may serve to reduce complexity and/or to increase complexity and diversity. Causal models typically reduce complexity, illustrating complicated cause-and-effect relationships with a handful of variables. The idea that ‘smoking is the main cause of lung cancer’ reduces complexity and eliminates the need for considering a multitude of other possible causes. The traditional Taylorist ‘one correct solution’ models aim to reduce the number of alternatives available to one, if at all possible. However, the fact remains that all decisions are conditional upon time and place, upon context and situation, and also involve risks.

If different research results are associated with different instrumental claims, they might neutralize each other. Instrumental relevance is based on the reduction of complexity, i.e. on the exclusion of alternative decisions. This is most obvious in the case of instruments that suggest a single “best way”. Yet theoretical pluralism re-establishes complexity with regard to the decision-maker (Nicolai & Seidl, 2010). Theoretical pluralism can lead to an increasing conceptual relevance.

Problem-solving skills can be increased by developing what Bartunek et al. (1983) refer to as “complicated understanding” – the ability to see and understand organizational events from several perspectives, rather than a single perspective (Astley & Zammuto, 1992). Complicated understandings are important because many of the problems faced – such as motivating employees, formulating strategies, etc. – are complex or “wicked” problems, which can be framed in many different ways, have many different answers, and are rarely definitely resolved.

For example, in strategic literature, many strategic management concepts can be found that should aid companies in formulating competitive strategies. Some stress the importance of decisions about which combinations of products and markets companies should or should not engage in. Some stress the importance of decisions concerning the various ways companies are able to make the future happen. The importance of added values, competitive moves, internal structure, resources and investments and operational excellence is also stressed. In fact, they can all be used as a heuristic tool in making sense of the external and internal environment of the company (Vos 2002, 2005a and 2005b).

9.3 Processual and "becoming" perspective on practices

Several calls have recently been made to reorient both organizational science and management practice to embrace change more openly and consistently (Tsoukas & Chia, 2002). The traditional approach gives priority to stability and treats change as an epiphenomenon. A major cause of dissatisfaction with the traditional approach to change is pragmatic: Change programs that are informed *by that view often do not produce change* (see Taylor, 1993).

Several authors have questioned the traditional approaches to organizational change. Orlikowski (1996), for example, has conceptualized organizational change as ongoing improvisation. Rather than seeing organizational change as orchestrated from the top, Orlikowski sees it as grounded in the ongoing practices of organizational actors, and emerging out of their accommodations to and experiments with the everyday contingencies, breakdowns, exceptions, opportunities, and unintended consequences that they encounter (see also Weick, 1993).

As Toukas and Chia (ibid.) says, change must not be thought of as a property of organization. Rather, organization must be understood *as an emergent property of change*. Change is ontologically prior to organization. Change is the condition of possibility of organization. Organization is an attempt to order the intrinsic flux of human action (Morgan, 1986), to channel it towards certain ends, to give it a particular shape, through generalizing and institutionalizing particular meanings and rules. At the same time, organization is a pattern that is constituted, shaped, *emerging from* change. While organization aims at stemming change, it is also the outcome of change (Tsoukas & Chia, 2002). It is a socially defined set of rules aiming at stabilizing an ever-mutating reality of making human behaviour more predictable. At the same time, organization is an outcome, a pattern, emerging from the reflective application of the very same rules in local context over time.

Organizational phenomena are not treated as entities, as accomplished events, but as enactments (Weick, 2001) – unfolding processes involving actors making choices interactively, in inescapably local conditions, by drawing on broader rules and resources. Organizations are sites of continuously changing human action, and organization is the making of form, the patterned unfolding of human action. Organization in the form of institutionalized categories is an input into human action, while in the form of emerging pattern it is an outcome of it.

Organization aims at stemming change but in the process of doing so it is generated by it (Tsoukas & Chia, 2002).

The above does not imply that all organizational change is endogenously generated. Organizations respond to external influences, be they competitive pressures, takeovers and mergers, technological changes etc. However, *how* organizations respond to external influences, is endogenously conditioned, and it cannot be fully anticipated. Organizations and companies are complex organizations (Willke, 1999). There is a world out there that trigger changes in the organization to respond, but the pattern of response depends on an organization's identity and *self-understanding* – the historically created assumptions and interpretations of itself and its environment (Tsoukas & Chia, 2002).

The processual, 'becoming' viewpoint enables an understanding and awareness of the fact that the development of company-specific and organization-specific operating practices is a *possible* and at the micro-level quite mundane matter. At the same time, the processual, 'becoming' viewpoint contains the implicit idea that any practices or any company *in their present form* are only 'half-formed' and require development or in many cases radical redesign. Existing practices and troubleshooting methods may have evolved or developed spontaneously or specifically to particular situations or locations while being in many ways limited and sub-optimal. The QWERTY keyboard is a good example of an ergonomically faulty design which has nevertheless survived to this day.

The 'becoming' viewpoint does not in itself offer insights and criteria for the development of existing practices and solutions or for the evaluation and identification of development needs. It is not possible to prove from the processual viewpoint alone that the development of the practices and operating models of a given company or organization is *necessary.* Demonstrating the need and necessity for developing or constructing (Van Aken, 2004) any given thing requires there to be criteria and a perspective for the evaluation of existing practices and solutions and for the development of alternative solutions. It is generally valid that development needs should be evaluated specific to situations, systems and contexts.

The fundamental motivation for development is that existing practices and solutions are felt to be somehow sub-optimal or outdated and that they should be improved. However, it may be difficult to identify development needs and potential if matters are addressed by adhering to existing practices or to the

internal viewpoint in the company or organization in question. This is a conflict or paradox (Quinn, 1988; Quinn & Cameron, 1988; Lewis, 2000): it used to be taken for granted that a practice-oriented approach must depend on the internal viewpoint. But it is difficult or impossible to identify development needs if we limit ourselves to the internal viewpoint. However, this paradox can be resolved by employing the both-and principle, taking both the internal and the external viewpoint into account (Vos 2002, 2005a and 2005b). Actually, a company and its environment are two sides of the same coin: no company can exist without customers, interest groups, investors, competitors, partners, and so on. Moreover, the distinguishing expertise of a company arises from differences between the company's own competence and the competence (or lack thereof) of other parties (customers, competitors, suppliers of individual resources, and so on).

Generally speaking, we can divide the development of systems theory into three stages: i) the theory of closed systems; ii) the theory of open systems; and iii) the theory of observing or self-referential systems (Luhmann, 1995 and 2006; Lassleben, 2002). The transition from the theory of closed systems (Weber, Taylor) to the theory of open systems (see e.g. Pfeffer & Salancik, 1978) drew increased attention to the environment. This change concerned not only the knowledge that there is an environment, but also the insight that an open system is based on the *relations* between system and environment, and that these relations are not static but *dynamic*. On these grounds alone, it was already obvious that no system can exist without an environment (Luhmann, 2006). Parsons had earlier spoken of "boundary maintenance" and thus changed the definition of a system: he shifted from a system definition that relies on an essence, essentials or other unalterable structures, to a definition that depends on the question of how the difference between system and environment can be maintained, possibly even at the same time as structures are being replaced. In this case, the identity of a system requires only continuity without requiring any minimal or essential elements at the structural level. Now one can say: a system *is* the difference between system and environment (Luhmann, 2006).

Companies and organizations are ultimately, in terms of their duties and functions, *their environments servicing systems* (Ansoff, 1981). We may further say that one of the key tasks of management is to bring the perspective of the environment and of interest groups into the company's decision-making and operations (Baecker, 2003). Efficiency, productivity, flexibility, service capacity

and similar features are feasible criteria and angles on the company's operations from the point of view of its environment and interest groups.

It is, therefore, justified to consider existing operating practices from *both the internal and the ex ternal perspec tive*, the latter meaning the viewpoint of customers, financiers and resource providers (personnel, suppliers, partners). Likewise, the development of existing operating practices should be evaluated from the perspective of both current and potential customers and operating environments. A future innovative firm must be able to examine and operationalize these perspectives at various levels in its networks (see section 8.3).

9.4 Future orientation

Normal scientific research, which is geared towards understanding and explaining, typically focuses on the recording of existing facts and ex post rationalisation. Life is understood backwards when detached theorists deploy analysis, abstraction, and simplification after the fact in order to impose order and patterns on previous activities that were lived forwards by involved practitioners (Weick, 2003). The living forwards itself is, however, an altogether different form of activity. When practitioners live forwards, they tend to mix together false starts, routines, automatic thinking, unanticipated consequences, recoveries, trade-offs, improvisation, and trial and error. Their living is both less orderly and of a different order than it appears in hindsight. Life can be understood backwards, but it must be lived forwards (Weick 2002 and 2003).

For the future, the key questions are not so much 'why' and 'for what reason' but above all '*how*'. How-questions play a central role, for instance, in American pragmatist philosophy (Peirce, James, Dewey), in the philosophy of mind of Ryle (1949), and above all in cybernetic and system theory thinking (see e.g. Ashby, 1958; Luhmann, 1995).

The things that are feasible for managing and improving the competitiveness of the company are issues, factors and variables which are connected to the operations of the *company* (and not, say, a scientific system) and which the company, its management and other interested parties *can influence* either directly or indirectly. For the purposes of business management research it is useful to realise that a company is a specific system that operates in a specific way in a specific context. Companies, social networks based on the actual physical presence of people and social communities are systems that operate on

different principles and are qualitatively different. Companies are connected to the global economy and its specific rules. Social networks and communities operate by different sets of rules. With regard to companies, we should recall the classic studies by Barnard, Simon and March concerning systems that make and are built on decisions (March & Simon 1958; Barnard, 1966).

A company's own premises of decision-making and its strategic and operative solutions and choices are examples of things that the company itself can influence. We should note at this point that from a constructionist point of view the company's specific operating environment or niche is actually the result of choices made and actions taken by the company itself (Smircich & Stubbart, 1985; Weick, 2001). The company, through its operations, creates both itself and its own operating environment and niche. Every company must in some way solve the chicken-and-egg problem as applied to itself and its environment, i.e. define itself and its unique expertise and the relevant market area and context for leveraging that expertise (for more, see Vos, 2002).

In relation to the time dimension, practice-oriented research comes close to the agenda of future research. The fundamental assumptions of future-oriented research have been described, for instance, as follows (Malaska & Mannermaa, 1985, 46–47): i) there is no certain information about the future, ii) the future is not pre-determined; and iii) the future is and can be influenced by choices and decisions made in the present. Historical events, choices and solutions can no longer be influenced, but the future and the shaping of future reality can. What future-oriented research and historical research share is a viewpoint grounded in the present, one looking forward and the other looking back. It is essential to realise that the future is being created now and that certain expectations regarding the future are always in play.

The difference, however, between general future-oriented research and practice-oriented management research is that a company or organization is a *specific* social, operative and communicative system. It is not possible to improve a firm's competitiveness completely intentionally, freely and arbitrarily. The rise and fall of traditional rationalist planning models (see Mintzberg, 1994) came about largely because they approached the issue of corporate strategic planning from the intentional and linear perspective of a single actor (senior management). Rationalist planning was unable to operate reflectively, taking

into account factual, temporal and social constraints.[38] Methods that were rational in and of themselves produced a range of confusing and surprising results and impacts (for more, see Mintzberg, 1994; cf. Truex et al., 2000). Perhaps the most important of these was that the outcome of the strategic plans was not nearly what had been expected. Practice-oriented research requires an understanding of the factors and obstacles that limit the improvement of a firm's competitiveness. The issue of the potential of improving a firm's competitiveness can only feasibly be approached when taking into account the various factors and mechanisms that limit the development of the firm's competitiveness.

Firstly, we need to distinguish between external and internal constraints. External constraints are all the facts and circumstances that the company cannot influence directly in any way. Legal norms, regulations, political agreements and conventions are examples of external constraints to a company's capacity for variation. Limited resources, a limited capacity for processing information (see e.g. Simon, 1996) and a limited absorptive capacity (Cohen & Levinthal, 1990) constitute another factor limiting potential. The company's history is an internal limitation on the capacity for change. The company's unique expertise and knowledge may turn in a changed situation to core rigidities (Leonard-Barton, 1992), likewise placing constraints on the capacity for innovation. Previous investment decisions and other strategic choices made in the company limit the range of subsequent options for action. The philosophies, practices and logic that have established themselves in the financial sector and in the economic system (cf e.g. Dosi, 1984; Spender, 1989; Bettis & Prahalad, 1995) constitute another major mechanism that limits the company's capacity for variation.

Concerning the time dimension, we should note that any actual and unique company functions in accordance with its own unique conception of trade cycles and time. The essential differences between companies here are not just differences between time dimensions but also differences between types of *time awareness.* For instance, decision-making may be situation-specific and 'blind' or time-aware, anticipatory and reflective. Usually companies and organizations develop in an evolutionary and incremental way (Nelson & Winter, 1982), with no reflected understanding of the alternatives available. The purpose of practice-

[38] For more on constraints as a key cybernetic principle of explaining and understanding, see Bateson (1972; cf. Ashby, 1958).

oriented management research is to complement and compensate ways of thinking and acting that have evolved with alternative perspectives and solutions.

Generally, we may say that the core concept in practice-oriented research comes close to the ideas on *strategic thinking* (Heracleous, 1998; Liedtka, 1998) that were featured in section 4.1. In addition to understanding the external business ecosystem in which the company operates – or could be operated – strategic thinkers must also appreciate the inter-relationships among the internal pieces that, taken together, comprise the whole. Furthermore, this must be done at several levels of future innovative firms and networks (see Figure 14, in Chapter 8.3).

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Author(s)
Katri Valkokari, Tapio Koivisto, Raimo Hyötyläinen, Maarit Heikkinen, Magnus Simons Maaria Nuutinen, Tiina Apilo & Juha Oksanen

Title

Management of Future Innovative Firms and Networks

Abstract
The main focus of this publication is the different aspects of managing innovative firms and their networks in the future. The premise of our approach is that many new changes in innovation and management area are happening at the same time, which will profoundly influence how firms and networks will compete and prosper in the future.

Our aim is to deepen the understanding of how management and business research and its concepts might support the renewal of firms, and what might be possible future models for survival and continuous renewal. This requires that focus will be postponed from the organization's static efficiency to its dynamic capabilities and ability to renew. The firms and networks have to be able to renew their management and organization as well as their products, services and marketing practices. The publication will provide new knowledge on the questions of renewal of the management of future innovative organizations.

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Many new changes in innovation and management area are happening at the same time. They will profoundly influence how firms and networks will compete and prosper in the future. In the new era of hyper-competition the firms and networks have to be able to renew their management and organization in order to turn growing uncertainty from risk to opportunity.

There has been wide discussion on the search for excellence in organising and managing innovative firm, networks and their innovation activities. Our aim is to challenge the discussion with the systemic and practice-based approach to strategic renewal and innovations. The premise of practice-oriented research is to look at organizations from the perspective of processual views and organizational change patterns.

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