Department of Management and International Business

Entering the Back Stage of Innovation:

Tensions between the Collaborative Praxis of Idea Development and its Formal Staging in Organisations

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Aalto University

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Abstract

Idea development is a delightfully and painfully muddled endeavour. Organisations invest great effort in directing and supporting it but are repeatedly disappointed with the results of their efforts. Although current academic and practical understanding of the subject has indicated the goal towards which to strive, it has not provided sufficient understanding of the means with which to reach this goal. Despite the wide-ranging interest that creativity and innovativeness have attracted over the last few decades, the details of the everyday reality of idea development remain largely unrevealed. The aim of this dissertation is to return to this back stage of innovation and shed light on the messy reality of idea development.

The dissertation explores the praxis of idea development of technology experts, with particular attention to the collaborative aspects of this praxis. The study adopts the practice perspective and builds on research into the front end of innovation, innovativeness and innovation practice. From these literature streams, the basis for the dissertation is laid by studies that have sought to describe the everyday praxis, and its collaborative nature in particular. In each research stream, these studies have represented the minority approach which highlights the unexplored nature of the topic.

The dissertation is a case study, conducted in three established companies that operate globally in traditional industries. The empirical materials were collected through qualitative methods, namely in-depth interviews and group observations. The empirical materials include 61 interviews and 29 hours of observation.

The dissertation contributes to the current theoretical and practical understanding in two ways: firstly, it provides an in-depth understanding of the praxis of idea development; and secondly, it identifies ways in which this understanding is hindered in organisations. Unlike the existing understanding, the findings of the dissertation highlight the inherently collaborative nature of this praxis and, further, the immediate, situational and delicate nature of this collaboration. Based on this understanding, the dissertation also indicates why it is so difficult to support idea development in organisations. It does this by identifying the back stage of innovation, which refers to the activities that take place in informal arenas, and the front stage of innovation, which includes formal arenas (including the support structures of innovation management). The results of the dissertation show that these two regions are tensioned and largely based on different ideals. The front stage includes ideals of clarity, objectivity and linearity, whereas the back stage is organised around situational, ambiguous and iterative activity. Furthermore, the front stage views informal actors as assertive idea champions, while the back stage also includes subtle means of idea advancement.

Keywords front end of innovation, idea development, innovativeness, practice, informal praxis, product innovation, collaboration

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In Helsinki, September 2011

Tea Lempiälä

Table of Contents

PART I:

In Matti Vartiainen, Conny Antoni, Xavier Baeten, Niilo Hakonen, Rosemary Lucas, Henk Thierry (eds.): Reward Management – Facts and Trends in Europe. Pabst Science Publishers, Lengeric: 251-274.
Reprinted with the permission of Pabst Science Publishers.

1. Introduction

Idea development is a messy practice. It involves ambiguous ideas; making sense of them, tearing them apart and combining them with others. At times, it requires racing forward and then turning back again. It causes emotional reactions and even personal conflicts, and creates frustration by escaping those who attempt to manage it. Just as a host will close the door to an untidy room when guests come for dinner, organisations cover up the messiness of innovation praxis when entering formal arenas. While the existence of occasional disorder in every house is admitted on a general level, it is perceived as an unflattering fact which should be hidden from view when possible. Similarly, in organisations the unfortunate messiness of innovation praxis is admitted, but attempted to deal away with managerial policies or simply hidden from formal arenas. The purpose of this dissertation is to open a door to the messy praxis of innovation that has largely gone unexamined by academics and practitioners. By applying the dramaturgical metaphors of Goffman (1959), this dissertation will shed light on the back stage and front stage of innovation and explain how the tensions between the two inhibit innovativeness in organisations.

1.1 Motivation of the Research

This research project did not begin with the notion of the front stage and back stage and their tensions. Nonetheless, their identification does represent the results of the study or, more specifically, the underlying tensions that are present in the four essays that form the core of this dissertation. The research process began with the aspiration to better understand the praxis collaborative idea development and its inhibitors in organisations. The motivation for examining this particular topic was based on my reading of the current theories of innovation as well as interaction with practitioner organisations. There is a clear theoretical gap in the current understanding of innovative activity, as it relates to collaborative idea development. Firstly, there has been scant research into the development of ideas in the early phases of the innovation process (Van de

Ven et al., 2008). Although there have been some notable regarding understanding the generation of ideas and its antecedents in organisations (c.f. Amabile et al., 1996; Woodman et al., 1993) as well as the implementation and diffusion of ideas (cf. Klein and Sorra, 1996), the connecting activity between the two, idea development, has received little attention. This is due to the fact that creativity and innovation literature represent two separate fields, with the former focusing on the creation of ideas and the latter examining the implementation and diffusion of these ideas (Mainemelis, 2010; Ford, 1996). The creativity literature has further been focused on the individual level whereas innovation research has examined the organisational and societal levels. Idea development of groups has thus fallen between these two large fields of study, both in relation to the subject of study and the level of examination (Khurana and Rosenthal, 1998; Mainemelis, 2010). An active discussion about the front end of innovation that has emerged to fill this gap (e.g. Koen et al., 2001; Kim and Wilemon, 2002) but this discussion is focuses more on the effective management of the front end than the description of idea development activities. Secondly, while the importance of collaboration has been highlighted in extant literature on innovation in general (Van de Ven and Rogers, 1988) and the front end in particular (Laudel, 2001), few studies – most notably Koch and Leitner (2008) and Hargadon and Bechky (2006) – have examined the ways in which organisational actors actually collaborate while developing ideas. Instead, collaboration has mostly been discussed in terms of team characteristics (Anderson and West, 1998), communities of practice (Brown and Duguid, 1991; Swan et al., 2002), network relations (Ahuja, 2000; Hansen, 1999) and the importance of cross-functional collaboration (Dougherty, 1992). Finally, most studies on innovation have been carried out "at arm's length from the actual activities of innovators" (Lowe, 1995, 54). In the research on the front end of innovation this is portrayed in a focus on the formal ways of managing idea development (cf. Cooper, 1988; Poskela and Martinsuo, 2009) despite the fact that the importance of informal activity is simultaneously highlighted (c.f. Markham et al., 2010; Markham, 2002). More understanding of the everyday praxis of the front end actors is, thus, clearly needed.

The practitioner-oriented reasons for the choice of this research topic stem from insights gained from the organisations with which I have interacted, both before and during the research process. I observed several

organisations that were struggling to enhance their innovativeness, even though the management and employees were both well aware of the enablers of innovativeness identified in the extant literature (by e.g. Kanter, 1988; Amabile et al., 1996; Anderson and West, 1996 and disseminated to the organisations by consultants). Although the organisations seemed to know where they were supposed to be, they had no idea how to get there. It also appeared that the way in which the organisations discussed innovation was filled with tensions and contradictions depending on who was talking, and the context of the talk (own work, organisational policies, etc.) and the organisational arena in question.

In order to fill the abovementioned research gap, it was necessary to approach the phenomenon from a different perspective than that which most innovation research has commonly adopted. Adopting a practice approach allowed for the detailed examination of the praxis of idea development, which further provided an in-depth understanding of why that praxis is hindered in organisations, despite the managerial effort to support it. The four essays of this dissertation investigate these themes, from the perspective of collaboration, idea smuggling, ideation praxis and organisational support structures (such as stage-models and rewarding). It should be noted that the practice approach was applied with increasing intensity towards the end of the study, as its importance for understanding the phenomenon became clear through an iterative research process. The final step in the research was to identify the front and the back stages of innovation which summarised the underlying themes in the four articles.

1.2 Research Focus and Research Questions

This dissertation examines the collaborative praxis of idea development and its inhibitors in organisations. The phenomenon is approached by combining understanding from three distinct research streams: the front end of innovation, organisational innovativeness, and work practice. The two first literature streams are situated within the field of innovation studies, while the third is located within practice studies. Although these three research streams rarely overlap, they have all discussed idea development as an empirical phenomenon and are relevant for this dissertation. Figure 1 presents the research area.

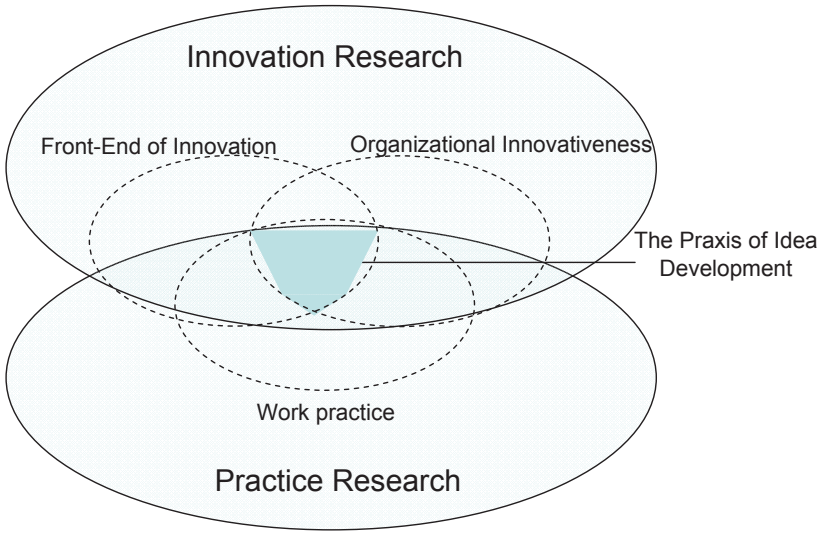

Figure 1: The Research Area

In terms of the level of analysis, this study is situated within the field of organisation studies, and particularly the examination of groups within organisations. Thus, the research is situated between the individual, which is the level that has been favoured in creativity research, and networks or societies, which have been the common locus of innovation research. It should be noted, however, that both of the literature streams that this study has built upon from within innovation studies – front end and innovativeness – have focused on the organisational level. This level of analysis has been favoured also in research on work practice. Figure 2 presents the study's level of analysis in relation to these three relevant fields of creativity, practice and innovation research.

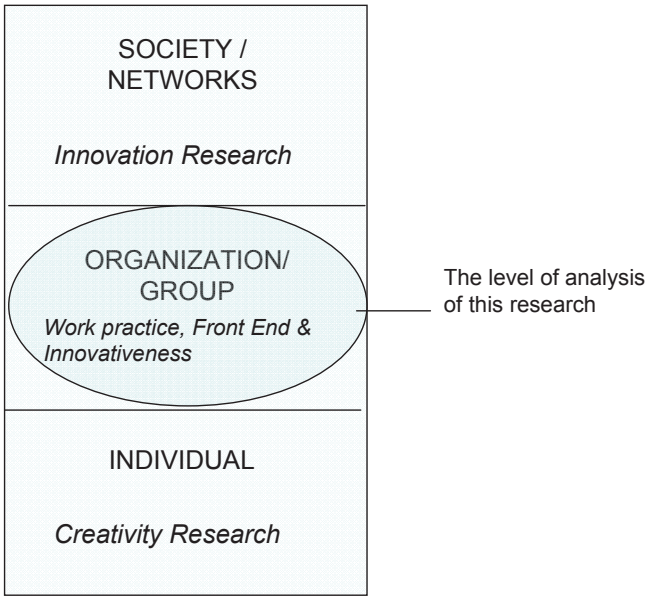

Figure 2: The level of analysis of this study compared with those preferred in related fields

This study has focused on understanding innovation as it happens in organisations, rather than proposing normative suggestions as to how it should happen. Therefore, the approach adopted in this dissertation follows that of practice research, as opposed to the one traditionally adopted in innovation management research. The approach of this dissertation is also inherently social. Innovativeness of activity, as well as the value of ideas, are perceived as socially determined (e.g., Csikszentmihalyi, 1997; Ford, 1996), rather than objective constructions. Further, the examination focuses on the collaborative activities that underlie idea development, rather than on individuals and their activities. A third important choice related to the research area was made regarding organisational influence on idea development. The focus here is on examining the organisational impediments to idea development, as opposed to its success factors. This does not mean that the organisations were not found to support innovativeness in any way, rather that this work does not discuss these enablers. The focus on inhibitors was found meaningful because most prior research on innovativeness in organisations has focused on the enablers (cf. Kanter, 1988; Anderson and West, 1998) and the impediments are rarely discussed in their own right. Contextually, this research has focused on technological innovation in large and medium-sized Northern European companies. Finally, examination is limited to the early phase of the

innovation process, the so-called front end of innovation, which is defined more specifically in Chapter 2.1.

This research has been driven by the following primary research question:

How does the praxis of idea development portray itself in the front end of innovation and why is it so difficult to support with managerial action?

This question is further divided into three sub-questions:

1) *What are the details of the praxis of idea development in the front end of innovation?*
2) *In what ways do organisations fail to support this praxis?*
3) *What are the reasons for this failure?*

These questions have been explored through a case study approach (Dubois and Gadde, 2002; Ragin, 1992), the data collection methods of which are in-depth, thematic interviews (Silverman, 2000) and group observation (Emerson et al., 2001). The empirical materials have been collected from three technology companies between 2006 and 2008. The examined innovation efforts have centred on the development of technical ideas and, therefore, the focus of this research is on product innovation.

1.3 Main Contributions of the Study

The dissertation answers the research questions and contributes to the current theoretical understanding in two ways: firstly, by providing in-depth understanding of the collaborative praxis of idea development; and secondly, by identifying ways in which it is hindered in organisations. Each of the four essays makes an individual contribution that provides a particular perspective on these two themes, while this introductory essay summarizes these contributions and further deepens them through the introduction of the front stage and back stage of innovation and the identification of four important tensions in between the two.

The results of the dissertation add to the understanding of the praxis of idea development by demonstrating its inherently collaborative nature and indicating the ways in which this collaboration is initiated, carried out and kept in motion. On a general level, these results add to the current understanding of activities at the front end of innovation (e.g., Koen et al.,

2001; Khurana and Rosenthal, 1998), the nature of innovative behaviour (e.g., West and Farr, 1989; Kleysen and Street, 2001) and details of the practice of innovation (e.g., Brown and Duguid, 1991; Dougherty, 1992). More specifically, the dissertation extends the current understanding of collaborative activities of idea development and complements in particular the research of Hargadon and Bechky (2006), Koch and Leitner (2008), Dougherty and Heller (1994) and Dougherty and Corse (1995). In depicting messy early stages of an "innovation journey" the research contributes also to the important work conducted in the Minnesota Innovation Research Program (MIRP) (e.g. Van de Ven et al., 2008; Van de Ven et al., 1989). The results of the research highlight the immediate, situational and delicate nature of these collaborative activities. Ideas are developed as a response to pressing problems, while immediate response and dynamic interaction with colleagues creates the momentum for the development effort. Innovativeness is understood in relation to one's work domain, while the way in which ideas are presented depends on the recipient. The results of this research support the findings of Hargadon and Behcky (2006), Van de Ven et al. (2008), Koch and Leitner (2008) and Garud and Karnoe (2003) in emphasizing the fluid, combinatory, dynamic and informal nature of idea development activities. In particular, the importance of reflective reframing activity (Hargadon and Bechky, 2006) is emphasised because it motivates organisational actors and makes use of their innovative potential. However, the research also demonstrates that this is a highly challenging activity that is rarely conducted outside of interaction between familiar colleagues and is rarely seen in formal arenas. While Hargadon and Bechky (2006) only address situations in which reflective reframing occur, the present study has also created understanding of the conditions and reasons for the loss of such activities. This dissertation joins Koch and Leitner (2006) in questioning the ability of formal arenas to host idea development activities, but contrasts their findings in relation to building coalitions and prototypes. These results of this research present coalition building as being more dependent on availability than on power or resources, which was proposed by Koch and Leitner (2008). In relation to prototypes this study questions the inherently positive connotation attached to prototyping (also Carlile, 2002; Garud, 2011). While demonstrating the importance of prototypes and other material objects, the dissertation also portrays them as excluding ideas from the sphere of discussion and thus limiting the range of possible ideas. The present study takes similar standpoints to those of

Dougherty and Heller (1994) and Dougherty and Corse (1995) and presents compatible findings while also offering additional detail and depth in analysis. However, a clear contrast to the findings of those two studies is the important role of the customer in the idea development praxis observed in this dissertation. While particularly Dougherty and Corse (1995) present an inward orientation as a part of the praxis of R&D experts, this research presents observations that are quite contrary. A more general contrast to the findings of Dougherty and Corse (1995) is the fact that most of the deficiencies they presented as being a part of the product developer's practice in established companies are, in this research, considered as being part of the front stage whereas the informal back stage is built around contrasting ideals.

Building on the understanding of the idea development praxis, the dissertation also deepens the understanding of its inhibitors in organisations. This is done by creating in-depth understanding of the reasons why the inhibitors are so difficult to overcome. This is done through the examination of the front stage and the back stage of innovation (the concepts of the front and the back are borrowed from Goffman, 1959 and are explicated in chapter 5.2.1) and the identification of four tensions between them. In general terms, the front stage refers to the formal discourse on innovation (formal arenas, tools and processes, managerial talk), whereas the back stage refers to the informal praxis of idea development. The four tensions, Process Tension, Justification Tension, Agency Tension and Value Tension, are related to the differing ideals between the front and the back stages, specifically to the ideals of clarity, objectivity, assertiveness and idea quantity.

The primary contribution of the four tensions to the extant research is that they help understand how idea development is tensioned in the level of interactions and underlying assumptions, in addition to the more strategic tensions presented in extant research (e.g., March, 1991; Christensen, 2000). Secondly, they contribute to the current understanding of the discrepancies between canonical and non-canonical practices (Brown and Duguid, 1991; Orr, 1990) by explicating how they are born in the level of the inherent values and underlying assumptions in the context of idea development. Thirdly, the tensions add to the criticism of activity-stage models of innovation in organisations (e.g., King and Anderson, 2002;

Dougherty and Corse, 1995; Van de Ven et al., 2008) by explicating the ways in which and reasons for their current failure to support the collaborative praxis of idea development. Finally, the four tensions provide in-depth understanding of the inhibiting factors of innovativeness in organisations (e.g., Kanter, 1988; Khurana and Rosenthal, 1998; Dougherty and Heller, 1994) by providing insight into why the attempt to implement the success factors presented in the extant research can yield disappointing results. One key reason is that the success factors can be in conflict with each other as well as with the everyday praxis. It follows that the very tools and processes implemented to support the praxis of idea development are currently attempting to alter its course towards front stage ideals rather than support its natural dynamic.

The contribution of this dissertation, then, is found in linking the theories of innovation management and organisational renewal better to the complex, day-to-day praxis lived by the organisational actors (as called for by, e.g., Van de Ven et al., 2008; Dougherty, 1992).

1.4 Structure of the Thesis

This introductory essay consists of five chapters: Introduction, Theoretical Framework, Research Approach, Summary of Four Articles on Idea Development, and Contribution of the Research.

The following section discusses the theoretical framework, which consists of four sections. The first section discusses the front end of innovation before the second section introduces the innovativeness literature. The third section discusses practices; it provides an overview of the practice concepts and explores the use of this concept in innovation research in general, and in relation to collaborative innovation in particular. A summary is provided after each three sections in the form of a table that brings together the activities, enablers and inhibitors of idea development presented in the discussed perspective. Because this dissertation focuses on the examination of the praxis of idea development, the presentation of activities in each perspective receives priority. However, it was important to include the discussion of enablers and inhibiting factors in the examination because these factors are central for all of the research streams as well as the dissertation's over-arching research question. The fourth section of the

theoretical framework provides comprehensive summary of the topics discussion in Chapter 2.

Chapter 3 discusses the research approach of this study. A discussion of my philosophical assumptions is followed by the research strategy and process, as well as the empirical materials used in the study. The fourth chapter presents the summaries of the four articles that form the core of this dissertation, while the fifth chapter explicates their contribution to extant research. The contribution chapter is further divided in two sections; the first discusses the theoretical relevance of the finding on the collaborative praxis of idea development, and the second introduces the four tensions between the back-stage and front-stage and their contribution to theory and practice.

2. Theoretical Perspectives to Idea Development in the Front end of Innovation

This chapter discusses the phenomenon of idea development from the perspective of three distinct literature streams – the front end of innovation, innovativeness and innovation practice. The approaches of these literature streams are quite dissimilar, and they differ particularly in relation to their focus on making normative prescriptions, identifying antecedents and describing detailed praxis. The two first literature streams do not talk of praxis, but of activities, when referring to the detailed doings of organisational actors. Hence, in the first literature streams the term "activity" will be used whereas in the practice stream the focus in on praxis and this term is accordingly used. In the dissertation the focus is on the praxis of idea development as a nexus of social, material, discursive and emotional action and this concept is used in the empirical section.

2.1 The Front End of Innovation as a Context for Idea Development

2.1.1 What is the Front End of Innovation?

Innovation and creativity scholars have both traditionally divided the organisational innovation process into two major phases: initiation and implementation[1]. The former refers to the introduction of novel ideas by individuals and the latter to the development and exploitation of these ideas within an organisation (Van de Ven and Rogers, 1988; Kanter, 1988; King and Anderson, 2002). In order to better understand and manage the details of this process, the new product development (NPD) literature has introduced more high-grained depictions of the phases it entails. A commonly used example of such depictions is the division of the innovation process into three phases: front end, development project and

[1] Or cyclical patterns of divergence and converge as presented by Van de Ven et al., (2008)

commercialisation[2] (Koen et al., 2001, 2005; Poskela, 2009).[3] The front end includes the part of the innovation process that starts with the recognition of an opportunity and ends with the creation of a concept and a decision about whether it will be chosen for further development (e.g., Kim and Wilemon, 2002). In this dissertation, a concept refers to a framing of an idea that includes rough estimates of aspects such as the risks involved, technology unknowns, required investments, potential customers and competitors (Koen et al., 2001). The product development phase includes the development of the concept into a finalised product and is much more structured and efficiency-oriented than the front end (Khurana and Rosenthal, 1998; Poskela and Martinsuo, 2009). This phase is characterised by formal processes, management involvement and designated budgets, which is the opposite of the front end (Kim and Wilemon, 2002). The commercialisation phase includes the introduction of the product to the market (Koen et al., 2001; Cooper, 2005), while the customer requirements and needs should be incorporated into the product development process from the very beginning (Cooper, 1988; 2005; Nordlund, 2009). The commercialisation phase does not always need to include sales activities to customers – an example is the case of organisational innovations – but the essence is that the product is taken into use. An invention can only be referred to as an innovation once this has occurred (e.g., de Jong and Den Hartog, 2007).

This dissertation focuses on the front end of innovation; that is, all the activities that take place before idea development is organised as a product development project (Kim and Wilemon, 2002; Sim et al., 2007). The front end is the most creative, dynamic and experimental part of the innovation process. It is largely informal and the information created is mostly qualitative and approximate (Kim and Wilemon, 2002). Due to these qualities, it has also been identified as the most difficult, yet most promising part of the process (e.g., Nobelius and Trygg, 2002; Koen et al., 2001). The complexity of the front end derives from its unstructured and ambiguous nature, which in turn poses challenges for management activities (Kim and Wilemon, 2002; Poskela and Martinsuo, 2009). The great potential of the front end is based on the fact that small and low-cost

[2] Also termed initiation period, developmental period and implementation/termination period by Van de Ven et al., 2008

[3] A fourth phase, diffusion, is often added to the list when examining the innovation process from the perspective of a product or a society (Kanter, 1988).

changes in this phase can yield significant benefits, as well as time and cost savings later on in the process (Nobelius and Trygg, 2002; Reid and de Brentani, 2004). Furthermore, the decisions made in the front end unavoidably direct and determine the direction of the whole product development process (Kim and Wilemon, 2002; Red and de Brentani, 2004). The front end has even been identified as the most important factor behind a product's success (Cooper, 1988; Backman et al., 2007).

2.1.2 Linear Models of the Front End

Most researchers have represented the front end in three consecutive phases (cf. Kijkuit and van den Ende, 2007; Nobelius and Trygg, 2002; Khurana and Rosenthal, 1998; Cooper, 1988).[4] Figure 2 presents a well-known example of such an illustration by Robert Cooper (1988). In this example, the front end is called "pre-development activities", in reference to its role as the initiation of the formal stage-gate process (Cooper, 1988; 1993; 2005). This well-known process model is used in many practitioner organisations to guide and structure product development activities. The stage-gate model is particularly targeted to improve the effectiveness of the development project, but it has been extended to include also the early stages of the process. The stage-gate process depicts the product innovation process in seven stages[5]: discovery (pre-stage), scoping, business case, development, testing and validation, launch and, finally, post-launch review (post-stage) (Cooper, 2005, pp.25). Each stage is followed by a decision gate with specific criteria for making a 'Go/No-go' decision on the idea. The first three phases are seen as comprising the front end (or pre-development activities).[6] The first phase includes activities such as problem identification and idea generation, while the second phase involves gathering information and generating an understanding of the idea's fit to the current organisational setting. The third phase focuses on turning the idea into a clear, concrete concept. These phases and activities within them are put

[4] Different authors have used slightly different names for the three stages. Kijkuit and van den Ende (2007) labelled them as idea generation, idea development and idea evaluation. Nobelius and Trygg (2002) referred to idea generation, preliminary assessment and concept definition, while Khurana and Rosenthal (1998) wrote of pre-phase zero, phase zero and phase one activities.

[5] The number of stages has varied slightly over time, mainly between seven (1988) and five (2005). However, also the 2005 model had seven stages in total, if one includes the pre and post stages.

[6] While in Cooper's original illustration (1988, Figure 3) front end activities are numbered as stages one through three, in the more recent writings (cf. Cooper, 2005; Khurana and Rosenthal, 1998) – and also in most practitioner organizations – they are called pre-phase zero, phase zero and phase one.

forward also by Kijkuit and van de Ende (2007), Khurana and Rosenthal (1998), Nobelius and Trygg (2002), however without the emphasis on the structured decision gates after each phase. As demonstrated in Cooper's (1988) and Kim and Wilemon's (2002) work, the fundamental goal of the managerial front end models is to reduce uncertainty (noted also by Backman et al., 2007) and to create a clear, explicated concept including an actionable business case (emphasized especially in Markham, 2002; Poskela and Martinsuo, 2009; Sim et al., 2007).

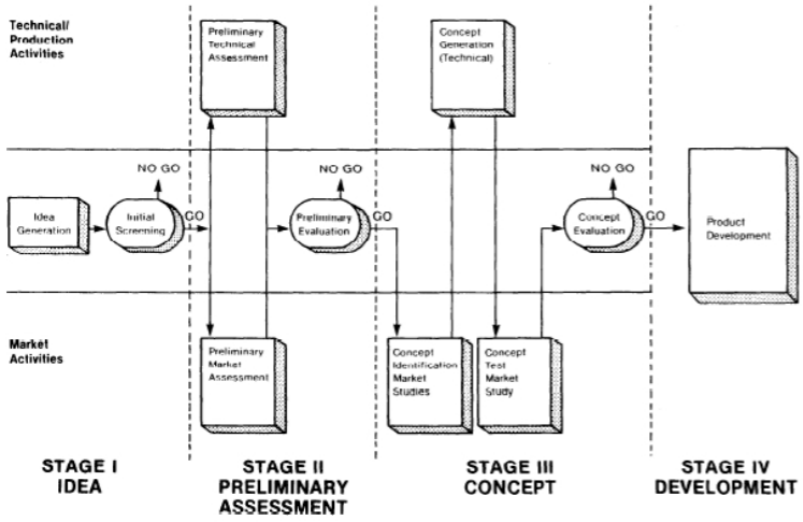

Figure 3: A Linear Depiction of the Front end (Cooper, 1988, 243)

Numerous authors, such as Koch and Leitner (2008); Koen et al. (2001), Backman et al. (2007); Griffin et al. (2007) and Van de Ven et al., (2008) have criticised the linear nature of the dominant depictions of the front end and even some of the creators of these models have joined the criticism (cf. Kijkuit and van de Ende, 2007). These critics have claimed that not only do the models fail to capture the true nature of the front end; they can also "force a set of poorly designed NPPD [New Product and Process Development] controls to be used to manage front end activities" (Koen et al., 2001, pp. 48). The argument here is that although these models do distinguish the front end activities from the NPPD process, the predevelopment activities are perceived as "preparing the idea for adoption by the formal processes" (Markham et al., 2010, pp.404) instead of actually depicting the nuances of early innovation. Nobelius and Trygg (2002) and Khurana and Rosenthal (1998) have further questioned whether a single process can be expected to host all the diverse routes employed in early idea

development and Griffin et al. (2007) have gone even further, asking whether the word "process", with its inherent implication of linearity, should even be used to describe this activity. Most of the current criticism on the linear models thus results from a worry that the rigidity and the lack of contextual sensitivity of the linear models has a negative impact on the front end, in the form of decreased innovativeness, lessened (intrinsic) motivation and focus on efficiency on the cost of quality (Poskela and Martinsuo, 2009; Tatikonda and Rosenthal, 2000; Amabile, 1998).

Despite the criticism, these linear depictions are still widely used and dominate the discussion of front end management. This is because they are seen to bring much-needed clarity to the fuzziness of the front end (cf. Cooper, 1988; Poskela and Martinsuo, 2009) and, also, because they represent the kind of managerial tools that researchers and practitioners are used to. These models have been found to be useful for speeding up the development process by increasing focus and direction, as well as by offering formalised methods for learning from past mistakes (Tatikonda and Rosenthal, 2000; Poskela and Martinsuo, 2009; Cooper, 1988). What makes these findings problematic, however, is that they rarely make a distinction between the front end stage and the development project (Poskela and Martinsuo, 2009). Alternative formulations of the innovation process, which are less linear and control-oriented, have been developed on the basis of fields such as evolutionary theory (Nelson and Winter, 1982), process theory (Van de Ven et al., 1989; Van de Ven et al., 2008) and complexity science (e.g., Brown and Eisenhardt, 1997; Koch and Leitner, 2008). While these models offer valuable insight into the complex nature of innovation activity, most of the theories focus on depicting the whole innovation process on a larger scale (even though integrating micro and macro level insight), but don't go into the details of the front end. Two notable exceptions are the cyclical model of Koen et al. (2001) and the self-organisation model of Koch and Leitner (2008), both of which are discussed in the next subchapter.

2.1.3 Front end Activities

It is not a simple task to identify front end activities from the extant research. Much of the influential work on the front end has focused on determining success factors of effective management (cf. Kim and Wilemon, 2002; Khurana and Rosenthal, 1998; Nobelius and Trygg, 2002;

Poskela and Martinsuo, 2009), whereas the detailed understanding of the actual activities that take place inside it have received scant attention (noted also by Backman et al., 2007; Koch and Leitner, 2008). Furthermore, while the unstructured nature of the front end is highlighted throughout the literature, many authors have focused on depicting formal approaches to its management (cf. Khurana and Rosenthal, 1998; Koen et al., 2001). Accordingly, the key activities of a successful front-end have been identified as establishing cross-functional teams, assigning a capable team leader, putting together a functional review committee and finding a sympathetic senior management sponsor (e.g., Kim and Wilemon, 2002; Khurana and Rosenthal, 1998; Poskela and Martinsuo, 2009). From the informal side, boundary spanning (e.g. Reid and Brentani, 2004) and championing (e.g. Kim and Wilemon, 2002; Markham et al., 2010) have received attention.

Despite the front end research's dominant focus on formal structures and success factors, there have been a few studies that have examined the informal front end activities. Koen et al. (2001), Koch and Leitner (2008) and Griffin et al. (2007) have all brought their own perspective into the more detailed understanding of the front end. Koen et al. (2001) stepped away from the linear depictions by proposing a cyclical model (Figure 4) in which the front end consists of five activities: opportunity identification, opportunity analysis, idea genesis, idea selection, and concept and technology development. In addition to these activities, Koen et al.'s model includes an engine, which represents management support (leadership) and organisational culture, and influencing factors including organisational capabilities, business strategy and the outside world. According to this model, the front end can be initiated with any of the five activities, although it typically begins with opportunity identification or idea genesis and ends with concept development, which leads to the product development process. Many of Koen et al.'s activities can be found at each of the three stages put forward by the linear process models, as they are expected to occur on multiple occasions during the development of an idea. For example, idea genesis in Koen et al.'s model includes much more than just the creation of ideas. It is an iterative process of proposing, refining, reshaping, tearing down and combining ideas; it therefore includes elements from stages one, two, and even three of the linear models. In relation to idea selection, however, the opposite applies. While the linear

models highlight idea selection after all three stages, Koen et al. linked it to ideas that have already been developed into a more complete form.

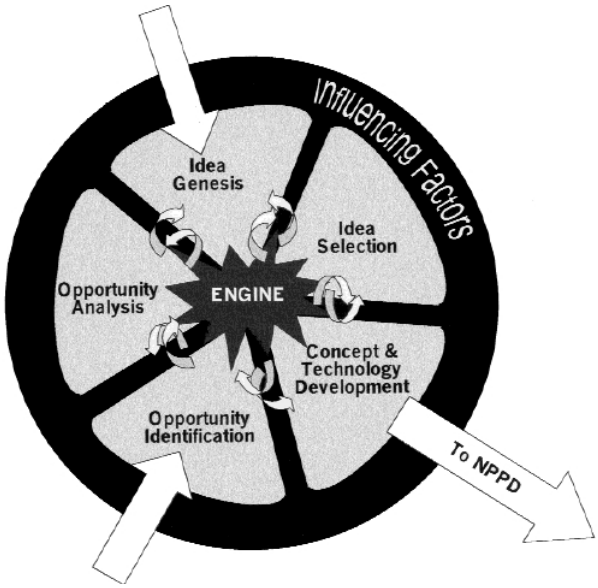

Figure 4: Front end Activities according to Koen et al., 2001 (pp.47)

Although Koen et al.'s (2001) model provides useful understanding of the cyclical nature of the front end and provides an overview of its central activities, it does not provide a great deal of information about how these activities are actually conducted. Moreover, despite the fact that their model has emerged to challenge the dominant linear models of the front end it is still managerially-oriented rather than focused on generating deep understanding of the minutiae of the front end. Koch and Leitner (2008), then, offered additional insight into the details of front end activities and how the five front end activities are carried out (albeit without utilising the same categories[7]). They concluded that most of the front end activities are conducted via informal channels and they highlighted the role of casual, informal interaction. According to them, opportunity exploration is conducted by intrinsically motivated individuals without explicit direction from management. Instead, personal networks, customer contacts and external partners act as important sources of stimuli for idea generation.

[7] Koch and Leitner's (2008) model includes idea generation, coalition building and networking, prototyping, persuasion of key actors, and reaction following a decision by senior management. For reasons of clarity, the five activities identified by Koen et al. (2001) are used here as a basis of discussion, complemented by Koch and Leitner's formulation.

Idea genesis is conducted through intensive and informal discussion in which individuals intuitively respond to each other's thoughts and perspectives. Koch and Leitner further emphasised the role of championing and coalition-building as parts of front end activity, claiming that they have a significant influence on idea selection. This championing activity involves attracting the attention of the key individuals in the organisation: people with relevant information, appropriate networks or power over resources, for example (see also, e.g., Howell et al., 2005; Kanter, 1988). In the initial stages this lobbying takes place through personal networks but once the idea has been crystallised, the persuasion activity is taken to formal arenas and directed towards senior management. In crystallising the idea, Koch and Leitner emphasised the role of prototyping. They described this activity as being conducted informally and even secretively in order to gain easier access to prototyping equipment and to avoid negative attention from management (see also Burgelman, 1983). Koch and Leitner did not offer a great deal of information about the actual idea selection process or of the subsequent activities. Interestingly, although Koch and Leitner emphasised the informality of all other activities, they saw idea selection as a formal activity conducted by senior management, whereas Koen et al. (2001) noted that it can also be an informal decision along the development path.

Like Koch and Leitner, Griffin et al. (2007), found the front end to be populated with the autonomous and intrinsically motivated efforts of informal actors. Their study of how champions "navigate through the front end" (pp.2), emphasised the role of autonomously emerging objectives in guiding the ideators' activity. Moreover, they found that the "serial innovators" they studied were more focused on these objectives than with the effectiveness of the process. Griffin et al. found three major objectives that drive the front end actors in their efforts: finding the right problem, making sure they understand the problem correctly and introducing a sufficiently clear and feasible solution to be accepted as a product development project. In finding the right problem the innovators evaluate possible problems against strategy in evaluating whether the problem is a suitable one in which to invest effort. After having chosen the problem they spend considerable effort in defining it and pulling together a capable team to work on it. The innovators then iterate between these two phases until they have created suitable conditions for solving the problem. Finally, they

create a solution to the problem by making use of their intuition, creativity tools as well as previous ideas stored in their memory.

2.1.3 Summary of Front end Activities and their Organisational Enablers

As the previous sub-section has shown, there is more understanding about what should be done at the front end and by whom than *how* this is actually done (Griffin et al., 2007; Backman et al., 2007). To date, the bulk of front end research has focused on creating normative propositions from a managerial perspective as to how the front end should be organised. This has been achieved in the form of linear stage-models that identify success factors and key roles. Despite this dominant focus, some authors, most notably Koch and Leitner (2008), Koen et al. (2001) and Griffin et al. (2007) have touched upon the micro-level issues and provided important information about the non-linear and informal activities of the front end. However, it should be noted that even their accounts do not offer a window into the collaborative activities related to idea development; they do highlight informal interaction, but do not invest a great deal of effort in examining its details.

Table 1 summarises the various perspectives of the front end, structured around Koen et al.'s (2001) activity categories. The more detailed activities are listed for each category, as are the organisational enablers and inhibitors. The purpose of the table is to give readers an image of the kind of topics and findings that have dominated front end research in the field of innovation management. The detailed activities (listed in the first column) are a point of focus in the table whereas the listings of organisational antecedents contribute to an understanding of whether they are the most meaningful from the perspective of the actual praxis. Of particular note is that the organisational enablers and inhibitors emphasise the creation of clarity and structure to the front end with a diverse set of methods and tools. However, the identified activities highlight the role of informal and spontaneous action. Consequently, there seems to be some tension between how the front end is carried out and how it is *supposed* to be carried out according to the recommendations of most of the research. Most authors caution against using overly rigid processes or overly strict criteria at too early a stage, although the ideal of a formalised and objectified process comes through strongly in the success factors they propose.

Table 1: Summary of Front end Activities, Their Enablers and Inhibitors

Activity Category	**Activities**	**Organisational Enablers**	**Organisational Inhibitors**
Opportunity Identification	- Imagining customers' needs - Questioning the status quo - Crossing over to other domains to retrieve possibly relevant information (Griffin et al., 2007; Reid and de Brentani, 2004) - Spontaneous social interaction including ad hoc group sessions, hallway discussions or email interaction (Koen et al., 2001; Roberts and Fusfeld, 1981)	- Formal opportunity identification process and creativity techniques (Koen et al., 2001; Cooper, 1988) - Formal teams with appropriate knowledge and skills* - Innovative organisational culture including shared vision and priority for innovation * - Cross-functional collaboration* (Kim and Wilemon, 2002; Roberts and Fusfeld, 1981; Griffin et al., 2007; Koen et al., 2001; Cooper, 1988) ** Emphasised for all five categories*	- Unclear product strategy and objectives (Khurana and Rosenthal, 1998) - Using ill-fitting NPD models at the front end* (Koen et al., 2001; Khurana and Rosenthal, 1998) - Messy roles, unclear responsibilities* (Khurana and Rosenthal, 1998; Cooper, 1983) - Lack of horizontal and vertical integration*
Opportunity Analysis	- Responding to an emerging opportunity or customer demand - Gathering together a group with appropriate knowledge - Having informal discussions with customers (Roberts and Fusfeld, 1981; Griffin et al., 2007)	- Focus groups of customers and competitive intelligence (Cooper, 1988)	- Shortage of key resources* - Lack of management involvement* (Khurana and Rosenthal, 1998; Poskela and Martinsuo, 2009)

Activity Category	**Activities**	**Organisational Enablers**	**Organisational Inhibitors**
Idea Genesis	- Gathering data from various fields and sources - Gathering necessary resources - Engaging in technical problem-solving, experimenting, and prototyping - Repurposing current solutions - Defining the limits of ideas (Griffin et al., 2007; Koen et al., 2001) - Using personal networks to gain access to machinery (Koch and Leitner, 2008) - Engaging in informal interaction when creating, developing and promoting ideas (Koen et al., 2001; Griffin et al., 2007; Roberts and Fusfeld, 1981; Cooper, 1988; Koch and Leitner, 2008)	- Brainstorming sessions - Idea management processes and idea contests (Koen et al., 2001; Cooper, 1988) - Developing multiple idea trajectories simultaneously, but choosing quickly which ones to keep (Kim and Wilemon, 2002; Griffin et al., 2007) - Capable project manager (Cooper, 1988; Kim and Wilemon, 2002)	- Committing serious funding too soon - Introducing overly tight objectives and criteria too soon (Cooper, 1983; Khurana and Rosentlhal, 1998) - Unresolved technical uncertainties (Khurana and Rosenthal, 1998) - Focusing excessively on the quantity of ideas (Kijkuit and van de Ende, 2007)

Activity Category	Activities	Organisational Enablers	Organisational Inhibitors
Idea Selection	- Making an intuitive choice among a collection of self-generated ideas (Koen et al., 2001; Reid and de Brentani, 2004) - Finding a supportive manager to act as a sponsor (Griffin et al., 2007; Koch and Leitner, 2008) - Hiding the idea if necessary (Koch and Leitner, 2008)	- Formal process conducted by a review board equipped with well-defined decision criteria, and checklists (Koen et al., 2001; Reid and de Brentani, 2004; Cooper, 1988) - Executive reviews (Khurana and Rosenthal, 1998)	- Informal screening with no procedure and no ill-defined criteria (Cooper, 1983) - Not having a balanced portfolio between radical and incremental ideas (Griffin et al., 2007; Khurana and Rosenthal, 1998)
Concept Development	- Using personal networks to convince decision makers (Griffin et al., 2007; Markham, 2002) - Creating a convincing concept formulation - Testing for feasibility (Koen et al., 2001; Cooper, 1988)	- Clear decision criteria and efficient decision making processes - Presenting the concept to customers (as models, sketches etc.) (Cooper, 1988; 2005)	- Lacking ability to execute ideas (Koen et al., 2001) - Inadequate product definition (Khurana and Rosenthal, 1998)

2.2 Idea Development as Innovative Activity

Another way the innovation literature has approached idea development is by examining innovativeness, particularly innovative behaviour. Innovativeness is claimed to be an important part of the front end of innovation (McAdam and McClelland, 2002). Surprisingly, however, these two literature streams rarely overlap which is probably due to their different approaches. The front end stream of research has been initiated by the identification of a particularly challenging phase of the innovation process, while the innovativeness literature has sought to understand and

measure innovative organisations. Despite these different starting points, both streams have actively identified success factors that enable the creation and development of ideas, as well as the activities that are needed for this to happen (albeit to a lesser extent).

2.2.1 Creativity as a Building Block for Innovativeness

For reasons of conceptual clarity, it is important to begin by explicating the difference between creativity and innovativeness. These concepts are often used interchangeably to indicate beneficial novelty, especially in the discussion on the front end of innovation (McAdam and McClelland, 2002). However, there is a clear distinction between the two terms, and research into the two phenomena has even been conducted in two distinct streams which have (somewhat surprisingly) had little contact with each other. This separation of the two discussions has most likely contributed to the fact that the two concepts have so rarely been defined in relation to one another. Creativity reseach has its roots in psychology (Ford, 1996; cf. Kirton, 1976; Runco, 2007), and, with a few exceptions (e.g., Ford, 1996; Amabile et al., 1996; Lempiälä, 2010) has remained largely separate from the innovation literature. Creativity research has focused on the cognitive processes of an individual who generates ideas, the moment at which this creative insight is achieved, and the prerequisites for these moments (noted also by McAdam and McClelland, 2002; see for example Amabile et al., 1996; Woodman et al., 1993). The focus in this stream is, therefore, on the individual and the process of idea generation, whereas research into innovativeness has usually focused on the organisational level and placed greater emphasis on the implementation of ideas.

Organisational creativity is commonly defined as the production of ideas that are novel (unfamiliar to the domain) and valuable (helpful in achieving the goals of the organisation) (Ford and Sullivan, 2004; Amabile et al., 1996). However, it is not particularly easy to define what is considered “novel” and “useful”. These qualities are neither universal nor objective, as creativity is always a “domain-specific, subjective judgement of the novelty and value of an outcome of a particular action” (Ford, 1996, pp.1115). This means that the relevant community determines actions or outputs to be creative (or uncreative). This community consists of the central actors (the field) of a certain subject area (a domain) (Csikszentmihalyi, 1996).

2.2.2 Innovative Behaviour and its Enablers

Innovativeness includes the creation of an idea but also its further development and final implementation in the organisation (West and Farr, 1989). Although creativity is the basis of innovativeness, it is only the development and utilisation of the ideas that turns the creative potential of an organisational actor into actualised benefit for the organisation (McAdam and McClelland, 2002). As pointed out by, for example, Koen et al. (2001) and Roberts and Fusfeld (1981), this is often the most challenging part of innovative activity. There have been a number of definitions of innovativeness, ranging from an organisation's ability to adopt new innovations (cf. Burns, 2007) to the novelty level of a product (cf. Kleinschmidt and Cooper, 1991). However, most research – including the present study – has defined innovativeness as the ability of an organisation (or a group) to produce innovations. Wang and Ahmed (2004, pp. 304), for example, defined innovativeness as an organisation's capability of "introducing new products to the market, or opening up new markets, through combining strategic orientation with innovative behaviour and process". Following this dissertation's overall orientation towards the examination of activities and group-level phenomena, innovativeness is approached through the lens of innovative behaviour while the strategic element receives less attention and is addressed only when it becomes apparent in the everyday praxis.

Innovative behaviour has been defined as all actions directed towards the introduction, development and application of novel and valuable ideas (West and Farr, 1989). This definition does not limit the existence of innovative behaviour to the successfulness of these efforts. Therefore, innovative behaviour is the kind of activity that enables – but does not guarantee – the creation of successful innovations. Kanter (1988) and Scott and Bruce (1994), have found innovative behaviour to include three behavioural tasks: problem/opportunity recognition and the creation of ideas as a response; support building for the idea in the organisation; and realisation of the idea into a prototype, concept or a commercialised product. Kleysen and Street (2001) have further divided these tasks into 14 behaviours, which include activities such as looking for opportunities to improve the status quo, paying attention to non-routine issues, generating ideas, defining problems more broadly, testing out novel ideas, evaluating

ideas, pushing ideas forward, and incorporating beneficial changes into daily routines.[8]

Just as the efforts of Koen et al. (2001) and Koch and Leitner (2008) in front end research deviate from the dominant approach, so does the focus on innovative behaviour in research on innovativeness. Most of the research into innovativeness has treated it as a uni-dimensional concept and aimed at tracking its determinants (Salavou, 2004) whereas its different behavioural components have been examined to a lesser degree. Moreover, Kleysen and Street's (2001)[9] approach, which focuses on identifying the detailed activities included in innovative behaviour, deviates from the norm inside the research stream on innovative behaviour. Most of the research in this stream (cf. De Jong and Kemp, 2003; Scott and Bruce, 1994; West and Farr, 1989) has focused on determining the organisational characteristics that benefit or inhibit the emergence of innovative behaviour rather than the details of its praxis. Even though these antecedents are not the core interest of this dissertation, it is beneficial for the reader to understand the central findings, given that the results of this dissertation contribute (at least indirectly) to the understanding of the formation of these antecedents in organisations. Table 2, then, summarises the enablers and inhibitors of innovativeness, along with a detailed listing of the activities associated with innovative behaviour. Again, the main focus is meant to be on the activities depicted in the first column, as they are directly related to the focus of the dissertation. The detailed activities are grouped according to the three general categories of innovative behaviour identified by Kanter (1988) and Scott and Bruce (1994). This type of grouping was not possible for the antecedents, however, because they are predominantly presented as supporting innovative behaviour as a uni-dimensional concept, as opposed to its constituent activities.

The activities presented in Table 2 differ only slightly from those depicted in Table 1; the latter is more detailed and pays more attention to convincing

[8] Kleysen and Street further attempted to create a five-item measure of innovative behaviour based on these activities. While the 14 activities, as such, received strong empirical support, the five-item measure did not. The authors believed that the non-definite results were a result of an overly vague set of survey questions, which prevented the respondents from being able to distinguish between the behaviors belonging to the different categories.

[9] Also, Kanter's work (e.g., 1988) discusses the activities related to bringing about innovation in organizations, although she does not make explicit reference to innovative behaviour.

decision makers. Interestingly, the success factors and inhibitors differ much more significantly. Table 2 has greater emphasis on flexibility of processes and de-centralisation of management, whereas Table 1 centres on establishing clarity to the messy reality of the front end. There also appears to be less friction between the depicted activities and the enablers in Table 2 than in Table 1. However, because the enablers (and inhibitors) remain on a more abstract level (such as “good project management”), they can be interpreted as being somewhat decoupled from the actual activities. A common theme in Tables 1 and 2 is the emphasis on facilitating cross-functional collaboration, interacting with customers, and providing sufficient resources.

Table 2: Summary of Innovative Behaviours, Their Enablers and Inhibitors

Behavioural Task	**Activities**	**Organisational Enablers**	**Organisational Inhibitors**
Recognising opportunities and generating ideas	- Looking for opportunities to improve the status quo (Kleysen and Street, 2001; Kanter, 1988; de Jong and den Hartog, 2007; de Jong and Kemp, 2003; Scott and Bruce, 1994; Mumford and Hunter, 2005) - Interacting with people with a different perspective (Kanter, 1988) - Generating ideas (Kleysen and Street, 2001; Kanter, 1988; de Jong and Kemp, 2003; Mumford and Hunter, 2005) - Generating combinations of ideas - Linking ideas to relevant information (Kleysen and Street, 2001; Mumford and Hunter) - Evaluating ideas (Mumford and Hunter, 2005; Kleysen and Street, 2001)	- Close interaction with customers, exposure to problems (Task 1) (Kanter, 1988) - Clear but not overly constraining strategy and vision (Task 1) (Anderson & West, 1998; Sundbo, 1996; Amabile et al., 1996; Kanter, 1988; West and Farr, 1989; de Jong and den Hartog, 2007). - Participative, encouraging leadership (Scott and Bruce, 1994; de Jong and den Hartog, 2007; West and Farr, 1989; Mainemelis, 2010; de Jong and den Hartog, 2007; Mumford, 2002) - Innovative climate including risk-taking, diversity emphasis, task orientation and participative safety (West and Farr, 1989; Anderson and West, 1998; Koberg et al., 1996; Kanter, 1988; Amabile, 1998; Mumford, 2002; Andriopoulous, 2001)	- Bureaucratic, segmented and isolated organisation - Overly tight and formalised job descriptions - Lack of resources - Unclear or shifting goals - Not understanding one's employees and their capabilities (Kanter, 1988; Amabile, 1998; Mumford and Hunter, 2005) * Usually inhibitors are not explicitly mentioned in the literature but it is implied that they are the opposites of the enablers*

Behavioural Task	**Activities**	**Organisational Enablers**	**Organisational Inhibitors**
Building support	- Acquisition of information and resources - Persuading, coalition building - Pushing and negotiating (Kleysen and Street, 2001; Kanter, 1988; de Jong and Kemp, 2003; Scott and Bruce, 1994; Mumford and Hunter, 2005; Mumford, 2002) - Finding a management sponsor (Kanter, 1988)	- Structures encouraging open, cross-functional collaboration (Lovelace et al., 2001; Martins and Terblanche, 2003; Sundbo, 1996; West and Farr, 1989). - Team structure (Kanter, 1988; Scott and Bruce, 1994; Mumford, 2002) - Sufficient resources (Kanter, 1988; Amabile et al., 1996; de Jong and den Hartog, 2007; Mumford, 2002) - De-centralised structure and flexible processes (Kanter, 1988; West and Farr, 1989; de Jong and den Hartog, 2007; de Jong and Kemp, 2003) - Accepting complexity (Kanter, 1998) -Challenging and broad tasks (Kanter, 1998; West and Farr, 1989; de Jong and Kemp, 2003; Scott and Bruce, 1994) - Good (project) management (Task 3) (Amabile, 1988; Amabile et al., 1996; Payne, 1987) - Rewarding and recognition (de Jong and den Hartog, 2007; Mumford and Hunter, 2005; Amabile et al., 1996)	
Realisation of the idea	- Experimenting with ideas and solutions - Modifying ideas - Implementing, routinising - Managing relations both inside and outside the team (Kleysen and Street, 2001; Kanter, 1988; de Jong and den Hartog, 2007; de Jong and Kemp, 2003; Scott and Bruce, 1994; Mumford and Hunter, 2005) - Concept selection (Mumford and Hunter, 2005)		

As the above discussion and Table 2 both suggest, this research stream also lacks understanding of the collective and collaborative activity between actors, despite the additional insight into the details and prerequisites of idea development. Most of the research is conducted from an individual perspective, which means that the formulations of innovative behaviour that have been put forward are identifications of activities in which individuals engage in different stages of the innovation process (cf. Scott and Bruce, 1994). In order to better understand the social activity that has been deemed central for idea development (e.g., Van de Ven and Rogers, 1988; Laudel, 2001), the dissertation now turns its attention towards the practice perspective.

2.3 Practice Perspective to Idea Development

While practice theories include a wide variety of research in different disciplines, this approach has been less common in innovation management research, which has largely relied on large-scale quantitative data or – at the qualitative end – managerial interviews to determine diffusion patterns, network shapes or organisational success factors for innovation (Lowe, 1995; Brown and Duguid, 1991). The roots of practice theories lie in the writings of such authors as De Certeau (1984), Giddens (1984), Bourdieu (1977), Foucault (1976); Heidegger (1927 [1978])[10] and Wittgenstein (e.g., 1969 [1977]). Despite the fact that practice theory, as a theoretical field, is still young and dispersed (Reckwitz, 2002), it has already been widely applied, in areas such as strategy literature (Whittington, 2006; Jarzabkowski, 2003), work and technology studies (Orlikowski, 1992; Barley, 1996), knowledge studies (Cook and Brown, 1999) and gender and equality studies (Butler, 1990, quoted in Reckwitz, 2002).

2.3.1 Defining the Practice Concept

A common focus in the study of practice in the organisational context is how people engage in 'real work' (Cook and Brown, 1999, pp.387). The concept of 'practice' refers to a type of activity that consists of several elements: bodily movement, mental activities, objects and their use,

[10] The present study has drawn most upon the works of De Certeau, Giddens and Wittgenstein.

contextual understanding, normative understanding, and emotion (Reckwitz, 2002; Schatzki, 2006). In this way, practices incorporate all aspects of human activity into a coherent whole. Practices are also social to the core, as their meaning is always drawn out of a particular social context (Cook and Brown, 1999; Brown and Duguid, 1991). The examination of practices, then, inherently includes the appreciation and understanding of the particular social context in which the investigated activities are embedded. It follows that practices include a notion of sharedness; that is, they are the type of activities that the community members (group, organisation, or society) share and understand. This does not mean that practices could not be performed individually and without interaction, but rather that their meaning must be collectively shared (Reckwitz, 2002).

Two distinct terms have been proposed to be used in order to distinguish between the everyday doings of the grassroots level and the more comprehensive entities. Reckwitz (2002) and Whittington (2006) suggested that the word 'praxis' should be used to describe the former, whereas 'practice' refers to the latter. Therefore, practices are traditions, norms and procedures, while praxis consists of practitioners' doings at a micro-level.[11] Taking these concepts to the context of innovation, praxis would include ways of presenting, commenting, refining and evaluating ideas, while practice would refer to the shared understanding of corporate life and the 'corporate kind of creativity' (one might ideate quite differently with family members or friends than with colleagues). The two practice types are interwoven and everyday praxis is influenced by the institutionalised practices, which in turn are reinforced and renewed by the former (Giddens, 1984).

Practices are stable in the sense that they are recurrent and have become a part of habitual action (Schatzki, 2006). They constitute the shared rules of social life and many of the macro practices direct our daily actions more than we notice (Giddens, 1984). Our 'practical consciousness' allows us to intuitively understand the appropriate form of action, even though we would not be able to articulate the social norm that drove us to react in a particular way (ibid.). Practices are not entirely fixed, however, and can also

[11] These same distinctions have been made by other authors who have used different labels. Schatzki (1996) used the term 'dispersed practices' to refer to praxis and 'integrative practices' to refer to the wider practices, whereas Jarzabkowski (2004; 2003) referred to practice and practices, respectively.

be subject to change (Jarzabkowski, 2003), although this process is neither fast nor easy. Praxis and its interactive relationship with practices allows for this change (Giddens, 1984). In their situated, everyday praxis, the organisational actors have the opportunity to be reflective of their actions (Giddens: discursive consciousness), try novel forms of behaviour and introduce change to the larger system of practices (Jarzabkowski, 2004). There is also flexibility in practices in the sense that not every practice is shared among all actors or all communities in the organisation/society; depending on the social context, actors draw selectively (although not necessarily consciously) on different traditions and norms (De Certeau, 1984). This further highlights the importance of understanding the local context in which the practices take place, as well as their relation to a larger organisational or societal context (Jarzabkowski, 2004; Giddens, 1984). This micro context is the focus of this dissertation. However, the focus in the empirical section is not the "changing practice" (Jarzabkowski, 2004, pp.535) but the practices of introducing change in the organisation; the inventiveness and improvisation of actors as they generate novelty in their everyday praxis (De Certeau, 1984).

2.3.2 Praxis of Innovation

Many of the researchers who have applied the practice perspective to studies of innovation, such as Brown and Duguid (1991), Dougherty (1992), Dougherty and Hardy (1996) and Garud et al. (2011) have criticized the interest of the majority of extant research on innovation in identifying how innovation *should happen* as opposed to aiming to understand how it actually does happen. Brown and Duguid (1991, p.40) argued that innovation research has generally focused on abstract representations that act "to the detriment, if not exclusion, of actual practice". Brown and Duguid referred to the former as "canonical practice" and the latter as "non-canonical practice". The tendency to emphasise formal prescriptions over the messy, everyday praxis can also be seen in the innovation management policies of organisations. Dougherty (1992) noted that management relies on abstracted accounts in their efforts to support everyday praxis, but these efforts often fall short in terms of addressing its true needs. This is also illustrated in Orr's (1990) rich ethnographic study on service technicians demonstrated how organisational actors base their learning praxis on storytelling and other social means, while the formal policies of the organisation (the training courses, job descriptions and manuals) are

superficial and distorted, which provides little help for daily operations. Based on Orr's study, Brown and Duguid (1991) further concluded that the canonical practices of organisations can even pose hindrances for the learning of organisational actors because they devaluate their actual praxis and complicate their work by reducing it to simplistic descriptions, thereby necessitating more – not less – improvisational effort (noted also by Koch and Leitner, 2008). Therefore, innovation often happens despite these canonical structures rather than because of them (Dougherty and Hardy, 1996). Moreover, while management often supports innovation as a concept and goal, it rarely provides genuine support for the type of practices that are needed for its emergence (Dougherty and Heller, 1994).

The actual, non-canonical praxis of product innovation has been described as collaborative, explorative, material and combinatory (Brown and Duguid, 1991; Dougherty and Heller, 1994; Garud and Karnoe, 2003; Carlile, 2002).[12] Collaboration, which is an essential part of innovation praxis, will be discussed in more detail in the next subchapter. Exploration in innovation praxis includes search for new opportunities, experimenting with objects and iterating based on the results. Dougherty and Hardy (1996) found that innovators interpret the surrounding world based on their understanding of the current strategy and their opportunities to introduce novelty to the organisation. This means that the organisational context in which they are located has a significant influence on their opportunity exploration activity (compare also with Griffin et al. (2007)). After ideas are generated from these opportunities, they are explored through laboratory tests or physical prototypes (Carlile, 2002; Van de Ven et al., 2008; Garud and Karunakaran, 2011). Carlile (2002) emphasizes the importance of this activity for product innovation as it allows the inventors to test the feasibility of their ideas and iterate towards more plausible solutions. Garud and Karunakaran (2011, pp.32) further highlight the need for incomplete prototypes to be considered not as mistakes but "outcomes of experimental probes". However, Dougherty and Heller (1994) point out that while these iterations are necessary for the ideas to develop, they can be difficult for managers to tolerate, which means they are often perceived

[12] A distinction should be made between the present study and most of the previous research on innovation practices and praxis. The vast majority of the articles that discuss the practices of innovation have approached the phenomenon from a knowledge creation and learning perspectives (cf. Dougherty, 1992; Carlile, 2002; Brown and Duguid, 1991), while the present study has focused on idea development.

as failures in the process. In addition to allowing for exploration, material objects facilitate the creation of mutual understanding by creating a common language and making visible the differences and dependencies of the different actors (Bechky, 2003; Carlile, 2002; Garud and Karunakaran, 2011). Material objects are at the centre of the work practice of product innovators because they form the substance and output of the work as well as the basis for evaluation. Central objects in the work of engineers include sketches, specifications, materials, prototypes, tools, CAD systems, testing equipment, estimates of costs and profits (Carlile, 2002).

The combinatory nature of product innovation refers to the variety of linking activities in which the innovators engage when developing their ideas. This linking is conducted in relation to resources, knowledge and people. Innovators are considered "bricoleurs" (Garud and Karnoe, 2003; de Certeau, 1984; also Dougherty and Hardy, 1996) who make do with the limited materials and assets to which they have access through their personal networks and create new solutions by recombining and transforming the existing resources. In relation to knowledge, Dougherty and Heller (1994) have found the innovators to engage in three kinds of linking activities: (1) linking market and technology knowledge, (2) linking expertise from different domains and functions, and (3) linking the novel ideas to the existing strategy and resources of the company. Innovators can also be seen as linking between perspectives, and Garud and Karnoe (2003) described the effort of innovators as "mindful deviation", in reference to the balancing act they have to perform when presenting the novelty of the idea. If the innovator deviates too much, he or she may encounter resistance, but too little deviation may prevent the innovator from creating enthusiasm for the idea (also Hargadon and Douglas, 2001, Dutton et al., 2001).

2.3.3 Innovation as a Collaborative Praxis

The praxis of innovation is inherently collaborative and requires efforts from multiple actors as well as collective achievements (Dougherty and Takacs, 2004; Garud and Karnoe, 2003; Brown and Duguid, 1991). This social quality is highlighted in the beginning of the innovation process (Laudel, 2001) and especially in idea development activities (McAdam and McClelland, 2002). Even though the practice literature has shed light on the social side of innovation, it has commented little on the praxis of developing ideas. The focus in this stream has rather been on the social

creation of knowledge and the linking activities between different types of knowledge and its holders (cf., Dougherty, 1992; Carlile, 2002; Brown and Duguid, 2001 For example, in their research on learning and innovating in communities of practice, Brown and Duguid (1991) and Orr (1990), explored the emergence and functioning of such communities as well as their influence on the creation and distribution of knowledge. While this research offers valuable insights into how narrative practices support the learning and innovating of community members, it provides little understanding of the collaborative activities with which ideas are developed. As discussed in the previous subchapter, other authors – such as Dougherty (1992), Carlile (2002) and Garud and Karnoe (2003) – have similarly focused on the ways in which organisational actors link and combine knowledge and resources, but have paid less attention to the details of the collaborative effort involved in developing ideas.

Although the championing literature does not come from the practice tradition, it has been able to shed additional light on the details of the socio-political activity with which ideas are put forward in the informal arenas of organisations. The central championing activities that have been recognised in this research stream can be divided into three general categories: justifying the idea in the organisation (cf. Shane, 1995; Garud and Rappa, 1994; Howard-Grenville, 2007), securing resources for the idea (cf. Markham and Ayman-Smith, 2001; Burgelman, 1983), and building coalitions and motivating others (cf. Howell et al., 2005; Kanter, 1988). Although this discussion has revealed important details of idea advancement efforts, it has been individually oriented (cf. Howell and Higgins, 1990) and provides thus little information of the genuinely social nature of idea development.

Hargadon and Bechky's (2006) model of interactions precipitating moments of collective creativity made a rare contribution towards generating understanding of the actual collaborative praxis of idea creation and development. Their study is based on the creativity and collective cognition literature and does not address the practice research explicitly, but the focus of the research in on identifying the collaborative actions with which organisational actors generate novelty. They observed that most of this interaction happens informally, takes place face-to-face and is ad-hoc in nature. More specifically, they identified four sets of interactive activities

that precede moments of collective creativity. These activities are depicted in Figure 5 and explained below.

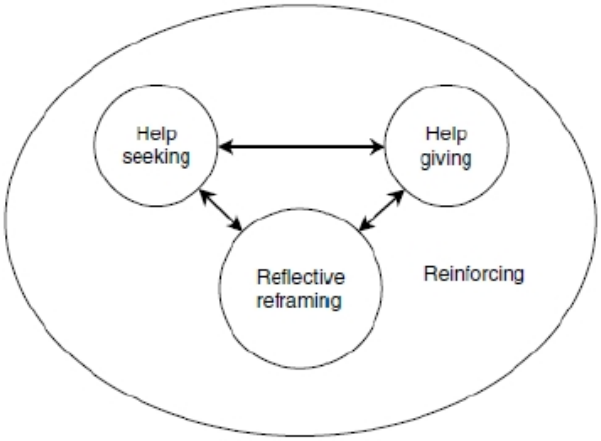

Figure 5: Interactions precipitating moments of collective creativity (Hargadon and Bechky, 2006, pp. 490)

Help-seeking includes all the activities that are used when trying to find assistance to solve a problem or develop an idea. Help-seeking activity is, quite naturally, connected closely to help-giving, and the way help-giving is conducted has been found to be central in determining the patterns people used when seeking help. This means that the structures of participation to innovation efforts are fluid and the development group is formed organically, based on the perception of the problem/idea holder who will give the most useful and timely feedback. Although help-seeking/help-giving interaction is largely informal, it can also be supported by formal means, including meetings, brainstorming sessions and accountability policies. Reflective reframing represents activities that take place in situations where there is no clear question or clear answer. The activities in this category, therefore, are centred on situations in which the ideas are a product of a joint (re)framing process and a person's insights both shape and are shaped by the interaction. This refers to the kind of action in which "rather than mindlessly answering the question as given, or deflecting it completely", the participants consider "not only the original question, but also whether there is a better question to be asked" (Hargadon and Bechky, 2006; pp.492). The reinforcing category refers to how the three interactions are strengthened in the organisation by, for example positive experiences and feedback (such as rewarding).

Garud et al. (2011) and Garud and Karunakaran (2011) have made recent contributions to understanding the collaborative praxis of idea development. These studies highlight the need for mutual engagement through narratives and unpolished prototypes, arranging for complexities inherent in the collaborative effort and reflection through encounters. Narratives are perceived as offering a way for organisational actors to create commitment through imagining themselves in the story and bridging between the past, present and the future. Both narratives and prototypes offer a point of relating for actors with different perspectives and thus help in creating mutual perspective (noted also by Bartel and Garud, 2009). Garud et al. (2011) divide complexities into four types: relational, temporal, manifest, and regulative. Arranging for and tolerating all of these intertwined complexities is important, but the temporal complexity is in particularly highlighted. In this, the simultaneous existence of *kairos* – the subjective notion of time – and *chronos* - the objective, traditional notion of time – is emphasized as a condition for allowing the freely flowing and more structured activities inherent in an innovation journey to co-exist. This is described as being attained with, for example, the practice of allocating time for employees to be used in the way they perceive it to best support the organisation (e.g. 15% rule at 3M).

2.3.4 Summary of Innovation Praxis and its Enablers

As the above discussion implies, the perspective of practice research for examining innovation activity differs quite markedly between the first two literature streams. Practice research has been more eager to understand the actual praxis of organisational actors and has largely refrained from producing normative models of how ideas should be developed. However, these studies also include managerial implications regarding how the organisation should support innovation praxis, particularly by providing information of how it is currently inhibited by the canonical structures. Table 3 shows these recommendations, as well as a summary of the central activities included in innovation praxis.

Table 3 has some similarities with and differences from the previous two tables. The most notable difference is that the activities presented in Table 3 provide a better description of the collaborative side of idea development

than those presented in Tables 1 and 2. The practice literature has paid attention to the communal aspect of innovation activity, as opposed to the particular activities needed to develop ideas into viable solutions. In fact, this literature stream has a rather limited understanding of how ideas develop because it rather focuses on the development of common knowledge as well as communal learning. A notable exception, of course, is Hargadon and Bechky's (2006) study (discussed above), but even this is focused on understanding the collective origins of creative insight rather than the collaborative effort to develop ideas. Hence, little research is centred on examining the front end because the different phases of the innovation process are usually not distinguished in this research stream.

There are also similarities between the two previous research streams and practice research. In all three tables, the centrality of material objects, iterations and informal activity are important themes in relation to innovation activities. By emphasising the role of objects in the idea development process, the front end literature comes closer to the practice literature than innovativeness research does. Both of the first literature streams highlight the use of prototypes, technical calculations and drawings in generating mutual understanding, testing for viability and building support for the idea. However, the opposite applies when looking at the success factors. Innovativeness and practice literatures raise the question of whether overly rigid processes and decoupled management are the main inhibitors for innovative activity, while the front end research focuses on criticising inconsistent and ambiguous management mechanisms. In terms of the success factors, common themes between all three literature streams are found in relation to encouraging cross-functional collaboration, providing sufficient resources and incorporating innovation into the corporate strategies.

Table 3: Idea Development Activities, Their Enablers and Inhibitors

Activities Constituting Innovation Praxis	**Organisational Enablers**	**Organisational Inhibitors**
- Search for new opportunities - Various linking and combining activities between different types of knowledge, resources and people (Dougherty, 1992; Dougherty and Heller, 1994; Garud and Karnoe, 2003; Markham and Ayman-Smith, 2001) - Help-seeking and help-giving - Reflective reframing, mindful interaction (Hargadon and Bechky, 2006; Dougherty and Takacs, 2004) - Experimenting with objects (prototypes, laboratory tests) - Iterations (Carlile, 2002; Dougherty and Hardy, 1996; Bechky, 2003) - Storytelling, narrating (Orr, 1990; Brown and Duguid, 1991) - Utilising personal networks (Dougherty and Hardy, 1996; Markham, 2000) - Justifying the idea (Shane, 1995; Garud and Rappa, 1994; Howard-Grenville, 2007) - Building coalitions (Howell et al., 2005; Howell and Higgins, 1990; Kanter, 1988)	- Gatherings related to problems, ideas or products - Accountability policies that reinforce collaborative responsibility (Hargadon and Bechky, 2006) - Available resources reserved for innovation - Collaborative structures and processes: continuous, distributed decision making, following through ideas and linking people horizontally and vertically - Connect innovation efforts with existing businesses - Genuinely incorporating innovation to the organisations' strategy and organisational actors to the strategy process - Introducing multifunctional teams (Dougherty and Hardy, 1996; Dougherty, 1992) - Supporting the cross-communal networking of individuals and acting as 'translators' at boundaries between functional communities. (Swan et al., 2002) Structures that tolerate complexity Pluralistic decision making (Van de Ven et al., 2008; Garud et al., 2011) Innovation narratives (Bartel and Garud, 2009)	- Abstracted nature of the canonical practice - Devaluing actual praxis - Reducing praxis to simplistic guidelines, thereby creating a need for increased effort and secretive behaviour (Orr, 1990; Brown and Duguid, 1991; Dougherty and Hardy, 1996; Koch and Leitner, 2008; Dougherty and Heller, 1994; Van de Ven et al., 1989; 2008) - Treating surprises as failures (Dougherty and Heller, 1994) - Bureaucratic organising (Dougherty, 2004)

2.4 Summarising the Perspectives on Idea Development in the Front End of Innovation

The literature presented above examines the same phenomenon; namely, the creation and development of ideas and how organisations are able to support it. However, the perspectives are noticeably different and the different streams rarely overlap.[13] As the above discussion has explained, particularly through Tables 1, 2, and 3, the three literature streams also have some commonalities; in particular, the innovation activities presented paint a rather coherent image of innovation praxis. The organisational enablers and inhibitors differ to a greater extent – especially between the front end literature and the two other literature streams – but they can also be seen to represent two complementary perspectives in the two ends of the same continuum between the necessary freedom and structure. Figures 7, 8 and 9 summarise both the similarities and the differences in perspective. Each of these figures is discussed in more detail below.

It is worth noting the challenges involved in placing the different streams into the same diagram, due to the different perspectives assumed in each stream. For example, the front end literature is largely normative, which sometimes makes it difficult to distinguish between normative and descriptive observations of the activities that have been identified as central to the front end (cf. Koen et al., 2001; Cooper, 1988). The literature on innovativeness, on the other hand, has largely been made from a quantitative perspective and the different innovative behaviours have been identified with very different methods than in the qualitatively grounded practice literature (the front end literature is situated somewhere in the middle). The practice perspective has offered less detailed activities or success factors and, instead, has focused on depicting the nature of innovation praxis. This in-depth insight is less easy to fit into diagrams and

[13] The literature streams differ also in relation to their terminology. As explained in the beginning of this chapter, the practice literature calls the everyday detailed doings as "praxis" and examines these doings as nexuses of social, material, discursive and emotional elements. These two first literature streams – front end and innovativeness – do not use that concept, due to which it has not been applied when discussing those traditions, but "activity" has been used to refer to all detailed activities in the microlevel. In order to be able to discuss the three literature streams together, the concept "idea development activity" will be used here to refer to the observations of the detailed doings related to idea development. Praxis, is however, the preferred term in the approach assumed by this dissertation and will be used throughout the empirical section.

tables. Therefore, these diagrams should be read with caution and only as a rough summary of the topics that have been discussed in the text.

Figure 6 presents the idea development activities from the three perspectives. In the centre are the commonalities between the three perspectives, while the particularities of each perspective are presented in the individual leaves of the clover. In the overlapping areas between two leaves are the commonalities of those particular perspectives. It is particularly noticeable in Figure 6 that the commonalities between the three perspectives include a variety of activities that draw a rather comprehensive image of idea development. Therefore, the three literatures have a common understanding of the range of activities that are included in idea development, as opposed to coming together in relation to just one or two perspectives or observations. This is evidence of the fact that, despite differences in perspective, the three literature streams have, in fact, identified the same empirical phenomenon. Figure 6 does exhibit some noteworthy differences as well. However, these differences portray differences in perspective rather than conflicting empirical results. Practice research has paid more attention to the social and interactive side of idea development, whereas the front end and innovativeness literature have paid more attention to the details of idea development (albeit from a rather normative perspective). From the two latter perspectives, innovativeness literature has paid more attention to the role of the individual, whereas front end research has focused on examining managerial action. Therefore, it can be seen that the front end literature is most focused on the actions of decision makers; whereas the other two streams discuss how these decision making processes can be circumvented and influenced.

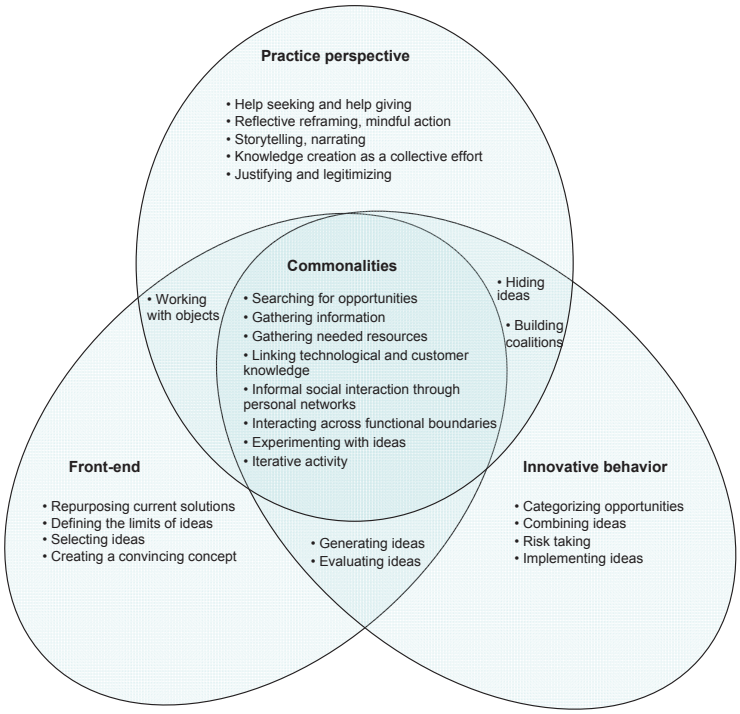

Figure 6: Depiction of Idea Development Activity from Front end, Innovative Behaviour and Practice Perspectives.

In a similar way, Figures 7 and 8 present the commonalities and particularities of the three perspectives in relation to organisational enablers and inhibitors, respectively. The differences between the three literature streams are clearer in relation to the success factors than to the depiction of the actual activities. Figure 7 indicates that the three literature streams agree on the usefulness of a shared vision, the necessity of providing priority and resources for innovative efforts, and the benefits of encouraging cross-functional collaboration. All of the literature streams also encourage participative leadership, although there is variation in how this is interpreted at the level of actual managerial action. The practice and innovativeness literature emphasises an understanding of the capabilities and activities of employees, upon which the managerial processes can be built. The front end research, however, emphasises the need for managerial intervention in the form of formal processes and clear responsibilities in order to reduce risk and ambiguity in the front end. In addition to these differences, the three literature streams each have their own weightings in terms of the most essential organisational enablers. The practice research emphasises structures that facilitate and enforce collaborative action, while

the innovativeness literature highlights the need to create a motivating environment for an individual through rewards and inspiring tasks. Finally, the front end research highlights managerial responsibility in terms of providing structure to the chaotic activities.

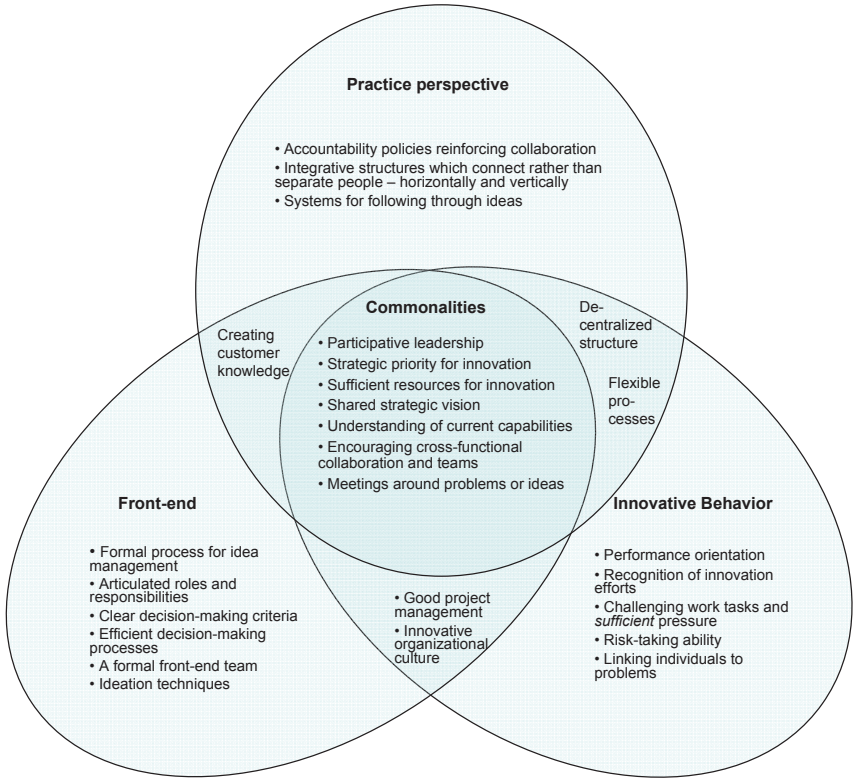

Figure 7: Organisational Enablers from Front end, Innovative Behaviour and Practice Perspectives

Figure 8 depicts the organisational inhibitors, which in most cases are mirrored reflections of the enablers. The common features of the three perspectives are much scarcer here than in the previous two figures. While the front end literature perceives the lack of managerial direction as being the most important organisational hindrance for effective idea development, the innovativeness, and particularly the practice literature, are concerned with the restrictive power of the formal processes. However, even though the two approaches seem contradictory, they do not need to be so. All three perspectives admit that some structure and some informal action is needed in idea development. The balance between the two can be seen to be located on a continuum, with one end representing complete managerial control (or the attempt to create it) and the other end

representing complete freedom. The front end research has been mostly concerned by the inefficiency caused by uncertainty; this is probably rooted in its origins in identifying the managerial challenge presented by this ambiguous phase of the innovation process. Practice research, on the other hand, has emerged to challenge the mechanistic perspective of the dominant management research; therefore, it sees the largest threats in the introduction of mechanistic processes. Innovativeness research, then, has sought to identify the antecedents of innovative organisational environments and has found the need for both managerial direction and individual autonomy. In sum, all three perspectives call for the right balance between structure and freedom, but have different perspectives in terms of where the biggest challenges lie in achieving this goal.

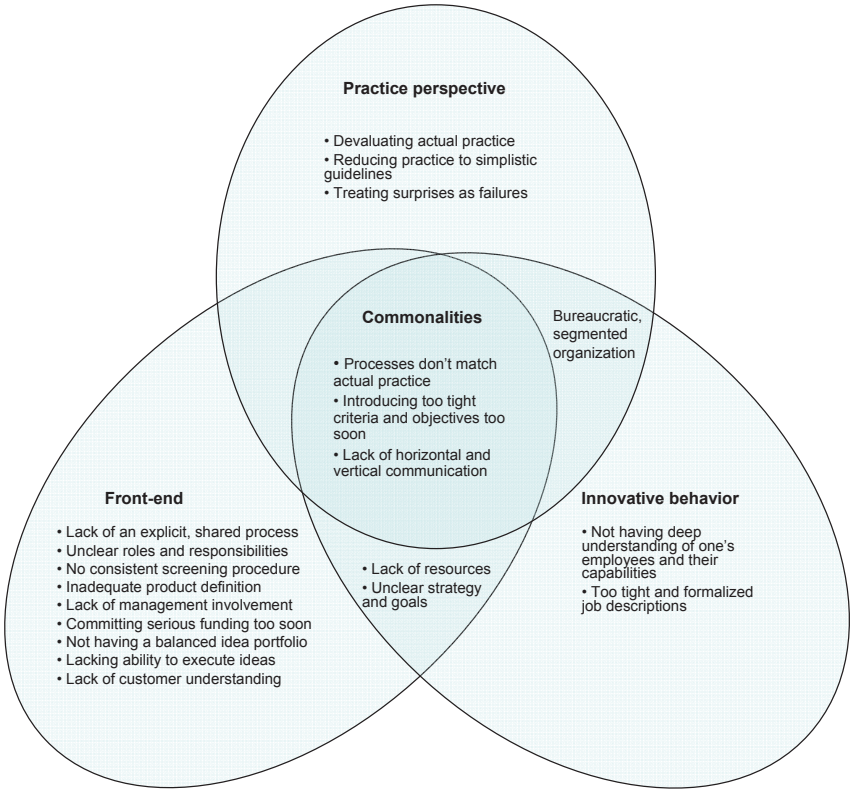

Figure 8: Organisational Inhibitors from Front end, Innovative Behaviour and Practice Perspectives

Finally, in order to create some kind of unified image of the praxis of idea development and its organisational enablers and inhibitors, Figure 9

presents the commonalities of the three literature streams. The figure includes factors that are mentioned in two or three of the literature streams. Idea development activity is portrayed as including being attentive to opportunities to improve the status quo, gathering and linking different kinds of knowledge, and experimenting with ideas. The nature of idea development activity is mainly informal and includes the use of personal networks at all stages. It also involves multiple iterations as new information is discovered and ideas are tested. Finally, idea development activity is material, in that drawings, prototypes and calculations are at the centre of the development praxis. In order to effectively support this praxis, management should give strategic priority to innovation, allocate sufficient resources, communicate a shared vision, and encourage cross-functional collaboration. Management should avoid enforcing overly rigid processes on the organisation and should move away from bureaucratic organisational structures. As discussed above, there is a great deal of variation between the perspectives' perceptions of what kind of processes are considered overly rigid.

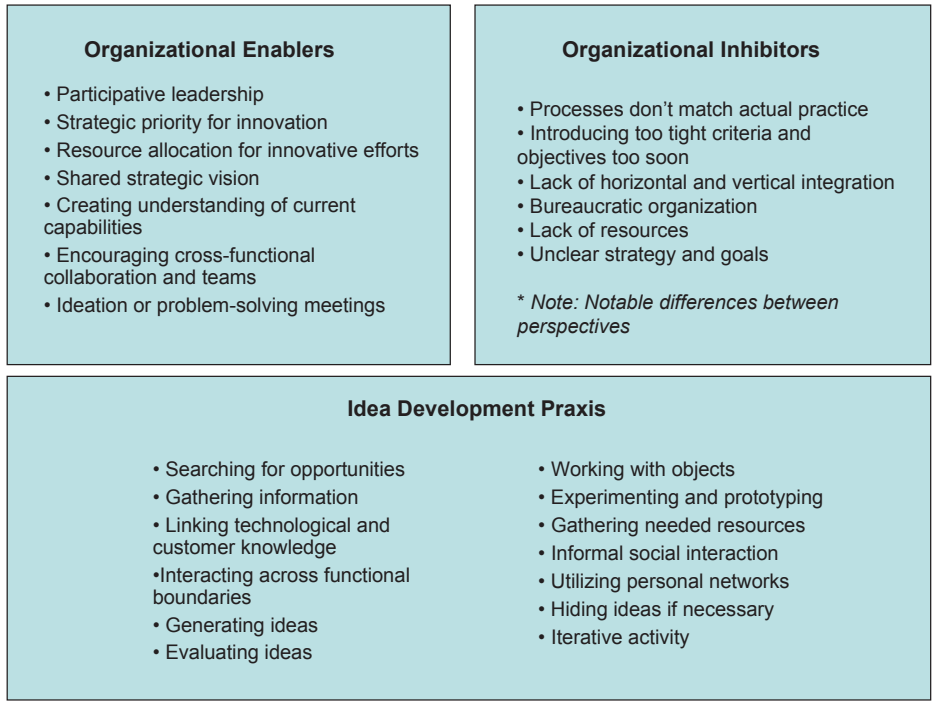

Figure 9: Summary of commonalities between perspectives

Although none of the three research streams discussed above has predominantly focused on examining either the praxis of idea development or its collaborative qualities, they have all contributed valuable understanding on the topic, as can be seen from the summary above. The present research builds on this understanding in general but, in particular, follows the work of the researchers who have focused on depicting the detailed activities of idea developers. Curiously, in each of the three streams, these authors represent the minority approach. From the front-end stream, the work of Koch and Leitner (2008), Koen et al. (2001) and Griffin et al. (2007) are of particular importance; from innovativeness research, the studies of Kleysen and Street (2001), West and Farr (1989) and Kanter (1988) have been especially influential. Together, these studies have provided insight into the activities that are necessary when developing ideas and how they should be supported in organisations. From the practice stream, the findings of Hargadon and Behcky (2006), Carlile (2002) and Van de Ven et al. (2008) have provided further insight into the nature of the idea development praxis, as well as to the work of technology experts. Finally, Dougherty and Heller (1994), Dougherty and Corse (1995) and Brown and Duguid (1991) have been central in the creation of in-depth understanding of the inhibitors of idea development praxis and the tensions between the formal and informal organisations in relation to innovation. The list of authors provided here is not intended to be exhaustive; instead, it is an indication of where the present study has drawn its main influences and where it aims to make its contribution.

3. Research Approach

This chapter presents the philosophical fundamentals of the study and how they are portrayed in the manner in which this research has been conducted. The chapter also presents the methods through which the study has been carried out and the empirical materials upon which the results of the research are founded.

3.1 Methodological foundations

This dissertation examines the empirical phenomenon of idea development in the light of two very different theoretical fields: innovation research (including the distinct discussions of the front end of innovation and innovativeness) and practice research. These theoretical fields are founded on different assumptions, the former being influenced by the realist and positivist traditions and the latter by pragmatism and relativism. This dissertation's philosophical assumptions are founded upon pragmatic philosophy, primarily following the assumptions that underlie practice theories (e.g., Schatzki, 1996; Giddens, 1984; de Certeau, 1984; Reckwitz, 2002) while also drawing from symbolic interactionism (e.g., Goffman, 1959; Blumer, 1969). Late Wittgenstein philosophy acts as an underlying influence. This approach was chosen because of the study's aim to offer an in-depth understanding of the ways in which ideas are developed. This has required the prioritisation of everyday activities and exploring them with a multitude of means. Pragmatic philosophy includes a wide range of approaches and traditions. This study follows those approaches and traditions that focus on everyday action and interaction (e.g., de Certeau; Goffman). In defining and examining practice, the study adheres to those authors who view practices as the nexus of doings and sayings (e.g. Schatzki, 1996), rather than emphasising either the discursive or bodily sides of practice. Because this study has focused on innovative activity, it is also important that its perspective includes the notion that practices can be

changed and that individuals have the opportunity to influence their surroundings. However, individuals are not free from institutional influence, since it is the surrounding social environment that chooses which ideas will be perceived as valuable and diffused. Thus, the interplay between individual agency and the surrounding social structure is a central assumption in the study's approach. In this, it follows the works of Giddens (1984) and the notions of his structuration theory. [14]

Although practice theories are still a young and dispersed field in terms of the formation of unified philosophical foundation or theoretical rigour (Reckwitz, 2002), it is possible to identify a group of key assumptions that underlie these theories. The first is the centrality of action. The examination of practice must offer an account of action (Schatzki, 1996). Practice perspective can be applied to examine a variety of topics, such as language or technology, but even in those cases the constituting approach must be to examine how these are portrayed or constituted in activity. The second key assumption is the notion of social ontology. In practice theories, the social is perceived as being located in embodied and interwoven practices that are organised around shared practical understandings (Schatzki, 2001; 1996). This view transfers the priority from the examination of individuals, language or institutions to the field of practices and urges all of the above to be perceived as aspects of this field. Therefore, social is not located in the mind or in discourses, but is found in the nexus of the two (Reckwitz, 2002), bound together with embodied activity. Moreover, not only is social located in this field of practices; such phenomena as knowledge, power and meaning also occur within it. The third assumption includes the inherent interconnectedness of the mind and the body. The actions, thoughts and sayings are not seen as separate but as interlinked constituents of human conduct (Barnes, 2001). In practice thinking, therefore, there is no divide between the mind and the body, in a Cartesian sense. Instead, the focus is on examining 'doings' in their most comprehensive sense; activities include the mental and emotional sides as well as the underlying collective knowledge of the meaning of these activities (Reckwitz, 2002). Fourthly,

[14] While the works of the above authors form a coherent image of what can be known of the surrounding world and how this knowledge can be acquired, they are not all strict adherents to a single paradigm. This is only natural since the boundaries of the different paradigms are socially defined and temporally shifting as new thoughts and paradigms are introduced and old categorisations are redefined (Tsoukas and Knudsen, 2002; Hatch, 1997). It is common, therefore, for researchers to be primarily oriented towards one paradigm while also having sympathy towards others (Tsoukas and Knudsen, 2002.; cf. Nordlund, 2009).

material objects are perceived as being necessary components of practices and as the carriers of meaning (Knorr Cetina, 2001). Therefore, objects have their own influence and role in the constitution of practices and are considered to be a comparable part of practice with the human actors. Finally, social structure in practice theories is perceived as having been born in social reproduction; social structure can therefore be found in the routine nature of action (Reckwitz, 2002). Changing social structure, therefore, can take place in crises of practice in which an agent is confronted with a situation that challenges his or her routinised action and forces him or her to improvise. However, improvisation is not confined to crises, as individual agents are capable of improvising and making creative combinations out of the material, spatial, mental and social elements at their disposal (de Certeau, 1984). Although practice is seen as routinised, one of its inherent qualities is its ability to change (Giddens, 1984; de Certeau, 1984).

While practice theories assign equal priority to all aspects of practice (the material, bodily, mental and emotional), the present study has followed the symbolic interactionists (particularly Goffman, 1959) in that it is particularly focused on interactive practices (or rather, the detailed praxis) between organisational actors and their underlying meaning. The sixth element of the study's underlying philosophical assumptions, therefore, is the centrality of the examination of social interaction between actors when aiming to understand a certain practice. This does not mean that I would disregard the other constituents of practice, only that interaction is used as a primary lens while the other elements are seen as complementary elements of the analysis.

3.2 Research Process and Empirical Materials

This research has aimed to achieve a better understanding of how collaborative idea development happens in organisations. This aim has necessitated an analytical focus on the activities in which organisational actors engage when constructing and developing their ideas. In other words, following the pragmatic philosophy, centrality has been given to praxis throughout the research; therefore, the other central concepts of the dissertation, such as collaboration and innovativeness, have also been examined through this praxis, not as separate from it. Because the extant research did not offer a framework that would have directly accommodated

my approach in examining this phenomenon, it was necessary to construct an initial frame by creatively combining understanding from the three different research streams presented in the previous chapter. This frame was then revised iteratively based on the empirical findings that emerged during the research process. This research thus aims toward theory-extension rather than theory testing. For this type of studies the case study method has been found to be appropriate (Eisenhardt and Graebner, 2007; Dubois and Araujo, 2004). A case study has been defined as "a research strategy that examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of 'confronting' theory with the empirical world" (Piekkari et al., 2009, pp. 569). In this context, 'confronting' does not mean testing theory but, instead, generating novel theoretical insight through the exploration of novel empirical phenomena or perspectives. Case studies can be conducted in several ways, ranging from positivist approaches (cf. Yin, 1984) to interpretative (cf. Dyer and Wilkins, 1991) and ethnographic approaches (cf. Sunaoshi et al., 2005, quoted in Piekkari et al., 2009). This research follows the approach of Ragin (1992) and Dubois and Gadde (2002; 2004), who promoted a holistic approach to case studies that perceives the case study as a strategy for exploring, challenging and reconstructing the relationship between the empirical world and theory. In this approach, the research question and the theoretical framework are not only allowed, but also expected to shift during the research process as the researcher iterates between the empirical data and theoretical assumptions (Eisenhardt, 1989).

3.2.1 The Case Companies

This research has been conducted as a multiple case study (Eisenhardt and Graebner, 2007) that includes three cases of which extensive qualitative materials were collected. The choice of cases was made following theoretical sampling (Eisenhardt, 1989), and cases were chosen that were most likely to offer a useful extension to current theory. The companies were selected based on the appropriate mix of homogeneity and diversity they provide in relation to their organisational setting. The organisations have many similarities, given that they all are based on a particular core technology and their innovation activities are centred on technological inventions. Also, questions of customer approval and commercialisation are central for each company. However, there is notable variation in terms of how innovation activities are organised within each of these firms. At Process

Inc.,[15] specific technology teams form the core of the company's innovation activities. Measurement Inc. has established a concept development team that spans technological boundaries, whereas Construction Inc.'s development praxis is based on dyadic relationships across functions. Although each of these companies operate globally, they have their head offices in Finland, which is also where the empirical part of this research was conducted. Therefore, the cultural context of the case organisations is primarily Northern European, specifically Finnish. Table 4 provides a description of each organisation.

Table 4: Description of the case companies

Organisation	Size	Unit Studied	Description
Process Inc.	> 2000 employees	A technology team	The company provides technologies and services to a global market in the metallurgical industry. Although the company is considered innovative within the industry, the conservative operating environment poses challenges for the implementation of innovative solutions. The focus of the study has been a technology team located within one of the company's three divisions. The team includes 17 highly educated people with experience in the technological domain. The purpose of this team is to maintain the continuous development of one of the company's key technologies, as well as to consult other organisational members and customers in issues related to this technology. The team has a long history within the company as the technology for which it is responsible has been a central part of the core business of the company for several decades.

15 All company names are pseudonyms.

Organisation	Size	Unit Studied	Description
Measurement Inc.	> 1000 employees	A concept development team	This company produces measurement-related products for a global market The company was originally founded around a technological invention of a new type of measurement technology. The focus of the study in this organisation has been a recently created concept development team than spans technological boundaries, even though it is still located in one of the three technology divisions of the company. The purpose of the team is to develop novel concepts, which it then offers for further development to one of the three divisions, which then make a final go/kill decision regarding the concept. The time frame for developing one concept is three months. The team has 10 members, a team leader and a project manager. The team leader and the project manager prepare the concept development projects before presenting them to the team. At this pre-development stage, three alternative concept ideas are prepared simultaneously, one of which is chosen for further development at a formal decision gate.

Organisation	Size	Unit Studied	Description
Construction Inc.	> 10 000	Dyadic collaboration structures	Construction Inc. operates in a conservative construction industry, mainly in the European market. It offers components, systems and integrated systems to construction and engineering industries. Construction Inc. has previously relied heavily on its competencies in material sciences and production capability, but has recently tried to take a more customer-centric and solution-based approach in its product development. The company is divided into two business divisions and the study data includes interviewees from both. The interaction structure of the company is based on dyadic relationships rather than specific teams. Idea development that takes place in these dyadic relationships is the focus of this study.

Space limitations of this introductory essay prevent a detailed description of the three case companies and the specific idea tracks studied within them. Article B describes the six idea tracks that were studied for this research (with an additional idea track from Sari Yli-Kauhaluoma titled Chemical Inc.) and each of the articles provide descriptions of the data. In an attempt to bring the context of my research closer to the reader I will describe here how I entered each of the three case companies and what observations first struck me at that company. These stories should not be taken to suggest that the observation in question was made only in that company or that it was the only influential observation made in that organisation; rather, this particular observation is what first led me to reflect on my approach in each company.

I began my research by working with Process Inc., which became the most explorative and in-depth of the three cases. My primary contact person, who held a senior managerial position, had expressed a need for more ideas

and collaboration in the organisation. The desire to improve the innovativeness of the organisation through the understanding created in this research meant that this contact person was highly sympathetic to the research project. The technology team under study was chosen because its leader was interested in participating in the research, which provided a fertile ground for negotiating access to various group situations and conducting multiple interviews with the team members. My first impression was that, despite the concerns expressed by my contact person, the idea development praxis seemed highly collaborative and idea-rich. The team members interacted with each other and with individuals outside the team, as well as customers, fluidly and informally. Even the most experienced individuals in the team preferred collaborative idea development over individual efforts and ideas were often spurred by customer problems or group discussions rather than personal insights. Ideas were also considered as a collaborative effort without disputes or discussions over ownership. No structures and tools were used by the team members in doing all this (even though they were offered by my contact person), but collaboration still happened. The problem originally expressed by my contact person then reformed to "why is the management unable to see and support this praxis – even when they are sympathetic towards it?".

At Measurement Inc., I was directed to study the concept development team from the suggestion of the company's HR director. Because the team represented a novel structure in the organisation, corporate management felt it would be an interesting subject to study, and possibly transfer some of its "best practices" to other parts of the organisation. The team leader was initially very protective of the team and strongly opposed my presence. I was eventually allowed to observe and interview the team after I had delivered a presentation about myself and my work to the entire team and they had had the chance to question me. The logic behind this was "we observe you first, then you can come and observe us". My presentation was well received in the team, after which all of the team members – including the team leader – were positive about my presence and requested that I observe one of their development efforts as a participant observer. Ultimately, however, organisational changes that affected the team's timetables and structure made it impossible for me to conduct this observation.

During my data collection at Measurement Inc., I was struck by the immediateness of the idea development praxis. Although I had expected development work to be dynamic, I was surprised by how dynamic it was. Virtually all genuine ideation and idea development happened on an ad-hoc basis between whoever happened to be present. Even scheduled brainstorms were perceived as being too formal for genuine ideation. An ideator would gather the group together by shouting in the team corridor and anyone who was interested would come and discuss the idea. Or the ideators would walk into someone's office and start talking about it. There was no meta-discussion of "I have this idea, when would you have time to discuss it with me?" Similarly, the people who did not happen to be at the office at that time were not contacted. Another thing that struck me in relation to this observation was that it was in no way reflected in the formal structures and tools of the team. The structure and the idea of the team itself seemed innovative, but the way in which the team members were guided within this structure did not seem to support their innovativeness. Therefore, my interest again gravitated towards the question of "why is the management unable to support this activity – even with such innovative structures?" rather than studying the best practices of the team, as first suggested by the HR director.

The contact person at Construction Inc. was, again, a member of corporate management who worked to improve the company's innovativeness. In this organisation I struggled for long to identify teams which I could study in a similar way than in the first two organisations. However, teams did not seem to be a central structure for idea development activity. I observed groups that came together once, or maybe twice, and never met again. This seemed to be a normal policy in the organisation as people did belong to certain functions and functional groupings, but these did not seem to be relevant for their work. I proceeded to conduct interviews using a snowball method, starting with a few people that my contact person knew had developed ideas recently and then asking them who they develop their ideas with. This allowed me to understand that the collaboration structure of the organisation was dyadic and that ideas proceeded from one person to another, rather than being developed within a group of relevant individuals, which seemed to be the case in the other two organisations. The dyadic relationships were not defined by the

functional structure of the organisation, but were instead built on common history between the individuals.

In addition to the dyadic structure of interaction itself, I was struck by the private nature of the idea development efforts. The organisational members shared their vague and/or radical ideas with the individuals they trusted the most, rather than seeking the people with the most appropriate expertise or greatest power. Therefore, sharing an idea with a trusted person seemed to be more important than tactically pushing the idea forward in the organisation or improving its factual base. A notable feature of the two large ideation workshops I observed was that attendees would not push their ideas, especially the radical ones. I observed an individual who started a group session with a high degree of enthusiasm but, having realised that his perspective differed from that of the other group members, started to present his ideas half-jokingly. When the other group members would laugh these ideas off, the ideator would not insist but would bring the idea up again later in an even less serious tone. These observations at Construction Inc. showed me the private and delicate side of idea development and further led me to wonder why, considering this nature of the praxis, the management insisted on implementing tools that required the idea to be visible to the decision makers and management at once and gave the ideator little control over the idea (alterations, redrawing, adding others) once it was submitted to the system.

As the above observations suggest, my attention was quickly drawn in all three cases to the multiplicity of tensions in relation to how idea development activity was presented and conducted in different situations, by different people and in different arenas. Where these tensions originated and how they influenced idea development activity was not clear from the start. However, it soon became obvious that in order to understand the origins of these tensions, it would be necessary to better understand the actual praxis of idea development. Although my reading of the extant research on innovation had informed me of the inherently tensioned nature of idea development, I was surprised how strongly they presented themselves in the everyday praxis, not just between the old and the new but between how innovation was supposed to occur and how it seemed to occur. Moreover, I not only found these tensions inside my empirical materials, but also between what I was noticing in my case studies and what I was

reading from the literature. Therefore, it seemed that investigating the praxis of idea development and the related tensions would be both interesting and meaningful as it could provide the necessary means with which to tolerate, understand and support idea development.

3.2.2 Data Collection and Analysis

The focus on understanding the praxis of idea development has required the kind of data collection methods that allow for a close inspection of the details of organisational life. The primary means of data collection have been in-depth, thematic interviews (e.g., Silverman, 2000), supported by group observation (Emerson et al., 2001; Hammersley and Atkinsson, 2007). At the beginning of the study, I conducted interviews that were more generalist in nature, in order to familiarise myself with the organisational context. I started by asking about the interviewee's work, their social setting, as well as their team and how it related to the wider organisation. These general interviews also touched upon the perceptions of innovativeness, its enablers and the ways in which innovative behaviour is present in the interviewees' work praxis. In an attempt to prioritise action in these interviews, I paid particular attention in my questioning to the way in which the discussed topics (such as the importance of innovativeness or rigidity of work procedures) were displayed in the everyday work of the interviewees and asked them to give me recent examples of situations where issues they had discussed had been displayed. After this, group observations were undertaken in ideation sessions in two of the three case companies (Process Inc. and Constructions Inc.). Observation was also planned to be conducted at Measurement Inc. However, due to organisational changes that restructured the setting identified for observation, the permission was eventually withdrawn. I conducted the observations as a peripheral member (Adler and Adler, 1994) and with some prior knowledge from the previous interviews and theory, but without a set framework. In the observations, I paid attention to the material and discursive elements of the group situations following the pragmatist philosophy and its request for connecting the material, and discursive elements. I recorded the discussion, which allowed me to use my own notes to record the spatial arrangements of the participants, their physical postures and expressions, and my own sensations of the group atmosphere at various points in time. At Process Inc., where I conducted the most extensive observations, I also interviewed the group members after the

ideation sessions in order to better understand what I had seen in the group sessions. I asked about the group sessions on a general level and also asked about their interpretations of specific incidents that had struck me as particularly interesting or had left me puzzled. I found this part of the research process particularly useful for learning about how the things that the organisational actors had described in their interviews portrayed themselves in everyday praxis.

Towards the end of the empirical research, I focused on examining specific idea tracks; that is the cultivation of ideas into technological development concepts. These idea tracks were mainly studied by way of retrospective interviews. These were used due to the challenges in accessing ongoing innovation efforts and also because of the possibilities of investigating both successful and unsuccessful idea tracks. Although my primary aim has not been to evaluate the success of different forms of idea development praxis, this set-up has given my analysis on their use more depth.

Although the use of interviews and retrospective studies is considered appropriate for examining innovation processes (Van de Ven and Rogers, 1988), these have not been regarded as optimal ways to examine the detailed praxis of organisations (Jansen et al., 2003). I have recognised this deficiency of my data collection method with regards to these idea tracks and sought to overcome it in five ways. Firstly, I paid particular attention to detail and context while conducting the interviews. After letting interviewees freely voice the narrative of the idea development effort, I went through the idea track with the interviewee, focusing on the details of the praxis at all stages as well as enquiring of the different constituents of practice. Secondly, as mentioned above, the interviews were complemented with group observations in two of the three case companies. These observations provided me with an understanding of how the actors' presented, commented and developed ideas; that is, their idea development praxis. Thirdly, because the idea tracks represented recent developments, they were fresh in the memory of the informants, which is perceived as helping the accuracy of the information provided (Jansen et al., 2003). Fourthly, I interviewed several individuals from each idea track. This approach allowed for multiple perspectives on the development story, which made it possible to achieve a more complete picture of the

development of the idea (Van de Ven and Rogers, 1988). Fifthly, during the research process I was actively involved with the studied organisations, which gave me greater insight into their everyday reality. The preliminary results of the research were discussed with the informants in various workshops, meetings and informal discussions. This has provided me with a more complete understanding of the context of case organisations, as well as with additional insights to my data analysis. This also responds to the request of involving practitioners/informants to the research process more as collaborators than simply as subjects of study (Tranfield and Starkey, 1998).

Table 5 summarizes the details of my data collection.

Table 5: Details of data collection

Organisation	Informants	No. of interviews	Of which managers	Of which females	No. of group observations	Observation hrs.
Process Inc.	Engineers. Metallurgy experts.	33	3	3	5	13
Measurement Inc.	Engineers. Experts of various technology domains.	14	3	2		
Construction Inc.	Engineers. Experts in various development tasks.	14	3	1	2	16
		61	9	6	7	29

As is the case in a lot of explorative qualitative research, the analysis process was iterative, overlapping with the data collection process and intertwined with the creation of the theoretical framework (Eisenhardt, 1989). The analysis, therefore, followed an abductive line of reasoning (Dubois and Gadde, 2002). When I entered the field, I had already established a preliminary understanding of the phenomenon, which I used to make sense of the events I encountered in the field. However, the observations I made in the field brought forward topics and perspectives that required me to reconstruct my theoretical frame of reference. Much like the idea development praxis I had studied, my own research process included periods of ambiguity, uncertainty and clarity in iterative cycles. Simultaneous analysis with data collection was necessary in order to maintain the developing insight and to focus my attention on the most

meaningful questions, from the perspective of both extending the current theoretical understanding and making sense out of the empirical phenomenon.

While the above activity could be labelled as a preliminary analysis (Yli-Kauhaluoma, 2008), the second stage in the analysis of the data included four separate rounds of thematic analysis (one for each of the articles in this dissertation). Within each of these points of in-depth analysis, two distinct cycles of analysis were conducted. The first cycle used an inductive approach (Eriksson and Kovalainen, 2008) and I immersed myself in the data with the intention of understanding the key themes that it revealed. At this stage, I conducted coding using in-vivo codes (Coffey and Atkinson, 1996); in other words, coding was conducted entirely based on the empirical data. At this stage I closely read through the transcriptions (of interviews and/or observations depending on the article) and marked sections that seemed relevant for my research question with a word or a sentence that I felt best captured the essence of the section (for example, "calls a colleague to share an idea" or "team must maintain a united front in a formal meeting"). After having done this, I went through all the codes and grouped together the codes that were connected to each other and seemed to be a part of a larger category. In other words, the coding process proceeded from open codes towards axial coding (Strauss and Corbin, 1990; Vandenboch et al., 2006), which yielded a group of central themes to be explored further. These themes were then compared with the preliminary theoretical framework, which was revised accordingly. In the second round of analysis, a more theory-driven analysis was conducted according to the revised theoretical frame. Thus, while the empirical materials were allowed to talk freely in the first reading, in the second round the theory made the empirical data speak (Silverman, 2000). In essays A, C and D, the analysis was more heavily weighted on the second round, while the approach was heavily inductive in essay B.

I have ensured the credibility of my research through data triangulation; that is, by combining different data collection methods (interviews and observations), collecting multiple individuals' accounts of inspected incidents, and discussing my results with members of the studied organisations. Transferability was ensured by gathering data from three different organisations and focusing on their individual contexts when

interpreting the results. The results presented in this dissertation appeared in each of the three cases and across most of the idea tracks (and in examples provided by the interviewees), which means that they appear to be relatively transferable across contexts. Despite efforts to ensure the credibility and transferability of the research, there are certain limitations that should be noted, both in relation to the method and empirical materials. The credibility of the research would have been improved by including more real-time observations of the idea tracks. Although this was not possible in the present case, I have explained how I attempted to overcome this challenge. The transferability of the research could have been even better if the organisations studied had been located in different national or cultural contexts. Furthermore, closer analysis of the cultural and contextual issues at play in the observed events could have improved the translation of these results to different contexts. Both of these issues raise interesting avenues for further research and are discussed further in chapter 5.4.

4. Four Studies on Idea Development in Technology Organisations

This dissertation examines the collaborative praxis of idea development and its inhibitors in the front end of innovation. The dissertation consists of four essays, each of which represents a different perspective to the examination of this phenomenon. Essay A examines the discrepancies between the everyday praxis of idea development and the structures of innovation management, as well as how these discrepancies inhibit idea development. Essay B sheds more light on the informal praxis of idea development by describing how idea promotion is conducted and the subtle ways it takes in order to be accepted in the organisation. Essay C pays closer attention to the ideation phase and examines the practices that inhibit the generation of radical ideas in group settings. Finally, essay D returns to the structural level and discusses the effects of rewarding policies on innovativeness.

The order of essays is chosen based on their role in presenting different sides of the studied phenomenon. It is important to provide the reader with a clear and logical thematic progression so that the contribution the dissertation makes to the phenomenon at hand comes across as clearly as possible. Hence, the order of the essays is not chronological. The chronological order of the articles is D, C, A, B. The progression of the research process and the way each article relates to its different stages is discussed in subchapter 5.4: Epilogue.

4.1 Essay A: Discrepancies between the Formal Support Structures and Collaborative Praxis in the Front End of Innovation

This first essay examines the collaborative praxis of idea development and, more specifically, how the formal structures of innovation management fail to support it.

Innovativeness and collaboration have mostly been discussed in terms of team cultures and characteristics (e.g., Anderson and West, 1998; King and Anderson, 1990), network relations (e.g., Ahuja, 2000; Hansen, 1999) and success factors of collaboration between different functions (e.g., Dougherty, 1992). However, there has been little examination of what people do together and the collective activities that are central for the birth and development of ideas. While the literature on innovative behaviour (e.g., West and Farr, 1989; Kleysen and Street, 2001) has provided valuable understanding of activities that are central for idea development, it has assumed the perspective of the individual rather than the collective. There is, thus, a clear gap in the extant literature in terms of understanding the collaborative development of ideas in the level of everyday activities. Hargadon and Bechky (2006), however, have distinguished four categories of interactive activities that precipitate moments of collective creativity. These four categories are help-seeking, help-giving, reflective reframing and reinforcement. These categories are used to conceptualise collaborative in idea development in the study.[16] In digging deeper into the collaborative activities of innovation, practice approach is utilized (following Schatzki, 2006; Whittington, 2006; Reckwitz, 2002). Brown and Duguid (1991) have discussed how formalised, or 'canonical', practices can create barriers to the flow of non-canonical praxis in relation to learning and innovation. They concluded that the official structures often rely on vague abstractions of the actual praxis, which renders them unable to support it.

The findings of the study indicate that the formal structures are, indeed, decoupled from the collaborative praxis of innovation and even inhibit help-seeking, help-giving and reflective reframing activities. The main problems in relation to help-seeking and help-giving interaction are time lags, impersonality and the fact that the official processes often disconnect the idea from the original problem. While help-giving and help-seeking interaction is still a natural part of everyday praxis, reflective reframing is clearly more challenging, in all respects. The official processes offer little room in which to bring unclear thoughts to the fore as they are met with decision points and evaluation criteria. Re-evaluating positions that have

[16] The study recognises the possible differences between collaborative activities in reference to creativity and innovativeness and pays attention to the possible discrepancies while using the framework in the analysis.

been assumed and decisions that have been made is perceived as a sign of weakness, which results in a tendency to reject uncertain ideas and the lost possibility to reform one's perspectives when they are met with new understanding. Fundamentally, the idea management processes that are currently popular are used to offer a channel for individual ideators to enter their ideas to organisational decision making processes. There is no room in these systems for collaborative idea construction, u-turns or ambiguity; if these do occur, they are perceived as a liability rather than an opportunity.

These findings have four main theoretical implications. Firstly, the study complements the work of Hargadon and Bechky (2006) through a detailed examination of the limitations of formal structures in relation to supporting the help-giving, help-seeking and reflective reframing activities. The study highlights the role of reflective reframing as a challenging yet motivationally important activity for innovation. Secondly, the results indicate a tension between the collaborative praxis and the canonical practices related to understanding innovation in organisations. The canonical practices act as mediators of instrumental rationality (compare with Brown and Duguid, 1991) whereas the collaborative praxis of innovation values intuition and passion. Thirdly, the results of this study add to the existing criticism (e.g., Kijkuit and van den Ende, 2007; King and Anderson, 2002) of the traditional activity-stage models of innovation (cf. Cooper, 1988; Nobelius and Trygg, 2002) by showing how the use of these models can actually create barriers to innovation efforts. Finally, the study contributes to the discussion of the interplay between canonical and non-canonical practices of innovation (e.g., Brown and Duguid, 1991; Dougherty, 1992) by specifying how they are decoupled from or in conflict with each other. The results of the study add a caution to the request of Brown and Duguid (1991) to give the communities of practice freedom and autonomy from organisational control. While this is a sensible recommendation, it can cause the informal praxis to go unnoticed and unsupported. The question, therefore, would be how to recognise the collaborative praxis in the canonical practices of the organisation without attempting to regulate it.

4.2 Essay B: Smuggler's Guide to Innovation – the Subtle Side of Championing in the Front end of Innovation

The second essay adds to the understanding of the informal praxis of idea development by identifying subtle ways of promoting ideas within an organisation. These practices take place outside the formal structures of the organisation and sometimes even because of them. Thus, the second essay continues the theme of the decoupling of canonical and non-canonical practices, while the focus of the examination is brought to the side of the informal praxis.

Champions have traditionally been described as assertive risk-takers who use any means of persuasion to have their idea accepted in the organisation (Schön, 1963; Markham et al., 1991). They have also been described as persistent individuals who are not discouraged by resistance (Howell et al., 2005) or negative outcomes (Garud and Van de Ven, 1992). Instead of examining the characteristics of successful champions, this second essay has focused on the championing praxis; that is, the ways in which champions aim to take their idea through the organisation. While the extant literature has emphasised the activities of justifying ideas (Howell and Boies, 2004), providing resources (Markham et al., 2010; Markham and Ayman-Smith, 2001; Burgelman, 1983) and building coalitions (Howell et al., 2005; Howell and Higgins, 1990; Kanter, 1988), essay B pays attention to the more subtle sides of championing. The clandestine side of resource procurement has been recognised by, for example, Burgelman (1983), Howell (2005), Augsdorfer (2005) and Koch and Leitner (2008), who argued that it can be necessary to conceal the ideas before their feasibility has been proven, in order to keep the idea alive during the ambiguous phases of its development. This need is especially highlighted in the front end of innovation (Koch and Leitner, 2008; Markham et al., 2010). Dutton et al. (2001) and Hargadon and Douglas (2001) further argued that embedding the idea to the current context is an important part of having it accepted in the organisation.

The results of the study suggest that the subtle championing activities play an important role in the front end of innovation. Champions engage in various practices to soften the collision between the status quo and the new idea, in order to gain acceptance for it in the organisation. These practices are more varied than the clandestine activities recognised in the existing literature (c.f., Burgelman, 1983; Augsdorfer, 2005). Essay B refers to these as ‘smuggling practices’, a term that refers to all activities by which

champions aim to take ideas through organisations without being particularly assertive or visible in their efforts. The smuggling practices that have been found to be particularly important for championing in the front end of innovation are: involving others in constructing the idea, having patience in getting one's ideas heard, hiding ideas from formal arenas, enforcing a fit to the current context, creating external pressure and softening decision-making situations.

These results have three important theoretical implications. Firstly, the study does not portray champions as the strategic visionaries like the extant literature does (c.f., Howell and Boies, 2004; Markham, 2000). Instead, the champions act within the limits of current strategies and justify their ideas through their fit with current strategies and technical feasibility, as opposed to their potential for organisational renewal. In this way, the present study challenges the notion of champions as assertive and visible strategic actors – at least in the front end of innovation. Secondly, the study presents champions as collaborative actors who include others as co-developers and co-champions instead of just persuading others to follow their lead (e.g., Howell et al., 2005; Kanter, 1988). Champions are traditionally perceived as exceptionally confident and assertive, the very qualities that have been perceived as convincing other organisational actors to follow their vision (Howell and Higgins, 1990). However, the results of the present study indicate that champions can and need to disclose the open questions, and even uncertainty, to others so that they can have a sense of contribution and ownership. Finally, and most importantly, the study complements the current understanding of championing practices by identifying how champions smuggle their ideas through organisations. In this way, the subtle, situational sides of championing activity presented in this paper complement the current image of assertive champions in important ways.

4.3 Essay C: Barriers and Obstructive Practices for Out-of-the-Box Creativity in Groups

The third essay focuses on examining the barriers for the creation and development of radical ideas. While the previous two essays have examined the informal praxis of organisational actors in relation to the formal structures of the organisation, this essay discusses the micro-level activities with which group members respond to each other's ideas. Essay C thus

allows for a closer inspection into the praxis with which ideas are developed collaboratively. The article focuses especially on obstructive practices; that is, the ways in which the group members either intentionally or unintentionally hamper the development of radical ideas.

The previous literature has not devoted much attention to the birth of radical ideas and the definition of out-of-the-box creativity as a concept. In order to fill this gap and to create a conceptual foundation for the examination of barriers to out-of-the-box creativity, essay C presents a definition of out-of-the-box creativity. Using Unsworth's (2001) and Kaufmann's (2004) conceptualisation of the different types of creativity as a basis, out-of-the-box creativity is defined as *"the kind of creative act that produces novel answers to previously unidentified open-ended problems (opportunities) or restructures and challenges familiar problems (tasks) by generating distinctively novel perspectives and solutions"* (pp.224). Since creativity has mostly been examined as a unitary construct (Unsworth, 2001), not a lot of work has examined the antecedents of out-of-the-box creativity, although several studies have investigated the supporting factors for creativity in general (e.g., Barrett, 1998; Oldham and Cummings, 1996; Amabile et al., 1996; Amabile, 1988). On the other hand, the radical innovation literature has focused on the later stages of the innovation process as opposed to the birth of radical ideas. By combining the understanding presented in these two separate fields, I have formulated four central antecedents for out-of-the-box creativity. These antecedents are presented in Figure 10.

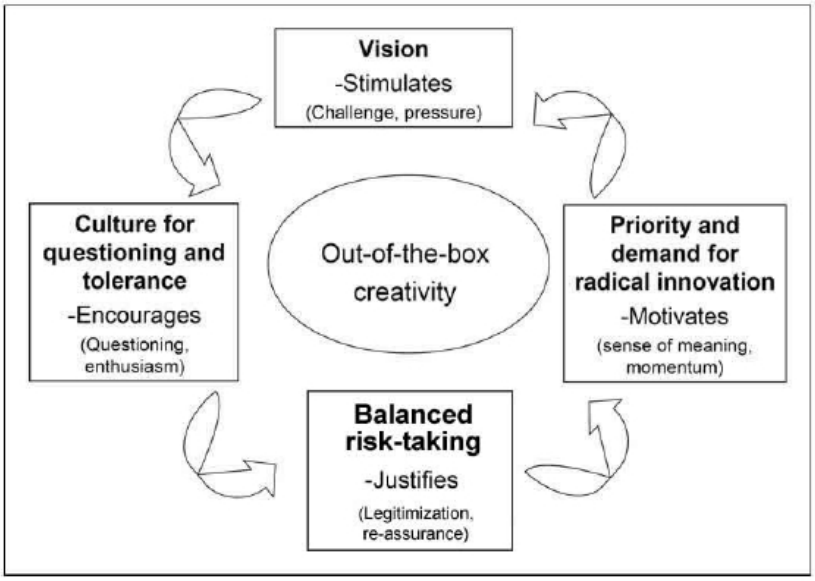

Figure 10: The four antecedents for out-of-the-box creativity

The findings of the essay present inhibiting factors and practices related to the realisation of the above-mentioned antecedents in group ideation. The essay's primary emphasis is to examine how the inhibitors are created in the praxis of the group; that is, how the micro-practices of the group members obstruct the realisation of the antecedents for out-of-the-box creativity. Table 6 presents the obstructive practices in relation to each antecedent.

Table 6: The antecedents for out-of-the-box creativity and related obstructive practices

Antecedent category	Related obstructive practices
Vision	Treating radical ideas as jokes, mistaking out-of-the-box ideation for a team building exercise, not linking out-of-the-box ideation to strategic vision
Culture of questioning and tolerance	Silencing ideas: creating a disturbance, lack of concentration, not stating one's opinion of the idea, superficially acknowledging the idea while directing attention away from it
Balanced risk-taking	Demanding proof and docusing on technical details at a very early stage of ideation, concentrating on feasibility and testing, highlighting the need for solutions to immediate problems
Priority and demand	Ideation sessions as an end unto themselves → ideas not being

for radical innovation acted on (and possibly being recalled as failed in the future)

Essay C contributes to the current understanding in three central ways. Firstly, it deepens the current understanding of the different types of creativity by examining the foundations and antecedents of out-of-the-box creativity. Secondly, it helps bridge creativity and innovation literature by examining out-of-the-box creativity as a part of radical innovation process. This perspective and the results of the study highlight the importance of acting on ideas rather than treating their generation as an end result. This is not only necessary for the effective utilisation of ideas in the organisation, but also for the motivation of the ideators. If ideas are not acted on, organisational actors are less motivated to voice their ideas because they know they will most likely be forgotten. More specifically and more conversely, the very practice of organising ideation sessions can have negative influences on innovativeness. They can consume resources, create frustration and make ideas seem 'used' if they are not combined with the willingness and ability to act on the generated ideas. Finally, the essay identifies practices that inhibit the realisation of the antecedents of out-of-the-box creativity. This generates in-depth and actionable understanding of the ways in which the birth of radical ideas can be enhanced in an organisation.

4.4 Essay D: Invention Rewards and Innovativeness – A Case Study

The fourth essay returns the focus to the structural level and examines the influence of monetary rewards for innovativeness. While monetary rewards are not favoured in creativity or innovation research (e.g., Amabile et al., 1996) they are still the dominant compensation method in organisations and are also used for incentivising innovation activities. The motivation for this article stems from study of the influences that this disputed rewarding method has on innovativeness.

It can be difficult to measure, reward and manage innovative activity due to its unpredictable nature and the importance of intrinsic motivation (Amabile, 1988), as opposed to external incentives. This is why attention is directed towards developing the antecedents of innovative work

environments that act as indirect motivators by supporting intrinsic motivation. This article provides an overview the antecedents of both creativity and innovativeness (e.g. Scott & Bruce, 1994; de Jong & den Hartog, 2007; Woodman et al., 1993; Amabile et al., 1988, 1996; Huhtala & Parcefall, 2007; West & Farr, 1989). In addition, the article summarises the antecedents presented in the extant literature into the six categories:

1. A vision or goal to set direction
2. Challenging tasks to energise and motivate
3. Freedom to choose how to innovate
4. A group of people to innovate with
5. Supportive culture: feeling of safety, support and the right to fail
6. Concrete support from supervisor and management, such as time, resources and recognition

The findings of the study discuss how monetary reward policies aim to support the above antecedent categories or, more specifically, how they fail in that attempt. The challenges in the ability of the reward policies to guide innovation activities into a desired direction stemmed mainly from the lack of mindfulness (Hargadon and Behcky, 2006) when designing rewarding policies. This caused discrepancies between management vision and the steering effect of the reward policies. For example, management wanted to encourage the creation of a wide variety of ideas from all organisation members, but kept focusing the measurement and reward policies on patentable ideas and patents. Further, while the importance of innovativeness was actively communicated, its meaning was never discussed, which led to the concept being perceived differently in different parts of the organisation. Similarly, while management considered collaboration to be an important value in the organisation, reward sums were divided among participants and no extra incentives were given for collaboration. Finally, while the company hoped for radical ideas from employees, the rewards were geared towards pre-determined targets, which were only renewed once yearly. Risk taking was not profitable because, even though it could create unexpected benefits for the company, it would also result in the loss of personal bonuses.

These results relate and contribute to the extant theories in the following ways. Firstly, the results highlight the meaning of contingency thinking in rewarding innovativeness and complement the findings of e.g. Lawler,

(1996), Balkin and Montemayor (2000), Heneman et al. (2000) by indicating that a fit between rewarding policies and other organisational action should exist even at the conceptual level, i.e. in the level of understanding what is meant with innovation and how it is portrayed in the work practice of organisational actors. It is difficult to take the social construction of creativity and innovativeness (e.g., Csikszentmihalyi, 1990) into account when designing rewarding and measurement policies; however, this is the only way in which management can avoid pushing an organisation into one direction with their words and another with their actions. Furthermore, the importance of understanding the power of interpretation continues in the successful implementation of the policies. The results of the essay support the notion that satisfaction with the reward amount is inherently linked to overall satisfaction with the reward policy (e.g., Cox, 2005). For example, interpreting the invention notice rewards as recognition generated higher satisfaction than interpreting the incentive system as compensation, even though the actual monetary amount was higher in the latter case. Finally, the results offer a caution for Amabile's (1983) influential model of individual creativity. While expertise in a specific domain is required for creativity, it can also seriously narrow the span of creative action by making other domains seems irrelevant, either for creativity or for one's own actions.

5. Contribution of the Research

This contribution section presents the common themes and observations from the four essays presented above. Although each essay makes its own distinct contribution to the current theoretical understanding, they all share a common underlying theme and contribute to increasing the understanding of the praxis of idea development and its inhibitors in organisations.

The chapter is divided into two sections. It starts by depicting the ways in which this dissertation contributes to the current understanding of the praxis of idea development in the front end of innovation. The second section discusses the four tensions that create challenges for supporting this praxis in organisations.

5.1 The Collaborative Praxis of Idea Development in the Front End of Innovation

This dissertation deepens the understanding of the praxis of idea development in the front end of innovation. The current literature does not provide in-depth understanding of *how* idea development activities are conducted; instead, it focuses on how such activities should be managed (the front end literature cf. Cooper, 1988; Khurana and Rosenthal, 1998) or supported by management (innovativeness literature cf. Anderson and West, 1996; de Jong and den Hartog, 2007). Practice literature, on the other hand, has taken the perspective of understanding the informal activity of organisational actors, but has not focused on the front end and the detailed activities of which it is constituted. This dissertation takes an important step towards closing a gap in the extant literature by providing in-depth understanding of how ideas are developed in the front end of innovation. The extant literature has given little attention to idea

development (Csikszentmihalyi, 1996) thus far because it has been situated in a "no-man's land" between creativity and innovation research (Mainemelis, 2010; Ford, 2000). The ways in which this dissertation advances the current understanding in this overlooked area are embedded in the descriptions of the idea development praxis presented in the essays. This makes it challenging to summarise the contribution of the dissertation here in a meaningful way. I will attempt to do this by providing a few examples of how the findings of the dissertation complement and challenge the extant understanding.

Most importantly, the dissertation underlines the significance of collaboration in the praxis of idea development and provides a detailed understanding of how this collaboration occurs. While the extant literature has highlighted the importance of collaboration, both in relation to innovation in general (e.g., Van de Ven and Rogers, 1988; Dougherty, 1992b; Garud and Karnoe, 2003) and to idea development in the front end in particular (e.g., Laudel, 2001; McAdam and McClelland, 2002), there has been little examination of how this collaboration is actually conducted. Besides Hargadon and Bechky (2006)'s framework of help-seeking, help-giving and reflective reframing activities, along with Brown and Duguid's (1991) and Orr (1990) notions on storytelling, studies into how people actually conduct collaborative innovation are practically non-existent. The results of this dissertation help close this knowledge gap by generating insights into how people seek out collaborators, how they interact together and how the necessary momentum is maintained in the collaborative effort. The results of the dissertation suggest that the collaborative praxis of idea development is even more spontaneous and centred around immediate and convenient availability – as opposed to, for example, superior expertise – than the extant research has indicated (e.g., Hargadon and Bechky, 2006; Koen et al., 2001; Koch and Leitner, 2008; Griffin et al., 2007).

Another important way in which this dissertation advances the understanding of the praxis of idea development in the front end of innovation is by examining how ideas are developed outside the formal channels of organisations. While several authors (cf. Koen et al., 2001; Koch and Leitner, 2008; Kanter, 1988; Hargadon and Bechky, 2006) have recognised the importance of informal interaction for the creation and development of ideas, again, few detailed accounts exist regarding how this

actually happens. The results of this dissertation emphasise the importance of subtle ways of advancing ideas when manoeuvring outside the formal arenas of an organisation. The results indicate that a central part of the praxis is making compromises to one's vision in order to gain acceptance, and even smuggling ideas through the organisation. Smuggling ideas includes presenting the idea in incremental pieces or as reversible options, hiding it from view, enforcing the idea's fit to the current context, or backing it up with pressure from customers. These findings offer some much-needed understanding regarding how and why ideas are hidden from view (an activity mentioned but not elaborated by, e.g., Koch and Leitner, 2008; Burgelman, 1983 and Brown and Duguid, 1991) and they challenge the prominent notion of informal idea champions as assertive heroes of the innovation process (cf. Schön, 1963; Markham et al., 1991).

Finally, the extant literature has primarily discussed idea evaluation and selection through formal selection criteria that have been utilised by managers or review boards (e.g., Cooper, 1988; Khurana and Rosenthal, 1998; Kanter, 1988). However, the present dissertation indicates that ideas are evaluated against current customer needs, feasibility and the current strategic direction (all common idea selection criteria) at the ideation stage by the ideators themselves. This indicates that the effect of evaluation criteria is actually much stronger than has been previously understood. These criteria form the boundaries of work and expertise domains of product innovators and exclude, at a very early stage, ideas and activities that fall outside this legitimate space. Furthermore, the opportunity to present the idea in material form (including sketches, calculations, prototypes, etc.) further defines the area of possible action and acts as a condition for the decision to start developing an idea. The centrality of material objects is pointed out as an essential part of product development (cf. Carlile, 2002; Behcky, 2003; Garuda and Karunakaran, 2011) but there has been little discussion of its influence in dismissing ideas that cannot be presented in these terms. These observations shed particular light on how radical and non-technological ideas are excluded from innovation praxis at very early stages.

5.2 Tensions that Hinder Idea Development Praxis in the Front End of Innovation

In addition to providing deeper understanding of the praxis of idea development, the articles included in this dissertation have all contributed to new insights into the tensioned nature of this praxis. Innovation activity has been recognised as being inherently tensioned (e.g., Janssen, 2004) and the extant literature has discussed tensions between, for example, exploration and exploitation (March, 1991), service and technology development (Fuglsang and Sundbo, 2005) and high-end technologies and disruptive solutions (Christensen, 2000). In addition, Andriopoulos and Lewis (2009) recognised the three following paradoxes of innovation in organisations: the paradox of strategic intent (profit vs. breakthrough), the paradox of customer orientation (tight and loose coupling) and the paradox of personal drivers (passion vs. discipline). However, these discussions have remained on a strategic level, which means they have had less (explicit) contact with the everyday praxis of organisational actors. This is where this dissertation deepens the extant understanding. The tensions put forward here also contribute to the discussion on the discrepancies between the canonical and non-canonical practices in organisations (e.g., Brown and Duguid, 1991; Orr, 1990). While the extant discussion has noted the existence of these discrepancies, the present dissertation delves deeper into understanding why and how the discrepancies are born in the interactions of organisational actors. In an attempt to bring more depth to the examination of the tensions from this perspective, Goffman's (1959) concepts of the front stage and the back stage (explicated in subchapter 5.2.1) have been utilised here. Although the four essays have not used these concepts, they summarise the common theme of the four articles in relation to the tensioned nature of idea development praxis and its inhibitors in organisations. I have chosen to introduce these concepts at this point (even at the risk of confusing the reader) because I believe that it has allowed me to discuss the contribution the essays make to the above themes more insightfully and coherently than would have otherwise been possible.

Importantly, the tensions between the back stage and the front stage identified in this research contribute to an understanding of why supporting idea development in organisations can be so challenging. A multitude of inhibitors and antecedents for idea development have been put forward in research into innovativeness (e.g., Kanter, 1988), the front end of innovation (e.g., Khurana and Rosenthal, 1998) and innovation praxis (e.g., Dougherty and Heller, 1994). Despite this valuable knowledge,

however, practitioners and researchers are still puzzled as to why it is so demanding to act on this information. The four tensions presented below aim to shed light on that question.

For reasons of clarity and readability, this section is divided into three parts. The first part provides a brief discussion of Goffman's (1959) concepts of the front stage and back stage and explicates how I apply these concepts to the context of idea development. The second part describes the four tensions between the front and back stages of idea development, before the third part discusses their theoretical contribution.

5.2.1 The Front Stage and Back Stage of Innovation

In order to explicate the four tensions and their contributions to the current theoretical understanding, it is necessary to provide a brief description of the concepts of the back and front stages. These concepts were introduced by sociologist Erwin Goffman in his book "The Presentation of Self in Everyday Life" (1959), in which he presented a particularly insightful analysis of how an individual (group) aims to guide others' impression of him by presenting himself and his actions in a certain, socially acceptable way. Goffman used dramaturgical metaphors to examine the interactions of individuals and groups. He wrote of "performance" in relation to the activities that an organisational actor undertook in order to influence other actors. This influencing could be verbal or non-verbal, intentional or unintentional, or a combination of any of these elements. It is even possible to engage in deceptive communication unintentionally (having internalised the show one is performing) or intentionally but unwillingly (for example, following the traditions of a group). Teams are essential for putting together the performances, and the different sides of performances often consist of teams rather than individuals.

Goffman used the concept of front stage (or the "front") to refer to the part of the performance that is used to define the particular situation for the participants in a manner that is perceived as socially appropriate for those involved. Accordingly, it is centrally important in the front stage to be able to give a particular impression to the others involved, which maintains the delicate balance of the social play. The back stage (or "back") involves actions that are hidden from the front stage. In the back stage, the impressions given in the front can be knowingly challenged and let go of;

the performers can relax their roles and give way to a freer form of interaction. In short, the front stage includes formal conduct, while the back stage incorporates familiar behaviour. Whereas the front is usually well-prepared and "tidy", the back can be messy and homely. Both stages are inherently interlinked and, despite being tensioned, they are also defined in relation to one another.

In this research I use the front stage to refer to the formal arenas and formal discourse of innovation in organisation (e.g. formal meetings, tools, processes and managerial talk) while the back stage refers to the informal praxis of idea development. The front stage creates the fundaments upon which the managerial models of innovation are created, draws the boundaries for the managerial discussion on innovativeness and its enablers in organisations, and forms the common ground for the ways in which ideas are discussed between innovators and management. The front-stage includes the canonical practices discussed by Brown and Duguid (1991) but is a more extensive concept built on socially formed understanding of what should be enclosed in public spheres of organisations and how this should be done. The group of people included in the front stage and the back stage is neither stable nor completely separated from those with whom it shares the front stage. Some individuals (such as supervisors) can be included in the back stage in some situations (such as informal social occasions), while the interaction at other times would be confined to the front stage performance.

I have made a further division of performance regions into the private back and front stages, in order to clarify the different levels of the performance when discussing the tensions related to idea development praxis. The private back stage is more confined than the common back stage and is only shared with those colleagues with whom an ideator shares mutual respect and trust. These are usually long-term friends with whom the ideator has developed a strong mutual understanding and harmonic interaction. In the private back stage, an individual can be freed of the limitations of so-called professional conduct and can portray enthusiasm, frustration and uncertainty. On the other hand, the private front stage includes the role expectations that a technology expert encounters, even when interacting informally with his peers. The private front stage includes the portrayal of confidence, technical excellence (in terms of, for example,

presenting technologically feasible ideas) and emotionally neutral out-take towards organisational events.

All of the regions presented above interact with each other and are defined in relation to each other. This means that organisational actors and ideas are both included in performances in all four stages. The development of an idea can advance from the private back stage towards the common front stage or it can gravitate between the different stages according to need. It should be noted that even though one of the stages would be the dominant region for the performance, the front and back stages are both present simultaneously, and ideas exist (albeit in a different form) simultaneously in the different regions.

This dissertation now turns its attention to the four tensions between the front stage and back stage of innovation identified in the study. Each of these four tensions presents a perspective into how the inherent ideals of the front stage and the back stage differ and how this is portrayed in everyday praxis.

5.2.2 Description of the Four Tensions

The first tension is the **Process Tension**, who is rooted in the discrepancy between the front-stage perception of how ideas should progress and how they are actually developed in the back stage. The back-stage praxis includes cyclicality, trial-and-error and spontaneous reaction to emerging opportunities. Surprises, unknowns and drawbacks are a natural part of idea development, as is the unpredictability of the result of this process. The front stage, however, is dominated by a conception that – despite the unfortunate messiness of innovation praxis – clarity, predictability and linearity are the features of an optimal innovation process. The formal processes of innovation management are thus constructed to collect clearly formulated ideas and guide them through a well-defined, logically progressing refinement process. Although the front stage does include a shared understanding of the fact that these ideals fit poorly with current reality, this is perceived as being caused by the deficiencies in the current praxis, which management strives to overcome with the help of the rigorous structures and tools of innovation management.

Some features of the praxis can only be revealed in the private back stage among trusted individuals. Here, the uncertain and ambiguous nature of the praxis can be shared. Ideators can voice their vague hunches because it is understood that ideas develop through multiple iterations in collaborative interaction with others. The first voicing of the idea, therefore, is not expected to be representative of the full capacity of the ideator. Unlike in the private front stage, the expertise or intelligence of the idea presenter is not judged by the idea, and the presenter can rest assured that the interaction is based on mutual respect at the outset. The private back stage, therefore, is the most natural space for the development of radical ideas.

The second tension, the **Justification Tension**, is born from the objective assessment policies of the front stage and the situational evaluation of ideas in the back stage. More generally, the tension originates with the contradiction between the detached nature of the front stage and the situated character of the back-stage praxis. The back-stage praxis is situated and subjective in three ways. Firstly, ideas are born as a response to an emerging problem in a practitioner's work and developed as a part of this work practice. Secondly, ideas are also temporally situational, as they are often created in response to a pressing problem or a topical opportunity. Ideas are then discussed, explored and developed immediately using whatever resources are at hand at that particular time. On the other hand, ideation is seen as unpredictable in terms of how long it will take and where it will lead rather than being confined to a particular space or time. Thirdly, the way in which ideas are presented depends greatly on the individuals who are available to the ideator at that moment and the quality of interaction between them. The back-stage praxis is, then, fundamentally contextual, immediate and personal. As a consequence, ideation as a separate activity from the work praxis is perceived as somewhat artificial and formally organised ideation sessions, for example, being of little use for actual idea development.

Conversely, the discussion in the front stage is built around generalised and objectified information. The structures of innovation are constructed in order to provide ideas with a fair and objective evaluation that is not affected by personal relations or the limited perception of a particular work group. Generalised criteria are perceived to guarantee a professional

handling of the ideas and centralised review boards are believed to provide the best possible judgement of their value. Thus, the detachment of an idea from its context or creator is a natural part of an effective evaluation process. In the private front stage, any emotional or personal accounts are perceived as unprofessional, because the ideal actor in this setting is objective and rational. The reasons for advancing an idea should stem from an understanding of its value to the organisation rather than the actor's personal interest towards it. In the private back stage, however, ideas can be portrayed as being situated in the emotional context of the ideator. The emotions of enthusiasm, disappointment and frustration can be shared and interest towards an idea can arise from personal interest and curiosity.

The third tension, **Agency Tension**, is related to how the informal side of idea development and promotion is perceived in the back and front stages. As noted in chapter 5.1 the back stage praxis of idea development is subtle and often even clandestine. Idea promoters carefully sense the appropriateness of the situation, wait for the right moment and introduce their ideas gradually. They are careful not to insist too often, too long, or too strongly, so as to avoid being labelled as trouble-makers or being ridiculed. They often do not trust their ability to raise internal enthusiasm towards their ideas, but create external pressure by presenting them to customers, for example. In the front stage, however, idea advancement is perceived as an assertive and tactical effort and idea promoters are seen as visible advocates of strategic change in the organisation. This type of assertive activity is not completely absent from the backstage, but the tension derives from the fact that the front stage only includes part of the back stage (the assertive part). In the front stage, an ideator is expected to stand behind his or her idea and to justify and defend it to others. In terms of creating support for the idea, the understanding in the front stage is that if an ideator is to convince others, he or she must be certain of the value of the idea and be able to provide solutions to arising problems. Ideators should not be discouraged by setbacks and should persistently push their vision, despite possible opposition.

In the private front stage, expertise is judged based on an ideator's ability to come up with convincing solutions to problems and presenting half-baked ideas can significantly prevent the development of one's image as a capable expert. In the private back stage, then, ideators can relax their

professional cover and reveal their doubts towards the idea. This allows for the genuinely collaborative construction of the idea and the disclosure of unconventional thoughts. In the backstage generating commitment towards the idea happens through the genuine possibility to take part in constructing the idea as opposed to presenting a convincing case as is the case in the front stage. In the private back stage, the idea promoters can then feel and demonstrate uncertainty even though they are passionate about their idea.

The fourth tension, **Value Tension**, is related to how the worth of ideas is perceived in the front stage and in the back stage**.** In the back stage, ideas are created to answer pressing questions or improve the status quo, which means that the value of ideation efforts is defined in relation to whether something is actually made of the idea. Therefore, an ideation effort is valuable if it results in the idea either being implemented or proved unfeasible; in other words, if it adds to the current understanding of the possible solutions to a certain problem. Accordingly, the number of ideas, *per se*, is irrelevant for the sense of meaning and motivation experienced by the ideators.

In the front stage, however, the quantity of ideas is perceived as an indicator of the innovative capacity of the organisation. Measurement structures and reward policies are geared towards assessing the number of ideas produced, and innovativeness is commonly supported by brainstorming sessions and other means of increasing the organisation's "idea mass". In addition, different tools (such as idea management software, rewarding structures) are used to make this idea visible throughout the organisation. Accordingly, ideators are perceived as being motivated by putting forward ideas, seeing other people's ideas and discussing them. Therefore, the front stage includes the assumption that collecting and storing ideas is always beneficial for innovativeness because it increases the organisation's innovative energy. More generally, when the value of an innovation effort is assessed in the front stage, it is done though quantifiable measures. Hence, the value of idea development is measured through the quantity of ideas or the financial value of the final output, not how well or fast a certain idea was able to solve a pressing problem.

5.2.3 Theoretical Contribution of the Tensions

The tensions presented above deepen the understanding of why it is so difficult to support the praxis of idea development in organisations, despite the extant research having provided a multitude of principles for it. Firstly, the guidelines provided by the managerial approach to the front end (e.g., Cooper, 1988; 2005; Kim and Wilemon, 2002; Khurana and Rosenthal, 1998) appear to serve the front stage ideals of a clear, linear and objective process rather than supporting the iterative and ambiguous praxis of the front-end actors. Managers are actively implementing processes and tools that follow the spirit of this line of research, but the results they currently yield are disappointing. When the support structures, such as process models and idea management software, are based solely on front-stage ideals and assumptions, their ability to support the back stage praxis remains low. By perceiving ambiguity, uncertainty and iteration as deficiencies to be overcome, management drives the genuinely collaborative or radical ideas to the back regions. This forces the organisational actors to hide the potential that could be realised through a collective effort to find sense, value and clarity in the ideas. This reflective reframing activity has been found as a fundamental building block for collective creativity (Hargadon and Behcky, 2006; also *mindful interaction*, Dougherty and Takacs, 2004). It can be assumed that forcing such activity to be conducted in the private back stage significantly hinders an organisation's ability to support the innovativeness of its members. Simple brainstorming sessions (often offered as a best practice) fall short in terms of combating the assumptions of professional conduct held in the private front stage ("a part of a technology expert's expertise is to present clear and feasible solutions"), especially if this ideal is simultaneously fortified by the support structures of innovation management.

The criticism presented above resonates strongly with the current criticism of the activity-stage models of innovation (e.g. Van de Ven et al., 2008; Kijkuit and van den Ende, 2007; King and Anderson, 2002). While the activity-stage models have received widespread criticism for playing down the complex and social nature of the process, enforcing linearity and assuming (instrumental) rationality of actors (Dougherty and Corse, 1995; King and Anderson, 2002; Olin & Wickenberg, 2001; Kijkuit and van den Ende, 2007; Van de Ven et al., 1989), the ways in which these representations actually hinder the collaborative praxis of idea development have not previously been depicted on as detailed a level than

has been done in this dissertation. Also, the analysis of the front stage and its assumptions relate the activity-stage models to a larger formal discourse on innovation in organisations. In addition, the tensions presented in this dissertation provide in-depth understanding of the activities that fall outside the legitimate sphere of action defined by the front stage and thus explain some of the reasons for illegitimacy and devaluation of innovation praxis in established organisations (for previous discussion, see Dougherty and Heller, 1994; Dougherty and Corse, 1995; Brown and Duguid, 1991).

The results of the dissertation also indicate that a factor that further complicates supporting idea development in organisations is the tension between the front and back stage perception of informal actors. In the front stage, the subtle methods of idea advancement (which this dissertation has brought to the fore) are perceived as symptoms of an ineffective innovation culture rather than natural methods of idea development. However, considering this side of the praxis as a deficiency serves to de-legitimise the natural way of action for less assertive ideators, much in the same way as the linear process models de-legitimise the iterative side of the praxis. This front-stage perception of an assertive informal agent is fortified by (or reflected in) the traditional research on championing (c.f. Markham et al., 1991; Howell and Higgins, 1990; Schön, 1963), which describes idea promotion as a heroic activity conducted by strategic, risk-taking individuals. The clandestine side of idea advancement has been discussed in relation to scavenging (Burgelman, 1983), skunk works (Single and Spurgeon, 1996; Kumar et al., 2000), bootlegging (Augsdorfer, 2005, Garud et al., 2011), idea selling (e.g. Dutton et al., 2001) and innovation diffusion (Hargadon and Sutton, 2001). These studies have introduced this underground activity as an optional strategy for having ideas accepted in organisations. The current research adds to this understanding by showing, on a more detailed level, how this activity is conducted as well as providing deeper insight into its origins. Instead of perceiving subtle idea advancement as an optional strategy, the present research proposes a notion of it as an inherent (yet poorly understood) quality of the praxis of idea development.

Thirdly, the tensions presented above complement the current understanding of the discrepancies between the canonical and non-canonical practices in organisations (e.g., Brown and Duguid, 1991;

Dougherty, 1992). While the extant research has discussed how these discrepancies inhibit knowledge creation and linking activities (Dougherty, 1992; Dougherty and Heller, 1994) and collective learning processes (Brown and Duguid, 1991; Orr, 1990), their influence on idea development has not been previously discussed on a detailed level. Also, by examining the tensions between the front and back stages, the current study has shed light on the underlying assumptions that contribute to the decoupling of canonical and non-canonical practice in idea development. This dissertation has argued that the roots of the decoupling lie not just in management's inability to see the discrepancy, but deep in the front-stage ideals of their managerial domain. More specifically, this research contributes to the discussion on the detachment of organisational guidelines and evaluations from actual praxis (e.g., Dougherty and Corse, 1995; Brown and Duguid, 1991). The results of this dissertation portray the praxis of idea development as being situated in the work practice in which the idea is born, the time when it is created (and needs to be reacted to), as well as the individual who creates it. In noting the importance of temporal situationality the research resonates with Garud et al. (2011) and their notion of the importance of considering both the *kairos* (subjective time) and *chronos* (objective time). However, the evaluation practices of the front stage promote the ideals of objectivity and generalisability. Therefore, the front stage is not only detached from the praxis, but also built on the ideals of detachment.[17] Furthermore, in calling for objectivity, the front stage ideal of personal detachment pushes accounts of enthusiasm, intuition or personal interest to the private back stage, deeming them unprofessional conduct. This indicates that the detachment of organisational guidelines not only makes the guidelines irrelevant to the actual praxis, but can even detach the perceived limits of professional conduct from it.

The present study adheres to the notion that that the constraints of product innovation are rooted in how people work, as well as in management ideology (Dougherty and Heller, 1994). In this way, it has aimed to understand the inhibitors of idea development by better understanding the praxis itself. While this dissertation has not produced

[17] Paradoxically, although these ideals are rooted in a well-meaning attempt to create a "fair trial" for each idea, they can easily become more unfair and unreliable than situational decision making. This is because detaching an idea from the problem it was created to solve and from the person who created it can cause crucial elements for its evaluation to be lost.

more success factors or inhibitors, per se, it has provided an understanding of why the current success factors are both difficult to attain and conflicting. The front-end discussion (e.g., Khurana and Rosenthal, 1998; Koch and Leitner, 2008) focuses on addressing the front stage of idea development, while the formal weighting of the success factors it has produced has actually contributed to the actual praxis being pushed to the back stage. The innovation practice discussion, on the other hand, has addressed the back stage (e.g., Dougherty and Heller, 1994; Dougherty and Corse, 2005) as well as the research on innovativeness (albeit to a lesser extent)(e.g., Anderson and West, 1996; Kanter, 1988; West and Farr, 1989). Therefore, it is only natural that the different research streams produce diverging recommendations and caution for organising idea development. One step that has so far been missing, which this dissertation has attempted to take, is to make visible the fundamental differences of perspective in these different domains and make the back stage praxis more legitimate by increasing understanding of it. I believe that this understanding will make it possible to better address the inhibitors of idea development in organisations and stop focusing on polishing the front stage.

5.3 Managerial Implications

The findings of this dissertation have several managerial implications. Firstly, identifying the back stage of innovation is intended to encourage managers to seek to understand and tolerate this aspect of idea development. Management would also be well advised to critically examine the structures and tools they currently use to support innovation and evaluate whether these actually serve the praxis of idea development or whether they attempt to alter this praxis. However, this does not mean doing away with all the structures that aim to structure and direct idea development. Structure is needed in order for the freely flowing action to be effective (Feldman, 1989; Olin and Wickenberg, 2001), while tensions between the front stage and the back stage are inevitable and even necessary Nonetheless, two key factors should be kept in mind when building and implementing these support structures. Firstly, such a process should start with an understanding of what organisational actors actually do when developing their ideas. Many managers seem to think that learning this praxis would mean needing to control it, or the other way around; if one does not wish to control it, it is not necessary (or perhaps even advisable) to examine it. However, it is only from this understanding that one can decide which features of the praxis should be supported and which

call for intervention. It should also be remembered that managing innovation is not a "control problem but one of organizing a "highly complex, uncertain and probabilistic process" (Van de Ven et al., 2008, pp.59). Secondly, throughout the implementation and communication process, it should remain clear what each structures and tools is intended to do. Tools or structures that aim to transform praxis have a very different implication for organisational actors than those that genuinely aim to support their praxis. Trying to pass off the former as the latter is usually not particularly successful.

Secondly, the results of this dissertation emphasise the importance of collaboration in idea development, while at the same time demonstrating that the front stage is built on rather individualistic assumptions. The formal processes are organised around individuals submitting and justifying their ideas and the informal efforts are perceived through the actions of assertive champions. Most collaborative idea development takes place in the back stage, while reflective reframing (Hargadon and Bechky, 2006) is even further hidden in the private backstage. The opportunity to engage in reflective reframing and share ambiguous ideas with others would be a particularly important part of radical innovation. Therefore, collaborative activity should be considered more fundamentally than simply the joint enrichment of an idea. In an environment of real participative safety (Anderson and West, 1998), opportunities could be made sense of together without anyone feeling that their professional identity was threatened by the portrayal of uncertainty and ambiguity.

The final point I wish to raise is the mindful consideration of what is actually pursued when aiming to support innovation activity in organisations. The confusion over what is meant by the very concept of innovation is visible throughout organisational levels, particularly its relation to the work praxis of organisational actors. There is no need to enforce an academically accurate or universally shared definition in each organisation. What is needed, however, is consideration of what innovation means for its members, and how it is portrayed in their praxis. The findings of this study particularly portrayed the lack of such consideration in measurement and rewarding practices. Because the measures and rewards did not address the aspects that actually motivated the experts in their own

idea development praxis, they were either considered to be distant or frustrating.[18]

5.4 Epilogue: Reflections on the Research Process and Questions for Further Research

At the end of a research process, it is natural for one's gaze to move beyond the completed study to how its results can be complemented in the future. It feels natural to combine these suggestions with reflections on the research process, as the point at which I currently stand is more a point on a continuum (albeit a special one) than an ending, as such. This dissertation has been an important personal learning process as much as it has been an extension of the current academic knowledge. In this section, therefore, I wish to discuss how my understanding has evolved during the research process and also the routes I plan to take in my future research – and recommend for others.

An essay dissertation – especially when it includes published articles – is a good mirror of the learning that has taken place during the dissertation process. The first published articles are fixed to the point in time at which they were created and, therefore, they display the first steps on the long journey towards completing the dissertation. For a researcher, these first articles may feel something like the untidy rooms of a house that has suddenly opened for guests' inspection. Just like the front stage of companies, the front stage of academia favours consistent and clear processes, so the perspective gained during the process would ideally have been present right from the start. If this were the case, however, there would be little learning involved. In a dissertation, however, learning is an important part of the outcome; a PhD has even been referred to as a 'research license'. Hence, in addition to being a research process as such, a dissertation study is part of the process of becoming a researcher. Personally, this has meant the evolution of the skills of the research craft – such as collecting empirical data, conducting qualitative analysis and writing up research – as well as an increased understanding of the academic field and its norms. Instead of hiding the more homely rooms of my 'house' and hoping that readers will disregard the variance between the

[18] It should be noted, however, the number of patent was seen as motivating because it was related to becoming merited as a technology experts.

articles, I hope that they do notice the learning process and see that the journey has been useful. After all, the type of variance that is referred to here is not a portrayal of inconsistency in terms of the research question or the studied phenomenon, but rather a demonstration of progress in finding meaningful ways to explain them.

In the case of this dissertation, the chronological progression of the essays particularly portrays how the practice perspective has gained increasing ground throughout the research process. The chronologically first essay (Essay D) discussed innovativeness to a large extent through its antecedents – although emphasis had already been placed at this point on approaching the concept through an activity perspective. This article reflects the part of the process at which I had explored the current literature on innovativeness and creativity and searched for ways to extend this understanding. The joint project with Elina Moisio enabled me to explore the challenges that organisations face when they try to support the antecedents of innovativeness by using reward structures. By exploring this topic, it became clear that examining the antecedents and formal support mechanisms would not be sufficient to really understand the challenges that organisations face in supporting innovativeness. Instead, it was necessary to dig deeper into the praxis of the organisational actors, since this is where the inhibitors and enablers are realised and created. Essay C represents the point at which my attention turned towards the minutiae of group praxis and used observational methods to attempt to understand how the antecedents for innovativeness identified in the extant literature are actually created in the level of everyday action. At this point, I also decided to focus principally on the barriers of innovativeness because they were theoretically less explored and the empirical data provided me with interesting observations in relation to them.

The last stage of the research process is reflected in essays A and B. In both of these articles (although essay B articulates it less explicitly) the focus of the analysis is on the praxis of idea development and how organisations are incapable in supporting it. These final essays, together, explicate why idea development is pushed outside formal arenas and how it is conducted informally. The inhibitors, as such, are left in the background, while the more in-depth understanding of why supporting idea development is challenging is brought to the fore. Although the focus on

collaborative idea development had been present in my approach from the start, this marked the point at which it was explicitly crystallised.

Looking back on the research process, I am pleased that it has brought me to where I am at the moment. If I were to write the thesis anew, I would start from this point and dive into the practice approach from the very beginning. Using the current process, my data collection and analysis evolved with my perspective and the level of detail found in my data increased greatly towards the end of the process. There is no doubt that it would have been useful to be able to collect more data on such a detailed level and use more observational techniques throughout the process. Some of the limitations of the empirical materials in these terms are the result of difficulties in negotiating access, but some of them could have been avoided by deciding on the practice approach sooner. The discovery of this approach, however, was brought on by interaction between the empirical materials and the theoretical literature; this made it necessary for it to happen after the initial empirical steps had been taken.

Although it marks the end of one research process, this point is also the beginning of new ones. I am content that this research journey has taken me to a point from which it is easy to continue on the path I have chosen and use the understanding I have gained in this process to make even wiser choices in the next steps. For future research, I have identified five primary directions that I plan to follow and recommend for others. First of all, there is a need for more empirical studies that examine the development of ideas in real time with ethnographic methods. While interviews (especially in-depth, ethnographic ones) do yield insightful information, observation makes it possible to dig deeper into the details of the process and escape the rationalised framing of the story that is usually present in people's accounts of their development efforts (or any historical events). Secondly, there is a need to give more priority to contextual understanding in conducting studies on idea development and innovation. In the present research, the context sometimes appears to fall into the background, as it is not made visible in the text. This has not been an attempt to hide or forget the context of this research, but a fault when writing up the research. Adhering to the formats of common academic writing does not make it easy to bring the empirical reality close to the reader, but this is definitely a skill I wish to improve upon in future research. Having said this, I believe that it is also

important to examine idea development and its organisational impediments in different contexts in order to gain a more complete understanding of the phenomenon. There is a need to gain empirical insight from different organisations and cultures, in different stages of the innovation process and in relation to different types of ideas. Even more importantly, it is essential to do justice to these contexts in the analysis and reporting of the research. Thirdly, there is a need to narrow the gap between the quantitative and qualitative approaches in innovation research and to apply mixed methods when examining idea development. Currently, there is regrettably little interaction between the quantitative studies that dominate the field of innovation management and the qualitative research conducted in the practice studies of innovation. More qualitative studies are required on innovation *per se*, as the field is greatly dominated by quantitative approaches, but it is crucial to build an effective knowledge base in interaction between the two approaches. Fourthly, while this study has focused on the shortcomings of formal management methods in supporting idea development, there is a need to examine how it does succeed in doing this. A detailed examination of both sides of the coin will provide more guidance regarding how to respond to the challenges currently at hand. Finally, the nature of the front stage and back stage of innovation should be explored further. This dissertation has taken the initial step of introducing them to the field of innovation by shedding light on their qualities and tensions in relation to idea development. However, significant work remains to be done in terms of exploring and defining the front stage and the back stage more thoroughly in this context and analysing the boundaries between the different regions (front vs. back; private vs. common). In addition, more work is needed in terms of linking the discussion in this dissertation to that of formal and informal organisations and the tensions in between.

Above all, future research should have the courage to open the doors to the messy rooms of innovation and the patience to discover value and meaning inside this seeming chaos. These rooms need to be organised in terms of their logic, instead of inflicting the traditional order to the parts it can manage and hiding the rest under the bed.

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PART II: ESSAYS

ESSAY A

Tea Lempiälä. Discrepancies between the Formal Support Structures and Collaborative Praxis in the Front End of Innovation.

Unpublished.

Paper presented at Academy of Management Annual Meeting 2010. 'Dare to Care: Passion and Compassion in Management Practice and Research'. Included in the Best Paper Proceedings of the conference.

ESSAY B

Tea Lempiälä and Sari Yli-Kauhaluoma. Smuggler's Guide to Innovation: the Subtle Side of Championing in the Front End of Innovation.

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ESSAY C

Tea Lempiälä. (2010) Barriers and Obstructive Practices for Out-of-the-box Creativity in Groups.

International Journal of Product Development 11(3/4): 220–240.

ESSAY D

Elina Moisio and Tea Lempiälä. (2008) Invention Rewards and Innovativeness: A Case Study.

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ESSAY A

Discrepancies between the formal support structures and collaborative praxis in the front end of innovation.

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Discrepancies between Formal Support Structures and Collaborative Praxis in the Front-End Of Innovation

Tea Lempiälä

Abstract

Many efforts are directed to the stimulation innovative behaviour in organizations. Processes, tools and other formal means are of innovation management are applied in the attempt to encourage and steer the generation and development of ideas. Though much attention has been directed in generating activity stage models of innovation less effort have been directed in the examination of their application and especially in their ability to support the collaboration of actors. This paper investigates the ways in which the formal structures of innovation management, such as processes, arenas and tools, fail to support the collaborative praxis of organizational actors in the front-end of innovation. More specifically this paper examines the ways in which these formal structures are a) decoupled from b) inhibit the collaborative praxis. Innovativeness conceptualized through the concept of innovative behaviour and the practice perspective is used in order to dig deeper into the social nature of the innovative activity. In the examination of the interplay between the informal praxis and the formal structure of innovation management the concepts of canonical and non-canonical practice introduced by Brown and Duguid (1991) are used. Collaboration is examined through the help seeking, help giving and reflective reframing activities identified by Hargadon and Bechky (2006).

Introduction

Innovativeness, as the creation and development of ideas into innovations (e.g. Wang and Ahmed, 2004), has sprung vast interest among researchers and practitioners during the last three decades. The present accounts of innovativeness are characterized by a focus on its organizational antecedents, such as motivation, peer and management support, freedom and risk-taking (e.g. Kanter, 1988; Van de Ven et al., 1989; Amabile et al., 1996). Though these studies have provided us with valuable understanding of innovative work environments, there has been little discussion on how the innovativeness of organizations is created in the everyday praxis of organizational actors (Brown and Duguid, 2000). The literature on innovative behaviour (West and Farr, 1989) has taken a step to this direction but is still much concentrated on identifying the organizational antecedents of these activities with the help of questionnaire studies (e.g. de Jong and Kemp, 2003). There is, thus, a need for a practice perspective in innovation research.

Additionally, we are lacking understanding of the collaborative activities needed to bring about innovation. While there is a notable amount of literature on the antecedents for innovation in teams and groups (e.g. King and Anderson, 1990; Anderson and West, 1998), the actual collaborative activity has been much less examined. Hargadon and Bechky (2006) have contributed to the creation of this understanding by examining the interactions precipitating moments of collective creativity in organizations. They distinguish four sets of such interactions: help seeking, help giving, reflective reframing and reinforcing. The collaborative praxis investigated in this paper is conceptualized through these interactions.

The focus of this paper is in examining how these activities are inhibited by or decoupled from formal innovation management practices. The emphasis on the fit between the formal and informal practices has been chosen through an inductive research process. In the beginning of the study a more general interest towards the practices supporting and inhibiting innovativeness in the front-end of innovation was maintained. However, as the research process progressed the tensions between the formal management practices and informal praxis of the organizational actors rose to the fore becoming one of the main interests of the study. The emphasis on the interplay between formal and informal practices is important also for several theoretical reasons. First, because in the extant literature on the front-end of innovation there is an emphasis towards the creation of

structures (e.g. teams, management roles) (Kim and Wilemon, 2002) and processes (stage-models, screening and evaluation) (e.g. Cooper, 1988) but less discussion on how these structures fit the praxis of organizational actors. Of course, the different structures, stages and processes are created based on empirical research on the way the front-end is carried out in companies, but practically no studies have been carried out on how these proposed structures and models are applied in the organizations. Second, most research conducted on rules in organizations has been directed at their formation and change, but significantly less interest has been directed towards their use and application in organizations (Olin and Wickenberg, 2001). Third, the discrepancies between the canonical practices (formal structures) and the non-canonical practices (informal praxis) in innovation activities has been identified and raised as a central concern in nurturing innovation and learning in organizations (Brown and Duguid, 1991).

The research question of the paper is the following:

1) *In what ways do the canonical practices of innovation management fail in supporting the collaborative praxis in the front-end of innovation?*
    a. *More specifically, how do they a) decouple from b) inhibit the collaborative praxis of organizational actors?*

The context of the study is the front-end of innovation, i.e. the very beginning of the innovation process. The front-end of innovation (FEI) includes the activities that take place before the product development project has been established, i.e. until the concept is developed. The front-end is recognised as a particularly fuzzy, complex and uncertain phase of the innovation process (Koen et al., 2001; Kim and Wilemon, 2002). Majority of researchers agree on depicting the front-end in three phases (Kijkuit and van den Ende, 2007; Khurana and Rosenthal, 1998; Cooper, 1988). Kijkuit and van den Ende (2007) label these as (idea) generation, (idea) development and evaluation. Koen et al. (2001) have drawn attention to the cyclicality of the front-end activities and have depicted the front-end as consisting of five main activities instead of consequent phases. These activities are: opportunity exploration, opportunity analysis, idea genesis, idea selection, and concept and technology development. The argument put forward by Koen et al. is that the front-end of innovation differs significantly from the NPD process and

thus requires more iterations as well as non-linear progressions between the phases.

The paper has several theoretical contributions. First, it extends the results of Hargadon and Bechky (2006) on the collaborative activities that precipitate innovativeness in organizations by examining the limitations formal channels have in relation to supporting the collaborative praxis of innovation. Second, it contributes to the literature on the paradoxes of innovation (e.g. Andriopoulous and Lewis, 2009) by investigating the tensions of rationality and passion in the front-end of innovation. Third, it contributes to the discussion of the interplay between canonical and non-canonical practices in innovation activities (Brown and Duguid, 1991) by extending this perspective to 1) the front-end of innovation and 2) collaborative activities. Finally, this paper has implications to the literature on the activity-stage models of innovation in organizations from the perspective of their implementation and application in organizations.

The paper is structured as follows. First, I introduce the theoretical basis of my examination including discussion on innovativeness, collaboration and practices. Second, I discuss the methods used and describe the empirical materials and case companies. Third, I discuss my findings and present their relevance to the current theoretical understanding in the discussion section. I finish with concluding remarks and questions for future research.

Innovativeness and collaboration

Innovativeness, as the introduction, development and application of novel and valuable ideas (West and Farr, 1989), is a central part of the front-end of innovation. Two distinctions should be highlighted upfront in relation to the use of the concept of innovativeness in this paper. The first one is the distinction between innovativeness and creativity. These concepts are often used interchangeably and are, indeed, close to each other – especially in the front-end of innovation. Creativity is defined as the production of novel (unfamiliar to the domain) and valuable (the extent to which the idea is considered helpful in achieving the goals of the group/organization) ideas (Ford and Sullivan, 2004).[1] Much of the creativity literature is focused on the individual generating ideas and the moment when the ideas are

[1] Note that the creativity of an idea is thus not an objective state, but – as Ford (1996, pp.1115) puts it – "a domain-specific, subjective judgment of the novelty and value of an outcome of a particular action".

generated – or the prerequisites of these moments. The focus of this paper differs from that perspective in two respects: First, it is focused on the early development of ideas, but less weighted on their creation as such. Second, the paper is focused on the collaborative development of ideas instead of the prerequisites of idea generation of creative individuals, as even before the actual product development process begins ideas undergo much development and championing. In fact, before the ideas are even evaluated by management, they are adapted and developed on many occasions by the inventors and their co-workers (Kijkuit and van den Ende, 2007).

The second distinction is made in relation to the use of the concept of innovativeness. I examine innovativeness through the concept of innovative behaviour and thus focus on what *people do* in order to contribute to the generation of novel solutions in organizations. Innovative behaviour is defined as "all individual actions directed at the generation, introduction and application of beneficial novelty at any organizational level" (West and Farr, 1989). Innovative behaviour includes activities, such as opportunity exploration, idea generation, formative investigations, championing and application (Kleysen and Street, 2001). The last of the categories, application, is less present in the front-end of innovation for this activity involves putting the developed new solutions in use – an activity which is usually present in the later stages of the (product) innovation process. Most of the literature on innovative behaviour has been focused on determining the organizational characteristics that benefit its emergence (cf. De Jong and Kemp, 2003; Scott and Bruce, 1994; West and Farr, 1989). Kanter (1988, pp.169) sums the organizational antecedent for innovative behaviour by stating that "If innovation is uncertain, fragile, political, imperialistic (reaching out to embrace other territories), then it is most likely of flourish where conditions allow flexibility, quick action and intensive care, coalition formation and connectedness".

Though the extant research on innovative behaviour has successfully brought about new understanding of the micro-level activities involved in the birth of innovations it is lacking in generating understanding of the collective activity between the actors. Most of the research is conducted from an individual perspective and thus the categorisations that have been put forward are mostly identifications of activities in which individuals engage themselves in the different stages of the innovation process (e.g. de Jong and den Hartog, 2003). However, innovation is a social activity requiring efforts from multiple actors and

"inherently involves a collective achievement among many individuals and stakeholders" (van de Ven and Rogers, 1988, pp.638). This social quality is also highlighted in the beginning of the innovation process (Laudel, 2001). Innovativeness and collaboration have mostly been discussed in terms of teams (e.g. King and Anderson, 1990; Anderson and West, 1998), network relations (Ahuja, 2000; Hansen, 1999; Powell et al., 1996) and collaboration between different functions (Lovelace et al., 2001; Jassawalla and Sashittal, 1998). The research on teams has been focused on discussion of beneficial characteristic of teams and their environments for innovativeness. For example Anderson and West (1998) have found that four factors – vision, participative safety, task orientation, and support of innovation – are predictive of innovativeness in a work group. In reference to networks and innovation Hansen (1999) has found that product development requires a balanced combination of weak and strong ties and that the weighting on one or the other is dependent on the complexity of the knowledge handled. The more complex the knowledge, the more strong ties are needed to transfer knowledge between different subunits. In reference to collaboration across functional boundaries the use of cross-functional teams is widely promoted – though also cautioned. Lovelace et al. (2001) found that in managing this type of collaboration the role of open communication and trust is central as well the possibility express one's doubts freely.

There has, however, been little examination of what people do together and what the collective activities central for the birth and development of ideas are. Hargadon and Bechky (2006) have examined the interaction precipitating moments of collective creativity. The authors argue that the collective activities of individuals are of key importance in creating novel interpretations of current knowledge and developing ideas into useful concepts. They observe that most of this interaction happens informally, takes place face-to-face and is of ad-hoc nature. Based on their six qualitative case studies the authors distinguish four sets of interactive activities which precipitate moments of collective creativity. These activities are depicted in figure 1 and explained below.

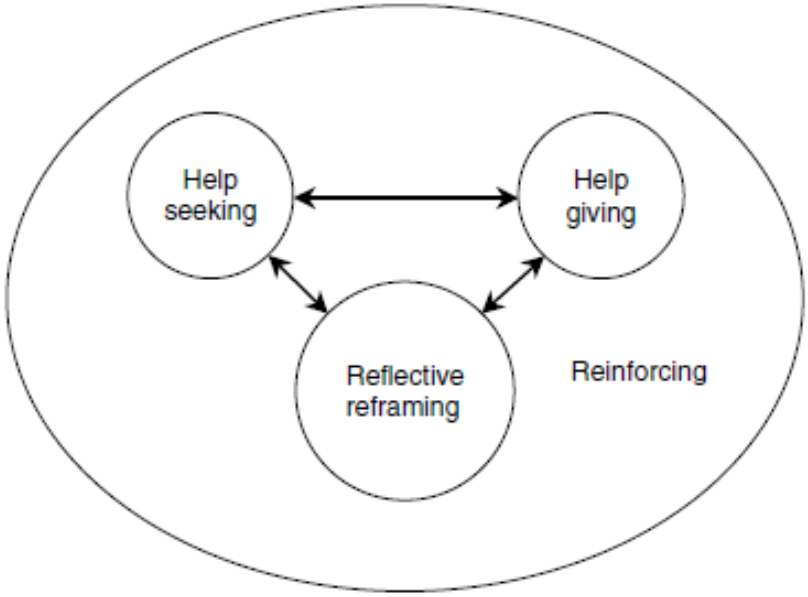

Figure 1: Interactions precipitating moments of collective creativity (Hargadon and Bechky, 2006, pp.490)

Help seeking includes all the activities the organizational actors used when trying to find assistance in solving a problem or making sense of an opportunity. The writers found that since the structures of participation to development efforts were fluid, the help seeking activities largely defined who were included in the efforts. This finding is in contrast with Weick and Roberts' (1993) study which claimed that the actors and patterns of interactions in development efforts are rather stable. This study was conducted in a high-reliability industry which might account for the discrepancy. The companies supported help seeking activities with formal means, which included formal meetings, brainstorming sessions, and accountability policies. The informal means of help seeking were found as more important and useful than the formal ones, though. The informal means included the use of personal networks and face-to-face interactions. The way help giving was conducted was found central in determining the patterns people used when seeking for help. Especially the timeliness of help giving was found to be important. Help giving activities play a central part in bringing about collective creativity since they both create possibilities for creating novel insights and shaped the ways in which help seeking activities were be performed.

Reflective reframing represents activities that take place in situations where there is no clear question or a clear answer. The activities in this

category are thus centred around situations where the ideas are a product of a joint (re)framing process and a person's insights both shape and are shaped by the interaction. Hargadon and Bechky emphasize the importance of "mindful listening" by stating that *"rather than mindlessly answering the question as given, or deflecting it completely, moments of collective creativity involve considering not only the original question, but also whether there is a better question to be asked." (pp.492)*

The reinforcing category refers to the way the three interactions are strengthened in the organization. Hargadon and Bechky have identified two ways in which this reinforcing happens. First, it happens via positive experiences actors encounter when engaging in the above activities, which in turn forms action patterns for future endeavours. Second, shared values and beliefs reinforce certain action patterns above other. These values can be reinforced e.g. via organizational rewarding and communication. For example, whether help seeking is considered a proof of incompetence or activeness has a strong influence on the organization members' willingness to engage in help seeking activities.

Informal praxis, canonical practice and the tensions in between

Though the current literature on innovativeness has offered us valuable understanding of the antecedents of innovation in organizations, it has for the most part remained "at arms length from the actual activities" (Lowe, 1995, pp.54) and mostly used large-scale quantitative approaches in its investigations. The practice perspective argues for paying attention to the seemingly mundane micro activities of everyday life in organizations and examining the way these are interwoven to the larger institutional context (Johnson et al., 2003; Giddens, 1984). Practice theories include a wide variety of research in different disciplines since the beginning of the "practice turn" in 1980's, but in innovation management literature this approach has been less common. There are, however, clear benefits to be obtained in applying this perspective to the examination of innovation.

The word 'practice' refers to activities that are socially shared and temporally sustained. Büger and Gadinger (2007) refer to "a socially organized form of behavior that binds space and time". Following Reckwitz (2002) Whittington (2006) proposes the word practice to be used in reference to multifaceted and constitutive macro practices that define different domains of social life, such as business practices or gender practices. To describe the everyday micro-practices he then refers to the word praxis.

Thus practices are traditions, norms and procedures for thinking and acting whereas praxis consist of what practitioners do in the more micro-level, the intra-organizational activity of everyday work. The two practice types are interwoven and thus the praxis of everyday is influenced by the institutionalized practices which are on the other hand reinforced and renewed by the former (Giddens, 1984).

Though there is not much research on the interplay between the official structures of innovation management and the informal praxis of organizational factors, there are a few studies that address this issue. Dougherty (1992) describes the practice of product innovation from the perspective of combining different types of market-technology knowledge during the process. She criticizes the capability of current organizations to do this suggesting that many of the current models of learning and structures for renewal in organizations are based on abstractions and are not in contact with the actual practices – and thus not helpful for their practitioners. Brown and Duguid (1991) discuss the tensions and discrepancies between an organization's informal praxis and the formal, or 'canonical', practices. Using Orr's (1990) seminal research on service technicians as a base they show how the formalized practices of organizations can pose barriers to the natural flow of the actual praxis, instead of supporting it. Orr has demonstrated in a rich ethnographic description the way service technicians base their practice and learning on storytelling and other social means of learning while the canonical practices of the organization, the training courses, job descriptions and manuals, are superficial and distorted thus providing little help for the technicians' daily operations. Conversely, the canonical practices add to the need for improvisation rather than reduce it. Additionally, behavior deviating from the canonical norm is not perceived as valuable, but rather problematic.

The claim Brown and Duguid pose is that the support mechanisms should be better designed to fit the actual praxis of organizational actors instead of relying on vague abstractions of it. This would require the will and capability from an organization to truly understand the details of the actual praxis (ibid.) and to be able to incorporate this into the official procedures of the organization. While the focus of Brown and Duguid is on learning and training programs, they make explicit reference to innovation as well. They argue that the informal (non-canonical) praxis of communities of practice (CoP) is vital for the innovation capability of an organization because CoP's represent a means for a part of the organization to escape its "inevitably limited core world view". Brown and Duguid emphasize the importance of

reregistering one's environment – an activity which is inherent for the non-canonical praxis whereas the canonical practices steer towards creating closure. The term reregistering is close to the term 'reflective reframing' used by Hargadon and Bechky (2006) and the importance of that activity for innovation is highlighted also by them. As Brown and Duguid point out, often, this non-canonical praxis is perceived as counterproductive – if taken note of at all. This tendency may lead organizational members to conceal their non-canonical praxis from the organization and thus the loss of valuable learning opportunities.

In this paper the focus is on innovation activity and on the canonical practices of innovation management. Using Brown and Duguid's terminology I will use the term canonical practice to refer to the official structures of innovation management, such as process models, descriptions, meetings and tools. Following Whittington (2006) and Seo and Creed (2002) I then refer the word praxis to the everyday activities of the organizational actors. The word praxis also includes the notion of agency and the possibility of the organizational actors to influence to their environment, though being at simultaneously influenced by it.

Methods

The research is a multiple case study (DuBois and Araujo, 2004) consisting of three case companies and idea tracks which acted as mini-cases within each company. The case companies (depicted in section 6) were selected along the lines of purposive sampling (Patton, 1990) based on their intensity and the appropriate mix of homogeneity and diversity that they provide. All the case companies are based on a certain core technology and situated firmly in the product/manufacturing business context. However, the ways in which the innovation activities are organized differ. The first company has specific technology teams that form a core of their innovation activities, the second has established a concept development team that spans technology boundaries and the third has a dyadic structure with practically no team activity. The empirical materials of the paper consist of retrospective interviews of six idea tracks (the development of an idea into a concept) and observation data from three ideation groups. Two idea tracks were chosen from each company and investigated with retrospective interviews of the people involved. Retrospective interviews are considered as a legitimate way for gaining understanding of the details of the innovation process (Van de Ven and Rogers, 1988), though not considered the optimal way of examining

the detailed praxis of organizations (e.g. Jansen et al., 2004). Retrospective interviews were used in the examination of idea tracks do to access problems in relation to observation. The quality of information obtained from the retrospective interviews was generally good in addition to which I have strived to overcome the limitations of this data collection method in four ways. First, as stated above, the interviews have been complemented with group observations in two of the three case companies. These observations have not represented the starting points of the idea tracks studied, but they have still provided understanding of the practices the actors utilize when innovating. Second, the idea tracks have represented very recent developments and are thus in the fresh memory of the respondents. This is perceived to help the accurateness of the information provided by the informants (Jansen et al., 2004). Third, I have interviewed several individuals from each idea track. This approach allowed for multiple perspectives on the development story which allows me to attain a more complete picture of the development of the idea (Van de Ven and Rogers, 1988). Fourth, during the research process I have been actively involved with the organizations studied thus gaining more insights of their everyday reality. The preliminary results of the research have thus been discussed with the informants in various workshops, meetings and informal discussions. This has provided a more complete understanding of the context of the research as well as with additional insights to my data analysis. This responds to the request of involving practitioners/informants to the research process more as collaborators than just subjects of study (Tranfield and Starkey, 1998).

In the analysis of the empirical materials the model of Hargadon and Bechky (2006) was utilized in operationalizing collaboration in the front-end of innovation. In examining the collaborative praxis of the organizational actors, attention was thus paid to help seeking, help giving, and reflective reframing activities. The reinforcing category is implicit in the analysis for the reason that it refers to the way the organization supports the three other activities and thus is embedded in the original research question. The analysis of how the canonical practices of the organization fail in supporting theses activities thus includes the analysis of reinforcing mechanisms.

The analysis of the empirical data was conducted following abductive logic of reasoning (Dubois and Gadde, 2002). First, the empirical materials were studied without a specific coding scheme in order to get familiarized with the data. The emerging themes were noted at this point rather freely after which they were grouped in order to find overarching themes that could

be investigated further. At this point the interplay between the informal, collaborative praxis and the formal innovation management practices emerged as a central and interesting theme and shifted the direction of the analysis. Second, the initial theoretical frame was revised to better serve the analysis and understanding of the emerging themes. Third, the data was examined again, this time more thoroughly and more tightly bound to the revised theoretical frame. While in the first reading the empirical materials were allowed to talk freely, on this round the theory made the empirical data speak (Silverman, 2000). The three interactions (help giving – help seeking – reflective reframing) described by Hargadon and Bechky (2006) were used as a map to describe the collaborative activities in focus and the ways in which the formal structures of the organization related to the informal praxis (supporting, inhibiting or decoupling) were grouped under these four activities. After this was done individually in each idea track, similarities and differences between each idea track were identified within each case company. Respectively, after this was done within each case company, the insights from the companies were compared against each other.

Empirical materials

The empirical data is collected from three large, Finnish technology companies. The focus of the examination has been on six idea tracks which have been studied through the means of retrospect interviews. Four of these tracks were found as successful (the concept was picked up for further development) and two unsuccessful (the concept was dropped). This data has been complemented with observations in two of the companies from ideation sessions and workshops. In Measurement Inc., access for observation was granted but a change in the organization structure during the research process rendered it impossible for practical reasons. The data collection of the idea tracks was conducted through semi-structured and open-ended interviewing. The observation data was collected through the means of passive observation (Hammersley& Atkinson, 2007). All interviews and ideation sessions observed – excluding two workshop observations – were recorded and transcribed. Of the two workshops that were not recorded detailed field notes were taken and complemented with additional notes within 12 hours of the observed event. The data collection in the three companies is illustrated in Table 1 and the companies as well as the idea tracks depicted below.

Table 1: Data Collection from the Three Case Companies

	Company type	**Idea tracks studied**	**Informants**	**Empirical materials**
Measurement Inc.	Technology firm, over 1000 employees	2, one successful, one failed	R&D professionals various technological domains located in a concept development team, engineers, males between 30 and 50 years	10 interviews in concept development team
Process Inc.	Technology firm, over 2000 employees	2, both successful	R&D professionals from located in the same technology area, engineers, males between 30 and 65 years	8 interviews in technology team, observations from 6 ideation sessions
Construction inc.	Manufacturing firm, over 10 000 employees	2, one successful, one failed	R&D professionals from various technological fields, engineers, between 30 and 50 years	6 interviews, observations from 2 ideation workshops

Measurement Inc.

Measurement Inc. is a globally operating company that produces measurement-related products. The company has a history of successful innovations and this has formed the company's identity as an innovative company and technological forerunner. At the moment of the study the company was undertaking efforts to shift its mindset into a more service and solution oriented direction. To boost their innovation activity the company had recently created a concept development team, which was located within one of the three divisions but spanned technological boundaries. This team was the focus of this study. The purpose of the team is to develop novel concepts which they then offer for further development and commercialization to the product development function of some of the three divisions. The time frame for developing one concept is three months. The team has 10 members, a team leader and a project manager. The team leader and the project manager have a habit of preparing the projects before they are handed to the team. The two prepare three possible concepts from which an evaluation board chooses the most potential one at business review gate -2. This concept is then presented to the team and the development effort is started. Due to this arrangement the two managers are much more informed of the background of the concept ideas than the rest of the team. Team members described this as a problem and said that they felt as being "two laps behind" and spending a lot of time guessing what the two managers were thinking.

Process Inc.

Process inc. is a globally operating technology company which provides technology and services within a traditional process industry which values reliability and high quality. The company has been economically successful and at the moment of our study was experiencing a substantial boom in its business. The unit studied is a technology team consisting if 17 people and developing one of the main technologies of the company. The team is located within one of the three divisions of the company. The members of the team are highly educated in the technological domain. The purpose of this team is to develop one of the main technologies of the company as well as consult other organization members in issues related to this technology. The team has a long history within the company as the technology in their responsibility has been the core business of the company for decades.

Construction Inc.

Construction Inc operates in a traditional industry mainly in European markets. The company offers components, systems and integrated systems to construction and engineering industries. Construction Inc. has previously relied heavily on its competencies in material sciences and production capability but has recently attempted to taken upon a more customer centric and solution based approach. The interaction structure of the company is more based on dyadic relationships than specific teams and much due to this feature the two idea tracks studied are not located within a specific team as is the case in the two other companies. The company is divided into two business units and the two idea tracks are located in different business units.

The description of the six idea tracks is summarized in Table 2.

Table 2: Description of Idea Tracks

	Context (company, people	**Type of idea**	**Main success factors**	**Main inhibitors**	**Turning point**
Idea track 1	Measure-ment Inc. ; 8 people	Vague business opportunity known for long → developed into a service concept	Team was able to reframe the initial concept idea during the process; informal, open meetings in joint spaces; Idea was widely known and supported throughout the organization	Concept did not fit the new strategic segment of the mother division of the team → division did not wish to fund the idea and wanted to just sell the technology to another division	Idea was passed on to the service division, which enforced a joint business model. This was not accepted and since no-one was able to assume responsibility idea was dropped. The team was very disappointed.
Idea track 2	Measure-ment Inc. ; Whole team divided in 4 subgroups	An idea that was sure to fit the strategic areas was chosen after the failure of the first →developed into a measurement automation solution	Team leader and project manager were successful in getting a sponsor from a business area	Team members were not enthusiastic about the idea. Main reason was that they felt that there was no room for the modification of the idea during the process and they could not contribute to the concept entity.	The concept received a go-decision. This, however, did not result into great joy amongst the team members since they did not have great faith in the concept. The failure of the first concept was felt more strongly than the success of the second.

Table 2: Description of Idea Tracks

	Context (company, people	**Type of idea**	**Main success factors**	**Main inhibitors**	**Turning point**
Idea track 3	Process Inc. ; 5 people	A technical idea originating from a customer request to solve a problem →developed into a solution combining two known solutions in a novel way	Fluent internal collaboration, fast reactions, proactiveness towards the customer: ideas were sent to the customer before decision meeting	Difficulty to incorporate customer‘s idea to own; passiveness from the customer – no reactions to the sent ideas.	The customer wanted to incorporate their own idea to the solution – this idea was not feasible but in order to please the customer its essence was included in the idea; Despite email silence to the proposed idea, customer accepted it in the decision meeting.
Idea track 4	Process Inc. ; 3 people	A technological idea. The roots of the idea came from an idea one of the innovators had had two years earlier.	A young technology expert was able to mediate between a senior expert‘s blue sky idea and a mechanical engineer‘s feasibility orientation.	No action was taken on the original invention notice (but after two years the ideator himself realized that this could be applied to the problem at hand).	Realization that the old idea could be utilized in the problem at hand ; finding a mediator between the two differing expert views; infiltrating the idea to a customer project.

Table 2: Description of Idea Tracks

	Context (company, people	**Type of idea**	**Main success factors**	**Main inhibitors**	**Turning point**
Idea track 5	Construction Inc. ; 5 people	A response to a long know-problem → developed into a technical solution	Multiple parties working on different parts of the idea: various perspectives involved – both outside and inside the company.	One person acted as a mediator between the different parties, which did not have an understanding of the whole.	A senior expert took a young expert with him to an informal meeting with a foreign contact which allowed the junior to gain perspective and initiate the project; Formal acknowledgement of the project from the division leader via email.
Idea track 6	Construction Inc. ; 2-4 people	Two technology experts came in contact with a discovery of an extremely hard material from a foreign research institute	The research institute agreed their current knowledge for a relatively small sum for they did not have the resources to develop the discovery further.	The experts didn't dare to propose the opportunity to their supervisors due to its uncertain nature.	The experts hired a graduate student and Ph:D. student to investigate and document the case. Both of these activities were small enough not to be questioned by management; Eventually the research institute was restructured, and the contact lost.

Findings

I will discuss the findings related to help seeking and help giving activities jointly because they are inherently interactive. They give feed back loops to each other and reinforce each others emergence. Particular attention is paid to reflective reframing in the analysis, because this activity appeared as the most challenging whereas the help giving – help seeking activities were more natural. Reinforcing is not discussed as a separate category, but is embedded in the original research question and is thus implicitly in the core of the analysis.

Help seeking – help giving

The help giving – help seeking interaction was a natural and well functioning part of the innovation praxis in all of the three companies. The routes through which individuals were identified were largely informal and the formation of the core group and the key actors was flexible (as suggested by Hargadon and Bechky, 2006). Customer site visits were often made with a short notice and with the resources available at that time. These actors then became central information holders for the following stages of the project due to the centrality of customer understanding to the innovation efforts. This is in contrast with the findings of Weick and Roberts (1993) from the high reliability industries although the cases in this study were from high reliance industries as well. What should be noted, though, is that the basic group of people among which the participants were identified was stable and consisted of people who were found active and knowledgeable in the relevant technological domain or belonged to a certain structure (such as technology team or a concept development team). Important factors in identifying the people one sought help from were availability, expertise, familiarity, and common understanding and interest towards the subject.

Decoupled.

While help giving and help seeking activities were a natural part of the praxis of organizational actors, they were largely decoupled from the official structures of the organization. In two of the case companies the actors did not use the company data bases, resource allocation systems or other formal structures for locating suitable individuals but turned to people they knew and/or were in close proximity. The formal channels were perceived as too slow or too impersonal for this purpose. In choosing the people one would start working on a problem, the main concern was about the delay in getting

the resource whereas in relation to the presentation of ideas the possibility to decide who to tell the idea to became central. The problem with the formal systems, such as electronic ideation tools, was that the actors themselves had no knowledge or control over the people who would be engaged in the process. They would enter their idea to the system and receive an anonymous feedback / evaluation of the idea or, in the worst case, only a notification of acceptance or rejection after a non-transparent enrichment and evaluation process. Another way to utilize the idea management tools was to make the idea visible to the whole company and open to feedback from everyone. This created unease in ideators as they wanted to pass the ideas by trusted persons before exposing them to the whole organization.

The formal systems were altogether decoupled from the collaborative praxis due to the fact that they were geared towards evaluation and management of ideas instead of collaborative idea development – although they were marketed to the organization as such. The systems – were they idea management tools, invention notice systems or worker initiative plans – were geared towards the reporting and evaluation of ideas instead of help seeking or help giving between peers. And this was how the systems were used. This discrepancy between the needs of the actors and the tools provided by the organizations led to the idea systems being used in a different way than intended. While the original idea of the systems was to assist ideators in sharing their rough ideas and early hunches, the ideas entered into the systems were often first discussed with a trusted person and only then entered into the system – if not taken forward through other means.

Approachability and availability were highly important in help-seeking – help giving interaction: meetings were rarely scheduled and phone calls and e-mails were largely disfavoured in relation to face-to-face interaction. Meetings were perceived as ways of confirming matters that were already discussed in informal settings. Whenever it was possible the dominant praxis was to walk into a person's office and just start talking about a dilemma. One of the respondents describes this as follows:

> " Well, I feel that in design work the question you are thinking about at the moment is the most important thing in the world to you….and then you just walk into other people's offices, sit down and start talking about it…"

Since none of the companies had in place structures that would ease or simulate such an informal and ad-hoc interaction, help giving-help seeking activities were mostly decoupled from the official structures and caused people to work around them when possible.

Inhibiting

Due to the slowness of the formal processes the help giving – help seeking interaction was to a large extent decoupled from them. Normally this did not pose problems to the organizational actors, but where the processes could not be worked around the slowness became an inhibiting factor. The dynamic interaction between the help seeking and help giving activities is what assures the elevated enthusiasm central for the motivation of the actors. This enthusiasm was curbed by the significant time lags and impersonal responses generated by the official processes of the companies. For example, if a person was new to the organization or for another reason did not have a network that could help them with a certain problem or comment on their idea, they were easily discouraged and passivated by the slowness, difficulty or impersonality of the process.

Another reasons for the ineffectiveness of the official processes in supporting the help seeking – help giving activities was the fact that they were mostly connected to the patenting process and did not give direct feed to business/project activities. A central problem was that these official routes disconnected the idea from the original problem. This was described by one of the informants in the following way:

> ”All innovation in my opinion … they are born in response to a need raised by a certain situation. Someone asks ”couldn’t we find a way to do this?” and then the people around start thinking of ways to solve that problem and some make an invention notice with the purpose of solving the problem. But what happens is that the idea is taken into the official procedures and lost in them for a year. And when it comes back, there situation is not acute anymore….”

Many of the ideas were born while conducting customer projects: the problems emerged ad-hoc and the need for solutions was immediate. If the solution would be taken through the official idea management system, the idea would not be fed back to the problem but taken to a patenting board and finally to a patent portfolio. The actor has to understand that this process is decoupled from the actual problem solving activity and use alternate routes for giving help to the problem at hand.

Another way in which the formal organization obstructed the help seeking - help giving interaction was that it created situations where the organization members would not dare to seek help from others – especially managers – but would rather hide the idea. The reason for this was fear of the idea getting rejected if its existence would be formally recognized. From the

management's side one of the forms of help giving was, in fact, looking the other way when these misfit ideas were developed. Though this kept the ideas from getting killed, the overall practice still prevented the actors from seeking help from the supervisors and the supervisors from offering their expertise and resources. An example of this practice is idea track 2 of Construction Inc. where two technology experts came in contact with a new and highly potential discovery from a Russian research institute by coincidence. The foundations of the discovery were not known, but the research institute was willing to sell their current knowledge for the price of 20 000 dollars since they did not have the funds to develop the discovery further themselves. The company was at the time experiencing a downturn in its finances and the experts didn't dare to propose this opportunity to their supervisors due to its risky and unusual nature. They decided to hire a graduate student to do their thesis on the case so that even some information could be documented. After this a Ph.D. worker was hired for the same purpose. Both of these activities were small enough financially not to be questioned by the management and could thus be carried out in secret. But these activities did not help the organization in seizing the opportunity as eventually the research institute was restructured by the Russian officials, the key persons retired and the contact was lost with the institute.

Reflective reframing

Whereas help giving – help seeking interaction was a natural part of the everyday practice, reflective reframing was scarcer and clearly more challenging. The mindset of the actors was more inclined towards formulating clear problems and answers than engaging in open-ended exploration activity. In many occasions the actors had to be forced into engaging in reflective reframing. This is illustrated in the first idea track of Process Inc. where an idea proposed by a customer forced the actors in to a process of reflective reframing where they tried to combine perspectives of the customer's idea to their own (the customer's idea was unfeasible but could not be disregarded because the customer's contact person was keen on it). On the other hand, the possibility to engage in reflective reframing was an important factor for the intrinsic motivation of the actors. This was illustrated especially in the two cases of Measurement Inc. In both of the cases the team leader and the project manager had prepared the concept ideas in before hand and taken them trough the first decision gate. Due to this the team members felt disadvantaged by the fact that the team leader and project manager had gained much perspective to which the team members had no

access to while preparing the concept ideas. In the first case people were still motivated and enthusiastic because the concept idea was restructured to a large extent during the process as a response to input from the team members. In the second case – after the first, risky concept had failed – the two managers wanted to make sure that this concept would fit into the strategic segments and thus the concept idea was more refined than the first one. Despite the straight-forward nature of the process, the team members struggled in understanding the big picture and contributing to it. They felt that the two managers know what they wanted out of the process and the team members were left executing subtasks instead of participating to the creation of the concept. Due to this, the team was much less motivated and felt undermined by not being able to contribute to the entity of the concept. The lack of openness of the concept for reflective reframing of the group thus resulted into a lack of ownership among the team members.

Decoupled.

Reflective reframing was especially difficult in relation to the formal structures of the organization. As discussed above, the supportive structures, such as idea processes and tools, had been built on the basis of the evaluation of and decision making on ideas instead of contemplations, hunches or questions. Ideas and problems were mostly presented as clear formulations rather than vague hunches and the perception was that one should have a clear position one could defend and others criticize and comment. This set-up led to reflective reframing activities being excluded from the support systems (innovation processes, idea management tools). These were rather taken up with close and trusted colleagues in situations where one could safely “be a mess” with one’s ideas and engage in a collective effort to find the sense, value and clarity in them.

Also, the more intuitive and passionate justifications of ideas were largely excluded from the official processes. The acceptable way of justifying one’s idea was related to providing answers to evaluation criteria, calculations and test results. Intuitive decisions were often hidden and legitimized with the use of figures and objective criteria even if the enthusiasm would have played a major part in the decision to develop the idea further. It is understandable that official structures have the task of ensuring that relevant measures have been taken to ensure that no unnecessary risks are taken. However, the fact that there is no legitimization space for more intuitive and emotional justifications in any of the formal support structures leads to the strong decoupling of the formal organization from the praxis of innovation.

This dichotomy led people in the companies studied to creating cover justifications for interesting but uncertain ideas and thus reduced the possibility to engage in reflective reframing in the formal arenas: if one cannot conceal honestly the justifications and on the other hand questions and unclear issues, the genuinely joint construction of ideas becomes impossible.

Inhibiting

The formal structures obstructed the emergence of reflective reframing activities in various ways. First, positions assumed and decisions made in the formal arenas were considered as final and their re-consideration was found uncomfortable and a sign of weakness rather than reflection. In the first idea track of Process Inc. this was experienced from the side of the customer who did not communicate their intentions or comment on the idea propositions that were sent to them as an invitation to discussion. The interpretation of one of the informants was the following:

> ” …They are afraid. That’s why they don’t like to comment on anything in writing, but the situation is different face-to-.face. In any case, they don’t like to change their mind if they have once taken a negative position. Like now, when they will let us know of their decision t will be like one from the Supreme Court”

This fear of having to go back on one’s decision and the demand for fact- and proof-based justifications led to the fact that the (formal) response to uncertain issues was commonly “no” rather than “yes, let’s give it a go”. One of the respondents described the situation saying that *“We need more people in positions where they are expected to rather say ‘yes’ rather than ‘no’”*. This, in turn, led to the praxis of looking the other way when management was not able to support an idea even though they *felt* that it was worth investigating. But a feeling was not considered a valid reason to make a “go” decision in the official processes.

The formal structures and especially the process models of innovation conveyed the perception of innovation as something intentional, linear and rational. There was little room for reflective reframing in this perception. The models were constructed to accommodate clearly formulated ideas or propositions and they were expected to progress in a linear fashion towards predefined goals. Some cyclicality was assumed but this was in the shape of clear steps, idea proposal-feedback-improvement-proposal, instead of a joint and simultaneous effort to construct an idea and find novel perspectives. Another side effect of this illusion of linear progression is that it excludes the false leads, u-turns and mistakes from the discussion. This in turn lessens the

valuation of reflective reframing activities for the contemplations and reconsiderations involved are taken as a sign of weakness instead of strength.

The practice of favoring clear positions and sticking to them once they were taken was clearly harmful from the perspective of reflective reframing since it did not allow for the adjustment of perspectives once they were brought in contact with differing ones. In several occasions this led to the loss of ideas with high potential. Idea track 1 from Measurement inc. is a good example of this. A concept idea related to a vague business opportunity was developed into a service solution which was the core business of the service division (different from the component division in which the concept development team was located). At gate BR-1 all relevant parties were highly excited of the concept and it was presented also to the CEO of the company who encouraged its development and the boundary-spanning activity between the two divisions. The concept received a go-decision. The responsibility of the development of the concept into the BR0-gate was transferred to the service division. During the two months that passed between the two gates the strategic segments of the component division changed and division manager decided that its distribution channels could not be used for this concept. Additionally the division manager wished to sell the necessary components to the service division and not be included in the continuous leasing efforts associated with the concept. The service division did not have the necessary distribution channels and enforced a joint business model for the leasing. Due to these unresolved issues the concept received a no-go-decision at gate BR0 to the great disappointment of everyone involved. An additional grievance was that the customers of the component division who had been studied in course of the development efforts were highly interested in the concept and were eagerly waiting for it to be launched.

The reason the concept was dropped was that the two divisions – the one in which the concept was developed and the one whose core business it would have been – could not come to an agreement of a joint business model or the use of distribution channels. The reasons given are rational, but cannot escape the question: Is dropping a concept which is supported by everyone, including the CEO, due to a strategic segment shift unavoidable and necessary? According to the informants interviewed from all levels of organization, no. One of the main reasons for this development of events was that the representatives from the two divisions were unable to engage in reflective reframing and thus pursued their own perspectives without

consideration of each other's perspectives. The representative also came together rarely in other arenas than official meetings where it was important to "stand as a united front" from the side of one division. These were not places to discuss diverging perspectives but to inform the other side of one's decisions and portray one's strength by sticking to them. There were fundamentally diverging perceptions of the nature of the business (the other concentrated on sales of components while other on services) which were never properly discussed. In relation to the dispute about the distribution channels no efforts were made to think jointly of solutions to go around the strategic shift in order to realize the potential concept. At the same time there was a overarching strategic shift in the company to enhance collaboration between division, but this was never considered as an argument – perhaps because it was more vague than the well defined strategic segment.

The interpretation of innovation activity as a quest of a hero innovator has been contested in the academia during the last decades and is contested in the companies as well. Despite these developments the tools and processes are geared towards accommodating individual actors subjecting their idea to evaluation by others and thus reproduce the perception of individuals as the locus of innovation. Two of the three companies studied were struggling to implement their idea management software but the use of these tools remained low. In the case of Construction Inc. the tool was constructed in a way that actors could enter their idea to the system which would begin a formal enrichment and evaluation process. One of the informants described this as follows:

> "But there is a big threshold to enter ideas into the system…it feels like "judge me"…and they do…they will butcher your idea…"

The perception of innovation as a joint construction of ideas was thus less familiar for the actors that of an individual actor pushing forward and defending a clear idea which could then be either supported or rejected by others. The perception was that if an idea was presented to a crowd it had past "the first gate" of refinement by the individual him/herself and could thus not be completely open for reconstruction. Also the fear of people stealing each other's ideas if they were entered into the system stemmed from the perception that ideas were an individual's private property which could then be stolen from others rather than co-developed.

Discussion

The aim of this study has been to investigate the way the canonical practices (Brown and Duguid, 1991) of organizations fail to support the collaborative praxis of organizational members in the front-end of innovation. The results discussed above indicate that the formal structures of innovation management are, in fact, lacking in many respects in their ability to support the interactions of organization members. The help seeking, help giving, and reflective reframing activities central for the emergence of collaborative innovation were not taken into account in the design and especially the implementation of the formal support structures. These results have several theoretical implications.

First, the study elaborates on the topics discussed in the model of Hargadon and Bechky (2006) on the collaborative activities that form the basis of innovativeness in organizations by examining more deeply the limitations the formal channels have in relation to supporting the help giving, help seeking and reflective reframing activities. Also, in relation to the informal praxis the findings suggest that help seeking-help giving relationships were generally well-functioning whereas reflective reframing was much more challenging and often required an outside stimulus (e.g. customer demand). In spite of its challenging nature, the possibility to engage in reflective reframing was important for the actor's intrinsic motivation and was central in creating a sense of empowerment and ownership. In reflective reframing visual representations and physical experiences acted as important mediators of the joint idea building as proposed by Hargadon and Bechky. However, at the same time they acted as exclusion mechanisms for more radical or non-technical ideas as often the ideas which could not be represented in this visual/physical manner were excluded from the discussion as irrelevant. Hargadon and Bechky describe ways in which meetings, such as formal brainstorming sessions or weekly meetings, facilitated the help giving-help seeking interaction. The informants of this study perceived meetings as ways of confirming matters that were already discussed in informal settings and did not find them arenas for help seeking-help giving activities. Two of the companies did have the habit of arranging ideation sessions, but these were not perceived as generating genuine help giving, help seeking or reflective reframing interaction but more generating ideas from a specific perspective. This difference in results is possibly explained by the difference in context as Hargadon and Behcky had studied

dynamic consulting companies/teams whereas the empirical materials of this study come from technology companies in traditional industries.

Second, the results indicate a paradox between the collaborative praxis and the canonical practices in relation to understanding innovation in the organizations studied. On the one hand actors were good at finding alternate routes to develop their ideas and perceived the flexibility of these activities central for innovation. Also, the social nature of the activity was recognized as innovation rarely stemmed from the efforts of a single actor. On the other hand the linear and rational nature of the process was perceived as an ideal and was largely the image put forward by the official structures in the organization. Accounts of innovation were communicated as hero-stories of inventive individuals and results of intentional (though laborious) efforts. The canonical practices act as mediators of instrumental rationality (Brown and Duguid, 1991) whereas the collaborative praxis of innovation values intuition and passion. The tensions between these conflicting forces in innovation have been discussed in the literature on exploration and exploitation in organization as well as organizational ambidexterity. Exploration refers to the search for and introduction of novel ideas and concepts whereas exploitation refers to their utilization and routinization (March, 1991). Ambidextrous organizations thrive in both, simultaneously. In relation to the ambidextrous capabilities in organizations, Andriopoulous and Lewis (2009) have identified three paradoxes of innovation in organization: profit emphasis vs. breakthrough emphasis; tight coupling vs. loose coupling with customers; and discipline vs. passion. The results of this paper add especially to the understanding of the paradox between discipline and passion. Andriopoulous and Lewis (2009) note that the tension between discipline and passion is dealt with integrating different demands into paradoxical work identities or/and maintaining distinct work identities. The results of this study indicate that although the individual actors had paradoxical or distinct work identities that allowed for valuing and practicing passion, intuition and collaboration in their praxis, they were not allowed to conceal this part of their identity when interacting with the canonical practices of the organization. The results of this paper also take the investigation of the paradox between discipline and passion to the group and organizational level, which adds to the understanding created from the individual level by Andriopoulous and Lewis (2009). In a more general level, this paper complements the literature on the ambidexterity and exploration-exploitation tension in organizations by examining how these conflicting

forces come into play in the front-end of innovation as opposed to perceiving the innovation process as an inherent locus of the values of exploration. And while there is literature that has addressed the dark sides and tensions inherent in innovation activity (e.g. Janssen et al., 2004), there is far less research that has examined the way these tensions portray themselves in the way innovation praxis is legitimized in the canonical practices of organizations (Brown and Duguid, 1991 being an important exception of the rule).

Third, this study contributes to the discussion of the interplay between canonical and non-canonical practices in innovation activities. The activities identified by Hargadon and Bechky (2006) have offered an effective way of operationalizing collaboration and allowed for a detailed account of the way canonical practices are decoupled from the actual praxis. The results of this study show that the formal processes and tools of innovation management are designed and implemented for the evaluation and decision making on ideas but largely fail in contributing to the collaborative development of ideas. This is in line with the argumentation of Brown and Duguid (1991) and Dougherty (1992) but adds to them in specifying the ways in which they are decoupled from or inhibit collaborative activities. While Brown and Duguid (1991) have examined collaboration as an inherent quality of communities of practices and – following Orr (1990) – focused more specifically on the storytelling activities of their members, this study has examined the interactions that have been found as precipitating moments of collective innovativeness (Hargadon and Bechky, 2006). While the specific ways in which the structures are discussed in the findings, a general level notion that relates to the study of Brown and Duguid (1991) is the fact that this decoupling was perceived as a natural quality related to the canonical practices of an organization. The collaborative praxis was perceived to be situated in and the responsibility of communities of practice and to be "better left alone" and not tampered with official structures. Though this perception would seem to be in line with the requests for freedom to operate for communities of practice requested by Brown and Duguid, it rather caused the collaborative side of the praxis to go unnoticed and unsupported. The question would thus be how to recognize the collaborative praxis in the canonical practices of the organization while not attempting to regulate it.

Finally, this paper has implications to the literature on the activity-stage models of innovation much used in depicting the innovation process in innovation management literature (King and Anderson, 2002, cf. Cooper,

1993, 1988; Mumford, 2000; Nobelius and Trygg, 2002). Perhaps the most famous of such models is Cooper's stage gate model (Cooper, 1993; 1988) which had also strongly inspired the innovation management processes of all the case companies of this study. The stage gate model is a conceptual and operational model that breaks the innovation process down into sub-processes and check points. The stages have a prescribed and multifunctional set of activities, and every stage is preceded by a gate which serves as a quality control and go/kill check points. The results of this study are in line with the criticism the activity-stage models have received for playing down the complex and social nature of the process (King and Anderson, 2002; Olin & Wickenberg, 2001) and assuming the rationality of actors (Kijkuit and van den Ende, 2007) and linear progression of innovation efforts. Many of the models do include the notion that the activities are cyclical and complex, but this perception is often lost in the side notes. The results of this study add to the previous criticism by showing how the use of these models can create barriers to innovation efforts instead of supporting them. The value of and need for collaboration is widely recognised (Montuory and Purser, 1999; Lowe, 1995; Laudel, 2001) and thus the lackings these processes have in this respect is a central hindrance in their application in organizations – at least if not complemented with other support mechanisms. Different portrayals of the innovation process have been put forward by several researchers. For example, the evolutionary theories of change (e.g. Nelson and Winter, 1982), the open innovation paradigm (e.g. Chesbrough, 2005) and other writers (e.g. Schroeder et al., 1988; Mankin, 2004) have provided different perspectives to innovation, but these are (yet) rarely feeding into the innovation management systems of companies. Additionally, these alternative perspectives are more geared towards external influences and interaction or societal level analysis the internal innovation efforts of organizations.

Conclusions

In this paper I have examined the collaborative praxis of innovation in the front-end of the innovation process and more specifically the ways in which the formal structures of the organization fail to support it. This has been done with respect to the interactions precipitating moments of collective creativity (Hargadon and Bechky, 2006). The findings of the paper indicate that the formal structures are, indeed, decoupled from the collaborative practice and also inhibit help seeking, help giving and reflective reframing. The main problems in relation to help seeking – help giving interaction were time lags,

impersonality and the fact that the official process often disconnected the idea from the original problem. Also, actors felt the need to hide uncertain ideas from the evaluation and could not seek assistance from the official organization. Whereas help giving – help seeking interaction was a natural part of everyday praxis, reflective reframing was scarcer and clearly more challenging in all respects. This applied also to the ability of the formal processes and tools to host this type of activity. The official processes gave little room to bring unclear thoughts to the fore as they were met with decision points and evaluation instead of joint reflections. Intuitive and passionate justifications of ideas were often hidden from the official processes and legitimized with the use of (seemingly) objective criteria, measures and test results. The re-evaluating positions assumed and decisions made was found uncomfortable and a sign of weakness in the formal arenas and thus the decision making practice favored assuming clear positions and sticking to them. The preference of not to reconsider decisions made in the past resulted into tendency to say no to uncertain ideas and the loss of possibilities for reforming ones perspectives when they were met with new understanding. Finally, though innovation was perceived as a social phenomenon, the tools and processes were geared towards accommodating individual actors subjecting their idea to evaluation by others and thus reproduced the perception of individuals as the locus of innovation and lessened the understanding of innovation as a joint construction.

Managerial implications

The common approach of management structures is to rationalize, steer and control organizational activities and they are indeed needed in that respect. But in relation to innovation this creates an interesting dilemma: how to control something that is inherently supposed to find novel paths and contest existing structures. This contradiction is visible in many organizations where the accounts of creating free and supportive environments for collaborative actors are combined with rigorous processes and evaluation methods. Feldman (1989) and Olin and Wickenberg (2001) argue that it is important to have guiding structures in an organization in order for the autonomous action to be effective and the importance of clear objectives and vision has also been highlighted by the creativity and innovation literature (e.g. Amabile et al., 1996; Anderson and West, 1998). However, the challenge is to find the right balance between structure and autonomy and find ways in which to accommodate the two. The search for this balance is in the fore of innovation management activities in most

organizations, but often the freedom aspect is perceived from the part of the individual innovator and the possibilities to accommodate collaboration are left outside the scope. There is also a belief that the best the formal organization can do is to close its eyes from the informal praxis and just let it happen. While there may be some truth to this notion, organizations should take a closer look on how their members actually collaborate in innovation activities and how this could be supported – without striving to formalize it.Though the formal processes of an organization cannot be expected to accommodate all activities imaginable and though actors are usually skilled in going around the processes when needed, there is a clear need to find a way for the formal organization to recognize, tolerate and support also the type of activities it cannot control.

The results of this study also relate to the realization of the antecedents of innovative behaviour in organizations. These antecedents include autonomy, collaboration, supportive climate, strategic attention, stress on performance and a decentralized organization (De Jong and Kemp, 2003; West and Farr, 1989; Kanter, 1988; Amabile et al., 1996). While organizations are widely aware of these factors and strive to support their emergence, they are often puzzled by how this could be done. Various efforts to make the climate more supportive are made, including arranging brainstorming sessions, away-days and spatial solutions, but the process models and tools used for the management of innovation activities and the flow of ideas often conveys a mindset that is opposing to these efforts. The tools and processes used in innovation management should thus be critically evaluated from this perspective and made sure that they represent the type of principles that the organization wishes to promote. My aim here is not to propose that the type of models and tools used in the companies at the moment would not be useful all in all, but call for a greater awareness of the ends they serve. This would then allow for more discussion on how the collaborative praxis of innovation could be supported with the help of canonical practices in organizations.

Limitations and questions for further research

While this paper has presented valuable findings on the way collaborative praxis is decoupled from or inhibited by the canonical practices in the front-end of innovation, it has several limitations. First, there are ways and situations in which the canonical practices do support collaboration. For example, individuals tend to ideate with a same pool of people – the ones they are in contact with currently and the ones they have know for long –.

This lessens the possibility for a fresh mix of perspectives, which can be assisted with the creation of formal practices or arenas that bring together people from different areas. Though this perspective is not addressed in this paper, it would bring a valuable addition to the results and thus represents a natural direction for further research.

Second, the context of the research has been limited to the front-end of innovation process and it would be valuable to investigate the same questions in the later stages of the process. Due to the creative and fuzzy nature of the front-end it is distinctively different from e.g. the product development or commercialization phases. It is probable that there will be differences in the way the formal structures are able to support collaboration in these different phases. Also, the context of the study is limited to technology companies acting in a mature industry. A comparison with different contexts would be valuable.

Third, the limitations of the retrospective interviews in examining the development of ideas are obvious. Though I have strived to overcome this limitations in multiple ways discussed in more detail in the methods-section, being able to observe the development of ideas into concepts in real-time would definitely offer valuable insight to complement the results of this study.

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ESSAY B

Smuggler's Guide to Innovation: the Subtle Side of Championing in the Front End of Innovation.

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SMUGGLER'S GUIDE TO INNOVATION: The subtle side of championing in the front end of innovation

Tea Lempiälä and Sari Yli-Kauhaluoma

Abstract

Whereas much of the championing literature has focused on determining the qualities of successful champions, the present study focuses on their activities in the front end of innovation. More importantly, this study examines the subtle, more clandestine side of championing activity, in contrast to the more assertive activities that have been the focus of extant research. Such activities are referred to here as 'smuggling practices' and six distinct practices have been identified as belonging to this domain. This study is an in-depth qualitative case study, and thus adds also to the methodological diversity of championing research.

1. Introduction

Champions have been found to play an important role in the emergence of innovations and new businesses (cf. Howell, 2005; Lichtenthaler and Ernst, 2009). They are traditionally viewed as individuals who fearlessly and relentlessly push ideas forward in organizations (Howell and Higgins, 1990a; Schön, 1963). The extant research has paid a great deal of attention to identifying the characteristics of champions (Howell and Boies, 2004; Howell

and Higgins, 1990b), describing how they are distinct from non-champions (Shane, 1994) and explaining the emergence of champions in organisations (Markham et al., 1991). Apart from identifying typical qualities of organisational champions, the literature has started to turn its attention to championing activities; that is, how these individuals advance ideas in organisations (cf. Howell et al., 2005; Howard-Grenville, 2007). Nevertheless, besides general recognition of, for example, champions operating through informal channels, taking personal risks, displaying contextual knowledge and political skills (cf. Howell, 2005; Markham, 2000; Nordqvist and Melin, 2008), a wider understanding of champions, and their activities in particular, is needed and has already been called for (cf. Markham and Aiman-Smith, 2001).

The extant research presents champions mainly as heroic individuals who loudly and proudly promote their ideas against organisational opposition. This paper, however, suggests that such a straightforward definition of champions may leave some important features of championing activity unnoticed. The need to make ideas fit the current contexts and hide radical ones from management's view has been pointed out by previous research on innovation diffusion, issue selling and corporate venturing (e.g., Mainemelis, 2010; Hargadon and Douglas, 2001; Dutton et al., 2001; Burgelman, 1983). However, such discussions have rarely, if at all, addressed how champions respond to these needs. It seems that responding to this conservative bias (Dutton et al., 2001) would require a closer analysis of the diversified and subtle set of championing practices than the ones discussed in the extant literature.

The aim of this study is to complement the understanding of champions, particularly their role in the emergence of innovations and new businesses, by bringing to the fore the subtle nuances of championing activity. The study focuses on the early phases of the innovation process (that is, front end of innovation), especially the championing practices of ideators. The emphasis on front-end innovation is relevant given that most of the studies on champions to date have focused on examining the implementation phase of the innovation process (cf. Howell and Boies, 2004; Mainemelis, 2010; Markham, 1998) and research on championing in the front-end of innovation is scarce (Markham and Aiman-Smith, 2001). Conversely, the front end of innovation has been found to be an important locus for championing activity as the influence of champions seems to be greatest at this unstructured stage of the innovation process (e.g., Markham et al., 2010; Markham, 2002; 1998; Roberts and

Fusfeld, 1981). Because there are rarely any formal processes in place in the front end, ideators can and must find their own ways to develop and promote ideas (Kim and Wilemon, 2002).

The present study is based on empirical materials from four Finnish technology-based companies in which seven distinct idea tracks were studied. With 'idea track' we refer to the progression of an idea into a technological concept. Six of the studied idea tracks are product innovation efforts and one is a technological service concept. The study's focus, therefore, is on the championing of technological ideas, which has also been the case in most of the earlier studies.

The results of this study suggest that subtle championing activities play an important role in the front end of innovation. Champions engage in various practices to soften the collision of the old and the new, in order to advance their ideas in organisations. These practices are more varied than the clandestine activities that the existing literature has recognised (see e.g., Burgelman, 1983). The present paper refers to these as 'smuggling practices', a concept that refers to all activities by which a champion tries to take an idea through an organisation without being particularly assertive or visible in his or her efforts. In brief, the smuggling practices that were found to be particularly important for championing in the front end of innovation are the following: involving others in constructing the idea, having patience in getting one's ideas heard, hiding ideas from formal arenas, enforcing fit to current context, creating external pressure, and softening decision making situations.

This paper is structured as follows. It starts with a brief presentation of the existing literature on champions in general and championing activities in particular. It then explains the details of empirical settings, material and methods and, finally, presents and discusses the findings of the study.

2. Championing in the front end of innovation

The front-end of innovation refers to the part of the innovation process that starts with the recognition of an opportunity and ends with the creation of a

(technological) concept (Koen et al., 2001)[1]. This essentially means that the front end includes all activities before the idea development is organised as a product development project. Perhaps as a consequence of the prevailing focus on the later stages of the innovation process, the previous research on championing has linked the championing role to middle management (cf. Shane, 1994) instead of the ideators themselves. In the front end of innovation, however, it is necessary to examine ideators as champions because they are usually the ones who advance and promote the ideas while developing them further (e.g., Koch and Leitner, 2008; Khurana and Rosenthal, 1998). Moreover, creating an appealing concept is a crucial part of championing activity at this stage (Markham et al., 2010).

The next section will briefly summarise the existing research on champion characteristics, followed by further elaboration on the current knowledge on championing activity and its links to the subtle forms of idea selling in the front end of innovation.

2.1. Identifying Champions

Donald Schön's (1963) work on the role of champions in developing radical military innovations has served as a starting point for the discussion on champions. Schön characterised champions as individuals who identify themselves with an idea and actively promote it in the organisation, risking their own position in the process. This willingness to take risks has often been quoted as one of the most distinctive qualities of champions relative to their peers (Markham, 1998; Howell and Higgins, 1990a). However, this does not mean that champions are prone to favouring radical ideas over incremental ones (Markham et al., 1991; Markham and Griffin, 1998). Risk-taking is highlighted because the champion is often seen as promoting an idea in the face of organisational opposition (Howell and Higgins, 1990b; Markham et al., 1991). In order to survive in such circumstances, champions are found to portray "extraordinary confidence in themselves and their mission" (Howell and Higgins, 1990b: 251). Champions are further described as being persistent and assertive in their persuasion efforts (Markham et al., 1991; Roberts and Fusfeld, 1981) and not discouraged by resistance (Howell et al., 2005) or

[1] In this context, the term 'concept' refers to a framing of the idea that includes a rough estimate of, for example, the risks involved, technology unknowns, required investments, potential customers and competitors (Koen et al., 2001).

negative outcomes (Garud and Van de Ven, 1992). However, a recent study by Lichtenthaler and Ernst (2009) showed that even though champions do overcome resistance, they are less likely to act in strongly unsupportive environments.

Champions are thus traditionally presented primarily as exceptional individuals who overcome virtually any obstacle to have their ideas accepted in an organisation. However, the present study adheres to another perspective put forward by, for instance, Markham and Ayman-Smith (2001), Dutton et al., (2001) and Rost et al. (2007) and pays closer attention to the collaborative activities of champions. The above authors have pointed out that rather than fighting against a hostile (or indifferent) environment, champions find ways to work in collaboration with others. The present study also differs from the traditional approach by perceiving championing activity as something that can be learned and that emerges in response to the social context, instead of treating championing ability as an inherent quality (cf. Howell et al., 2005; Markham et al., 1991 as examples of the traditional approach). Following Howell and Boies (2004), the paper then defines champions as organisational actors who promote, create and develop ideas and, at the same time, influence and work closely with others – either within or outside their own organisation. Thus, champions promote ideas that the organisation does not formally demand from them, although innovating in general might be a part of the champion's work requirements. This approach makes it possible to focus on championing activity rather than on champions and their qualities as such.

2.2. Championing activity

We have identified three categories of central championing activities from current research. The first category deals with justifying the idea in the organisation (e.g., Shane, 1995; Garud and Rappa, 1994; Howell and Higgins, 1990b; Howard-Grenville, 2007). Concretely, this means that champions defend ideas particularly in strategic terms and convincing others of the potential benefits of the idea to the business goals of the organisation (e.g., Howell and Boies, 2004; Markham, 2000). Champions are then seen as strategic actors and visionaries who are able to create and distribute an understanding of the desired strategic direction, as well as of how their idea would contribute to moving forward on this path. However, Markham et al. (1991) found that champions are not necessarily good at judging the real

benefit of an idea for the firm, as they may also support projects that do not have a positive impact on business goals or that fail altogether.

The second type of critical championing activity deals with securing resources for the idea (Markham and Ayman-Smith, 2001; Kanter, 1988; Burgelman, 1983). Champions are found to be particularly good at this activity and although the ideas they support are not always successful, such ideas tend to receive more resources and management support than projects that are not endorsed by champions (Markham and Ayman-Smith, 2001). Champions lobby for monetary resources for their projects, as well as time and personnel allocations (Markham and Ayman-Smith, 2001) and attempts directed towards senior management are highlighted in importance (Shane, 1994; Burgelman, 1983). It tends to be more difficult in the front end of innovation to secure resources than in the later stages of the innovation process. This is because a project has not usually been established at this stage and there are few formal processes in place (Markham et al., 2010; Markham, 2002; Kim and Wilemon, 2002). Therefore, champions must often find their own ways of identifying the right people and acquiring the monetary resources they require.

Finally, the third central championing activity consists of building coalitions and motivating others in the idea development process (Howell et al., 2005; Howell and Boies, 2004; Howell and Higgins, 1990a; Kanter, 1988). In the championing literature this socio-political activity is highlighted and champions are perceived as social actors who excel at finding their way through the organisation's informal system (Howell et al., 2005; Markham, 2000; Markham and Griffin, 1998; Day, 1994). The extant research on the front-end has, however, focused on the formal organization of effective collaboration while the more informal activity has been less examined (cf. Kim and Wilemon, 2002; Nobelius and Trygg, 2002). Little of the current literature thus discusses the socio-political activity in the front-end *per se*, but during the innovation process in general.

The motivational efforts include providing information about and raising enthusiasm towards the idea among critical actors in the organisation. Howell et al. (2005), who examined the actions of champions in a more detailed way than most of the previous championing studies, discovered that the most important ways to involve others in development efforts are expressing confidence and enthusiasm about the success of an innovation, persisting in the face of adversity and getting the right people involved. By persisting in spite

of adversity, Howell et al. (2005) meant that champions do not let go of an idea just because others say it is not feasible. By getting the right people involved, they refer both to the key decision makers and to those who can solve problems that emerge in the idea development effort. Interestingly, unlike most studies on championing, Howell et al.'s (2005) findings do not highlight the role of providing arguments for the idea's contribution to the business goals of the organisation; instead, they emphasise the socio-emotional side of championing activity. Recent studies by Sandberg (2007) and Rost et al. (2007) present similar findings and emphasize the importance of generating enthusiasm and excitement. Further, Carnelli and Spreitzer (2009) argued that the positive emotions experienced by the champions themselves will help achieve buy-in for the ideas they present.

All the activities discussed above assume a visible and assertive role for the champion in the organisation. Champions spread understanding about a new strategic direction, lobby senior management for resources and enthuse others with their confidence. While these are the most commonly discussed activities in the current literature, champions are sometimes unable to use assertive idea-selling methods, and must instead resort to more clandestine or subtle activities. These are discussed next.

2.3. Smuggling activity

While much of the championing literature portrays champions as celebrating the uniqueness of their idea, another important part of idea promotion is making the idea fit the current organisational context (e.g., Howard-Grenville, 2007; Garud and Rappa, 1994). This topic has scarcely been discussed in championing literature, but has been recognised in relation to issue selling (e.g., Dutton et al. 2001; Mainemelis, 2010) and innovation diffusion (e.g., Hargadon and Douglas, 2001). Dutton et al. (2001) called this phenomenon a "conservative bias" in issue selling, whereas Hargadon and Douglas (2001) used the term "robust design"; that is, embedding the invention into the current institutional context. Radical ideas in particular can be presented as incremental or chopped down to incremental parts in order to make them more understandable and acceptable among recipients (Dutton et al., 2001). Novel ideas are made to seem familiar because the existing institutions constitute the range of accepted solutions, actions and

interpretations for their members (e.g., Howard-Grenville, 2007; Hargadon and Douglas, 2001; Hargadon and Fanelli, 2002; Goffman, 1959).

Conservative bias sometimes even forces champions to hide their ideas in order to avoid possible rejection or to keep the idea alive after being instructed by management to stop working on it (Mainemelis, 2010). Concealing ideas until they can be proved feasible can be an important part of championing activities, especially in highly innovative ventures and in the front end of innovation (Mainemelis, 2010; Koch and Leitner, 2008; Howell, 2005; Burgelman, 1983). Resources are scarcer in the front end of innovation than in the initial research or product development phase (Markham et al., 2010; Markham, 2002), which makes clandestine activity especially relevant (Koch and Leitner, 2008). Moreover, since ideas are still fuzzy at this stage, there are fewer opportunities to convince decision-makers with hard facts and figures. In such cases, champions often develop ideas by utilising resources that have either been forgotten or hidden (Burgelman, 1983; Shane, 1994). This allows the ideas to evolve without the pressure to create proof and results at an early stage in the process.

The timing of idea presentation is another way for champions to soften the clash between their idea and the status quo. Dutton et al. (2001) discussed the importance of timing in relation to issue selling, identifying three forms of such activity: persistence, opportunism, and the inclusion of others at an appropriate time. While the championing literature has highlighted persistence, opportunism and timely inclusion are rarely discussed. Opportunism is described as sensing when it is appropriate to present an idea, while timely inclusion is the understanding of when others should be involved in the process. Dutton et al. (2001) stated that the early inclusion of others helps to save effort related to sales activities later on in the process whereas Howell (2005) cautioned that ineffective champions would push too quickly and strongly without first building the necessary enthusiasm and support. Therefore, the question is not just when to involve others in the process, but how. In order to successfully involve others, champions must be prepared to see their idea through others' eyes, rather than just pushing their own vision through the organisation (Parker and Axtell, 2001; Boland and Tenkasi, 1995; Howard-Grenville, 2007). Champions need to balance between persisting with their own vision and being willing to make room for novel perspectives (Garud and Rappa, 1994; Markham, 2002). If they do not find the appropriate balance,

their influence attempts can, at worst, generate conflicts and even reduce support towards the idea (Markham 1998; 2002). While the championing literature does not offer insight into how this could actually be achieved, related discussion in creativity research offers some perspective into this activity[2] through the concept of reflective reframing. Reflective reframing activity, as discussed by Hargadon and Bechky (2006), is an example of including others in a genuinely collaborative manner in the construction of an idea. Reflective reframing refers to an activity in which all involved parties must modify their perspectives to form a common framing of the situation. This happens in situations that have no ready-made or clear decisions or even questions and where the ideators must make sense of the situation together.

3. Research setting

This research is based on two in-depth qualitative studies of how ideas are generated and developed in a technological innovation process. One of the studies focused on idea development processes in three large technological firms, referred to here by their pseudonyms: Process Inc., Measurement Inc. and Construction Inc. The other study focused on the search for technological applications for a scientific discovery in a small start-up company, referred to here by the pseudonym Chemical Inc. The companies studied have many similarities, since they all are based on a particular core technology and their innovation activities are centred on technological inventions. Also, customer approval is central for each company. However, the ways in which innovation activities are organised within each of these firms vary notably. Process Inc. has specific technology teams that form the core of its innovation activities, while Measurement Inc. has established a concept development team that spans technological boundaries. Construction Inc.'s development activity is based on dyadic relationships and Chemical Inc. develops and uses inter-organisational collaboration to develop technological innovations. This mix of homogeneity and diversity provides an interesting basis for exploring the details and diversity of championing activity in front-end innovation in different organisational contexts (see Appendix). Before presenting the

[2] Even in the field of creativity research there are regrettably few studies that address the collaborative construction of ideas – Hargadon and Bechky's (2006) research being a fortunate exception of the rule.

methods used in this study, the following provides a brief description of the case organisations.

Process Inc.

Process Inc. is a globally operating company that provides technologies and services to the metallurgical industry. Although the company is considered to be innovative within the industry, the conservative operating environment poses challenges for the implementation of innovative solutions. The unit studied is a technology team located within one of the three divisions of the company. The team includes 17 people, who are highly educated and experienced in the technological domain. The purpose of this team is to maintain the continuous development of one of the key technologies of the company, as well as to consult other organisational members and customers in issues related to this technology. The team has a long history within the company, as the technology in its responsibility has been the core business of the company for several decades.

Measurement Inc.

Measurement Inc. is a globally operating producer of measurement-related products. The company was originally founded based on the technological invention of a new type of measurement technology. The company has recently created a concept development team that spans technological boundaries, even though it is located in one of the three technology divisions of the company. This team is the focus of this study. The purpose of the team is to develop novel concepts, which it then offers to the three divisions for further development. The time frame for developing a single concept is three months. The team has 10 members, plus a team leader and a project manager. The team leader and the project manager prepare the development projects before presenting them to the team. At this pre-development stage, the team leader and project manager simultaneously prepare three alternative concept ideas, one of which is chosen for further development at a formal decision gate.

Construction Inc.

Construction Inc. operates in a conservative construction industry, mainly in the European market. The company offers components, systems and integrated systems to construction and engineering industries. In the past, Construction Inc. has relied

heavily on its competencies in material sciences and production capability, although it has recently attempted to take upon a more customer-centric and solution-based approach. The company is divided into two business divisions, both of which provided interviewees for the current study. The interaction structure of the company is based on dyadic relationships rather than specific teams. The focus of the study is the championing activity that takes place in these dyadic relationships.

Chemical Inc.

Chemical Inc. is a small start-up company that produces new types of chemical catalysts. All of the firm's five founders are scientists in chemical engineering or chemistry who originally worked at the same university. Soon after setting up the firm, three of the founders started working for the firm full-time, while two founders remained just as owners. After patenting their invention, the entrepreneurs tried to find potential industrial applications for the catalyst. The key challenge was to gain knowledge about ongoing relevant development processes in industry, because access to relevant industrial processes often takes place through research and development efforts. This required close collaboration with other chemistry professionals, even across industries.

4. Methods

This research has been conducted as a multiple case study (DuBois and Araujo, 2004) including four case companies from different industries. Specific idea tracks were studied within each case company (see Appendix 2 for a detailed description); that is, the cultivation of ideas into technological development concepts. These idea tracks were mainly studied with retrospective interviews, which are considered to be a useful way to understand the details of innovation processes (Van de Ven and Rogers, 1988). The use of retrospective interviews was motivated by two factors. The first was the difficulty of observing multiple and simultaneous ongoing innovation processes, and the second was the opportunity to investigate distinct innovation efforts and select tracks in which the champions were able to have the concept selected for further development as well as tracks in which they were not. Although categorising idea-smuggling practices based on their

successfulness was not the primary aim of the study, this set-up has, to our experience, provided depth to the analysis of the use of these practices.

The analysis approached retrospective accounts as interviewees' interpretations of past events (cf. Cox and Hassard, 2007). Several participants in each idea development effort were interviewed in order to identify the key champions and their collaborators, to gain multiple perspectives on the championing activities and to achieve a complete picture of the praxis behind the development of ideas (Van de Ven and Rogers, 1988). The interviews followed semi-structured and open-ended interview methods (Emerson et al. 2001; Silverman, 2000). Two idea tracks from Process Inc., Measurement Inc. and Construction Inc. were examined, plus one from Chemical Inc. A total of 73 interviews were conducted: 25 at Process Inc., 15 at Measurement Inc., 14 at Construction Inc. and 19 at Chemical Inc. Table 1 presents a more detailed account of the idea tracks.

Table 1: Desciption of Idea Tracks

	Champions involved	**Others involved**	**How the idea emerged**	**The eventual concept**
Idea Track 1 (Process Inc.)	A senior metallurgy expert (main champion), a junior metallurgy expert.	Senios expert from customer (the main target of influence efforts), sales manager from Precess Inc., mechanical designer (modelled the idea).	Customer had an idea and demand for a better cooling solution for an industrial process.	A new type of a cooling element was created based on a combination of customer ideas and an existing technique that had been applied in different contects at Process Inc.
Idea Track 2 (Process Inc.)	A young product manager	Customer representatives from a elivery project, mechanical designer (influence target after which an important contributor to idea), a senior expert known for his wild ideas (contributor).	A product manager put forward an idea for optimizing the efficiency of an industrial process. He had presented the idea already two years before, but it had newer been implemented.	A senior expert presented a wild idea to be combined to the initial idea. The product manager simplified the wild idea into a form that could be accepted by a mechanical designer who was needed in making the idea feasible.

Table 1: Desciption of Idea Tracks

	Champions involved	**Others involved**	**How the idea emerged**	**The eventual concept**
Idea Track 3 (Measurement Inc.)	Team leader (TL), project manager (PM), service business manager (SBM) (secondary champion)	Potential customers, eight members (of 12) of the concept development team (also important contributors to the concept), division manager, CEO, service division manager, service business manager.	TL and PM started developing a concept for water restoration business. The concept idea quickly evolved from a more accurate measurement concept into a solution providing more efficiency for the work flow of the customer. Idea was based on project manager's novel framing of an opportunity that had long been recognized and for which several ideas had been proposed before.	The technological solution as well as the business model evolved significantly during the development effort. The end result was a service concept crossing organizational boundaries. After a prediod of high enthusiasm throughout the company the idea was dropped at the final decision gate due to unresolved issues related to risk sharing and sales channels.
Idea Track 4 (Measurement Inc.)	Team leader, project manager, Segment manager	Potential customers, Division manager, concept development team (also important contributors to the concept), segment manager (first influence target, then champion),, (product manager)	A technological solution improving the energy efficiency of buildings.	The concept did not change during he development process but was rather technologically refined.

Table 1: Desciption of Idea Tracks

	Champions involved	**Others involved**	**How the idea emerged**	**The eventual concept**
Idea Track 5 (Construction Inc.)	A senior communications specialist, A senior R&D specialist	A senior R&D specialist (later on champion)	While commenting a strategy document presenting new ideas, the communication specialist developed one of the ideas into a radically new direction.	A ridacal new business concept not to be applied at once, but to be used for long-term strategic discussion.
Idea Track 6 (Construction Inc.)	Two technology experts	Resource holders higher up in the organization	The technology experts came into contact with a discovery made by a foreign research institute. This discovery was an empirical finding of a way to make very hard, yet moldable steel. The scientific basis for the discovery were, however, not known.	The idea of the concept as such was not changed, but the development included efforts to identify the scientific basis for the discovery and replicate it. Eventually the contact to the research institute was lost.

Table 1: Desciption of Idea Tracks

	Champions involved	**Others involved**	**How the idea emerged**	**The eventual concept**
Idea Track 7 (Chemical Inc.)	Three inventors who set up a start-up firm	Chemistry professionals in large established firms	The inventors came up with an idea to use the chemical catalyst in a chemical reaction used in traditional food-processing industry. A research manager in a food-processing firm proposed a chemical reaction in a functional food-processing, instead. Collaborators of the food-processing firm heard about the catalyst from one of their collaborators in a university and suggested testing it.	A suggestion to use the chemical catalust in a chemical reaction used in functional food-processing.

In the case of Process Inc. and Construction Inc., it was possible to complement the retrospective interviews with group observation data (Hammersley & Atkinson, 2007) in order to shed more light on the minutiae of organisational praxis (Janssen et al., 2004). Observation of organisational members in ideation sessions provided insights into aspects such as the kind of argumentation used while presenting ideas and the types of tactics used to criticize and defend ideas. In the case of the large technological firms, the authors of the study were actively involved with these organisations during the research process, which offered greater insight into their everyday reality. Also, the preliminary results of the research were discussed with the informants in various workshops, meetings and informal discussions. In the case of Chemical Inc., interviews were extended to the key collaborators in large established firms. The empirical materials also included written documents concerning, among other things, various technological experiments in the course of the development process and visits to different kinds of R&D facilities. Most of the interviews and ideation sessions (with the exception of two interviews and two workshop observations) were recorded and transcribed. Detailed field notes were taken for the interviews and workshops that were not recorded.

The empirical data was analysed inductively, applying the grounded theory process proposed by Glaser and Strauss (1967). The analysis was guided by the focus on the various subtle ways in which ideas are advanced and promoted in the front end of innovation. The analytical process proceeded in three phases. The first phase identified the central championing activities in each idea track. To do this, all of the activities in which our informants were engaged while developing and promoting ideas were coded from the data. In the analysis of Process Inc., Measurement Inc. and Construction Inc. Atlas.ti was used as a coding tool. In all four cases, the coding was done on a detailed level, including a high number of fine-grained practices. In the second phase, a cross-case comparison was conducted on the basis of the single-case analysis. This process compared the key championing activities that emerged from each idea track. It soon became evident that the subtle ways of advancing ideas merited further attention. Accordingly, the third phase deepened the analysis of this theme by identifying on a more detailed level how this subtle activity was manifested in each case. The entire analysis process involved constant reflection and comparison of the emerging results with the relevant literature.

5. Smuggling Practices in the Front End of Innovation

The results of our analysis highlight the fact that, in contrast to traditional view on champions (cf. Markham and Griffin, 1998; Markham et al., 1991; Howell and Higgins, 1990a; 1990b; Schön, 1963), championing is not an activity ruled by individual heroes; it is primarily a collaborative endeavour. The results also show that the subtle forms of championing – or smuggling practices – are especially highlighted in the front end of the innovation process. The smuggling practices that we identified overlap but are not identical to the clandestine activities recognised in the extant research (c.f. Burgelman, 1983). A total of six practices were identified that aimed to smuggle ideas within organisations: involving others in the construction of an idea, being patient in getting one's ideas heard, hiding ideas from formal arenas, enforcing fit to current context, creating external pressure, and softening decision making situations. Before these practices are described in detail below, Table 2 summarises the results of the study.

Table 2: Summary of Results

	Involving others in constructing the idea	**Having patience in getting the idea heard, letting go**	**Hiding ideas from formal arenas**	**Enforcing fit to current context**	**Creating external pressure**	**Softening decision-making situations**
Process Inc. Idea Track 1	- Building the idea as a joint effort between a senior and junior expert. - Asking for feedback from a familiar colleague - Trying to find ways in which the customer's suggestion could be incorporated into the idea	- Not pushing when no reaction received from the customer regarding the idea sent to them	- Not requesting resources through formal channels. - No formal decision-making points.		- Initiative came from customer, so external pressure existed naturally	- Sending the idea to the customer well before decision meeting
Idea Track 2	- Asking for feedback and contribution from a familiar colleague - Allowing a junior expert to take over the development of the idea; being happy about idea's advancement rather than protecting one's own role as the idea's owner.	- Presenting the idea to formal processes but not pushing for implementation. Returning to it two years later when identifying a problem to which it could be applied.	- Not relying on the patenting process to implement the idea - Finding resources and making decisions outside the formal decision-making processes	- Transforming a wild idea presented by a senior expert into a more acceptable (feasible) form, then presenting it to a mechanical designer.	- Linking the idea to an existing sales project - Having the idea included in a project bid	Proposing the idea to a customer as an optional solution that could be tested alongside the old technology

Table 2: Summary of Results

	Involving others in constructing the idea	**Having patience in getting the idea heard, letting go**	**Hiding ideas from formal arenas**	**Enforcing fit to current context**	**Creating external pressure**	**Softening decision-making situations**
Measurement Inc. Idea Track 3	- Involving the team in constructing the concept - Discussing and ideating freely, allowing the original concept to change significantly during the process - Handing the idea over to service division for further development	- Letting go (or at least appearing to let go) of the idea when its rejection seemed probable and commencing the development of a new idea.	- Hiring a student team to investigate the rejected idea from a different perspective (this could be done despite no longer formally pursuing the idea)	- Trying to enforce a traditional business model on a service concept	- Intensive selling efforts towards customers in the early stages of concept development	- Discussing the idea with service division representatives before each decision gate - Decision maker involved in choosing the original concept idea from three alternative options
Idea Track 4	- Segment manager included in sales efforts as co-champion - (Not allowing the team to genuinely contribute to the construction of the dea created negative consequences for their commitment and motivation)			- Selecting the idea so that it would best fit the strategic direction of the company - Protecting the idea from developing into a concept that would not fit the current strategy	- Intensive selling efforts towards customers in the early stages of concept development	- Discussing the idea with the key decision maker well before decision points and including him or her in sales efforts as co-champion - Decision maker (other) involved in choosing the original concept idea from three options

Table 2: Summary of Results

	Involving others in constructing the idea	**Having patience in getting the idea heard, letting go**	**Hiding ideas from formal arenas**	**Enforcing fit to current context**	**Creating external pressure**	**Softening decision-making situations**
Construction Inc. Idea Track 5	- Presenting a raw idea to a trusted colleague and constructing it together - Handing the idea over to the colleague for further development	- Not expecting the idea to be implemented right away or in its original form	- Contacting a trusted colleague instead of using formal means or tools to present the idea			- Presenting the idea casually and only half-seriously - Not insisting that an implementation decision be made in the short term
Idea Track 6	- Two engineers developed an idea collaboratively		- Hiding the idea from management due to its uncertain nature - Hiring Master's students and PhD candidates to investigate the idea - Maintaining informal contact with the research institute that initiated the idea	- The reason for hiding the idea from management was largely due to its poor fit to the current contextual and strategic frame		- Trying to secure evidence of feasibility before submitting the idea to decision making

5.1. Involving others in the construction of the idea

The results show that champions not only welcomed feedback and contributions from others to their ideas but also expressed that they were more willing to take the ideas forward as a joint effort than as an individual endeavour:

"Well, it's almost always better to think about them [ideas] with others. I mean … You do have to be really sure about something if you dare to take it [forward] alone." (Junior expert, Process Inc.)

The analysed cases had two main ways in which champions involved others in idea development and promotion. One important way was that the champions gathered a group of trusted individuals with whom they could test their ideas and receive feedback. These trusted individuals could be their peers, subordinates, supervisors, or even customer representatives. The central connecting features were informal rapport (as noted also by Koch and Leitner, 2008), mutual respect and common areas of interest. This finding is well aligned with the previous literature that highlights the coalition-forming activity of champions (e.g., Rost et al., 2007; Howell and Higgins, 1990a; Kanter, 1988). However, our findings further indicate that this activity is more of a collaborative effort than a strategic attempt to push the idea through the organisation. The primary aim of champions who involved others through discussions was not necessarily to convince the others of the quality of the idea, but rather to receive reassurance regarding its value and suggestions for improving it. Consequently, champions were able develop their ideas into a form that would be more easily accepted, either within their own organisations or by their collaborators elsewhere.

The results further suggest that champions not only allowed others to contribute to the construction of an idea, but even let them take the lead in its promotion. In large firms in particular, champions did not attempt to assume control over the idea until its implementation – or even through the front end. Instead, they were happy to let someone else take charge in taking the idea forward in the organisation and moulding it according to their own vision.

"Now that I think about the recent times, it has happened quite often that someone else, such as the IT department, will take it [the idea] forward. … I am happy as a clam if someone [takes my idea forward], because I'm usually a bit ahead of my time and

have been hitting my head against a brick wall trying to push them [ideas] through by force. So I am not at all worried [about losing ownership and credit]; I think it's just nice to come across it sometimes as a ready-made solution. So there is no jealousy, really there isn't …" (Senior expert, Construction Inc.)

It seems that these champions were not very possessive of their ideas or autocratic in their persuasion efforts. While they did seek recognition for their ideas, they were more keen to see their ideas implemented, even if this meant letting someone else be in charge of the development effort. This finding contests the earlier depiction of champions as identifying themselves strongly with the idea (e.g., Schön, 1963), and indicates that the champions' main interest is to have the ideas implemented, even though it may not represent their personal vision.

The consequence of letting others take part in shaping and even taking the lead of the idea development is that it seems to provide important commitment and ownership towards the idea. This provides some answers to the question of how others can be included in the development efforts early on (as proposed by Dutton et al., 2001) but not make the mistake of pushing too strong and too quickly (as cautioned by Howell, 2005). According to our results others should be allowed to genuinely participate in the construction of the idea because the enthusiasm (followed by co-championship) seems to emerge through personal investment and contribution to the idea (also noted by Gattiker and Carter, 2009, in the context of environmental management). The idea development processes in Measurement Inc. provide a particularly good example of this. In this case firm, the concept development team under study was responsible for coming up with a new concept every three months. There were significant differences regarding the involvement of team members in various concept development efforts, which also influenced the motivation level of the team members. In one particular effort, in which the team members were actively involved in constructing the concept, they became highly enthusiastic and committed towards the idea. Eventually, however, the concept did not receive a go-decision from the division management due to a lack of strategic fit within the target division (the concept was highly innovative, spanning divisional boundaries). In the effort that followed, the management duo of the team sought to create a concept that would be guaranteed to fit the current strategy of the target division. They pushed their own vision strongly, leaving little room for joint construction of the concept with the team members. Consequently, the

team members were not able to build ownership of the concept through questioning, challenging and contributing as they had in the previous concept development effort. This resulted in frustration and even resistance against the idea development process at the later stage among team members, even though the concept itself was successful in the organisation:

"It [the big picture of the concept] was already there. I think that was probably a big de-motivating factor right from the start. … It would be great to do real conceptualisation work … that we would have a question that would be open to all. I still don't quite know why exactly but no one was really inspired by the project… I **still** personally think that it's boring [laughs]." (Team member, Measurement Inc.)

"It almost feels like we were intentionally kept out of the ideation stage after the first failed project in order to make sure that we would end up with the product solution the managers wanted. … Even though the idea proposed by the managers would have been the best, which is a possibility, of course, the only way to recognise that is to make counter-proposals and jointly come to the conclusion that they are worse than the original. If you just say that 'this is what we are going to do', we're not going to be convinced. … Personally I am still not convinced [even though the idea has been accepted for further development]." (Team member, Measurement Inc.)

5.2. Patience in getting one's ideas heard

The second way in which the champions in our study smuggled ideas was by demonstrating a great deal of patience in getting their ideas acted on. In concrete terms, this means that they presented their ideas on several occasions and, if necessary, even waited years for the right time for the idea to be accepted. While the importance of right timing in idea presentation has been recognised (e.g., Dutton et al., 2001), our results indicate the importance and the nature of this tactic in championing activity. Our results note that champions were both persistent, in that they would not forget the idea, and flexible, in that they would let go of the idea if it did not seem successful at the time:

"We were about 10 years ahead of our time with X and we have learned from that that there's no use trying to force an idea when it's clearly ahead of its time. On the other hand, one must voice those thoughts, or at least be allowed to do it. Otherwise, they won't get used to them, even in 10 years. Therefore, we will present an idea along the way every now and then, but never force it. When we tried to push a novel solution for the internal ICT system by force and kept pushing and insisting that this was the only right way to do it and this is what we're going to do, well, it won't get accepted like

that. Instead, you have to make the propositions every now and then, and not too seriously." (Development officer, Construction Inc.)

The above quote indicates the importance of not insisting on an idea for too long on any given occasion; instead, one must be able to let go of an idea temporarily and return to it if and when an appropriate occasion arises. In the analysed cases, this kind of cycle of pushing and letting ideas go could be repeated multiple times. This means that ideas could be voiced on several occasions over several years before finally being acted on. Importantly, even though it might seem that pushing an idea relentlessly could bring it to the implementation phase sooner, our study suggests that such an approach can have a downside. Individuals who keep insisting on a particular idea can be labelled as trouble-makers and, consequently, shunned by others in the organisation. It seems, then, that champions consider it to be more important to select the right time and place for their idea promotion activities than to push a pressing idea at every possible opportunity.

5.3. Concealing ideas from formal arenas

The third way in which champions smuggled ideas was by concealing them from formal arenas and pre-testing them with customers before they could demonstrate feasibility. While earlier research has recognised these activities (Burgelman, 1983; Koch and Leitner, 2008), our results add to these notions by indicating on a more detailed level the ways of and reasons for engaging in this activity, as well as portraying some of its challenges.

Ideas were often concealed from formal arenas by identifying colleagues with relevant expertise and inviting them to take part in idea development with a small enough amount of effort that would not to raise questions in their reported time use. This also made it possible to "jump the queue" and have requests acted on right away, instead of waiting for one's turn in the formal processes. In most cases, these colleagues were motivated to invest their time in the development effort by the opportunity to be involved in an interesting endeavour, as well as an established relationship with the help-seeker. Another way of concealing ideas from formal decision making processes was to break them down into smaller and more incremental pieces. Thus, ideas that required larger investments would be presented in pieces that were small enough to be decided locally, while more radical developments would be cut up into incremental pieces. A common reason for concealing ideas from formal

processes stemmed from the fear of rejection (as noted previously by, e.g., Burgelman, 1983), since champions knew from experience that overly uncertain or ambiguous ideas would most likely be terminated if they were raised before there was any proof of their feasibility. Another important reason for keeping ideas outside the formal processes was the slowness (also noted by Koch and Leitner, 2008) and inappropriateness of these processes for collaborative idea development. Furthermore, the formal processes would often disconnect the idea from the original problem by subjecting it to centralised evaluation. Overall, the champions felt that if ideas were brought to the formal processes too early, the required momentum could be lost due to their slow, de-contextualised and impersonal nature.

"In my opinion, all innovations … are born out of necessity, a need created by a certain situation. Someone says, 'man, they always ask this [solution] from us; don't we have any way of doing this?' And then, usually, many people start thinking of ways in which it could be done. And some people make a formal notification of it with the intention of solving the problem. And after that, the idea goes into the formal system, which kills it for a year. Well, after a year it is not acute anymore."
(Senior Expert, Process Inc.)

The challenge of concealing ideas from formal arenas is that the secret development of an idea can sometimes prove too difficult an endeavour for the champions. Our results suggest that this can be caused either by the champions' inability to bring the idea to formal arenas at all, or by having to assume more responsibility for the go-decision than they are prepared for in the lack of formal decision making channels. For example, the lack of formal decision-making processes in Process Inc. sometimes made the endeavours of champions difficult since they could not find an instance that would make a decision on new ideas; in other words, an appropriate target for their championing efforts. They then had to assume more responsibility than they might have wanted to for their decision to proceed, as well as of the possible failure.

"If we don't reach a consensus, then it [the idea] is left unrealised because the one who should take it forward doesn't dare to do it since there are so many differing opinions. That person is supposed to know better than the more experienced ones … it's a difficult situation because the one who decides is held responsible and if there are two extremely experienced persons and they both have differing opinions about the matter, how can you then … choose yourself?" (Junior Expert, Process Inc.)

5.4. Enforcing fit to current context

The key aspect in the fourth way of smuggling an idea is to conceal the idea's level of novelty. Most of the existing literature on champions has portrayed them as celebrating the novel aspects of their ideas (cf. Howell et al., 2005; Howell and Higgins, 1990a). However, our results suggest that champions often downplay the novelty of their ideas. They would rather emphasise the feasibility of the idea or its fit to the current strategic or technological frame than the possibilities that the idea offers for strategic renewal. As an example, management at Construction Inc. and Measurement Inc. strongly evaluated ideas against current strategies and the ideas were unlikely to be accepted if, for example, they required new sales channels or changes in strategic choices. Therefore, champions would automatically mirror their ideas against the current interests of the management or the customers and were much more willing to champion ideas that would fit into the existing frames. Moreover, if the champions did decide to promote an idea that would not fit the current frame, they would attempt to find ways in which they could argue that it actually does.

"The strategy has been internalised so strongly in some divisions that anything that even smells like it doesn't belong to the strategic direction will not even be taken up on coffee break discussions." (Development Officer, Construction Inc.)

"… we constantly try to look for [ideas], test whether those different kinds of ideas will work out and check whether [these ideas] will be suited for the company [its current strategy]." (Senior expert, collaborator of Chemical Inc.)

This type of activity is closely related to the concepts of "conservative bias" and "robust design" discussed by Dutton et al. (2001) and Hargadon and Douglas (2001). Essentially, this means that champions are forced to make their ideas seem familiar in order for them to be accepted, even if this means making compromises on the radical features of their ideas and, at times, downplaying their novelty. The results of the present study, however, suggest yet another bias towards the status quo in championing activities. Champions in the study would not just make compromises in the course of the championing process but would already themselves filter out most of the ideas that they did not consider fitted the company strategy or the feasibility of which they could not demonstrate. This means that the most radical ideas were rarely championed at all, and if they were promoted, this was either done with

a highly trusted colleague or half-seriously in passing. At both Process Inc. and Construction Inc., for example, participants in ideation sessions would usually bring up radical ideas as humorous remarks and the other group members treated them as such. These ideas could be built on for some time in a light atmosphere until it was "time to get serious and back to work", which meant that these ideas were rarely noted down or decided upon. A participant who had presented such an idea could try to return to it later on in the meeting, but if others did not seem to bring the idea into the sphere of serious discussion, the participant would rarely do it themselves. Champions were generally hesitant to identify themselves with radical ideas or push them seriously in the organisation. In many ways, therefore, radical ideas were less privileged in the championing activities than incremental ones. This is somewhat paradoxical given that radical ideas usually need more risk-taking and persistence than incremental ideas.

5.5. Creating external pressure for the idea

The fifth prominent way to smuggle ideas and gain legitimacy for them is to use or to create external pressure from customers or competitors to develop a sense of urgency for the idea. For example, champions in Process Inc. actively tried to get their ideas written into project offers, such as renovations at customer plants, in order to acquire formal pressure for their implementation. In order to do this, they would play down the risk and novelty of the idea or even try to slip the novel solution into project plans and hope that it would go unnoticed. Pressure from customers was considered vital for the progression of ideas, while it was considered unlikely that suggestions stemming from internal development interests of the organisation would be implemented.

"And you'll never get it [an idea] through here if you suggest it yourself; it has to come from the outside. … A demand coming from a customer will always be prioritised over others [ideas]." (Senior Expert, Process Inc.)

This tactic was used as an effective tactic to create commitment to the idea: if a customer expected a particular idea, it would be much harder to let the idea go when difficulties arose. Internally driven ideas could always be postponed or abandoned when something more urgent came along or if their realisation started to seem more difficult than initially estimated. But if an improvement was promised to a customer, the decision to abandon the idea would also have

to be justified for the customer. Involving the customer thus makes the whole idea development effort more legitimate and official, which means that its termination would also have to be made as a formal decision rather than just gradually forgetting that the effort ever existed.

5.6. Softening decision making situations

Finally, the sixth way of smuggling ideas took place by softening the collision between the old and the new in decision making situations. This was done by gradually making the decision maker aware of the novel idea and making sure that they would have ample time to get used to the thought before having to make decisions about it. This tactic was especially used towards customers and was particularly apparent in Process Inc., where champions tried not to put customers in a situation where they had to make decisions on an idea right after it had been presented to them. The champions knew that customers would then be prone to saying 'no', just in case, because they would not have time to think through all the possible risks involved. Another way of softening the decision-making situations was to offer the novel ideas as optional alternatives to the standard solutions. At Process Inc., for example, a novel solution was introduced as a part of a larger renovation project and customer acceptance for trying it out was only received when the champions found a way to test the new idea while maintaining the opportunity to return to the standard solution:

> "…they asked for our bid [for a renovation at a customer plant] and we decided that we would try to push it [the idea] there. The advantage of the idea was that it was optional; You didn't have to use this new solution, you could choose not to use it. If it would have been obligatory, the customer wouldn't have accepted it." (Junior Expert, Process Inc.)

Therefore, it seems important to make the risk of trying out the idea seem smaller and to make the decision seem less final in having the ideas accepted, especially by customers.

6. Discussion

6.1. Theoretical implications

This study complements the line of research that portrays champions as social actors and skilled navigators through organisations' informal systems (cf. Howell et al., 2005; Markham and Ayman-Smith, 2001; Markham et al., 2010). The results indicate that championing activity in the front end of innovation is collaborative in a more fundamental way than previous research has indicated. Moreover, the findings portray championing as a more flexible and subtle activity than most of the traditional descriptions of assertive and relentless champions imply (cf. Howell et al., 2005; Markham et al., 1991; Howell and Higgins, 1990a). Most importantly, the study found that champions invest a great deal of effort into smuggling their ideas rather than assertively pushing them through the organisations.

The existing research has identified three fundamental championing activities: justifying ideas (e.g., Shane, 1995; Howell and Higgins, 1990b), securing resources for the ideas (e.g., Markham and Ayman-Smith, 2001; Markham et al., 2010) and building coalitions around the ideas (e.g., Howell et al., 2005; Howell and Boies, 2004; Kanter, 1988). The present study's most important theoretical contribution lies in the observation that each of these three activities includes a subtle side that is essential for promoting ideas in and across organisations. Such subtle activities are referred to here as smuggling practices, six of which have been identified. The findings then describe champions as skilful actors with particular situational sensitivity that not only allows them to know how to justify ideas (e.g., Shane, 1995; Howell and Higgins, 1990b) but also when and how to present their ideas (as suggested also by Nordqvist and Melin, 2008). Furthermore, the results note that, in securing resources for the ideas, champions are not always willing to draw attention to them or assume substantial personal risk by visibly identifying with the idea. This, in turn, drives champions to seek resources (in the form of time investment or equipment sharing) from colleagues or customers instead of monetary resources from senior management.

So, while champions are often described as pushing their ideas relentlessly and not being discouraged either by resistance (Howell et al., 2005) or negative outcomes (Garud and Van de Ven, 1992), our results indicate that champions

are patient in terms of having their ideas heard and careful in terms of choosing the time and the place at which to make their propositions. Our research supports Dutton et al.'s (2001) findings regarding the importance of the timing of presenting ideas and, even further, indicates its depth and breadth in championing activity. In our results, then, timing not only refers to carefully choosing the moment for presenting one's idea; even more importantly, it means being able to sometimes let go of an idea, even for years, and bring it up again at a more appropriate time. The results suggest that this kind of cycle could be repeated several times over the course of several years, which demonstrates a different kind of persistence than the extant literature has presented (cf. Markham et al., 1991; Markham, 1998). Moreover, temporarily letting go of ideas that are not right for the time or place seems to be important in order to maintain the ability to act as a champion in the long-term. This observation could be taken to infer that champions who successfully advance multiple innovation efforts over time[3] would look at the big picture rather than become overly invested in a single idea. This can, at least in part, allow such champions to avoid the destiny of the "tragic hero" (Burgelman, 1983) who sacrifices his or her own career to get an idea implemented. Following this line of thought, one could conclude that stubborn relentlessness could get a single idea implemented, but when examining a series of ideas, it might be more beneficial for the champion to let go of those ideas that do not seem create enthusiasm at that particular point in time. Although the empirical materials in this study do offer some observations that support this line of argument, this aspect clearly needs further investigation in the future.

Finally, the research emphasises and further elaborates the third critical championing activity identified in previous literature; namely, the importance of building coalitions (e.g., Howell et al., 2005; Howell and Boies, 2004; Kanter, 1988). According to our results, champions welcome others' contributions to their ideas and even seek out people who can help them construct ideas – even though this would require handing over control of the idea and letting someone else be in charge of the development effort. Moreover, providing others with a genuine opportunity to take part in the construction of an idea seems central for generating ownership of the idea.

[3] One could call these "serial champions", following the terminology used by Price et al., 2009.

While issue selling research has previously recognised the need for perspective taking (Parker and Axtell, 2001; Boland and Tenkasi, 1995), involving others (Dutton et al., 2001) and co-constructing contextual meaning (Howard-Grenville, 2007), championing research has rarely discussed or investigated this aspect. Furthermore, our results extend beyond the above notions and suggest a way of idea promotion and development in which the champion does not retain the ultimate control of the idea but both parties collaboratively construct and promote it. In this way, the results highlight the importance of reflective reframing activity (Hargadon and Bechky, 2006) not only in 'precipitating moments of collective creativity' (pp.490) but also in including others in the championing efforts. This is a significant change of perspective with respect to the previous discussion of championing activity as an influence and sales effort (cf. Howell and Higgins, 1990a; Markham, 1998). Champions are traditionally perceived as being exceptionally confident because they convince other organisational actors to follow their vision. However, our results indicate that champions can, and sometimes need to disclose their open questions and even their uncertainty so that others can have a sense of contribution and ownership. This observation also raises the question of whether championing should be perceived as a separate activity in the front end of innovation or whether it is inherently intertwined with idea development. Our results highlight the entangled nature of these activities, especially in cases where influence efforts are targeted towards colleagues rather than management. Peers are usually more oriented towards the co-construction of ideas, whereas senior management and formal decision makers are often more accustomed to evaluating pre-defined ideas. Since the role of formal decision making is less prominent in the front end of innovation than it is in the later stages of the innovation process (Kim and Wilemon, 2002), the role of championing through collaborative idea development is also likely to be more dominant.

6.2. Practical implications

This study has three important practical implications. Firstly, the results offer guidance for champions struggling to get their ideas accepted in organisations that are comfortable with the status quo and wary of novel developments. When presenting new ideas, it is often necessary to soften the shock caused by old meeting new (e.g., Hargadon and Douglas, 2001) and our

study has indicated some ways this can be done. Pushing too aggressively and too fast can result in even less support for the idea (cf. also Markham, 2002; Howell, 2005). At times, therefore, it is important to make compromises in one's own vision in exchange for acceptance.

The second practical implication relates to recognising the social nature of championing activity. While the myth of champions as lone heroes of innovation processes is still strong, organisational leaders and champions both need to realise the importance of collective construction of ideas, both for the development of ideas and to their promotion in organisations. As our results have shown, allowing others to genuinely contribute to the construction of the idea seems to be a particularly effective way of creating commitment and enthusiasm. Such activity should be supported by the organisation and permitted by the champions.

Finally, the results indicate that championing does not necessarily involve having to "risk it all" in order to be successful. This means that there are different styles of championing, depending on the champion and the context of the championing effort. It seems that, particularly in the front end of innovation, subtle championing activities are at least as common and effective as the more assertive ones.

6.3. Future research

The present study has certain limitations, which should be taken into account when interpreting the results. Firstly, the study has focused on the front end of innovation, which is a particularly ambiguous and uncertain part of the innovation process (e.g., Kim and Wilemon, 2002). Therefore, smuggling activities and the collaborative construction of ideas are both likely to be highlighted in this context. An interesting question for future research, therefore, is whether and in which ways championing activities vary according to the phases of the innovation process. Markham (1998) and Markham et al. (2010) opened the discussion of the different roles of the champion in the different parts of the innovation process, and we encourage the continuation of this direction of inquiry. It would be both interesting and important to examine the extent to which similar kinds of smuggling practices as those identified in this study exist in the later phases of the innovation process. The second limitation of this study is that it was only conducted in the context of one country in Northern Europe. Comparative research with other national

cultures would provide an understanding of the applicability of our results in different cultural contexts. Thirdly, the study was conducted in technology companies, so further research on championing activities in different types of businesses and organisational contexts would be beneficial. Finally, further research is needed to examine the balance between assertive championing tactics and smuggling practices, both in the front end of innovation and in later stages of the innovation process. By deepening our understanding on the balance of different kinds of championing activities in different types of organisations and various phases of the innovation process, it will be possible to gain further knowledge to support the emergence of both innovations and new businesses.

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APPENDIX 1: DESCRIPTION OF IDEA TRACKS

Idea track 1: A senior expert received a request from a customer to conduct an audit at a customer site in preparation for an upcoming renovation. The senior expert contacted two junior experts to help him with the project, one of whom joined him on the audit. During the site visit, a senior expert from the customer expressed a need for a novel technological solution to be used in the renovation; to the surprise of the experts, the customer presented his own idea for a possible solution. The experts felt this idea conflicted with what they thought was mechanically feasible, but they found it difficult to reject the idea because it had been proposed by the customer. Instead, they tried to find ways in which the idea could be incorporated into their own ideas. After a joint effort by three experts – the senior expert, the junior and a familiar mechanical designer, they consulted on feasibility issues, solution was found by combining two previously known technologies in a novel way. The experts knew that the customer was still developing its own idea, so they requested an exchange of ideas before the scheduled decision meeting in order to soften the clash of perspectives. There was no reply from the customer. The experts decided to protect the property rights of their concept and send it to the customer anyway. No reply was received. Eventually, at the meeting, the customer responded positively towards the concept presented by the experts, largely because they had been able to familiarise themselves with it beforehand.

Idea track 2: While familiarising himself with the details of his technology area, a young product manager discovered a possible solution to a long-term technological problem. He made an invention notice of the discovery, although this never led to the application of the idea from the part of the organisation. Two years later, the product manager was working with two other technology experts on an internal development project related to an ongoing customer project. He realised that the solution he had proposed earlier could be applied to a part of the problem at hand. He proposed this solution to the group and a senior expert, who was known for his wild ideas, proposed an idea (which he had also presented many times before) to cover the second part of the solution. Though the product manager found this idea to be unfeasible, he saw great potential in the underlying concept. He developed a simpler version of the idea on his own and presented it to a familiar mechanical designer in order to get feedback on its feasibility and to get the idea modelled. Together, the two then

presented the developed idea back to the original ideation group, including the senior expert who presented the original wild idea. This senior expert was pleased to hear that idea had been taken forward and accepted the modified concept. The solution was proposed to the customer and put forward for patenting. The new solution was proposed to the customer as an optional feature that could be tested alongside the old version. This was a key issue for the customer's acceptance of the idea to be tested.

Idea track 3: The team leader and the project manager jointly prepared three concept ideas, one of which would be used as the starting point for the first project of the new concept development team. They conducted an extensive information gathering and networking operation, predominantly using external contacts and resources, such as customers and personal acquaintances. The selected idea was a novel segmentation of a vague business opportunity that had been in discussion for a long time but never quite mastered. After the decision had been made, the concept idea was presented to the eight members of the team that were included in the effort.

The concept idea was vague, which caused discussion and confusion in the project group. The project was discussed widely with the whole team, as informal meetings of the project group were held in joint spaces. The concept idea was restructured significantly during the process as a response to input from the team members. The final concept was a service solution that spanned functional boundaries. The concept created enthusiasm throughout the organisation, and even the CEO encouraged its development. The concept received a go-decision at the first decision gate and the responsibility for developing the concept idea was transferred to the service division located in another part of the organisation.

At the second decision gate, the service division and the components division (the home of the concept development team) came together to decide on the final business model. The service division proposed a shared business model in which the two divisions would share the risk and profit and where the existing sales channels of the components division would be used for distribution, since the service division had not yet established its own sales network. However, during the two months that had passed since the first decision gate, the strategic segments of the components division had changed and the division manager decided that their distribution channels could not be used for this concept. Additionally, the division manager wanted to sell the components to the service division and did not want to be included in the joint leasing effort

associated with the concept. Due to these unresolved issues, the concept received a no-go decision at the second decision gate, to the disappointment of everyone involved. An additional grievance was that the customers of the component division who had been involved in the development effort were highly interested in the concept and were eagerly waiting for it to be launched.

Idea track 4: After the disappointment of the previous concept, the team leader and project manager decided that they would stay away from risky service concepts and ensure that the next concept would fit into the strategic segments. They also decided to include the whole team to the effort, in order to try novel ways of organising. They divided the team into four subgroups, to which they appointed specific tasks and leaders. Weekly meetings were set up for the project. In this case, the concept idea was more refined and straightforward than in the first case, but the team members struggled to understand the big picture and contribute to it. All of the team members found this project to be less satisfying. Communication between the subtasks was scarce and the atmosphere was not as open and enthusiastic as in the first project. The team members were less committed to the project and felt that they had no say in the final result, which was eventually very similar to the original concept idea presented by the team leader and project manager. Despite these negative aspects, the project manager and team leader successfully sold the concept to a business segment and the concept received a go-decision at both decision gates. A major factor in this success was the support received from the segment manager, who was enthusiastically involved in the development of the idea and was also the key decision maker. However, the success of the concept did not result in great joy amongst the team members, since they did not have great faith in the concept. The failure of the first concept spurred much more emotion that the success of the second one.

Idea track 5: While going through and commenting on a strategy document that included ideas for new business opportunities, a senior communication specialist noted a particular idea that reminded her of a current problem in her own residency area. Stimulated by this association, she came up with another idea that took the original thought in a more radical direction and involved thoughts of a completely new kind of a business area for the company. The specialist immediately presented the idea to a trusted colleague who worked as an R&D specialist in another part of the organisation. The specialist presented the idea in an informal and semi-serious tone and asked for feedback and input

from her colleague. The colleague became interested in the idea and the two developed the idea further collaboratively via phone and email. Eventually, the communication specialist handed the idea over to the R&D specialist, who took it further in the organisation by presenting it as part of a strategy document she was working on at the time.

Idea track 6: A potential discovery was made at a foreign research institute with which two technology experts from the company coincidentally came into contact. The foundations of the discovery were not known but the research institute was willing to sell its efforts and current discoveries for a very reasonable sum since they did not have the funds to develop the discovery further themselves. The company was experiencing a downturn in its finances and did not dare to propose this opportunity to their supervisors due to its uncertain nature. Instead, they decided to hire a graduate student to do his thesis on the case, so that some information could be documented and the contact could be kept alive. Subsequently, a PhD candidate was hired for the same purpose. Both of these activities were small enough financially not to be questioned by the company's management. Eventually, local officials restructured the research institute, the key persons retired and contact with the institute was lost.

Idea track 7: A group of university scientists invented a new type of a chemical catalyst. After patenting their invention, they set up a firm and started looking for ways to find potential industrial applications for the catalyst. As part of this search process, they sold samples of their catalyst to various research institutes and arranged laboratory-scale tests to try it out in various chemical reactions, as suggested by industry. In order to establish contact with industry, they also offered companies research services that were related in some way to the invention itself. After some time, the scientists had the idea of applying the catalyst in a chemical reaction used in the food-processing industry. They asked a research manager at a food-processing company if they could test their invention in one particular chemical reaction. Contacting him was easy since they had all studied at the same university and one of the scientists had even been in the same university sports team as the research manager. The research manager had doubts about whether the new type of the catalyst would be suitable for the suggested chemical reaction for cost reasons. Instead, he told the inventors about an ongoing development project in the area of functional food where the catalyst could be tested. They

scientists then started testing the catalyst in the process that the research manager had suggested. At the same time, the scientists were contacted by a company that was a collaborator of the food-processing firm in the functional food project. This company had heard about the catalyst from a professor who had originally conducted research at the same university as the scientists. These two contacts, one from a food processing company and the other from its collaborator, led to intensive testing and development that turned the catalyst into an industrial application.

APPENDIX 2: DIFFERENCES BETWEEN ORGANISATIONAL CONTEXTS

The organisational structures varied notably among the four case companies, as did the formal idea development processes. Although there was a surprising amount of similarity in the championing practices across contexts, there were also some noteworthy differences, which are discussed here.

Process Inc. was the only established organisation in the study that did not have a formal idea review process in place. The only formal idea evaluation mechanism in use is the patenting process, including an invention notice (a form filled out by the inventors) that is reviewed by a formal patenting board. However, this process is only used to secure IPR rights, not to actually put the ideas into use. Hence, champions who tend to rely on a formal process in their idea promotion efforts would most likely have their ideas officially recognised but never implemented. The main reason for smuggling ideas in this context stems from the need to have ideas accepted, either by customers or those in charge of customer projects – namely project managers. These persons wish to minimise risk and often perceive the implementation of novel solutions as an addition to their workload. The fact that customer demand is perceived as being essential for an idea to advance in the organisation further accentuates the importance of a customer's acceptance. Because the industry in which Process Inc. operates is conservative and values reliability, it is more important to soften the impact of novel ideas by downplaying novelty or softening decision-making situations in this context than in others.

At Measurement Inc., the formal structures are highlighted in comparison to the other case organisations. Since the entire development effort takes place in between two formal decision-making gates – namely, Business Review 1 and Business Review 0 – and within a pre-determined time-period of

three months, there is little chance for the champions to hide ideas from formal processes or to be patient in pushing them through. Also, the role of the key champions (the team leader and project manager) is more formal in terms of how the team members are expected to take part in the development efforts that the management duo presents them with. However, championing ideas inside the team is important for creating the necessary enthusiasm towards the concept idea. The championing effort is very different outside the team, as there is no guarantee that the review board will select the idea for further development. Thus, although the team has a mandate for the development activity as such, there is no guarantee that any particular idea will be accepted in the organisation. The management duo is clearly more explicit in its championing efforts than the champions in the other case companies, largely due to their formal role, but they still have to engage in smuggling practices. In most cases, these practices create external pressure towards the idea by intensively selling it to potential customers at early stages of development and downplay the idea's novelty by trying to enforce its fit to current structures and strategy. The particular challenge in this case was to balance between the formalised nature of the team's innovation activity, which allowed for minimal smuggling, and trying to come up with exceptional concepts, which could have required softer approaches in order to become gradually accepted.

The specificity of *Construction Inc.* lies in its focus on dyadic relationships in idea development. The effect of this relationship structure on championing practices is that possible supporters must be convinced one-by-one, instead of through small group discussions, for example. Otherwise, there do not seem to be any differences in the smuggling practices stemming from this structural factor in relation to the other cases. The most notable difference between Construction Inc. and the other case companies is its particularly strong emphasis on strategic fit when presenting ideas to others. The formal processes that guide the innovation efforts are strongly enforced and hiding ideas from these processes is a central smuggling practice. Champions actively assess how their ideas fit existing strategies. If an idea does not fit the current strategy, a champion will often choose to wait until the moment is right and, in the meanwhile, will only promote the idea cautiously, if at all. Therefore, patience in getting the idea implemented is especially important in this context, due to the fear of rejection brought on by the strong strategic direction in place in the organisation.

When the present study was conducted, *Chemical Inc.* was an entrepreneurial small start-up venture. Unlike the large organisations in the study, Chemical Inc. had no formal structures guiding or restricting its idea development processes. However, the entrepreneurs in Chemical Inc. were highly dependent on the technological structures and decision processes of their large collaborators. It was especially important for them to seek feedback on their ideas from these collaborators. They did this in order to delicately spread knowledge about the possibilities of their technology and to gain information about ongoing development efforts that would provide commercial possibilities for their technology. The entrepreneurs were well aware that this is typically a time-consuming process that requires patience and flexibility and the moulding of ideas to fit the expensive technological infrastructure in large firms. Chemical Inc. was later bought out and is currently owned by a large multinational chemical company.

ESSAY C

Barriers and Obstructive Practices for Out-of-the-box Creativity in Groups

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Barriers and obstructive practices for out-of-the-box creativity in groups

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Abstract: This paper examines the barriers and obstructive practices for out-of-the-box creativity in group ideation. It first combines knowledge from creativity and innovation literature, summarising four antecedents – vision, culture for questioning and tolerance, balanced risk-taking and priority and demand for radical innovation – for out-of-the-box creativity. It then examines how these antecedents are concretised in group practices and identifies the practices that are detrimental for out-of-the-box creativity. Such practices include the misuse of humour, silencing ideas and overemphasis on proof and detail.

The empirical materials were collected from three group ideation contexts. The first and most in-depth data collection setting was a large, globally operating technology company, where an ideation group was observed during a six-month period. The two other settings included a two-day ideation workshop organised by a large global manufacturing company and two ideation workshops in a mixed environment with both students and corporate participants. The methods of data collection were interviews and observation.

Keywords: creativity; radical innovation; groups; antecedents; barriers; practices; product development.

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1 Introduction

Companies pursue radical innovation to create competitive advantage and profit margins that would be unreachable with business-as-usual product improvements. There has been much discussion on the success factors for radical innovation in relation to managing radical innovation projects. However, there has been less discussion on how radical ideas are born.

Out-of-the-box creativity is the starting point for radical innovation. Novel and useful ideas are generated by the creativity of individuals and groups (Amabile *et al.*, 1996; Feist, 2005). These ideas are then enriched, combined and developed into innovations. Even though not all radical ideas develop into innovations, it is useful to examine out-of-the-box creativity as a part of the radical innovation process since the ultimate goal of ideation in an organisational setting is to get ideas implemented or launched in the market. In this paper, I will discuss out-of-the-box creativity as the starting point for radical innovation. I will focus especially on the barriers and obstructive practices in a group setting.

By out-of-the-box-creativity, I refer to the kind of creativity that produces novel solutions to open-ended problems (opportunities) or restructures and challenges familiar problems (tasks), thereby generating novel perspectives and solutions. By radical innovation, I refer to "… a product, process or service with either unprecedented performance features or familiar features that offer significant improvements in performance or cost that transform existing markets or create new ones" (Leifer *et al.*, 2001, p.103).

There has been little interaction between the (radical) innovation and creativity literature, mainly because they have different starting points (Ford, 1996). Whereas innovation research has focused more on managerial aspects and macro-level sociological and economic topics, the roots of creativity research lie in psychology. Much of the research on creativity has thus focused on the cognitive psychological processes of individuals, *e.g.*, motivation, personality and skills and their linkage to the surrounding context (Ford, 2000). There has been a growing amount of discussion on the effects of work environments on both creativity and innovation in groups during the last two decades (*e.g.*, Amabile *et al.*, 1996; Woodman *et al.*, 1993; Barrett, 1998; Anderson and West, 1998), but there is much untapped potential in bringing together knowledge from these two fields.

The contribution of this paper is twofold. First, it identifies four antecedents for out-of-the-box creativity in groups by combining factors from the creativity and radical innovation literature. Second, it identifies the practices that inhibit the realisation of these antecedents in group ideation activity. The objective here is not to present an exhaustive list of practices, but to deepen our understanding of the barriers to out-of-the-box creativity in group activity.

2 Creativity in groups

Organisational creativity refers to the production of novel and useful ideas in the work context (Amabile *et al.*, 1996; Feist, 2005). However, making an obvious distinction between creative and uncreative action is not straightforward in practice. Ford (1996, p.1115) accounted for this by defining creativity as "a domain-specific, subjective judgment of the novelty and value of an outcome of a particular action". This is the definition of creativity to which I refer in this paper.

Most of the creativity – and innovation – research is focused on the organisational and individual levels, while the group level has received less attention (Anderson and West, 1998). Despite this imbalance, a notable amount of research on group creativity has been carried out. Much of this discussion deals with group characteristics and

processes (*e.g.*, King and Anderson, 1990; Woodman *et al.*, 1993; Payne, 1990) and work environment antecedents for successful creative activity (*e.g.*, Amabile, 1988; 1998; Amabile *et al.*, 1996). Group creativity has also been approached from the perspective of creating appropriate methods and tools for effective ideation. Creative problem-solving techniques can be divided into three categories (McFadzean, 1998):

1 paradigm-preserving techniques (which do not strive to change the participants' perspective)

2 paradigm-stretching techniques (which stretch the boundaries of the participants' perceived problem horizon)

3 boundary-breaking techniques (which encourage participants to break down the boundaries of their perceived problem space).

The last category is especially relevant for out-of-the-box creativity and includes methods such as wishful thinking and rich pictures (McFadzean, 1998).

Despite the advances in research on antecedents, characteristics, processes and tools, group practices related to creative action have received little attention. The interesting question here is how the antecedents of group creativity are realised, reinforced and renewed in practices. Though there have been important contributions to examining the social dimension of creativity (*e.g.*, Amabile, 1983; Ford, 1996; Montuori and Purser, 1999), this issue needs to be understood in greater depth. One such approach (although not focused on the group context) is a study of the practices of 'ordering creativity' conducted by Nov and Jones (2006), who identified idea generation and development practices in the advertising industry.

3 Out-of-the-box creativity

Creativity has mostly been perceived as a unitary concept and there has not been a great deal of literature on the different types of creativity. Early discussions on the subject ranged from distinguishing between *adaptive* and *innovative* creativity – where the former was very close to normal conformist behaviour (Kirton, 1976, quoted in Kaufmann, 2004) – to proposing that creativity should *always* include a notion of radical novelty (Hausman, 1987). Both of these extremes have met opposition, whereas the notion that creativity as a concept should include both incremental and radical forms has received more support. It has been less clear how these two forms should be differentiated.

Unsworth (2001) presented a typology of creativity along two axes: problem type and driver for engagement. The problem type axis describes the openness of the problem, whereas the driver for engagement axis indicates to which extent engagement in creative activity is internally driven and to which extent it is externally driven. According to these dimensions, Unsworth presented four creativity types: expected creativity, proactive creativity, responsive creativity and contributory creativity (Table 1).

Table 1 The four types of creativity

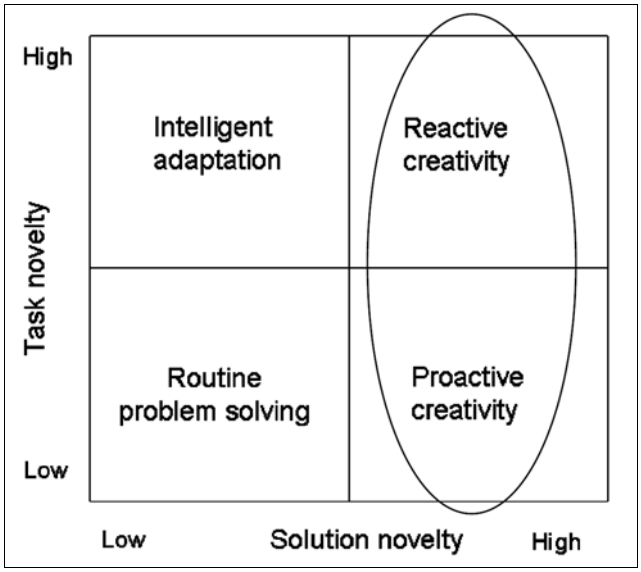
Creativity type	*Depiction*
Expected creativity	Open problem – external motivation
Proactive creativity	Open problem – internal motivation
Responsive creativity	Closed problem – external motivation
Contributory creativity	Closed problem – internal motivation

Source: Modified from Unsworth (2001)

The two uppermost creativity types would seem to be related to out-of-the-box creativity since they are both characterised by the openness of the problem. However, an open problem can be met with a familiar solution (Kaufmann, 2004). This raises the need to take the output into consideration when defining out-of-the-box creativity.

Kaufmann (2004) presented a matrix where the vertical axis is task novelty (compared to Unsworth's problem type) and the horizontal axis is solution novelty, *i.e.*, the novelty of the output (see Figure 1). Kaufmann also used the concept of proactive creativity, though in a different sense than Unsworth. Whereas Unsworth used it to depict a situation where an individual engages in problem finding even though he/she is not expected to do so, Kaufmann discussed a situation where a familiar task is approached in a novel way even though a novel solution is not required. The internal-external driver division put forward by Unsworth is useful for understanding why this is done. An internally motivated person can seek possibilities for improvement from everyday tasks and, thus, initiate out-of-the-box creativity in the face of a routine task. The driver can also be external. For example, a customer might demand a genuinely novel solution to a problem that has long been handled in a conventional manner.

Figure 1 The creativity types for out-of-the-box creativity



Source: Modified from Kaufmann (2004, p.291); indication of out-of-the-box types added

The reactive creativity described by Kaufmann is different from the concept of responsive creativity used by Unsworth. When discussing reactive creativity, Kaufmann referred to a situation where the task is novel and, thus, requires a novel solution. As Kaufmann put it, this is not necessarily the most radical type of creativity, even though the combination of a novel task and a novel solution might lead one to think so. In fact, it may require much more out-of-the-box thinking to come up with a novel solution to an old problem because this calls for breaking from the old routines without a change in the external frame.

The two above types of creativity represent out-of-the-box creativity (circled in Figure 1), whereas the two remaining categories belong to the more adaptive domains. With 'intelligent adaptation', Kaufmann refers to a situation where a novel situation is met with a familiar solution (employing previous experiences in new task situations) and with 'routine problem solving', a situation where both the task and the solution are familiar.

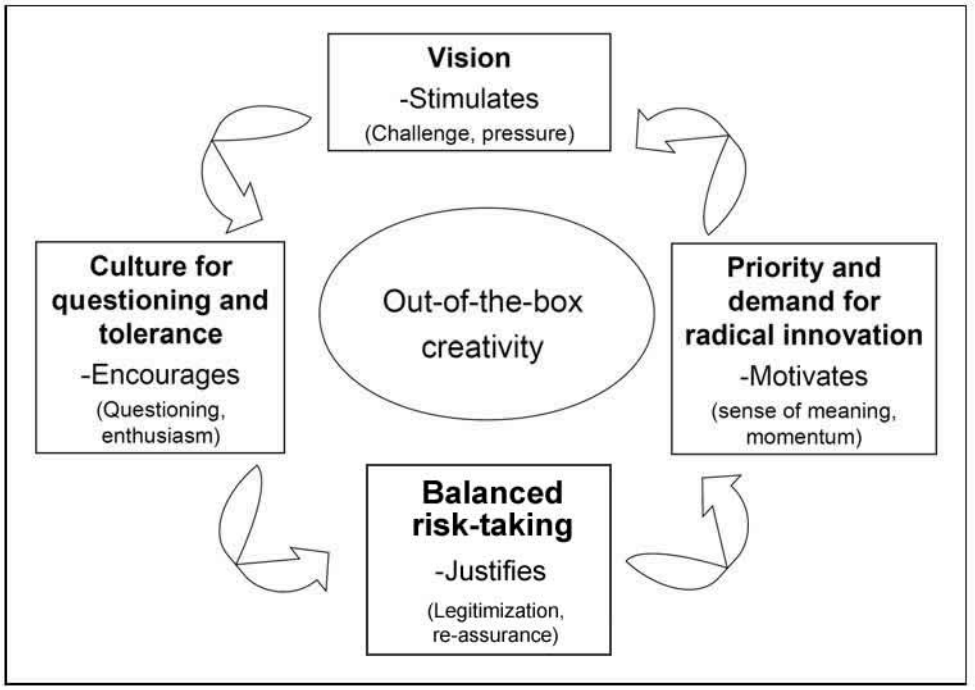
Summing up from these perspectives, I conclude that out-of-the-box creativity is the kind of creative act that produces novel answers to previously unidentified open-ended problems (opportunities) or restructures and challenges familiar problems (tasks) by generating distinctively novel perspectives and solutions. Out-of-the-box creativity does not need to lead to historically significant innovations such as the electric light, but should nevertheless challenge the status quo and break familiar thought patterns.

4 Antecedents for out-of-the-box creativity

Since creativity has been mostly handled as a unitary construct in creativity research (Unsworth, 2001), there is not much work examining the antecedents for out-of-the-box creativity in groups and organisations, though many studies investigate the supporting factors for creativity in general (*e.g.*, Barrett, 1998; Oldham and Cummings, 1996; Amabile *et al.*, 1996; Amabile, 1988). The differences between radical and incremental innovation have been recognised in innovation research, but the studies of antecedents for radical innovation tend to have a greater focus on project management and organisational structures than on the very beginning of the process. Ford (1996) advanced the interaction between creativity and innovation research, but did not concentrate on the interaction between the antecedents of group creativity and innovation.

The four antecedents for out-of-the-box creativity (indicated below) complement our understanding of the work environment factors that are beneficial for creativity in groups by indicating factors that are central from the perspective of out-of-the-box creativity and radical innovation. Structural antecedents (group size and composition, group longevity and group structure) as well as individual-level competences and detailed motivational processes are outside the focus of this paper. The different tools and techniques for creativity are also excluded. Comparing with, *e.g.*, King and Anderson's (1990) categorisation of antecedents for group creativity, which include leadership, group cohesiveness, group longevity, group composition and group structure, these four antecedents fall in the category of leadership. However, rather than assuming that a team leader alone is able to create a suitable environment, the perspective adopted here is that team culture is the common creation of the team members and realised in everyday practices.

Figure 2 The four antecedents for out-of-the-box creativity



In relation to previous research on group creativity, these factors highlight the ability to act on ideas in the organisation. Though the focus here is on group ideation, the four factors include the assumption that the ideation stage is influenced by how confident the group members are that their ideas will be taken forward in the organisation. The existing research on group creativity is centred on the generation of ideas and whether these ideas are actually acted on or not has often been left outside the scope. In most of the creativity literature, innovation is defined as the implementation of ideas (*e.g.*, Amabile, 1988; Woodman *et al.*, 1993), which takes the perspective quite far from the beginning of the process. Also, such studies often focus on the individual level and, *e.g.*, the influences of the group setting on the motivation of the individual participants. On the other hand, research on radical innovation concentrates more on the structural level and group culture and leadership factors often include suggestions of participant selection, group size and structure. In addition, the focus of this research stream is later on in the process, giving recommendations on how to successfully carry out radical innovation projects in the organisation (in relation to other projects). This division has resulted in a lack of attention to how group ideation is affected by the ability to act on the ideas in the early stages of the innovation process – especially from the perspective of leadership and group culture. The four antecedents presented below (and illustrated in Figure 2) have been put together from the creativity and radical innovation literature from this perspective:

1 Vision – Ambitious and imaginative goals calling for radical ideas.

  The vision should not be too restrictive, but allow freedom in deciding how to pursue goals and even to redefine them altogether. Sharedness of vision is important in assuring common direction.

2 Culture for questioning and tolerance – Feeling of safety and openness in the group. The culture encourages towards questioning the status quo and challenging others' opinions while valuing diverse perspectives. Active participation and enjoyment should also be characteristic to this culture.

3 Balanced risk-taking – Risk taking is tolerated and the right to fail is highlighted. Risks are balanced with safer endeavours and radical ideas with continuous improvement efforts.

4 Priority and demand for radical innovation – Concrete support and genuine demand for radical innovation from management. The percentage of radical innovation efforts of all renewal efforts monitored and some resources reserved solely for radical pursuits.

Examples of the factors and references grouped under each antecedent category are presented in Table 2. The grouping was conducted by first collecting the antecedents for innovation and creativity separately from the creativity and innovation management literature. Only peer-reviewed articles were included in the examination. The assumed perspective (leadership and ability to act on ideas) determined the antecedents that were included in the examination. The antecedents were first grouped within the two categories (creativity and radical innovation) so that similar factors were grouped together and labelled with concepts that captured their common features. Within the creativity category, special attention was paid to the identification of the factors for out-of-the-box creativity (these were often not explicated by the authors, but identified from the context). The creativity antecedents were then compared with the ones for radical innovation to identify the common features and differences between the concepts in the two categories. After several clustering and recombining cycles, the four categories were identified as central connecting factors between the antecedents for radical innovation and creativity.

These four factors include elements that are similar to the previous categorisations of work environment factors for creativity, but differ from them in three important ways. First, the element of balancing between risk taking and continuous improvement was not present in prior discussions on creativity, mostly due to the fact that the literature does not differentiate between continuous and radical creativity. However, to support out-of-the-box creativity, it is important to plan and explicate the balance between these efforts. That will help alleviate the uneasiness of the participants, as well as ensure that they can devote a certain amount of effort to more radical ideation. Second, vision plays an important role in out-of-the-box ideation. Radical ideas are difficult to come up with and difficult to be accepted by others. A vision that is stretched enough but, at the same time, clear enough to be understood and accepted by the whole group can help foster a positive yet serious attitude towards out-of-the-box ideation. The last distinction is that 'priority and demand for radical innovation' includes taking rapid action on ideas (testing, making go/no-go decisions). This is important from the perspective of catching, developing and making use of the ideas generated in the ideation stage.

Table 2 Creativity and innovation antecedents grouped under each antecedent category

Antecedent category	*Creativity antecedents*	*Radical innovation antecedents*	*References:*
Vision	Goal clarity, challenging and interesting work	Strategic vision, visionary stories, clear vision for the total business, clear vision and fully understood concepts	*Creativity*: Ford, 1996; Amabile *et al.*, 1996; Oldham and Cummings, 1996; Ekvall, 1997; Howell and Shea, 2006 *Innovation*: Dismukes, 2004; Stringer, 2000; Mascitelli, 2000; Anderson and West, 1996; Terziovski, 2002
Culture for questioning and tolerance	Emotions (partly), enjoyment, critical thinking, fair, supportive evaluation of ideas, work group encouragement	Climate of excellence, avoiding defensive responses, culture encouraging diversity, commitment, positive identity, environment of respect and tolerance	*Creativity*: Ford, 1996; McFadzean, 1998; Amabile *et al.*, 1996 *Innovation*: Stringer, 2000; Mascitelli, 2000; Anderson and West, 1996; Phillips *et al.*, 2006
Balanced risk-taking	Spontaneity, improvising, errors as source of learning, time-pressure vs. creativity, structure vs. freedom, encouragement of risk-taking	Overcoming short-term orientation, balancing continuous improvement and radical innovation, tolerance of fast failure, reasonable risk-taking, ambidexterity	*Creativity*: Ekvall, 1997; Barrett (1998); Amabile *et al.*, 1996 *Innovation*: Dismukes, 2004; Terziovski, 2002; Mascitelli, 2000; Phillips *et al.*, 2006
Priority and demand for radical innovation	Effective leadership, resources, organisational motivation, supervisory encouragement, work group encouragement, pressure (paradoxical)	Support for innovation, resources for high-risk ventures, trust in good ideas being implemented, radical innovation as a strategic and cultural priority, separate funds for radical innovation	*Creativity*: Amabile *et al.*, 1996; Ford, 1996 *Innovation*: Anderson and West, 1996; Dismukes, 2004; Stringer, 2000; Mascitelli, 2000; Phillips *et al.*, 2006; Leifer *et al.*, 2001

From the perspective of proactive and reactive creativity (Kaufmann, 2004), the four antecedents are important to give reasons and justifications for questioning the problems at hand and finding new opportunities. Reactive creativity is a more natural setting for out-of-the-box creativity to blossom, but these antecedents are especially valuable in situations where the group is striving "to maintain change in the face of order" (Hargadon and Bechky, 2006, p.495). A compelling vision drives the group members to search for these possibilities, encouraging balanced risk-taking gives them the courage to do so, priority and demand for radical innovation ensures that these efforts are acted on (and, thus, are worthwhile) and culture for questioning and tolerance establishes an environment where the group members feel liberated and safe enough to do so.

5 The practice approach

Practices are sayings (linguistic actions) and doings (non-linguistic actions) that are located in a social, material and temporal context (Büger and Gadinger, 2007). Cook and Brown (1999) defined practice as "action informed by meaning drawn from a particular group context". This definition points out two important elements that distinguish practice from activity. First, practices are social to the core. If an action does not include social sharing of any kind, it cannot be interpreted as a practice. Second, practices have spatial and temporal stability. This does not mean that they are static and immutable, but rather that they are routine in some way. Thus, an action that happens only once and does not entail any kind of continuity is not a practice.

Brown and Duguid (1991, p.40) argued that in innovation research, the focus is generally on abstract representations that act "to the detriment, if not exclusion, of actual practice". When the focus is on formal prescriptions, the understanding of the actual work practices can be lost. This is because the ways in which organisations represent their work in manuals and guidelines are found to differ significantly from the way people actually carry out their work. Brown and Duguid stated that, in relation to innovation, learning and work, organisations focus too often on canonical practices (official descriptions) instead of non-canonical ones (practices of everyday work). Important work has been done in studying innovation activities from the non-canonical perspective in the Communities of Practice (CoPs) context (*e.g.*, Brown and Duguid, 1991; Swan *et al.*, 2002). Although these studies have provided us with stimulating insights, there is also a need to study practices related to creativity and innovation in more formal group conditions (such as semi-formal ideation sessions). Thus, the intention in my analysis is to examine non-canonical practices in a semi-canonical group setting.

My primary interest in this paper is to link the antecedents of out-of-the-box creativity in groups to the actual practices with which they are realised. The focus here is on practices that obstruct these antecedents. My intention is to take a step forward in linking the practice approach and the research on the antecedents of group creativity and innovation. In this paper, I cannot examine exhaustively the different practices related to out-of-the-box creativity, but my intention is rather to present examples of the kind of practices that can obstruct these antecedents and, thus, deepen our understanding of them. More research is called for to examine in greater depth and breadth the multitude of practices related to creative and innovative endeavours in groups.

6 Empirical case and research methods

The empirical materials for this paper have been collected from three arenas. The first and most in-depth data collection setting is a large, globally operating and publicly listed technology company. This company provides technology and services within a traditional process industry that values reliability and a high standard of sophisticated technology. At the time of writing, the company is experiencing a substantial boom in its business, which has led to increased time pressure from sales and delivery projects. The company is among the technology leaders in its business and needs innovation to maintain its market position. The company's technology management has developed models and procedures to help structure innovation activities, although they are still rather seldom

used in the organisation. Management is currently seeking to deepen their understanding of the practices and barriers related to innovation, which was their motivation for participating in the study.

This research has been conducted at one of the company's three divisions in Finland. This division has developed some of the company's key technologies. The main empirical evidence in this study has been gathered from a technology development team consisting of 17 people (referred to herein as a tech team). The empirical materials have been collected by conducting 15 interviews in the organisation and observing five sessions of a semi-formal ideation group. The first interviews were conducted to learn of the antecedents for creativity and the perceived challenges in this respect. The interviewees were chosen by our contact persons based on our request for a diverse set of participants (with respect to professional age and function). The interviewees were asked a wide range of questions on factors inhibiting and supporting creativity and innovativeness.

I observed the group to identify the obstructing practices related to the inhibiting factors recognised in the interviews. The observed group consisted of six people and worked on improving the main technology developed by the tech team. This group was not a permanent structure, but consisted of members of the tech team that were asked to participate in these sessions. The team leader chose the group members on the basis of his perception of their creativity and appropriate expertise for the task at hand. The participants represent different competence areas and seniorities. Two goals were set for the ideation sessions: finding solutions to concrete short-term problems and engaging in out-of-the-box ideation (long-term dreams). The short-term problems were discussed in the first three sessions and the long-term goals, in the last two sessions (the last session being the most long-term-oriented). The group members could also raise any of the issues that they were interested in. Altogether, there were five meetings, of which four were recorded and transcribed. The first meeting was not recorded because the permission to record the session was granted only after the first meeting.

The primary empirical data have been complemented with observations from two other ideation arenas. The first arena was a two-day ideation workshop organised by a large global manufacturing company. I observed these workshops with a colleague on two occasions. We were not allowed to record these workshops. Instead, we took detailed notes during the workshops and complemented them with additional notes and details within 24 h of the sessions. The second arena was a workshop called 'Product Development in Six Hours', organised by the Helsinki University of Technology's Department of Mechanical Engineering. The participants were company representatives and students. Participation was free of charge and the workshop was part of Helsinki Design Week. I observed these workshops with a colleague on two occasions. In the first workshop, we acted as participant observers and in the second, as passive observers. This allowed us to collect rich and versatile observation data from the situation. The sessions were recorded (videotaped).

The transcriptions and field notes from the observation sessions and interviews were analysed first by identifying the perceived antecedents and barriers for out-of-the-box creativity and then by grouping them under the four antecedent categories. Due to the wide range of subjects discussed in the interviews, many factors were left out of this examination. These factors concerned either the more structural (*e.g.*, organisational rewarding policies) or individual (*e.g.*, personal capabilities) levels. The factors from

the appropriate level of analysis fit the coding scheme quite well and there were few contradictions. Second, the different practices affecting out-of-the-box creativity in the group sessions were identified and classified under the four antecedent categories after a second round of analysis. Many micro-level practices were identified in the group. Not all of these practices were included in the final analysis because they (1) were not central to the subject of the paper and (2) did not fit the coding scheme. These are discussed further in Section 9. Thematic analysis was applied at both analysis levels.

7 Barriers to out-of-the-box creativity

The following were the perceived barriers related to the antecedents of out-of-the-box creativity based on the first interview round (conducted before the group observations).

7.1 Vision

The interviewees felt that they did not understand the strategic direction of the company well enough. The objectives of single customer projects were well understood, but the future goals and dreams seemed less clear. They felt that this disengaged them from strategy work; since they did not know the company's strategic direction, they could not make a personal contribution. One of the interviewees described this in the following way:

> "Strategy is something written in the strategy documents and then discussed in separate work groups … I don't know what my colleagues think about this, but this is how I see it…"

For the vision to be effective, everyone should have a shared understanding of the concepts that are used in communications. There was some confusion over the concept of innovation in this organisation. Since the company is a technology provider, it has a strong technological orientation. Thus, the patenting path is highlighted in innovation activities. In fact, the concept of innovation was used to refer to the declaration of a potential invention submitted to the patenting board. This is captured by the next statement of one of the interviewees:

> "We can make innovations and present them to the patenting board but whether anyone ever makes use of them is a different question ..."

Since employees (but not management) tended to perceive innovations as inventions, the scope of the innovated domains was limited. When management encourages the employees to innovate, this is perceived as a request for more patentable ideas. In most cases, this does not pose a significant problem (since the primary domain of innovation in this organisation is the technological domain), but it does restrict the span of new perspectives in reference to out-of-the-box ideation.

7.2 Culture for questioning and tolerance

The interviewees felt that the openness of information sharing, engagement in discussion and commitment to tasks were in fine shape and gave positive feedback on the good atmosphere of the group sessions. One aspect that they considered detrimental to out-of-the-box ideation was the tendency to criticise and challenge ideas too quickly

instead of supporting them. Another problematic factor that they noted was 'the silent treatment for new ideas', *i.e.*, reluctance to comment on other people's ideas, let alone develop and champion them or encourage others to do so. This was mostly attributed to a lack of resources ("if I open my mouth, I will end up with more work") but, at the same time, there were doubts about whether this could really be the reason. However, no other possible reasons were pointed out.

7.3 Balanced risk-taking

The industry in which the organisation is positioned is conservative and the products require large investments before they can be taken to market. Thus, risks are not taken lightly and the balance has to be carefully considered. The interviewees recognised these restrictions, but had differing opinions on whether the lack of risk taking is inherent or resulted from outside pressure. Some of the interviewees stated that customers are not willing to take risks, whereas others said that the most difficult issue is to sell new ideas internally and that customers do take risks if they are properly justified:

> "The customers don't like it when things change … they don't like it even if we would argue that it can save a significant amount of money ... they want to be sure."

> "The most difficult thing is to sell the ideas internally … the customers are willing to accept improvements if you sell them well … but new ideas are too easily silenced within the organisation, instead we just focus on the most urgent issues …"

There were shared stories of successful inventions in the organisation, but not of useful failures. The company had personnel development schemes that accentuated continuous improvement, but these schemes were not balanced with concrete efforts to achieve radically new openings. The interviewees stated that they found it difficult to break out of old thought patterns and question their customary problem-solving ways based on their strong expertise areas. At the same time, there was an apparent tendency to reject ideas coming from different or novel perspectives or representing a long-term perspective. The interviewees often mentioned the Not-Invented-Here (NIH) phenomenon.

7.4 Priority and demand for radical innovation

Although the employees were intrinsically well motivated to solve challenging problems and perceived their work tasks to be motivating, they felt that work relating to current customer projects took away time and priority from more radical innovation efforts. In fact, the interviewees expressed their concern over the lack of priority placed by management on out-of-the-box ideation and, thus, on securing the future success of the company:

> "There is one thing (that prevents innovation) … there is a lack of radical development … Lately we have been so busy with our customer projects that … it (long-term development) has been forgotten, which is naturally not a good thing since our competitors are evolving all the time, too …"

The lack of time was seen as the greatest deficiency in assigning importance to out-of-the-box creativity and radical innovation. They felt that they were under heavy time pressure and that one of the most important goals of their work was to keep to project schedules.

8 Practices that obstruct out-of-the-box creativity

The four antecedents presented above are still somewhat abstract categorisations of daily life in groups. We can deepen the understanding they offer of the barriers to out-of-the-box creativity by examining the practices through which they are realised. In the following section I will identify the most relevant practices obstructing the realisation of the four antecedents for out-of-the-box creativity. Again, I wish to remind the reader that my intention is not to provide an exhaustive list of detrimental practices for out-of-the-box creativity, but to point out the central ones related to these four antecedents.

8.1 Vision

Generally, the objectives set for the group were met successfully, although the results of out-of-the-box ideation were not as good as expected. This was somewhat surprising because many of the group members had expressed the need for long-term thinking. However, when the team leader sought to take the conversation to a more radical level in the ideation sessions, the group members did not follow his lead and soon returned to discussing more concrete issues. For example, the team leader suggested that the group could spend some time thinking of what the ideal product would be like and then proceeded to name some very radical technical features. The participants playfully built on the ideas for a moment, after which one of the group members asked, "Why did we start designing these fairytale products? Don't we have any real solutions?" This comment derailed the process and the group returned to discussing more current customer problems and the possible solutions for them.

Why did this happen if all the group members acknowledged the importance of radical ideation? Radical ideation was presented as part of the agenda for the team, but was not linked to the company's strategy work. The members seemed to have a clear understanding of the objectives of the more concrete tasks, but were less united in their perception of the goals of the radical tasks. This tended to focus group activity on the more concrete problems. The team leader himself drummed up enthusiasm for radical ideation and made an effort to engage the group members in this activity. He did not push for radical ideas, but took a rather humorous view of the issue. Though this had positive effects on the group climate, the more radical ideas were excluded from 'serious' group activity.

Although it would have probably helped the participants to take radical tasks more seriously if out-of-the-box ideation had been linked to the strategic vision of the company, this alone would not resolve the issue. In one of the other observation arenas, the entire workshop was arranged around seeking new strategic openings, but in spite of this, few of the radical ideas were taken seriously, written down or developed afterwards. Also in this workshop, the leader kept the discussion at a light level and the tasks were handled in a humorous way. When a visiting workshop leader maintained a more serious – yet playful – atmosphere at another session, the situation improved to some extent (but this did not eliminate the problem altogether).

Humour is a good element in ideation and often improves the group's atmosphere. When a participant throws in a wild idea, the other members might respond by making humorous comments that eventually lead them to recognise it as a useful new idea. But this can also lead to bantering that reduces the idea to a mere joke. In this case, the

group members responded to someone's wild ideas with humorous remarks, after which they 'got serious again' and moved on to more concrete issues (as what happened in the example above). This type of reception can be an intentional effort to reject the idea or the result of the group members mistaking the idea for an actual joke. The potential for misinterpretation was exacerbated by the fact that the ideas were, in most cases, also introduced in a joking tone, which was most probably due to the personal emotional risk involved in presenting wild ideas and putting oneself at risk. If the idea presenter then wanted to discuss the idea seriously later on, even more courage was required. The idea presenters almost never did this, although they could make subtle efforts to change the tone of discussion around their idea. Hence, the actual point of the idea went unnoticed on many occasions.

8.2 Culture for questioning and tolerance

The members of the group were familiar with each other, respected each other's expertise and felt comfortable with ideating together. The group members were not afraid to present their ideas and discussion in the group was active. However, the factor that had a negative impact on culture for questioning and tolerance was that the ideas were sometimes ignored, *i.e.*, met with no reaction at all. This factor seemed to be the most obstructive practice with regard to both the emotional and task-related effects on out-of-the-box ideation. Criticism and even conflict at the task level were less harmful. When one receives direct criticism, one is able to respond – either to prove it wrong or use it to develop the idea. When an idea receives no reaction at all, one is at a loss about what to do next. Should one carry on developing the idea or give it up? What do others think of the idea and what do they think of me for having presented it?

There are many different ways to overlook presented ideas. They include creating a disturbance (*e.g.*, starting to draw one's own idea on the white board while someone else is explaining his/her idea), the lack of concentration, not stating one's opinion of the idea and superficially acknowledging the idea while directing attention away from it ("Yes, we could think about that, but we also have to think about …"). These practices prevent proper discussion of the ideas and, thus, good ideas can be silenced to death. Emotionally, this creates uncertainty and frustration, which is especially detrimental to out-of-the-box ideas because of the personal emotional risk involved. Also, if a group member's efforts continuously go unnoticed, he/she is likely to become more passive and less committed to the group and/or task.

The use of these practices can be a result of a simple ignorance of their effect on ideation or intended to dismiss an idea without having to confront the presenter or give justifications for the rejection. The latter reason was pointed out by the group members: "I don't want to take the conversation further because that would only lead to endless discussion about whether the idea is possible to realise or not … and I know that it is not a smart way to go." Thus, the 'silent treatment' can result from a need for cohesion and the wish to avoid conflict. It has been recognised that when there is a culture of openness and safety in the team, the group should be able to handle contradictory opinions and task-related conflict without negative effects on the group's creativity (*e.g.*, Lovelace *et al.*, 2001). In fact, there is always some conflict involved in out-of-the-box creativity and radical innovation and, thus, the accentuated need to avoid conflict is particularly

harmful to the creation of radical ideas. The explanation given in the first interview round for engaging in silent treatment ("if I open my mouth, I end up with more work") is less complicated to address. This problem could be fixed with more resources. But a situation where group members silence ideas to avoid conflict needs to be addressed at the level of group culture and leadership.

8.3 Balanced risk-taking

The organisational frame of low risk taking could also be seen in the activities of the group. Though the group members had much freedom in developing their ideas, they recognised that the ideas that were not related to current customer projects had less chance of being developed after the session. Comments such as "Yes, that idea *could* work, but the customer will *never* approve us testing the idea" were the most common ways to discard ideas. Finding the needed pressure and priority for these ideas was extremely difficult and, thus, it was rare for the group to take decisions on how it should proceed with them.

This reality was evident in practices that controlled the risks related to the ideas that were discussed in the ideation sessions. One of these practices involved demanding proof and focusing on technical details at a very early stage of ideation. Although the group members seemed to know that they should not criticise ideas too much or focus on details at this stage, this appeared to be difficult to accomplish in practice. The examination of technical feasibility was a familiar way of discussing ideas and, thus, the discussion took to these tracks without them paying attention to it. Also, moving out of one's comfort zone involves personal risk. The participants then resort to the domain they know (here, technical feasibility) and evaluate the idea through that specific domain.

There was much discussion of risk in the group sessions and it dealt almost exclusively with the difficulties resulting from the increased risk involved in the presented ideas. Parting from feasible solutions seemed to be a real threshold for the participants. One reason for this may be that the participants felt that the assurance of technical feasibility was in the core of their expertise and thus it was their responsibility to assure the technical feasibility of the presented ideas. Thus, though the technical domain was the primary domain of expertise, the group members could have felt less constrained by generating out-of-the-box ideas from a non-technical perspective. This kind of risk could have been more easily tolerated and it could have brought some fruitful new perspectives to the discussion.

8.4 Priority and demand for radical innovation

The very practice of having group ideation sessions that strive to create out-of the-box ideas is evidence of priority and demand for radical innovation. Still, there is a risk involved. If ideation sessions become an end unto themselves, the development of ideas after the sessions can be overlooked. In turn, this can frustrate the participants because their ideas are not being acted on, further reducing their enthusiasm for engaging in this type of activity. This effect is not restricted to radical innovation, but applies to innovation activities in general. However, in relation to radical innovation, the issue is even more problematic. Radical ideas are seldom implemented immediately; their development into innovations can take several years. Thus, it is even more important for those involved to have confidence that good ideas will be noticed and have a

good chance of being realised. In the case of radical innovation, acting on an idea does not mean immediate implementation, but clear recognition and active championing in the organisation.

Ideation sessions are usually thought to be useful because it is valuable that ideas are expressed; even if such ideas are not acted on right away, someone else might recall and apply them in another situation. Though this is true in many cases, there is also a chance that these ideas will either be forgotten or remembered as failures in some way, as exemplified by the following quote:

> Group member 1: "Could we use the technology X for this problem?"
>
> Group member 2: "We tried that out five years ago and nothing came out of it."
>
> Group member 3: "But the reason for that was that we simply did not take the idea forward after the tests were made, there was nothing wrong with it..."

There can also be problems of ownership. If Person A presents an idea and Person B recalls it some time later, Person A does not necessarily get any credit for the idea if his/her contribution to the original idea is not remembered. Though seeing one's ideas developed can be perceived as more important than receiving credit for them, it can nevertheless lead to frustration and decreased motivation to engage in free ideation.

Why should management and organisation members wish to continue the practice of ideation sessions and provide them with time and resources if they do not have the time to take the ideas further? The ideation sessions can act as practices that alleviate the organisation members' pressure to engage in creative activity and generate innovations while the conflicting pressures of business routines take up their resources. Having ideation meetings can alleviate the emotional stress involved and give a feeling of accomplishment, even if the ideation activity does not lead to further development of the ideas. The same kind of false feeling of accomplishment is listed as a problem of brainstorming (*e.g.*, Pennington, 2002), but with respect to the amount and quality of the presented ideas.

9 Discussion

I have previously discussed the barriers and obstructive practices for out-of-the-box creativity in groups. This paper has contributed to the existing literature on group creativity by introducing two novel perspectives on the topic. First, out-of-the-box creativity has been examined as the basis for radical innovation. This puts emphasis on both the ability to act on the ideas in the early phases of the innovation process and the influence this has on group ideation. From this perspective, four antecedents for out-of-the-box creativity have been identified by combining factors from the creativity and radical innovation literature. Second, the practices inhibiting the realisation of these antecedents have been examined to deepen our understanding of how the antecedents are represented in group activity. The antecedent categories presented in Section 7 and the related detrimental practices discussed in Section 8 are summarised in Table 3.

Table 3 The four antecedent categories for out-of-the-box creativity and the related obstructive practices

Antecedent category	*Related obstructive practices*
Vision	Treating radical ideas as jokes, mistaking out-of-the-box ideation for a team building exercise, not linking out-of-the-box ideation to strategic vision
Culture of questioning and tolerance	Silencing ideas: creating a disturbance, lack of concentration, not stating one's opinion of the idea, superficially acknowledging the idea while directing attention away from it
Balanced risk-taking	Demanding proof and focusing on technical details at a very early stage of ideation, concentrating on feasibility and testing, highlighting the need for solutions to immediate problems
Priority and demand for radical innovation	Ideation sessions as an end unto themselves → ideas not being acted on afterwards (and possibly being recalled as failed ideas in the future)

The empirical evidence of the study supported the notion that ideation is influenced by the ability to act on the ideas later on in the process. The fact that more radical ideas were less likely to be developed and championed in the organisation affected the willingness of the group members to put forth radical ideas, even in the very early stages of ideation. From the outset, the thought patterns of the members were influenced by personal, social and financial risks. This indicates that it is difficult to separate the free ideation sessions from the restrictions imposed by organisational realities and, thus, out-of-the-box-ideation sessions and their follow-up should be thought out carefully.

An interesting notion from the perspective of managerial implications was the dual role of ideation sessions. The very practice of organising ideation sessions shows that radical innovation is a priority. At the same time, the overvaluation of this practice can inhibit the process. Naturally, ideation sessions are needed if the company wishes to have everyone pull together in this effort. But it is important to recognise that these sessions can adversely affect innovation – take up resources, create frustration and make ideas seem 'used' – if they are not combined with the willingness and ability to act on the generated ideas. Creativity is influenced by the expectations of the group members of what happens after ideas are presented. Creativity cannot be isolated from its consequent steps towards innovation in an organisation. Thus, it is important for the motivation of the group members to ensure that the good ideas they have presented are given priority in the organisation after the ideation sessions. Ideally, this would mean acting on the ideas without delay. When this is not possible for every idea, it is a good practice to collect the ideas in an idea bank for later review – but for this to work, the idea bank must be used actively!

At the group ideation sessions, many practices were observed that have not been discussed above in relation to the four antecedent categories for out-of-the-box creativity. The first (obvious) reason is the limited amount of available space. A large number of micro-level practices (sayings and doings) were included in the discussed practices. Examples of these are various sayings with which radical ideas are excluded from decision making. Second, positive practices were not included in the scope of this paper. A wide variety of practices reinforced the antecedents and counteracted the obstructive

practices in the group sessions. For example, in the case of the practice of reducing ideas into mere jokes, other group members used certain practices to support the presenter by framing the idea as worthy of serious discussion. These practices included, *e.g.*, presenting part of the idea that is technologically feasible or pointing out a customer need that the idea could cater to. Third, not all of the identified detrimental practices could be fitted into the coding scheme. However, it was surprising how well the coding scheme fit the actual practices and events in group ideation. The coding scheme was also effective in capturing the main concerns that the organisation members stated in their interviews in relation to radical ideation. The types of issues that could not be fitted into the coding scheme included the internal dynamics of the team in relation to the work history and expertise of the participants, the differences between the practices utilised by the team leader and other group members and the boundaries between the group and the surrounding organisation.

10 Topics for further research

This paper has taken a step forward in linking the research on creativity antecedents and the practices related to them. More research is needed to deepen and broaden our understanding of these obstructive practices and those with which the antecedents of out-of-the-box creativity are supported. Furthermore, more research on the practices related to group creativity and innovation is needed on a broader scope, not just in relation to out-of-the-box creativity. Despite the advances made in research on both group creativity and innovation, there are significant gaps in our knowledge of the real-life, non-canonical practices related to these endeavours. While this paper focused on group ideation, similar research is also needed on the other parts of the innovation process. As we have seen in this paper, ideation is affected by what subsequently happens to the ideas in the process. Thus, to remove barriers to ideation, it is vital to have an understanding of the practices situated later on in the innovation process.

Methodologically, the focus in creativity and innovation research has been on contributions utilising quantitative methods (notable exceptions being, *e.g.*, Amabile, 1988; Nov and Jones, 2006), such as questionnaires on the factors perceived as beneficial or harmful to creativity and network surveys (*e.g.*, Oldham and Cummings, 1996; Amabile *et al.*, 1996). While this research has provided us with a valuable understanding of the antecedents for creativity and innovation, there is a demand for more contributions that examine creativity and innovation with qualitative methods to complement the quantitative findings on the subject. Observation is particularly effective for the careful examination of the practices that the organisational actors might not be able to articulate in interviews or surveys. Practices can be such an integral part of the interaction and way of working that the organisation members do not pay attention to them. Therefore, it can be difficult to achieve a complete picture of practices with interviews alone. Of course, interviews are very useful in searching for the meanings and interpretations of the organisation members of the practices that are observed. Thus, methodological diversity is needed.

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ESSAY D

Invention Rewards and Innovativeness: A Case Study

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Invention Rewards and Innovativeness – A Case Study

Elina Moisio, Tea Lempiälä

This paper explores the role of monetary rewards in innovativeness, particularly in the front end of innovation. We first present a summary of relevant literature on both innovativeness and reward management. Based this understanding we explore the topic further in a case study. We describe two reward practices and their effects on the innovativeness of researchers in a research centre. Also the effect of these reward practices on the antecedents of innovativeness is examined. Our study resonates with the previous research, but also points out new perspectives on the subject. First, we highlight the sharedness and clarity of innovativeness -concept and its effect on measures for reward practices. Second, we emphasize the need for reward measures to keep up with the fast changes in the the business environment today. Third, we discuss the size of a reward sum: where creativity itself is highly appreciated, it may be better to use sums that are interpreted as recognition rather than as financial compensation.

1. Introduction

The purpose of this paper is to explore the role of monetary rewards in innovativeness, particularly at the front end of the innovation process. Innovativeness is an important issue for most organisations, particularly for those in a competitive and changing environment. They need to develop new products, services and business models continuously in order to survive.

Many organisations have also developed their reward practices, and particularly the use of performance-based pay and incentives has increased (Hakonen, Salimäki, & Hulkko, 2005). They have a clear positive effect on quantitative measures of productivity but findings on the effects on quality have been less consistent (e.g. Jenkins, Mitra, Gupta, & Shaw, 1998). At the same time literature on creativity and innovativeness frequently questions the use of pay to enhance creativity (e.g. Amabile, Conti, Coon, Lazenby, & Herron, 1996). What effects will these reward practices have on innovativeness? What particular challenges does the need for innovativeness create?

In this paper, we discuss the influence of reward practices on the innovativeness of technology development personnel. We focus on the work of technology experts and R&D personnel, whereas questions concerning the rewarding of top executives or management

in research and technology development are beyond our focus. We also limit our observations to the front-end of innovation, which is the most creative part of the innovation process.
This paper begins with a summary of the relevant literature on the topic. First, we discuss the concepts of innovativeness and creativity to develop an understanding of the phenomena and to identify the aims of rewarding. Second, we identify the key areas in rewarding that we perceive as relevant for the topic. Then we explore the presented concepts through a case study in order to illustrate them in a real-life example. Finally, we summarize our thoughts and present conclusions derived from the study.

2. On innovativeness, creativity and their antecedents

Despite the vast amount of discussion around the subject, and partly due to the fashionable nature of this and related concepts, there has been some confusion between the concepts of innovativeness and creativity. We find it important to make the distinction clear here. We shall thus discuss innovativeness and creativity separately – starting with creativity (as the building block for innovativeness) and continuing with innovativeness which includes the development of ideas and their promotion and application in the organisation. We find the literature on both of the concepts relevant to our research, because we are interested in both the production of novel and useful ideas and in the way in which they are taken forward in the organisation (though our focus is on the front-end of innovation).
Although innovativeness as a concept includes both creativity and the ability to take ideas forward in the organisation, we wish to give creativity its own weight in our discussion. This is mainly because the discussion of the effects of rewards on creativity in the literature on creativity – especially Amabile – is relevant to our topic even though our focus is on innovativeness. Also, because our empirical materials revealed some confusion regarding the different concepts related to innovation, we wish to highlight what is meant by each concept.

2.1 Creativity

Organisational creativity refers to the production of novel and useful ideas in the work context (Amabile et al., 1996). Creativity thus refers to the generation of useful ideas in the organisation whereas innovativeness also includes the capability to take action after an idea is presented. Creativity can thus be seen as an important building block and starting point for innovativeness.
In their definition, Woodman, Sawyer and Griffin (1993) connect the social system of an organisation closely to the birth of creative output: "Organisational creativity is the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system." It is a valuable notion that individuals,

as creative as they may be, are always affected by the social environment of the organisation, which can either encourage or inhibit their creativity. This is also highlighted by Csikszentmihalyi (1988, 1990), who has developed a system view of creativity that describes the social processes through which action becomes defined as creative. The important notion in this perspective is that actions or outputs are not creative as such, but are labelled as creative (or uncreative) by the relevant community. Creativity is thus an interactive process between an individual, a field and a domain. The domain comprises e.g. the rules, language and customary practices of a recognised area of action and the field represents the people who populate the domain and affect its structure. According to Csikszentmihalyi, the individual is the sole source of variation and change in this system. The field, i.e., the people populating and personifying the domain, serve to select and retain the ideas whereas the domain communicates to the individual what is the legitimate way of behaviour and action. The process of interaction between these three elements continues as an ongoing cyclical set of relationships.

Even though our focus is on innovativeness, we find that a brief discussion of the building blocks of individual creativity is helpful in understanding the origins of organisational innovativeness. Like innovativeness, creativity also requires more than just creative cognitive skills. Amabile (1983) identifies three components in the individual creativity: domain relevant skills, creativity-relevant skills and task motivation (Figure 1). They are all needed to bring about creativity. An increase in the level of any one of them, results in an increase in overall creativity.

The domain-relevant skills include knowledge, technical skills and special talent in the expertise area in question. These skills are the "raw material" of creativity, i.e., one needs to have at least some knowledge and skills in the area where one wishes to be creative. The creativity-relevant skills on the other hand represent the cognitive style of the individual, i.e., approaches to problem-solving, working style or cognitive patterns. These skills depend both on training and personal characteristics. Task motivation includes two elements: the attitude towards the task and the individual's perceptions of his/her reasons for taking the task. The former describes the amount of interest and enthusiasm the individuals has towards the particular task, whereas the latter illustrates the perception of one's own motivation for performing the task. Task motivation determines the extent to which domain-relevant and creativity-relevant skills are used for creativity production. No

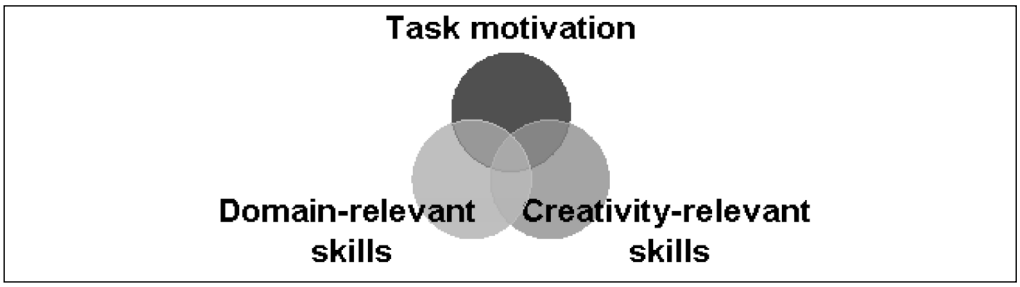

Figure 1: The components of individual creativity based on Amabile (1983).

amount of skill in the domain or in methods of creative thinking can compensate for a lack of appropriate motivation, but a large amount of proper motivation can make up for deficiencies in the other two areas. Thus, the domain-relevant and creativity-relevant skills define what the individual can do, while task motivation defines what the individual eventually will do.
Amabile (1988, 1996) further divides task motivation into two parts, intrinsic and extrinsic motivation. Intrinsic motivation or self-motivation means that a person is motivated by the interest, enjoyment or challenge of the task itself. Hence, extrinsic motivation factors are evaluation, competition and rewards. Intrinsic motivation is seen to have the most positive effect on creativity. In order to achieve optimal results, extrinsic motivational factors should support intrinsic motivation.

2.2 Innovativeness

Innovativeness has been subject to a vast amount of research in recent years (e.g. West and Farr 1989, Scott and Bruce 1994, Kleysen and Street, 2000, de Jong and Kemp, 2003). The concept has been defined and approached in many different ways. One approach is to perceive innovativeness as a capability as shown in the definition of Hult, Hurley, & Knight (2004): "Innovativeness relates to the firm's capacity to engage in innovation; that is, the introduction of the new processes, products, or ideas in the organization". This definition is still at quite an abstract level and does not give much insight into the components of innovative capacity or to the kind of outcome it is expected to produce. On the other hand this definition underlines that innovativeness does not have to be limited to only products, but can also be directed at improving organisational processes or many other domains such as services and business models. Wang and Ahmed (2004) define organisational innovativeness as an "organisation's overall innovative capability of introducing new products to the market through combining strategic orientation with innovative behaviour and process". This definition has two particularly good qualities: 1) it communicates that an idea becomes a genuine innovation only when it is put on the market or when organisational and other such innovations are implemented, and 2) it breaks down the innovative capability into strategic orientation, behaviour and process. We find that breaking innovativeness down into components makes it easier to "handle".
While the above definitions have focused on innovativeness on the organisational level, it has also been approached on the level of individual activity. These activities are called innovative behaviour. West and Farr (1989) define innovative behaviour as covering 'all individual actions directed at the generation, introduction and application of beneficial novelty at any organisational level'. This definition is quite general with regards to the output of the innovative activity. We find it appropriate because the result of innovative behaviour can vary greatly. Innovative behaviour also involves risk taking, which means that not all innovative effort results in successful innovations. This does not, however, make it less important.

Innovative work behaviour can be seen to include three behavioural tasks: problem recognition and the creation of novel or adopted solutions; promotion of the idea in the organisation to gain sponsorship for it; and realization of the idea, e.g., a prototype building or model of the innovation that can be diffused etc. (Scott & Bruce, 1994; Janssen, 2000; Kanter, 1988). Kanter (1998) also adds a fourth innovation task, which is the transfer or diffusion of innovation.

The three categories are still on quite a general level, and it is helpful to recognise different types of innovative behaviours in order to be able to study them in an organisation. Kleysen and Street (2001) answer this need by identifying five categories of innovative behaviours: opportunity exploration, generativity, formative investigations, championing and application. These categories are collections of several activities that fulfil a similar function. In *opportunity exploration* four sets of behaviours are identified: paying attention to opportunity sources; looking for opportunities to innovate; recognising opportunities; and gathering information about opportunities. This set of behaviours thus involves the search, recognition and gathering of information about opportunities. *Generativity* includes behaviours like generating ideas with which to respond to opportunities and solutions to problems; generating representations and categories of opportunities; and generating associations and combinations of ideas and information. This set of behaviours thus comprises generating, categorising and combining ideas and opportunities. *Formative investigations* include behaviours that give form to and flesh out ideas, solutions, and opinions and trying them out through investigation. This set of activities includes formulating ideas and solutions, experimenting with ideas and solutions, and evaluating them. *Championing* comprising socio-political behaviours involved in processes of innovation, such as mobilising resources, persuading, influencing, negotiating, challenging and risk taking. *Application* includes those behaviours whose aim is to make innovations a regular part of business as usual. These include implementing, modifying and routinising.

Not all employees need to demonstrate all of these behaviours. Employees may also be involved in any combination of these behaviours at any one time (Scott & Bruce, 1994). Often people are prone to different behaviours. This does not mean, however, that innovative behaviour is characteristic of some people and not of others. There are two reasons for this. First, the categories indicate that there are many types of activities related to innovativeness, even behaviours that seem almost routine-like. All of these behaviours are, however, important in bringing the creative potential of an organisation into innovation. Second, people are capable of learning and engaging in behaviours that are not the most characteristic for them and individuals do act in different types of roles in different social situations. This is why we find that it is useful to think about innovativeness as activities in an organisation, rather than by concretising it into e.g. specific roles for individuals.

In our study we have focused on innovativeness in the front-end of innovation, which is the early part of the innovation process- beginning with opportunity exploration and ending with the creation of a concept. The FEI can be perceived as the first one of three phases (FEI, development project phase and commercialization/implementation) in an organisational innovation process (Koen et al., 2001; Buckler, 1997). The front-end of innovation includes activities such as idea genesis and enrichment, idea selection, opportunity

identification, opportunity analyses and concept definition (Koen et al., 2001). One cannot state a universal set of activities that should take place in the FEI-stage, for it heavily depends on e.g. the degree of complexity and innovativeness of the product and the effect of the FEI on subsequent processes (Kim & Wilemon, 2002). There aren't either specific innovative behaviours that are present in the FEI, but they can all be found in each part of the process (Tuominen, 2007, though in a KIBS context). The front-end of innovation is especially interesting when studying innovativeness due to its adventorous and unstructured nature (Buckler et al., 1996). There is not much research on FEI in comparison to the development and commercialization phases of the innovation process although it is perceived as the most problematic of the three yet providing the greatest potential for the improvement of the overall innovation capacity (Nobelius & Trygg, 2002; Kim & Wilemon, 2002). These aspects of the FEI make it especially interesting to be studied in respect to rewarding practices and their effect on innovativeness.
The social context of an organisation is perceived as being of particular importance in the FEI (MacAdam & McClelland, 2002). There are fewer formal processes and procedures present in this phase and a large amount of freedom is needed in order to allow and encourage explorations with new ideas. The FEI is thus the part of the innovation process where individuals are asking new type of questions and presenting bold ideas, commenting, supporting and criticizing, seeking different ways of thinking and doing, dreaming, challenging, testing and championing their ideas. Individuals perform these activities but in a continuous, flowing and dynamic interaction with each other. When there are few formal processes the social practices that guide the daily work become essential. Can ideas be presented in a safe environment? Do others have time and interest to listen and to react? Is there enough enthousiasm to make things happen, to start and strengthen the virtuous circle? Especially for the ability to develop and promote the ideas in an organisation social activity is essential (West et al., 2003).

2.3 Antecedents for organisational innovativeness and creativity

Most organisations wish to manage and develop their innovative capacity, but struggle to do so, because they cannot find concrete ways of action. How is it possible to manage innovativeness when its essence lies in unpredictability? Since management of innovative activity itself is difficult, much effort is put into developing the antecedents of innovative work environments that provide the most fruitful circumstances possible for innovativeness. There has been much research on factors enhancing innovativeness and creativity (e.g. Scott & Bruce, 1994; de Jong & den Hartog, 2007; Woodman, Sawyer and Griffin 1993; Amabile et al., 1988, 1996; Huhtala & Parcefall, 2007). Most of the factors are the same, but there are some slight differences as well. Below we have listed the factors that have been found to enhance creativity and innovativeness. Individual psychological factors are not included, but we have focused on the factors that an organisation can influence. The antecedents found for creativity can help us to understand innovativeness and

vice versa (Staw, 1990). This is why the antecedents are to a large part overlapping. The lists are not exhaustive, but offer a collection of the most discussed topics in the issue.

Antecedents for creativity

Freedom to decide how to accomplish a task. This provides organisational actors with an opportunity to explore for innovative routes to do their own work and gives them a sense of control over their own ideas. It does not mean that a clear goal is lacking for a particular project, but refers rather to the way in which individuals and groups go about pursuing this goal. (Amabile, 1988; Amabile et al,1996)

Sufficient time and resources. In order to come up with creative ideas individuals must have the time to stop and think about the problem or task at hand. Also, sufficient resources, such as facilities, equipment, funds, information and people are needed. (Amabile, 1988; Amabile et al., 1996; Payne, 1990; Woodman et al., 1993)

Good (project) management has been found to be a central part of enhancing creativity. Although there is not necessarily a project or a project manager at the front-end of innovation, good leadership from the part of the people exercising power are essential at this stage. The leader should be enthusiastic, a good communicator, skilled in balancing clear goals, have sufficient freedom of implementation and be able to protect her/his group from outside disturbances. (Amabile, 1988; Amabile et al.,1996; Payne, 1987)

Recognition of creative efforts is important in motivating the employees. Such recognition should not be achieved through strict procedures, but through a general feeling of appreciation for creative effort. (Amabile, 1988; Sundbo, 1996)

Challenge is important in creating the enthusiasm for and interest in the problem at hand. The sense of challenge can arise from the nature of the problem itself or from its importance to the group or organisation. (Amabile, 1988; Amabile et al., 1996)

Pressure. Even though pressure is often perceived as being detrimental to creativity, some amount of pressure is needed to communicate urgency. (Amabile, 1988)

Work group support and organisational encouragement. There should be encouragement by peers and management and for generating new ideas. Evaluation of ideas should not be intimidating, and other group members should be encouraged to express ideas rather than discouraged (Amabile, 1988; Amabile et al., 1996)

Group factors: leadership, cohesiveness, longevity, group composition and group structure have been found to have an influence on the creativity of groups (Woodman et al., 1993; King & Anderson, 1990; Payne, 1990). Group creativity is perceived to be highest when "lead-

ership is democratic and collaborative, structure is organic rather than mechanistic, and groups are composed of individuals drawn from diverse fields or functional backgrounds" (Woodman et al., 1993, p. 302). Group cohesiveness and longevity have been seen as important but problematic and, e.g., for cohesiveness a curvilinear relationship is suggested in relation to creativity.

Social information consists of verbal and nonverbal cues and signals regarding what factors are valued in the workplace (Ford, 1996). These signals are conveyed by organisational actors to other organisational actors in social situations. Social information affects the perceptions of what is valued and what is perceived as creative and thus affects the creative processes of individuals and groups.

Antecedents for innovativeness

Many of the factors influencing innovativeness are the same as the factors influencing creativity. This is logical because creativity is the basis for innovativeness. We list here only the factors that are found in addition to the above-mentioned creativity antecedents. We find that these factors have been more often mentioned in relation to innovation and innovativeness, but they havenevertheless not been completely absent from creativity literature.

Risk taking is central because with playing it safe means that the crucial trial and error needed for creativity does not occur. (Koberg, Uhlenbruck & Sarason, 1996; Martins & Terblanche, 2003)

Organisational climate can be defined in two ways. First, it can be viewed as the shared perceptions of the organisation and group members, for instance sense-making is a relevant concept here, and second, it can be perceived as the shared cognitive schemas of the organisational actors (Anderson & West, 1998). The features of the organisational climate that have been perceived as enhancing innovation are: *vision, participative safety, task orientation, and support for innovation*. Vision refers to an idea of a preferred goal, participative safety indicates a climate where people do not feel threatened when presenting their idea and are active and motivated to do so, task orientation refers to a shared interest in the quality of the task performance, and support for innovation consists of the expectations, practical support for and approval of innovative efforts from peers and management.

Leadership is highlighted in relation to innovative behaviour (Scott & Bruce, 1994; de Jong & den Hartog, 2007; West & Farr, 1989). Even though leadership involves roughly the same factors as creativity, the weight is more on leadership factors such as leader-member exchange.

The strategy of the organisation should be visionary and purposeful and provide concrete goals and action plans (Martins & Terblanche, 2003; Sundbo, 1996).

Open communication is highlighted in achieving innovation; cross-functionality is also proposed in this respect (Lovelace, Shapiro, & Weingart, 2001; Martins & Terblanche, 2003; Sundbo, 1996).

Innovative organisational culture (West & Farr, 1989; Martins & Terblanche, 2003; Sundbo, 1996)

We found that examining the effect of rewarding on these antecedents of creativity and innovativeness would be a useful way of approaching the relationship between innovativeness and rewarding. In our analysis of the empirical materials we do not focus solely on these factors, but also on the basic issues arising from the concepts themselves, as they form a basis for our analysis. Because the lists of factors influencing innovativeness and creativity is too vast to handle in depth in this study and many different factors touch on similar issues, we summarized them for the purposes of this study in six categories that we found especially relevant for this study. The six categories are as follows:

1. A vision or goal to set direction
2. Challenging tasks to energize and motivate
3. Freedom to choose how to innovate
4. A group of people to innovate with
5. Supportive culture: feeling of safety, support and the right to fail
6. Concrete support from supervisor and management, such as time, resources and recognition

3. On rewards and their effects

In this part of the paper we take a look at some key questions concerning reward practices. What effects do reward practices have? What makes reward practices effective? What is important when rewarding innovativeness?

In literature, 'rewards' are defined in many ways and also terms such as 'pay' and 'compensation', are used with similar meanings. Rewards can be both monetary/financial and non-monetary. Typical forms of monetary rewards are monthly salary or base pay, incentives and bonuses, ad hoc or lump sum rewards, commissions and royalties. Also benefit can be considered monetary rewards. Non-monetary rewards are practices or events that are also important for motivation. They are e.g. the job itself, career or development opportunities, flex-time arrangements, work community, recognition and feedback from work.

In this article we discuss monetary rewards. It does not mean that non-monetary rewards are not relevant for innovativeness, on the contrary. Many researchers point out the im-

portance of non-monetary rewards in innovative workplaces. However the effects of monetary rewards in innovative workplace are not yet well known.

During recent years a trend in reward management has been strategic pay and rewards. Various types of pay-for-performance and incentive pay systems are seen as the main elements of strategic pay. In their classic study Gomez-Mejia and Balkin pointed out that the choice of rewards should be contingent with the strategic choice of an organisation (Gomez-Mejia & Balkin, 1992). On the whole, the *fit or contingency* between the organization and its environment, or between its structure and processes has been studied from various perspectives. In the original contingency theory Lawrence and Lorch (Donaldson, 2001) state that contingency between the organization and its environment leads to better performance. In reward management literature the focus is usually on the fit between rewards and other elements of the organization (e.g. Lawler, 1996; Balkin & Montemayor, 2000; Heneman, Ledford, & Gresham, 2000).

Many studies have found that monetary rewards in general do have effects, on both organisational and individual level. The effects vary according to both the reward and the desired effects. E.g. Jenkins, Mitra, Gupta and Shaw (1998) found in a meta-analysis that financial incentives are related to performance quantity, but not as much to quality. Similar results were found in an econometric study showing that organisations that used bonus plans had significantly higher productivity (Snellman, Uusitalo, & Vartiainen, 2003). On individual level it has been pointed out that rewards have effects on motivation, commitment and job satisfaction (e.g. Rynes & Gerhart, 2000). The effects on individuals intermediate the effects on the organisation.

Not all rewards systems have the desired effects. Researchers also have reported cases where reward practices have failed and unanticipated costs such as employee resistance and negative peer pressure even made managers abandon the pay for performance plans they had implemented (e.g. Beer & Cannon, 2004). A major challenge is in identifying and choosing appropriate and understandable measures to be used as the basis for pay raises or bonuses. Poorly selected measures may lead to undesired behaviour, suboptimisation or lack of motivation. The targets may be too challenging or too easy, or out of control for the employee. The measures may be immeasurable or non-transparent.

Many examples also show that the success or failure of a reward practice is not explained by the basic structure of the practice alone, but there are also other elements that should be taken into consideration. An example of these is in a recent study on results-oriented pay, a type of variable pay system. It concluded that knowledge of the pay system, the strategic fit between the pay system and organisational goals, and a fair system implementation all have an impact on pay system outcomes. This study was based on a survey of individual employees in 18 different organisations (Hulkko-Nyman, Hakonen, Kira, Sweins & Ylikorkala, 2007).

It seems that the processes of developing and implementing rewards are also relevant (Cox, 2005). The effects of rewards are thus created as the outcome of the whole reward system, consisting of both the structure and the processes. The final "truth" emerges in the interpretations of it made by each employee.

3.1 Rewarding innovativeness in the Front-end of innovation

Many organisations today believe that innovativeness is a strategic necessity. They look for new ways to manage innovativeness, and reward systems should naturally be part of it. But how can this be accomplished?

Most researchers of creativity and innovativeness discuss the role of monetary rewards only briefly stating that it is important to align rewards with other innovation management practices. However, Amabile (1988, 1996, 1998) discusses the role of rewards in detail, and many other authors in both the creativity and the innovation literature refer to her.

Amabile describes monetary rewards as extrinsic motivators. Money may lead people to think that they are bribed or controlled. It may lead to fast and less creative solutions. On the other hand, monetary rewards can act as recognition of creative work, which in an important part of encouragement. Amabile writes that creative organisations consistently reward creativity but avoid using money. She stresses that at the same time not providing sufficient recognition and rewards for creativity can spawn negative feelings within an organisation. If people work in an organisation where they have seen creative efforts rewarded in the past, they will feel that value is placed on creativity, and that their own work will be rewarded equitably when the time comes (Amabile, 1988, p. 149). According to Amaile monetary rewards can be best used when people have strong intrinsic motivation (ibid, p.146).

Amabile has her focus mainly on creativity. To our knowledge, the effects of rewards on other elements of innovativeness have not been studied much. De Jong and den Hartog (2007) suggest in their study on the influence of leaders on employees' innovative behaviour that even though financial rewards may not be the best incentive to stimulate idea generation, they can be helpful in effective idea application.

This article focuses on rewards in the front-end of innovation (FEI), the most creative part of the innovation process. How can rewards be aligned with FEI? A major challenge lies with measures of innovativeness. The nature of FEI makes it difficult to find clear measures to be used as the basis for reward practices. Measures for the front-end of innovation are more difficult to find compared with the New Product Development (NPD) process due to its different nature. FEI is experimental and often chaotic, the schedules are unpredictable and many projects are even "bootlegged" (Koen, Ajamian, Burkart, Clamen, Davidson, D'Amore, Elkins, Herald, Incorvia, Johnson, Karol, Seibert, Slavejkov, Wagner, 2001).

On the organisational level, the ultimate measure of innovativeness is the success of the organisation. The measures for this can be based on a market position, profitability, return on investment (ROI), customer satisfaction etc. The output of the entire innovation process is, for example, a new or improved product or service, which is needed to reach the business objectives. Innovativeness can also be measured with number or quality if patents (Makri, Lane & Gomez-Mejia, 2006). For FEI the direct output is the concept of, e.g., a new product, which is the starting point of the new product development process.

Such organisational measures are not generally suitable for rewarding individuals. Effective results can often be measured only after the new products or services are on the market, and this may happen only after a long time. Some measures are, however, suitable for rewarding the executives responsible for the innovation process.

Could the number of concepts be used as measures on individual level? Usually only a small proportion of ideas during FEI enter the next phase of the innovation process. It is also difficult to know during FEI which ideas will be chosen. The measurement of only successful ideas would not be sensible, as it would reduce risk taking and creativity. Another challenge is the social nature of creativity (Woodman et al. 1993). In most cases there are a number of people involved in the creation of a concept during FEI. It may be impossible to demonstrate the contribution of one person or even a team to the end result. Also the success of a concept is dependent on many issues beyond the control of the inventor.

Widely used measures of organisational innovativeness are the number of patents, patent applications or invention notices. In many countries, and also in Finland, legislation provides some guidelines on compensating employees for inventions. Most organisations have policies and procedures for this purpose. The situation, howevere, is not simple. The procedure from an idea through invention to a patent may be affected by factors beyond the control of the inventor. Also there may be several inventors, and it may be difficult to point out the role of an individual person.

Also, process measures could be considered on individual level. We discussed earlier the activities of FEI and individual innovative behaviour. These types of behaviour have been described in great detail and also measurement or evaluation practices exist (e.g. de Jong & Kemp, 2003). The common procedure for evaluation is to describe the desired behaviours and have an evaluation made either by the employee herself, by peers and/or by supervisor. However, evaluations are not without problems. For example, the evaluation situation may include many sources of errors or evaluators may be biased

Besides measuring the output or the process of innovativeness, organisations could also measure contextual factors influencing innovativeness. Earlier in this article we described the antecedents of creativity and innovativeness in an organisation. Reward practices must also have an influence on these antecedents, and this indirect effect on innovativeness needs some consideration as well.

The effects of a reward system are also influenced by the fit of the reward practice with other elements of the organisation (e.g. Lawler, 1996). Since our focus is on innovativeness, the fit between the reward practices and the antecedents of innovativeness should be important.

4. Rewarding innovativess: A case study

From the literature presented above we selected the following aspects to be described and analyzed from the case:

1. What kinds of rewards are used for enhancing innovativeness?
   – How are these rewards designed and what measures are used?

2. What are the employees' overall perceptions of these practices?
   – What effects do these practices have on innovativeness?
   – What is the role of these rewards in their motivation?
   – What explains the perceptions?

3. What is the effect of the reward practices on the antecedents of innovativeness?
   – Are the reward practices fit or aligned with the antecedents of innovativeness?

We carried out a case study to learn more about our research area. A case study approach is often used for exploring a new area of research. Our purpose was to compare the concepts from literature with practice and to explore possible new aspects of this area.
The empirical material for this study was collected during the first phase of a project on the front end of innovation, FEI. The purpose of that phase was to explore and diagnose the situation of creativity and innovativeness in the case organisation. For this article we analysed particularly the material concerning employees' perceptions of the reward practices. The larger background material helped us to understand the context. It was particularly useful in analysing the alignment between antecedents of innovativeness and reward practices.
The case organisation is a research unit of a large, globally operating technology company. This originally Finnish company is today listed publicly and has offices in several countries. The company is among the technology leaders in its business and needs innovation in order to keep its market position. The company has been successful and is at the moment of our study experiencing a substantial boom in its business. This has led to increased time pressure from sales and delivery projects, which is challenging for innovativeness.
The company communicates the importance of innovativeness in many ways. In the discussion on company values, innovativenesss is present in many areas. Innovation processes have been desribed, but their implementation is unfinished. The director of research and technology development of the company is particularly looking to increase the number of ideas presented and the management of the research centre wants to involve more people to the innovation activities.
The research unit is located in Finland. The research staff is highly educated: many of them have doctoral degrees. Many of them have also worked in other units of the company. The researchers have multiple tasks. They participate in projects for developing new technology and many are also members of cross-functional technology teams where they serve as technology specialists. In addition they participate in sales and delivery projects by designing new solutions or running various, routine technical analyses. The various tasks compete for time and resources.
The research unit has gone through organisational changes in recent years. This has also influenced its strategy, goals and management practices. The unit has adopted a balanced

scorecard approach (Kaplan and Norton, 1996) to plan and measure its activities. At the research unit the target for innovativeness is operationalised as the number of invention notices. The management also seeks to encourage a larger proportion of the employees to submit invention notices, particularly the younger researchers.
The empirical materials collected for this study consist of company documents, discussions with the management and eight semi-structured interviews with employees of the research unit. The employees are all in research tasks. They were selected to represent different views, - different ages, tenure, positions and fields of technology. Most of the interviewees had been involved in the invention notice procedure and many had patents. The interviewees were first asked to tell about their work, what motivates them to be innovative and what enhances and what hampers innovativeness at their workplace. Then they were asked to share their experiences and perceptions about the reward practices.
All interviews were recorded and half of them were also transcribed. The researchers looked particularly for parts of the interviews were interviewees talked about their motivation and the effects of the reward practices. The findings were collected on an Excel sheet, which was then used for summarizing our findings. All this was done in Finnish, and the findings were translated in English for this article.

4.1 The invention reward practices in the case organisation

We wanted to study the reward practices that aim directly at enhancing innovativeness. In the research unit they are the *incentive system* and the *compensation plan for employee inventions*. The base pay system was not included in our research since it is currently undergoing a major reform. The existing base pay system does not have explicit job evaluation or other criteria, but is in practice based on seniority, competence and performance.
The incentive or bonus system had been introduced in the present form only a year ago. The general rules are common for the entire company. The bonus comproses three independent parts: part A is based on company financial performance, part B on performance of the unit, and part C could be based on either team performance or individual performance. The unit level measures in the research unit are based on the balanced scorecard framework The four main areas are financial goals, customers and partners, internal processes, and competence, development and organisation Within each area there are two measures. In part C, the individual level measures were used for the first time for all researchers.
At the research unit the measures for innovativeness exist in part B and potentially also in C, depending on the individual's work. The measure in part B is the number of invention notices and patent applications.
In the beginning of the year, each employee had a target setting discussion with his/her supervisor. The supervisors had been instructed to choose 4 to 5 targets that are important to the organisation and parts of the employee's job. The maximum amount for the individual part C is 5% of annual income. The relation between measures and money was

not explixitly stated. The results were to be discussed in the beginning of the following year and the amount of part C of the bonus could be decided for each employee.
The compensation plan for employee inventions has its foundations in Finnish legislation concerning inventions at the workplace. In our case an employee of the company is entitled (1) to one-time compensation based on an invention, i.e., an invention notice reward, and (2) on the patent application made based on this invention, i.e., standard compensation for patent application, and (3) to a royalty type of compensation based on the financial of other benefits for the company due to the invention. If more than one inventor was involved, the sums of (1) and (2) were to be shared between them. The amount of the patent application compensation would in this case be slightly larger than with one inventor. The first two amounts are not substantial, in contrast to the potential royalties, which depend on the financial benefits of the invention.

4.2 The results

We present here our findings on the two invention reward practices in the case organization. First we summarize the employees' overall perceptions on these practices:
– What effects do these practices have on innovativeness?
– What is the role of these rewards in their motivation?
– What explains the perceptions?

We then proceed to discuss our findings on the effects of the practices on the antecedents of innovativeness.

Evaluation of the reward practices

Many of the interviewees told us that the *bonus plan* did not actually influence their motivation. The amounts to be earned were considered low, particularly for a single target. At the same time the measures were described as meaningful: they communicate what is important and what is appreciated in the organisation. The unit level target for invention notices constantly reminded the employees of the importance of making such notices. For those who had the same measure in their individual part of the bonus plan the communicative effect of the target seemed to be even stronger. It seems that at least in respect to communicating value for innovativeness, the bonus plan was effective.
When discussing the bonus plan targets some interviewees brought up the social aspect in making inventions. They felt that the unit level was the correct place to measure the amount of invention notices, since most inventions are created in cooperation. They would not find it to be relevant to single out the efforts of different inventors involved in an invention. The unit level targets on the whole were understandable and acceptable, even though not all were under the control of each employee. The other measures in the

bonus plan were evaluated to inhibit innovativeness, as they encouraged researchers to do routine work at their own desks instead of communicating with each other.
Most interviewees criticized the individual measures in the bonus plan. They realised how difficult it is to set measures for the type of work they are doing. As an example they told us that some of their own measures were beyond their control. Also the time span of one year is too long since many relevant changes happen during that time. This can result to the bonus being reduced not for the reasons of the individual's personal efforts, but due to the changing goals or discontinuing projects due to external reasons. The link between the measures and the monetary bonus also was unclear to many and raised speculation. In addition, employees did not know what measures others had. This was said to create suspicion and mistrust and also made it difficult to plan for cooperation. All these experiences raised feelings of injustice and decreased the motivating power of this practice.
If the incentive plan did not motivate, what did? The interviewees' source of motivation was primarily of an intrinsic nature. The interviewees were inspired by the content and challenges of their job, interesting problems presented by customers or unsolved issues in the technology, curiosity, the pleasure of finding solutions to difficult problems, and seeing one's own ideas being implemented. But also successful projects, appreciation by colleagues and being rewarded were mentioned several times as we discussed motivation. On the whole, it also seems that people with many patents were highly appreciated. Many interviewees said that it is simply their job to be innovative. They seemed to be highly committed and motivated with regard to their tasks but presented some criticism of the lack of time and resources for innovative research work.
All interviewees gave a positive assesment of the practices with *invention notice reward and standard compensation for patent application*. The amounts were considered to be fairly small, and thus it was more like a symbolic reward than actual compensation for the work. Even though the rewards were not perceived to be an incentive for inventions or invention notices, the interviewees considered it to be fair that monetary compensation for inventions was provided.
We asked the interviewees' opinions about the rule that if there are several inventors, they share the rewards. The interviewees we virtually unanimous that being on the list of the inventors was more important than money. They emphasized that innovations require team effort, which is a much more important driver than a small sum of money. The fact that the sum was relatively small seemed to be a positive factor in this case. According to the interviewees a larger amount may have highlighted the role of monetary compensation and lead to increased tactics for an individual inventor receiving as high a reward as possible. This in turn could lead to fewer inventors being included in the invention notice or at least more tactical thinking and behaviour.
The above-mentioned concerned only the first two parts of the plan, the invention notice reward and the standard compensation for patent application. The royalties based on the financial benefits from the patent were considered to be more problematic. Here the expected sum was larger but not fixed and thus there was much more at stake. The process was criticised as non-transparent. The interviewees told stories of waiting for a long time

for answers or receiving negative decisions with inadequate explanations. The perception was that the company was reluctant to pay any royalties or larger compensation.

The alignment of the reward practices with the antecedents of innovativeness

We also studied our material from the perspective of the antecedents of innovativeness. We tried to identify what kinds of effects the two reward practices have on them. We also took a look at the fit between the reward practices and the antecedents. In many cases it is difficult to point out direct effects, but a relevant issue is the overall alignment between them.

The six categories of antecedents are as follows:
– A vision or goal to set direction
– Challenging tasks to energize and motivate
– Freedom to choose how to innovate
– A group of people to innovate with
– Supportive culture: feeling of safety, support and the right to fail
– Concrete support from supervisor and management, such as time, resources and recognition

The potential effects may be derived from the structure, e.g. the measures of the bonus plan, or from the processes of the reward practices.

A vision or goal to set direction. In the bonus plan, the number of invention notices as a measure presents a clear goal. It is in line with the company vision of being an innovative organization. The compensation plan for employee inventions supports the same goal. These rewarding practices are also in line with the appreciation of inventors and patent holder in the organisation.The downside with this goal is that it does not recognise forms of innovativeness that cannot be patented. There are no similar rewards for creating e.g. innovative software or work processes. This raises a question of the appropriateness of the chosen measure.
The balanced scorecard approach with the bonus plan tackles the dilemma between short-term business goals and creation of new solutions. However it seems that this was not entirely succesful. The interviewees experienced that business-driven measures reduced innovativeness while they took time from creative work and discussions with others and directed their time into more routine tasks, such as project management and sales support.

Challenging tasks to energize and motivate. On the whole the employees were motivated and inspired by the challenges with their jobs, and well selected measures could help in priorities between tasks. The discussions between supervisors and employees were perceived as important as they pinpointed the bonus targets and interesting challenges. They also created shared commitment (between supervisors and employees) towards these chal-

lenges and legitimized their pursuit in everyday work. However many interviewees claimed that once the targets were set they were not discussed and revised during the year even though relevant changes with the tasks had happened. This could cause motivational problems, because one can not rely on the fact that one's pursuits for commonly set goals will be evaluated according to relevant parameters.

Freedom to choose how to innovate. The reward practices did not have clear effects on this antecedent. On one hand the reward practices were more tied to the end result of innovation activity and less to the process itself. This would indicate that the employees do have freedom to choose how to accomplish their objectives. On the other hand the end-result targets were essentially tied to the patent and invention notice process, which could be perceived as limiting the range of innovation activity in the organisation. Even though the reward practices do not explicitly force the employees to follow a specific route in their innovation activities, the invention notice measures emphasize strongly the technological patenting path. This is quite natural as technology development is the central part of the work in the research center. But this still raises the question whether the innovative potential of the employees could be even more varied than currently if encourages towards a wider field.

A group of people to innovate with. The fact that the number of invention notices is a unit level measure recognizes the social aspects of innovativeness. It encourages team work in the sense that it does not single out the individual efforts of the inventors. On the other hand, the unit level and individual level business targets were seen to diminish cooperation since many of them required a lot of independent work.
The fact that the compensation plan for employee inventions provided for sums to be shared between multiple inventors could have reduced cooperation. Fortunately the financial value of the compensation was considered to be mainly symbolic, and other drivers of innovateveness were stronger. Employees were aware of this rule and accepted it.
In general the motivation to work together was mostly intrinsic and generated by the nature of the work itself. Most of the innovation work involved advanced problem solving which one person could not accomplish alone. Group effort sprung automatically from the need to solve wide ranging or very deep and detailed problems. The invention notices and the related rewards were not considered when co-workers were asked for their advice. These were perceived secondary to accomplishing the work. The fact that all the people involved were recognized in the invention notices was still perceived as important for the motivation to cooperate.

Supportive culture: feeling of safety, support and the right to fail. The supervisors were evaluated as being very supportive. They encourage employees to present ideas and write invention notices. The supervisors are also obligated to pass the invention notices handed to them to the invention board of the organisation. Also advice from co-workers is available, even in a hurry. It seems that pressure from the bonus plan had not changed this.

It also seems that the invention notices are evaluated in a positive spirit. The overall perception was that (almost) all notices were accepted and the due rewards paid. This has a positive effect on the feeling of support. However confidentiality rules prevent employees from access to information concerning the number and quality of the inventions.
Along with the compensation plan for employee inventions, negative experiences were reported from negotiations on the royalties from successful inventions. The inventors felt that the company would not let them benefit from the success of their invention. This has a clear negative effect on the trust in the employer.
Failure is not punished as such, but the bonus sums are smaller when the targets are not met. On the other hand, the incentive plan practices give room for discussion and reconsideration. For example, if an employee portrays desired behaviour but fails to reach the objectives the supervisor could use her own discretion in deciding the final bonus sum. This was, however, not clear for all employees. This could have a negative effect on the feeling of the right to fail and willingness to risk taking. Also, bold efforts are not officially recognized and as far as we know, there are no stories of "successful failures" in the organisation.

Concrete support from supervisor and management, such as time, resources and recognition. The compensation for invention notices and patents is a concrete sign of recognition. Also, the bonus plan on the whole represents recognition of what is important. Thus they are aligned with this antecedent. We were told that if someone had an idea that needed to be investigated further, the necessary resources were available. Thus the individual targets do not limit innovative activities to what had been planned for. However, not all employees knew of these practices.

5. Discussion and conclusions

The purpose of this paper was to explore the role of monetary rewards in innovativeness. We brought together relevant literature of innovativeness and reward management and created an analytical frame which we then reflected to a case example. The findings from the case illustrate the complexity of topic as well as point out new insights on the subject. We also point out relevant topics for further research on the subject
From the most part our research supports the previous studies on the subject. Employees in the research unit had in general positive perceptions on such monetary reward practices that communicated recognition and appreciation to innovativeness and were in line with their strong intrinsic motivation. This finding was well in line with earlier research. These practices encouraged the employees to create inventions and file invention notices, which were the explicated goals and the used measures in the incentive plan. However, when discussing innovativeness more generally, negative viewpoints were presented concerning other elements within the bonus plan. Among these were some other bonus measures that were considered to be contradictory to innovativeness as well as unfair procedures, as described in the findings.

But is the number of invention notices a measure that truly describes the innovativeness of the organization? And is finding the right measures altogether sufficient for creating the effects on innovativeness? What are the other factors influencing the fit between the reward system and organizational goals of innovativeness? These questions came up as we analysed the effects of the reward practices to the antecedents of innovativeness.

From this analysis we raise four topics as our main findings and contribution. These topics represent cross-cutting themes that were present in the findings of our case study. These themes are the concept of innovativeness, the challenges of a balanced measurement system, time span and the reward sums. We wish to first raise these themes for deeper discussion after which we present our suggestions for further research.

First of all, the definition and communication of the concept of innovativeness is of central importance with all innovation management practices, including reward practices. As we have stated when presenting the concepts of innovativeness and creativity, these issues are wide-ranging and subject to many confusions. Whereas creativity includes the creation of novel and useful ideas, innovativeness incorporates also their development and implementation. Still, when discussing "innovativeness" and "innovation activity" with the interviewees in the case organisation, they were perceived as the same as creativity. The distinction here is important because the development and application behaviours related to innovativeness are easily left out from the consideration of reward practices if innovativeness and creativity are perceived as synonymous. If the managers do not know what they mean by innovativeness, how can they communicate their vision and goals to employees? In our case organisation innovativeness was for the large part understood as the creation of technical ideas. Additionnally the processes for securing intellectual property rights (IPR) were dominating the discussions on innovativeness. The word innovation was thus strongly attached to patents. This led to the fact that non-patentable ideas were usually not perceived as a central part of innovativeness. This excludes e.g. process improvement or software inventions from the invention rewards. The statement by Csikszentmihalyi (1990) that creativity – and also innovativeness – is a subjective judgement of the field in question is well visible in our case study. In this case the technically trained employees of the research center were directed towards technological innovation and they did not perceive other type of tasks (business, project tasks) as possible domains for innovation. These represented domains for other type of (routine) work. This is not dangerous as such – because their primary task is to create novel technological solutions - but it can inhibit their innovative span quite essentially. Although – as Amabile (1983) states – ones expertise in a certain domain plays an important part in creativity, this does not mean that individuals can be innovative only in their primary expertise domain. Employees can possess sufficient skills in other domains of their work than the one where their primary expert status is. Thus the technology experts could be important resources for developing e.g. organisational processes or business models if they would only perceive these parts of their work as possible domains for innovativeness.

Ín general, the concept of innovativeness that is adopted by management and the whole organisation inevitably guides the selection of measures and reward practices for innovativeness. Reward practices, in turn, communicate strategy and should thus be in line with

other communication. When establishing reward practices attention should be paid to the measures – are they measuring just the most obvious type of innovative effort or are they directed towards all type of innovation activity? Also compensation sums and types of rewards are communicating the value of various domains of innovative effort.

Our second topic concerns multiple, possibly conflicting/competing measures and their balance. The employees experienced that measures in the balanced scorecard for "non-creative" work were inhibiting creativity because meeting those targets took time away from creative activities. Our conclusion is that, in fact, this critique should be directed to the way their work is organised, not the way it is measured or rewarded. The measures of a reward plan reflect the work and its goals and thus the problem of conflicting measures is really a problem in the level of work planning and rationalization. Another point of view here is the ideal composition of creative work. Is there successful innovative work resulting to actual innovations without any routine tasks? Innovativeness itself consists of both creativity and ability to develop and take the ideas to market (implement in organisation). Most innovation processes also within the front end of innovation include routine tasks. Innovative behaviour includes tasks that can feel routine-like, but are very essential in taking the ideas into practice and developing them into profitable products.

Our third topic deals with the time span from target setting to the appraisal discussion. In our case organisation a year seemed to be too long a period since several interviewees complained that some of their the original goals had become irrelevant already in the first half of the year due to reasons beyond their control. The reason for this was changes in the business environment and customer needs which could shift unexpectedly in a year. These unanticipated changes that could in fact lead to much better results were not (at least explicitly) taken into account in the bonus system. This created a feeling of injustice. Also, when thinking of innovation activity, risk taking is an important antecedent. Too strict measures set for too long time periods decrease motivation to find alternative paths towards set goals or to find more meaningful goals all together. This is a challenge particularly for organisations that operate in a turbulent environment, but requires thought also from companies that not positioned in particularly fast-moving, but more traditional industries (much like our case company).

Our fourth topic concerns the reward amounts. In the case organisation the amount of the individual bonus was considered to be too small to motivate. At the same time the amount paid for filing an invention notice was even smaller, but the reward practice was perceived to be motivating. We suggest that the satisfaction with the amount is linked to the overall satisfaction with the reward practice. Also expectations may have differed between the two practices. An incentive system was perceived as a compensation for the achieved objectives (and work done) whereas the invention notice plan was viewed as a recognition and encouragement for creating inventions. In other words, the bonus plan provided monetary compensation, whereas the invention notice plan provided recognition. Thus we conclude that the interpretation of the invention notice rewards as recognition led to higher satisfaction than the interpretation of the incentive system as compensation.

Managerial implications

Based on our study we suggest first that organisations aiming at promoting innovativeness with reward practices should have clear strategy-driven concepts of innovation and innovativeness. When implementing the reward practices related to innovativeness, enough attention should paid to communicating to and discussing with the whole organisation what is actually meant by innovativeness. These concepts are central in all innovation management and rewards are one media through which they are communicated. Thus a congruent communication through all communication and management practices throughout the organisation is central.

Clear concepts are also useful in organising innovative work. Innovativeness includes different type of actions and their priorities and goals are communicated both in the way the work is organised and in the measures within reward practices. The different type of behaviour and practices needed for achieving innovations should be considered both in organising the work itself and measuring the outcomes.

In some business environments incentive systems may encounter extra difficulties due to the fast pace of change. The more there is turbulence the more difficult it is to manage a reward plan. Organisations need to assess their "pulse" before implementing bonus plans. The pressure is not only on setting the measures but also on the processes of planning and implementing the reward practices.

Organisations need to be sensitive to reward sums in enhancing innovativeness. Managers need to understand when rewards communicate recognition and appreciation and when the expectations focus on the monetary value.

Suggestions for further research

In our study, measurement was a difficult issue for rewarding. We hope that the research of the FEI will bring new knowledge on measures. The concept of innovative behaviour could be a potential area for this. More research is as well needed for better alignment of reward management with different innovation management practices.

Previous literature has staded that money is not the optimal way to reward innovativeness. However, since monetary rewards are constantly used in practically all organisations it is important to focus research on how they could be used as well as possible to support the innovation strategy. Our study confirmed that the use monetary rewards to enhance innovativeness is challenging since the mechanisms of reward practices are complicated. We need more knowledge on their effects on motivation and on innovative behavior as well as their effects on the antecedents of innovativeness.

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