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**Leading Open Innovation: Creating Centripetal Innovation Capacity**

AOM 2006 Presenter Symposium Proposal

**Divisions: BPS, ENT**

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## **Abstract**

Innovation research and organizational practice often focuses on R&D investments and activities carried out in designated departments and controlled processes. Anecdotal evidence tells us, however, that this centralized and formalistic approach to innovation is often insufficient. A significant number of radical but profitable innovations have their origin outside of R&D departments, and a significant number are created in later stages of value creation that were not intended to produce innovations. Only a few successful companies seem to be able to identify and build upon these “peripheral” innovation activities from unexpected loci, but in an increasingly competitive world it is more and more important to learn how to manage innovations from many sources.

This symposium emphasizes the entrepreneurial leadership requirements for increasing Centripetal Innovation Capacity (CIC) – the ability to draw innovation from many sources into the organizational pipeline. The speakers in the symposium will consider 4 specific aspects of this problem: 1) Local leadership of innovation, 2) Corporate leadership systems, 3) Absorptive capacity, 4) Models of cooperation. We hope the symposium will spur conversation about open innovation across the BPS, ENT & TIM divisions, and more specifically encourage additional empirical research on how organizations can marshal centripetal forces to utilize the enormous potential of open innovation.

## ***Keywords***

TIM: Leadership, Organizational Theory and Design, Resource Dependence

BPS: Knowledge Transfer/Replication, Structure, Design & Boundaries, Innovation Management

ENT: Intrapreneurship, Creativity, Innovation

## Overview of the Symposium

It is clear that innovation is important (Kilroy, 1999; Roberts, 1999); research has demonstrated in particular how new products facilitate the survival of firms and contribute to broader social welfare (Chaney & Devine 1992; Debruyne et al. 2002). Many argue, however, that organizations do not focus enough on future oriented activities. As Peter Drucker says: “Today no one needs to be convinced that innovation is important – intense competition, along with fast changing markets and technologies, has made sure of that. How to innovate is the key question” (Drucker 1988, p. 149).

“Democratizing innovation” (von Hippel, 2005) has recently been proposed as the answer to this key question. This new model is a radical departure from past practices of centralized research and development in which the innovative genii is sought in separate organizational units, project management designs and incentive systems. One important drawback of the centralized approach is that breakthrough innovations do not always originate in the R&D unit of the organization (Johnson & Huff, 1998; Robinson & Stern, 1998). Examples include the development of the ulcer medication Losec which corporate innovation managers at the pharmaceutical giant Astra (today AstraZeneca) tried to stop (Östholm et al, 1996), but which grew to become one of the world’s most successful prescribed medications.

This example shows that management is part of the reason why innovations that are created at the periphery are not recognized in the core of an organization. When innovation is expected to happen in an officially designated place, the signal is that only a tiny fraction of the organization is meant to be inventive, and few outside innovations occur or survive (Chesbrough, 2003). Furthermore, when corporate innovation systems are centralized, the practices, values, and incentive systems that might pick up dispersed innovations are not in place. As markets become more global and competitive, the loss is increasingly important. All organizations must learn how to be more entrepreneurial.

A second critical issue is that centralized innovation practices often focus on product innovations. But successful products are increasingly embedded in complementary services and customer experiences which are supported by a variety of activities. Service quality and innovation relies

on employee involvement (White & Schneider, 2004). As customers are rapidly coming to expect attention to the experience of engaging with a product/service (Cagan & Vogel, 2002), the points of required innovation and contact are even more widely dispersed. Centralized innovation management practices can not develop the necessary reach. The people closest to this growing complexity are important sources of information and breakthrough.

Several scholars have recently highlighted the benefits of opening up the innovation process (see, e.g., Chesbrough, 2003; Gassmann & Enkel, 2004; Piller, 2005; von Hippel, 2005). The central insight is that by encouraging and considering the ideas and solution knowledge of a large number of individuals, new creativity can be brought into the organization. The practical benefits of this overall approach can be seen in the success of open source software, such as Linux. Weber (2004) observes that a dominant capability of open source software development systems is to incorporate the "wisdom of the periphery" (Weber 2004, p. 225). This observation also fits with other conversations about the human resource benefits of designing *democratic enterprises* (Gratton, 2003) and drawing on employees' tacit knowledge (Nonaka & Takeuchi, 1995).

The speakers in this symposium feel that it is important to search beyond these pioneering efforts to better understand the potential for *radical* innovation in large organizations. Most systems that encourage creativity across the organization generate incremental improvements that stay at the local level (Robinson & Stern, 2003). The purpose of this paper is to outline a research proposal for better understanding and increasing "*Centripetal Innovation Capacity*" – the ability to create and capture entrepreneurial ideas across the organization and then spin the best into larger efforts that complement established R&D. We want to focus on how managerial work at the local and corporate level can positively influence this capacity, and expect that current employees will have ideas about increasing organizational innovation capacity that will be worth testing. We are interested in significant product / service / experience innovations, rather than innovations that merely improve existing processes.

The central idea of recent proponents for open or distributed innovation systems is to utilize the energy, creative input and solution knowledge of large numbers of individuals. We feel it is important to study and expand upon early efforts to incorporate this radical new design philoso-

phy, which has the capability of significantly disrupting activity in many different areas (Christensen & Raynor, 2003). Research is needed that focuses on the ideas and inputs of members at the periphery of an organization, i.e. outside the institutionalized corporate R&D and innovation management function of a firm. However, once a firm acknowledges the potential for peripheral innovations, there is still a need for “*centripetal forces*” that can relate distributed innovations to overall objectives, and make them grow to the point where they can affect overall organizational competitiveness.

The overall objective of the symposium is to conceptualize “*Centripetal Innovation Capacity*” (CIC) as a determinant of innovation success. Our preliminary definition is that this is the capacity to initiate, assimilate and leverage *innovation behavior* from inside and outside the organization for economic success. CIC explicitly includes peripheral innovation behavior that occurs outside of designated R&D. It considers new products/services/experiences as well as new administrative processes and business models that radically depart from past practice.

An initial challenge in defining and conceptualizing a firms’ centripetal innovation capacity is that any definition is contingent on the level at which innovation and related management activities are carried out or, for that matter, what the researcher or manager believes about the appropriate level of innovation management. Four important levels include: (i) local (work unit / team) level, (ii) functional (R&D/ innovation) level, (iii) organizational (corporate / top management) level, and (iv) interorganizational (customer, supplier, alliance networks) level. We want to examine the nature and interdependence of all four levels in managing centripetal innovation capacity and suggest how this in turn impacts innovation performance.

To deepen our understanding for conceptualization and analysis, we propose two theoretical perspectives: social network theory and the resource based view of the firm.

(1) Research in the domain of *social network theory* (Granovetter 1973, 1982) tells us that there is a “social side of creativity” and innovation. One focus of theory in this area is on how individuals’ positions in social networks can explain their innovative behaviour. Of particular interest to us is the observation that individual creativity flows from “embeddedness” that cuts across diverse social networks (Granovetter, 1985). Furthermore, employees located in the *network*

*periphery* are proposed to be in an especially favorable position to contribute to radical innovations because of their links to outside networks (Perry-Smith & Shalley, 2003).

This argument is consistent with von Hippel's observation that the locus of innovations is often close to where the need for innovative arises (von Hippel, 1988). Leifer et al. phrase it more dramatically: "You need a great team of people with diverse skills to perform a symphony well, but no team has ever written a great symphony! While cross-functional teams are key players in defining and implementing incremental innovation projects, cross-functional disruptive individuals tend to be key players in defining radical innovation projects" (Leifer et al. 2000). We find this quote an important backup for the idea that the R&D function can no longer be expected to be the sole source of innovation, and an important guide to seeking *peripheral innovation* in terms of network position rather than innovation content.

Managerial practices in the areas of leadership, human resources and innovation can shape opportunities to interact differentially depending on employees' positions in hierarchies and task structures. For example, people who have held many positions in different organizations are more likely to develop social capital that spans several organizations (Greve & Salaff, 2001). Because their contacts cross organizations they are particularly valuable collaborators on joint projects. Corporate social capital refers to relations embedded in positions that are specific to firms (Nahapiet & Ghoshal, 1998; Gabbay & Leenders, 1999). Furthermore, the concept of nested systems is important when studying the management of innovation from this theoretical perspective. As described above, we want to study centripetal innovation capacity at organizational, functional and individual levels, considering the nested systems of relations where conditions from each of these levels affect innovative behaviour on lower levels. Drawing on this stream of literature, we will propose models explaining how structures enhancing creativity and innovations evolve and can be managed.

(2) We also expect to find a useful theoretical foundation for centripetal innovation capacity in the *resource-based view* of the firm (Barney, 1991). This perspective has developed understanding of how firm *capabilities* (Amit & Schoemaker, 1993) are related to overall organizational performance. The term "capability" refers to an organization's ability to use organizational

processes to marshal its resources and achieve desired objectives. Capabilities are firm-specific, information-based processes that are developed over time through complex interactions amongst the organization's resources, while "dynamic capabilities" are defined as "the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" and enable proactive agility, learning and innovation (Teece et al., 1997).

Several authors have drawn on this literature to think about innovation. The term "innovation capability" was used by Burgelman, Kosnik and van den Poel (1998, p. 36) to describe the "... comprehensive set of characteristics of an organization that facilitate and support its innovation strategies". Similar concepts are the "capacity to innovate" (Burns & Stalker, 1961), the ability of an organization to successfully adopt and implement new ideas, processes or products, and "absorptive capacity" (Cohen & Levinthal, 1990), the ability to access, value, and utilize external resources and knowledge for innovation purposes. Whilst these constructs refer to successful implementation of innovations, "*innovativeness*" more specifically refers to openness to new ideas and sources of innovation as an aspect of a firm's culture (Zaltman, Duncan, & Holbeck, 1973). This stream of research helps us to further define, conceptualize and operationalize our central construct of centripetal innovation capacity and to postulate causal relationships with existing explanatory factors of innovation success.

Figure 1 summarizes this discussion, and visualizes our theoretical pre-understanding of centripetal innovation capacity.

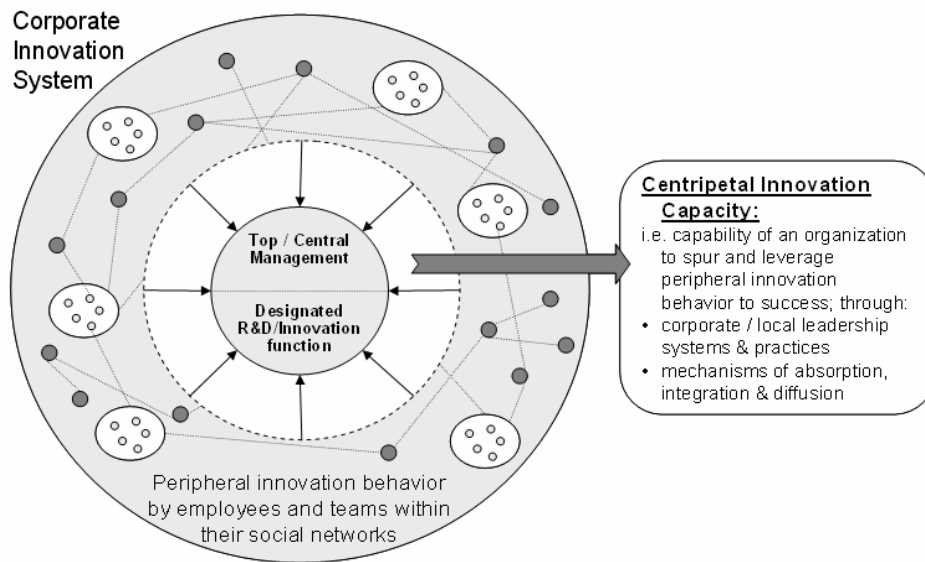


Figure 1: Pre-understanding of Centripetal Innovation Capacity

## Symposium Format & Questions for Discussion

We hope to engage the audience in this new topic. Four speakers will each provide a distinctive disciplinary perspective on CIC and explore different aspects of managerial practices at different organizational levels that can spur and leverage innovation activities across the organization (10-15 min. presentations). Our discussant, Lynda Gratton from London Business School, will consider CIC in the larger frame of cooperative behavior.

The presenters are an international group that works with both qualitative and quantitative methodologies to provide insight into three specific questions that anchor the symposium:

1. How can managers from different organizational levels with different responsibilities spur and leverage peripheral innovation activity?
2. What managerial practices contribute to 'centripetal innovation capacity' – the ability to draw innovations occurring at various locations into a coherent agenda?
3. How the results of insider/outsider activity can be combined to improve economic performance?

Answering these questions requires more information about:

- a) What kind of significant innovations are now being generated outside of centralized R&D efforts in large organizations?
- b) What happens to them over time as they are or are not managed?
- c) Are there systems at a corporate level that can promote absorption and increase the impact of innovation from an organization's periphery?
- d) What suggestions do managers and other employees have for increasing centripetal innovation capacity?
- e) Are there hybrid models of corporate innovation that can capture the benefits of open innovation as well as more conventional R&D?

We hope discussion will shed insight on these important issues.

## **Synopsis of Presentations**

### ***Introduction to Centripetal Innovation Capacity (CIC)***

**Anne Huff, Technische Universität München, Germany**

The promise of emerging models of 'open' or 'dispersed' innovation will be briefly reviewed by Anne Huff. She will argue for the importance of formulating and empirically testing models that emphasize the *management* of centripetal innovation capacity, as outlined above. Open innovation will be described as a potential organizational resource that benefits from integration existing literature on social network theory. To explain peripheral innovative behaviour by individuals, Christoph Ihl will identify variables from the increasingly important domain of social network theory in combination with other existing psychological explanations of work place innovations (e.g. Scott & Bruce, 1994).

Systematic and proactive management of peripheral innovation behaviour will be describe at different levels, from individual initiation and motivation to organizational (and inter-organizational) integration and exploitation. The goal is to describe firms that use open innova-

tion effectively as a system. Antecedents and consequences of centripetal innovation capacity are part of the proposed framework. Antecedents include management orientation, commitment and incentives in favour of innovation. These factors, when positive, can lead managers to implement practices generating centripetal innovation capacity. Consequences include how centripetal innovation capacity contributes to corporate innovativeness and overall capacity to innovate; factors that have been shown to positively impact economic performance. To isolate the contribution of centripetal to overall capacity to innovate, functional competencies related to designated R&D and innovation activities are important (e.g. overall, technical, marketing and managerial excellence and formalization in the innovation process; see Pavlou & El Sawy 2005 for a similar categorization). Variance due to industry and firm size must also be considered.

### ***Local Leadership Practices that Foster CIC***

**Tobias Fredberg - Chalmers University of Technology, Sweden**

Recent research clearly shows that a proper understanding of management demands that the focus is put not on the individual leader, but on the relationship between the leader and his/her local context (House & Aditya 1997; Gronn 2002; Hiller 2002). This new perspective suggests that managers on all levels, from the CEO to the shop floor manager, share the problem of making the groups for which they are responsible work more innovatively. Furthermore, the new paradigm shatters older descriptions of innovation that concentrated on single factors leading to innovative work (for example, motivation, creativity management or stress management).

Tobias Fredberg will describe how innovation is created on the local level, and what the local manager does to encourage innovative co-workers. This perspective is usually covered in a number of other research streams. Figure 2 is a first tentative model to describe the areas of influence on local innovation management by identifying research streams that point to potential areas of influence. The idea that innovation is a manageable process and that management therefore also itself is subject to innovation has gained increasing support in the academic literature (Hatchuel, 2001; Tidd, Bessant, & Pavitt, 2001; von Hippel, Thomke, & Sonnack,

1999). An innovation in management is for example the ability to innovate, to strategize and to renew the organisation. Research has shown that change processes are hard on employees in terms of insecurity, stress-related disease and inability to be creative. Management innovations focus on both how you create products and processes and how you create sustainability and possibilities for renewal through new, innovative management solutions.

One view is that innovation can only be achieved by providing the institutional arrangements for it to take place (e.g. slack). Wrongly exercised control is here likely to be detrimental rather than beneficial to creativity and innovation. The fields in Figure 2 are all expected to lead to more innovation, according to the academic literature. It is a task for management to work actively in these areas to facilitate innovative processes to occur. And, perhaps, more importantly, to facilitate this improved way of working to take place, innovations in management need to be developed and implemented. Innovation is an elusive term, however, which is difficult to measure (Fitzgibbon, 2000; Tidd et al., 2001). It is easier to show in hindsight that an organisation has been innovative (e.g. market success) than to actually show what activities and practices within the organisation lead to innovation. It is even more difficult to find proper measurements and methods to increase the local innovation capacity.

Motivation, for example, has been explored primarily in psychology (often with student subjects). In management research, motivation has been addressed as an area of creativity management, with intrinsic motivation factors identified as especially important for creativity. Motivation, in itself, consists of a number of problematic areas that need to be further researched to understand the significance of them. Conceptual issues of this character arise also in other areas in local leadership practices for innovation. Fredberg suggests that further research will show some important distinctions from previous work when this context is specified. However, the supporting research on the areas in figure 2 has been done on general populations or within R&D units. The underlying factors are expected to be more complex for open innovation than innovation in designated R&D units.

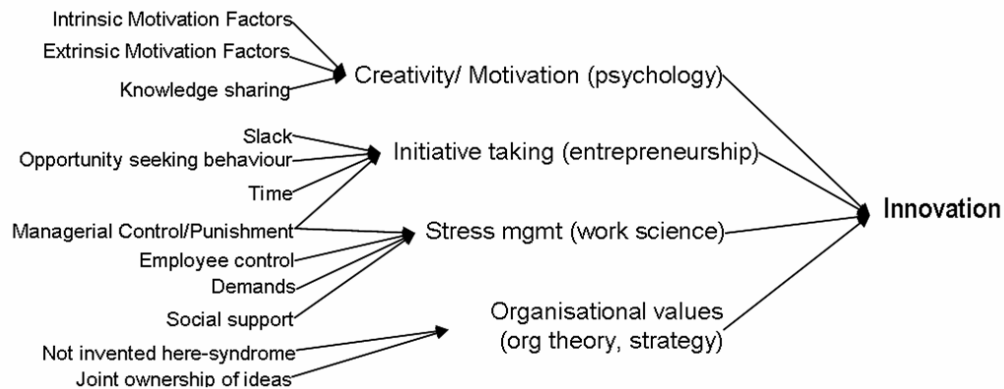


Figure 2: Tentative model of managerial areas of influence in local innovation capacity

### *Corporate Leadership Systems*

*Kathrin Moeslein: HHL-Leipzig Graduate School of Management, Germany*

To create organizational contexts that support innovation of different degrees of novelty, originating from different sources and locations, can be seen as one of the key leadership challenges for innovation. Kathrin Moeslein proposes that developing CIC in large organizations requires going beyond the individual leader. Innovation is impacted by leadership systems, structures, processes, culture, competencies and networks (Munshi et al., 2005). Her presentation will focus on the role of leadership systems and explore how current corporate leadership systems affect the centripetal innovation capacity of a firm. The intent is to isolate design principles for innovation-oriented leadership systems and derive categories of contextual predictors for the generation of centripetal innovation capacity in corporate settings.

This presentation will draw on a series of interviews in large multinational organizations. The company panel covered a broad range of industries, including automobile (BMW, DaimlerChrysler), IT, electronics and software (e.g. Cisco Systems, HP, IBM, Philips, SAP), energy (e.g. Chevron Texaco, E.On), risk, insurance and financial services (e.g. Allianz, Deutsche Bank, JP Morgan Chase, Liberty Mutual, Marsh, Munich Re), systems and solutions (e.g. BAE Systems, Siemens) or travel and tourism (e.g. Lufthansa, TUI). Several reports of this project are now available (Huff & Möslein, 2004; Möslein, 2004, 2005; Reichwald, 2005; Reichwald, Möslein,

Siebert, & Kalbitzer, 2003). Research data from this study is summarized for insight into how leadership systems can leverage corporate innovation capacity. The focus is on the antecedents and consequences of the centripetal force that leadership systems create for corporate innovation.

### ***Building centripetal absorptive capacity***

***Frank Piller: MIT Sloan School of Management & TUM Business School***

The notion that firms have to absorb external knowledge and innovative input, including inputs from the firm's customers, is a very strong theme in the work of Frank Piller. Various means, such as the lead user workshop methodology (Herstatt & von Hippel, 1992; von Hippel, 1986; von Hippel, Thomke & Sonnack, 1999) or toolkits for innovation (Franke & Piller, 2004; von Hippel & Katz, 2002), have been shown to make absorption more efficient. These efforts are important starting points for the discussion of absorbing innovation in this presentation.

The challenge of an organization to identify and transfer innovation wherever it occurs can be interpreted as an effort to enlarge its absorptive capacity (Cohen & Levinthal, 1990). The concept of absorptive capacity is a term closely connected to the resource dependence approach (Pfeffer & Salancik, 1978). This approach looks essentially outside the organization for explanations of the patterns through which firms allocate external resources to activities creating competitive advantage. Innovative inputs originating from loci outside the corporate innovation management practice can be interpreted as such an "external" resource that is increasingly critical for firms (Berger et al., 2005). Building on Zahra and George's (2002) structure of capabilities which compose a firm's absorptive capacity, Piller will identify four fields which may define the ability to utilize periphery innovations:

- *Acquisition* is defined as the capability on the corporate level to identify and acquire innovative concepts and ideas from the periphery which are critical to its operations. The presentation will build on studies of cases where corporate innovation systems mirror innovation systems outside the organisational contexts, as reported for example by von Hippel (1988) for developments in the medical device and semiconductor industry.

- *Assimilation* describes routines allowing the organization to process, analyze, interpret and understand information from sources at its periphery. Common assimilation practices on the corporate level include supervision of the management of innovation projects, innovation diffusion mechanisms, influence of strategy on innovation making (e.g. through resource allocation), the organisation of innovative work and creating spaces and slack for innovation (management principles, workshops etc.).
- *Transformation* is the capability to design and re-design the routines that facilitate combining existing knowledge and practices and the newly acquired and assimilated knowledge. We know from research on communities of practice (Swan *et al.*, 2002) that there are collaborations between local innovation groups to transfer innovative ideas. The focus is not on the knowledge created or the social mechanisms keeping innovators together (for a review of this field, see Piller 2005; von Hippel 2005), but on the arrangements and the collaboration in-between such groups.
- *Exploitation* capability is based on the corporate routines that allow the organization to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations. Whenever initiatives to transfer innovations from the periphery to the corporate level are first implemented as pilot initiatives, but not as part of the standard routines of the organization, the key challenge is to exploit the initial learning process and the competencies acquired and to transform them into standard organizational routines for the larger organization.

## **Discussion: Models of Cooperation**

### **Lynda Gratton: London Business School**

Over the last decade Lynda Gratton has created a clear agenda for how organizations can become inspiring and meaningful – how each can become a “democratic enterprise” (Gratton, 2003, 2004; Gratton & Ghoshal, 2003). The Democracy Study, begun in 1993 explored employee attitudes, people management processes and organizational leadership frameworks in large corporations.

The question was to what extent contemporary companies enable individual commitment and citizenship. It combined survey research (surveying more than 4,550 employees in three waves), 30 in-depth interviews and focus groups in each of the participating organizations with an extensive collection of policy and process documentation (see also Gratton, Hope Hailey, Stiles & Truss, 1999).

More recently, Gratton has focused on cooperation in organizations as a crucial building block for innovation and productivity. This research is being carried out with the Concourse Group in the United States. Ten international organizations are involved in interviews and employee surveys. Gratton will draw themes of the symposium together using models of cooperation emerging from this research.

### **Relevance of Topics for Divisions**

This proposal contributes to this year's overall theme of 'Knowledge, Action and The Public Concern' in several ways. First, and most important, open innovation pushes the bounds of current theory and practice. Innovation is a critical issue for the organizations we are working with (as well as an increasing emphasis of government programs). Our symposium suggests how current 'actionable knowledge' is being extended by reaching out to new sources of information.

**TECHNOLOGY AND INNOVATION MANAGEMENT (TIM):** The symposium is relevant for the TIM community as it focuses on the key question of a firm's innovation capacity. It emphasizes the entrepreneurial leadership requirements for increasing Centripetal Innovation Capacity (CIC) – the ability to draw innovation from many sources into the organizational pipeline. The speakers in the symposium will consider 4 specific aspects of this problem: 1) Local leadership of innovation, 2) Corporate leadership systems, 3) Absorptive capacity, 4) Models of cooperation. We hope the symposium will spur conversation about open innovation, and more specifically encourage additional empirical research on how organizations can marshal centripetal forces to utilize the enormous potential of open innovation.

**BUSINESS POLICY AND STRATEGY (BPS):** The roles and problems of general managers and those who are specifically responsible to manage innovation in a corporate context seem to be well researched from a strategy perspective. This, however, is only true in a model of centralized corporate research and development. Open innovation confronts us with a different model. When innovation is expected to happen in an officially designated place, the signal is that only a tiny fraction of the organization is meant to be inventive, and few outside innovations occur or survive (Chesbrough, 2003). Furthermore, when corporate innovation systems are centralized, the practices, values, and incentive systems, the strategic control and reward systems as well as general management processes that might pick up dispersed innovations are not in place. As markets become more global and competitive, the loss is increasingly important. The symposium therefore addresses the strategic question of a firm's innovation capacity.

**ENTREPRENEURSHIP (ENT):** The creation and management of new venture ideas and strategies is a key theme in entrepreneurship research. As markets become more global and competitive, all organizations must learn how to be more entrepreneurial. This symposium addresses the key question of a firm's innovation capacity. It emphasizes the entrepreneurial leadership requirements for increasing Centripetal Innovation Capacity (CIC) – the ability to draw innovation from many sources into the organizational pipeline. The speakers in the symposium will consider 4 specific aspects of this problem: 1) Local leadership of innovation, 2) Corporate leadership systems, 3) Absorptive capacity, 4) Models of cooperation. We hope the symposium will spur conversation about open innovation in firms *and* markets. Further researching open innovation in corporate contexts seems to offer a promising approach to broaden our understanding of corporate entrepreneurship.

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***Participation Statement***

I have received signed statements or emails from all intended participants formally agreeing to participate in the symposium.

*Anne Sigismund Huff*