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Leadership in Organizational Knowledge Creation: A Review and Framework

Georg von Krogh, Ikujiro Nonaka and Lise Rechsteiner

ETH Zurich; Hitotsubashi University; ETH Zurich

ABSTRACT Organizational knowledge creation integrates context, knowledge assets, and knowledge creation processes throughout the organization. Using organizational knowledge creation theory as an organizing framework, we conduct a literature review that shows prior work has focused on the role of central, upper-echelon, leadership in knowledge creation processes, without devoting much attention to context and knowledge assets. To remedy these weaknesses, we develop a new framework for situational leadership in organizational knowledge creation. The framework is based on a continuum that ranges from centralized to distributed leadership at three layers of activity: a core layer of local knowledge creation; a conditional layer that provides the resources and context for knowledge creation; and a structural layer that forms the overall frame and direction for knowledge creation in the organization. We discuss the implications of this framework for theory and practice.

Keywords: distributed leadership, knowledge creation, leadership theories, organizational knowledge

INTRODUCTION

Over the past 20 years, the study of knowledge creation in organizations has emerged as a body of theoretical and empirical work (e.g. Becerra-Fernandez and Sabherwal, 2001; Chou and He, 2004; Nonaka, 1994; Nonaka and Konno, 1998; Nonaka et al., 1994). Several theoretical and empirical contributions have concluded that leadership plays a significant role in knowledge processes, such as sharing, creation, and capture (e.g. Bryant, 2003; Lakshman, 2005, 2007; Politis, 2001, 2002; Srivastava et al., 2006; Zárraga and Bonache, 2003), and the successful implementation of knowledge management efforts (e.g. Chourides et al., 2003; Kulkarni et al., 2006; Liebowitz, 1999). Yet, leadership is often mentioned in passing as an auxiliary factor or as a practical implication of theory development; with some notable exceptions, concepts of leadership have received limited systematic, analytical exposure in the study of organizational knowledge creation. Thus far, the long-standing and rich theoretical traditions in the leadership literature have not

Address for reprints: Lise Rechsteiner, ETH Zürich, Kreuzplatz 5, KPL H 6, 8032 Zürich, Switzerland (lrechsteiner@ethz.ch).

been extended to work on organizational knowledge, prompting an important question: How does leadership impact on knowledge creation in organizations?

Our approach is to review the literature on leadership studies applied to research problems in organizational knowledge, using organizational knowledge creation theory as an organizing framework (Nonaka, 1994; Nonaka and Takeuchi, 1995; Nonaka et al., 2006; von Krogh et al., 2000). Organizational knowledge creation theory is a suitable framework for three reasons. First, it has widespread application in management and organization studies and will be familiar to many readers (Nonaka et al., 2000a). Second, it comprehensively covers sharing and creation processes, which allows a broad inclusion of prior work (Nonaka, 1994). Third, the theory includes process, knowledge assets, and organizational context in an explanatory framework. This comprehensiveness enables the identification of areas where leadership impacts on knowledge creation (Nonaka et al., 2008). We show two areas of weakness in past work. First, theory building and empirical research on leadership have tended to take a limited view on knowledge processes, while largely ignoring knowledge assets and organizational context. Second, much of the work on organizational knowledge creation has tended to view leadership as a central activity, exercised by a privileged few in the upper echelons of the organization. This weakness echoes past critiques of organizational knowledge creation theory (Gourlay, 2006; Lado and Wilson, 1994; Tsoukas, 1996). With the aim of remedying these weaknesses, we introduce a distinction between centralized and distributed leadership, reflecting recent theoretical developments in the leadership literature. Based on this distinction, our paper develops a new model of situated leadership in organizational knowledge creation, explaining centralized and distributed leadership at three layers of activity. These layers depict the composition of activities, conditions, and structures within different contexts and functions of organizations. The interaction of these layers allows for a holistic view of the organization, combining micro-level activities with macro-level structures, and distributed with centralized leadership.

In the next section, we briefly introduce organizational knowledge creation and present the results from the literature review. In the third section, we develop a model of leadership that distinguishes centralized and distributed leadership along five dimensions. In the fourth section, we develop a new framework for leadership in organizational knowledge creation that accounts for this distinction. The final section contains a brief discussion and concludes the paper.

LEADERSHIP IN KNOWLEDGE CREATION: A LITERATURE REVIEW

Organizational knowledge creation is the process of making available and amplifying knowledge created by individuals, as well as crystallizing and connecting it with an organization's knowledge system (Nonaka et al., 2000a). It is a continuous process through which individual boundaries are transcended and a new context, a new view of the world, and new knowledge are acquired (Nonaka et al., 2000a). New knowledge is created through the four phases of the SECI process. *Socialization* represents the sharing and conversion of tacit knowledge through the shared experiences of individuals. *Externalization* represents the articulation of tacit into explicit knowledge. *Combination* represents the process of combining different strands of explicit knowledge to create more

complex or systematic sets of knowledge. *Internalization* represents the process of embodying explicit into tacit knowledge (Nonaka et al., 2000a).

The organizational context for knowledge creation is *Ba* (Japanese for ‘place’), a shared space for interaction that can be physical, mental, or virtual. *Ba* is the locus of meaning-making, as all knowledge is situated within its social, historical, or cultural context (Nonaka et al., 2000a). It contains both boundaries and possibilities for knowledge creation through interactions between individuals, even if these may change over time. *Ba* can take the physical form of business space and offices; the virtual form of mailing lists, intranet, meetings and social events; and a mental form, such as ideals or ideas. The SECI process emerges in *Ba* and is moderated by available ‘knowledge assets’, organization-specific resources that are indispensable to creating value for the organization (Boisot, 1998; Nonaka et al., 2000a; Teece, 1998). Knowledge assets are outputs, inputs, and moderating factors of the knowledge creation process. For example, trust among organizational members evolves as an output of the knowledge creation process, and at the same time moderates how *Ba* functions as a platform for that process. Assets include explicit knowledge articulated through images, symbols, and language; for example, product concepts, design, or brand equity. They also include systematized and packaged forms of explicit knowledge – documents, specifications, manuals, databases, and patents – as well as routines like shared know-how in daily operations. Lastly, knowledge assets include individuals’ skills, experiences, values, and norms. The SECI process, *Ba*, and knowledge assets are interdependent within organizations’ knowledge creation processes. A review that explores the effects of leadership on organizational knowledge creation must integrate leadership with the knowledge creation constructs in the tripartite model. We support the observation that leadership theory provides important direction and clarity to the dynamic and emergent process of knowledge accumulation, sharing, and creation (Nonaka et al., 2000a). In the next few sections, we briefly describe the review method, and go on to analyse how the elements of SECI, *Ba*, and knowledge assets have been connected to leadership in earlier work.

Review Methods

We identified the papers included in this literature review through a three-step process. The first contained Boolean searches within the ISI Web of Knowledge (Social Science Citations Index). The first search combined ‘organizational knowledge’ with ‘leadership’ in the title, abstract, or keywords. Second, we searched for ‘organizational knowledge’ and ‘leader’ in the title, abstract, or keywords. Next, we searched for ‘knowledge transfer’, ‘knowledge sharing’, and ‘knowledge creation’, each in combination with ‘leadership’ in the title, abstract, or keywords. This allowed us to capture work on various knowledge processes in a search space combined with leadership. To ensure that this specification did not narrow down the results, we checked at the end of the review process whether the inclusion of additional knowledge processes combined with ‘leadership’, such as ‘knowledge dissemination’ and ‘knowledge acquisition’, pointed us to different work. This was not the case. Step one resulted in 15 papers relevant to our review. One non-English paper was dropped. The second step consisted of a Boolean search on Google Scholar combining ‘organizational knowledge’ and ‘leadership’. The

search string was limited to 'organizational knowledge' and 'leadership' as Google Scholar produces a very high number of results. Due to the high number of results and the way Google sorts results by most relevant articles, we decided to consider only the first 200 search results. We also specified the search to be limited to the scientific fields of business, administration, finance, and economics as well as social sciences, arts, and humanities. This search provided ten further papers for review. The third step entailed manually examining references in work identified through the two previous steps, and the collection of relevant articles known to the authors before the review process. Step three ensured that we did not overlook any papers by the search procedure just described, and resulted in 23 further papers.

There were some overall conditions for adding a paper to the review. Papers had to analyse leadership and knowledge management and/or organizational knowledge processes such as sharing and creation, and there needed to be an explicit connection between leadership and the knowledge variables. Papers had to specify how leadership affects the knowledge variables. These conditions ensured that we only include studies that are relevant for the examination of leaders' effect on organizational knowledge. If a paper referred to management but did not explicitly reference leadership, it was excluded from analysis. This filter is consistent with the leadership literature that separates 'management' and 'leadership'. It has been argued in emergent leadership theories (Sarker et al., 2009) that leaders are not always assigned to their role, and managers are not necessarily leaders, nor leaders managers (Zaleznik, 1977). We believe that the exclusion of literature on managers is justified, since it is doubtful that a paper employs leadership theories without mentioning the concept of the 'leader' in the text. A good example from the review is Gagne (2009), who examines management tasks by employing leadership theories.

Another criterion for inclusion was analysis of organizational knowledge, knowledge management, and knowledge processes, rather than organizational and individual learning. This filter retained sharpness in the review. While the two streams of work sometimes overlap, there are also significant differences in assumption and perspective that make them partly incompatible (for a comprehensive discussion, see Magalhães, 1998). Lastly, the papers had to be published in peer-reviewed journals. In total, 48 relevant papers were collected from these steps. If we found more than one paper by the same author(s) using overlapping theories, we chose a representative paper for the review. Most papers we found for the same authors described similar relations between leadership, knowledge processes, assets, and context, and were thus merged into one contribution (Anantatmula, 2007, 2008; Lakshman, 2005, 2007; Pan and Scarbrough, 1998, 1999; Politis, 2001, 2002). Due to significant difference in the analysis of leadership and organizational knowledge of the papers, two papers by Goh were considered independent contributions (Goh, 1998, 2002). We found several relevant contributions by Kodama (2004, 2005a, 2005b, 2006a, 2006b, 2007). However, since all papers seem to propose the same leadership attributes, a representative paper was chosen for analysis (Kodama, 2005a).

In coding the contributions of prior work, we found papers explicitly using the SECI framework (Nonaka and Takeuchi, 1995). However, we also included papers containing no explicit reference to the SECI process. The content of these papers was coded based on our framework. If papers did not specify the knowledge processes analysed, but knowledge was nevertheless comprehensively apprehended, those papers

were categorized as examining the entire SECI process. The results of the review are displayed in Table I, which shows the focus on SECI processes, and whether or not papers acknowledge a role for context and knowledge assets in their framework. Results in parentheses imply that papers acknowledge a role for *Ba* or knowledge assets, but hypothesize no connection between these and leadership. SECI processes in parentheses imply that these processes were not explicitly examined in the paper. Leadership theories in parentheses indicate the main leadership focus of the papers.

Leadership in Knowledge Creation Processes

The literature review demonstrates that leadership in SECI has been analysed from various theoretical perspectives ranging from style to self-management theories. One approach assigns leadership qualities to leadership style – that is, what leaders do and the roles they take on in the organization (e.g. Bell DeTienne et al., 2004; Huang et al., 2008; Ribière and Sitar, 2003; Singh, 2008; Yang, 2007). Style theory mainly refers to the style or behaviour of top managers of organizations. For example, leaders play roles such as ‘innovator’, ‘mentor’, or ‘facilitator’, all of which Yang (2007) finds to be positively related to knowledge sharing in organizations. According to Yang (2007), styles involving strict policies and procedures will be less supportive of knowledge sharing than styles emphasizing human interaction, affiliation, morale, cohesion, and workplace harmony. Further leadership styles have been found to have a positive effect on SECI: consideration and initiating leadership styles^[1] (Huang et al., 2008), and ‘catalyst’, ‘coordinator’, ‘controller’, and ‘evaluator’ (Holsapple and Joshi, 2000). Yet, the most frequently referred style in the reviewed work is role-modelling, representing the adoption of knowledge practices, the encouragement of followers to follow an initiative, and support for their efforts (e.g. Bell DeTienne et al., 2004; Eppler and Sukowski, 2000; Goh, 2002). For example, Eppler and Sukowski (2000) propose important role-modelling activities, such as leaders sharing their knowledge openly, taking time for crucial reflection processes, and documenting important insights. Role-modelling is not strictly attached to a specific theoretical branch within leadership studies; however, we choose to categorize it under ‘style leadership’ as it describes a specific form of behaviour. ‘Leading by example’ has been categorized as part of transformational leadership (for the definition, see below) by some authors (Yukl, 2010). Nevertheless, we find the concepts of role-modelling and ‘leading by example’ to be similar and focused on certain leadership behaviours rather than the motivational element towards higher goals that we find in transformational leadership (Burns, 1978). Most contributions on role-modelling have aimed at advising practitioners and often do not draw upon an explicit backing in leadership theories. Role-modelling, or leadership by example, is not specific to knowledge creation but applies to virtually all aspects of organized life. Moreover, even though ‘style leadership’ is applicable to lower-level leaders, the focus of the reviewed literature is clearly on the upper echelon in an organization. Nonetheless, it remains questionable whether the style of an upper-echelon leader is sufficient to dispense with the barriers to knowledge creation, a point we will return to later.

Table I. Overview of the literature review

<i>Literature</i>	<i>Knowledge dimensions covered</i>			<i>Leadership</i>
	<i>SECI</i>	<i>Ba</i>	<i>Knowledge assets</i>	
Anantamula (2007, 2008)	S, E, C, I	n/a	Technology/IT infrastructure	Transformational/strategic
Bell DeTienne et al. (2004)	E, C	n/a	Organizational culture: cooperative involvement, trust and incentives	Styles
Bollinger and Smith (2001)	S, E, C, I	n/a	Culture of loyalty and trust; knowledge infrastructure	Strategic
Bonits and Fitz-enz (2002)	S, E, (C, I)	n/a	n/a	Strategic
Bryant (2003)	S, E, C, I	n/a	KM/IT systems	Transactional/transformational
Chen and Barnes (2006)	S, E, C, I	n/a	n/a	Laissez-faire/transformational
Chourides et al. (2003)	S, E, C, I	Shared space or common place (virtual, physical, mental)	(KM information system)	Styles/(transformational)
Couillard and Lapierre (2003)	S, E, C, I	n/a	Values, vision, culture, trust; intangible resources (core competencies, social capital etc.)	Strategic/distributed leadership
Eppler and Sukowski (2000)	E, C, I	Virtual and real spaces	(KM tools such as T-Matrix, ExpertWeb, Toulmin, etc.)	Strategic/styles
Fedor et al. (2003)	S, E, C, (I)	n/a	n/a	Strategic
Gagne (2009)	S, E	n/a	Trust, team cohesion	Transformational/styles
Goh (1998)	S, E, C, I	n/a	Experimenting culture	Strategic/shared/transformational
Goh (2002)	S, E, C, I	n/a	Culture of collaboration, trust	Strategic/styles
Gowen et al. (2009)	(S), E, C, I	n/a	Knowledge culture; KM tools	Transformational
Gratton et al. (2007)	S, E, C, I	n/a	n/a	Contingency/(styles)
Ho (2009)	S, E, C, I	n/a	(Organizational culture; IT)	Strategic
Holsapple and Joshi (2000)	S, E, C, I	n/a	Trusting environment	Styles/strategic
Huang et al. (2008)	S, E, C, I	n/a	Trust	Styles
Inkpen (1998)	S, E, C, I	n/a	(Climate of trust)	Strategic
Kelloway and Barling (2000)	S, E, C, I	n/a	Trust, (organizational culture)	Transformational
Kodama (2005a)	S, E, C, I	(Shared spaces)	n/a	Contingency/(styles, strategic, servant, transformational)
Kulkarni et al. (2006)	C	n/a	(KM tools)	Strategic/styles

Table I. Continued

Literature	Knowledge dimensions covered			Leadership
	SECI	Ba	Knowledge assets	
Lakshman (2005, 2007)	S, E, C, (I)	Knowledge networks, councils, committees, forums, meetings	Information networks and systems	Strategic
Liebowitz (1999)	C	n/a	(Knowledge repository; KM systems and tools)	Strategic
Martiny (1998)	S, E, C, I	(Learning communities)	n/a	Strategic
McDermott and O'Dell (2001)	C	(Informal networks)	Organizational culture	Strategic
Pan and Scarbrough (1998, 1999)	S, E, C, I	n/a	Infrastructure, infostructure, infoculture	Strategic/styles
Politis (2001, 2002)	S, E	n/a	n/a	Transactional, transformational
Reinmoeller (2004)	S, E, C, I	n/a	*Knowledge assets: vision, spirits, routines	Strategic/(traits)
Ribière and Sitar (2003)	S, E, C, I	n/a	Organizational culture; (IT tools)	Styles/strategic
Riege (2005)	S, E, C, I	n/a	(Organizational culture)	Strategic/(style)
Robertson et al. (2003)	S, E, C, I	Social events	Social identity, values, team cohesion	Strategic/transformational/self-management
Rosen et al. (2007)	E, C	n/a	Transactive memory system; safe environment	Strategic/styles
Rowe (2001)	S, E, C, I	n/a	n/a	Strategic/(visionary/managerial)
Sarker et al. (2009)	S, (E), C, I	(Virtual Ba)	(Information system development abilities)	Emergent/(shared)
Simonin and Özsozer (2009)	S, E, C, I	n/a	Atmosphere/culture for knowledge sharing	Transformational/facilitative leadership
Singh (2008)	S, E, C, I	n/a	n/a	Styles
Skyrme and Amidon (1997)	S, E, C, I	n/a	(Knowledge culture, technology infrastructure)	Strategic
Soosay and Hyland (2008)	S, E, C, I	n/a	Culture of collaboration, trust, (knowledge repository)	Strategic/styles
Srivastava et al. (2006)	S, E, C, I	n/a	n/a	Empowering leadership/transformational/(styles)
Wong (2005)	(S, E, C, I)	n/a	(Organizational culture, IT)	Strategic, styles
Yang (2007)	S, (E), C, I)	n/a	(Organizational culture)	Styles
Yeh et al. (2006)	S, E, C, I	n/a	(Corporate culture; IT)	Strategic
Zárraga and Bonache (2003)	S, E, C, I	Physical and virtual Ba	Trust, high care	Transformational

Style theories are criticized for their lack of consideration of contingencies (Gill, 2006): independent of context or organizational needs, leadership styles and behaviours remain unchanged. This sort of static approach may be inadequate within ambiguous processes like knowledge creation. Contingency theories oppose the static view by demonstrating the interactions between situations, followers, and leaders (Fiedler, 1964, 1967; Fiedler and Garcia, 1987), and showing how situations change the effectiveness of leadership styles. For example, Gratton et al. (2007) argue that to improve knowledge sharing in teams with strong fault-lines, leadership style must vary according to the issues and problems that arise as the team approaches the deadline for their work. Kodama (2005a) advocates a dialectical leadership model that switches between forceful, servant, strategic, and creative leadership, depending on the business situation. These theories focus on leadership roles that fit a broad set of situations. Within the interplay of process, context, knowledge assets, and leadership, a situational approach seems to be inevitable. The contingency theory based studies in the review, however, leave open the question of how resource variance may affect the adequacy of leadership qualities. The contextual variance in these studies is either partially described or limited to time-dependent variance.

Most work on leadership and organizational knowledge acknowledges that one specific style may not be the most appropriate approach, and focuses on broader prescriptions for leadership action. One of these research streams focuses on strategic leadership (e.g. Bollinger and Smith, 2001; Bontis and Fitz-enz, 2002; Fedor et al., 2003; Ho, 2009; Inkpen, 1998; Lakshman, 2005, 2007; Skyrme and Amidon, 1997). Strategic leadership theories show how leaders impact on organizational effectiveness by formulating strategy, vision, and mission, and foster organizational culture. Strategic leadership includes the processes by which top managers make strategic decisions, senior executives' behaviour within the organization, and the composition of top management teams (House and Aditya, 1997; Reinmoeller, 2004). Fedor et al. (2003) argue that, to reach their strategic objectives, leaders set the tone and provide guidance and direction to their teams. Ho (2009) emphasizes that leaders are crucial for the planning of knowledge processes, and Inkpen (1998) suggests leaders take initiative in setting up knowledge sharing channels. Rowe (2001) argues that both 'managerial leadership', focusing on the exchange and combination of explicit knowledge, and 'visionary leadership', focusing on the communication and use of tacit knowledge, are centred too narrowly on short- and long-term wealth creation, respectively, and fail to foster the whole SECI process. Rowe (2001) advocates a strategic leadership role that combines the qualities of managerial and visionary leadership. Lakshman (2005, 2007) also emphasizes the role of strategic leaders whose personal interest and participation motivate people to engage in knowledge management initiatives.

Studies that advocate strategic leadership in SECI may have underestimated the importance of Lakshman's argument (2005, 2007); many authors tend to ignore the need for motivation, inspiration, and empowerment in knowledge creation (Gill, 2006). However, while the role-modelling function of leadership might enhance employees' motivation, strategic leadership is a matter of directing and deciding on organizational development at the upper levels of an organization. While the importance of strategic direction should not be underestimated, it is unclear how such leadership qualities

should impact on knowledge processes, which are recurrently based on (micro-level) face-to-face interactions. The quest for more clarity on this point might have motivated the bulk of papers that advocate a mix of several theoretical elements, the most common being a composition of strategic, style, or role-modelling leadership and general support arguments (e.g. Goh, 1998; Pan and Scarbrough, 1998, 1999; Ribière and Sitar, 2003; Rosen et al., 2007). Pan and Scarbrough's (1998, 1999) comprehensive list of leadership includes role-modelling, support of the organizational culture, creation of a managerial mindset positively positioned towards knowledge sharing, and developing an environment conducive to knowledge creation. Similarly, Rosen et al. (2007) see leadership tasks as role-modelling, the articulation of a vision, the clarification of leaders' expectations of their followers, recognition, and rewards. However, the reviewed literature does not explicitly suggest how strategic, style, and role-modelling leadership could simultaneously and interactively constitute leadership in knowledge creation. Further, the doubts about the impact of upper-echelon style or strategic action on micro-level knowledge creation processes cannot be remedied with the mixed approach.

The so-called 'new' leadership theories – a term that refers to transactional and transformational leadership theories – consequently respond to the need to include incentives and inspiration in leadership prescriptions. While transactional leadership theories focus on leader–follower exchanges, in the form of benefits, rewards, and self-interest, the transformational leadership approach emphasizes the motivation and inspiration of followers to give their best for the organization (Bass, 1990; Burns, 1978). In the transformational tradition, the organization strives for 'performance beyond expectations' (Bass, 1985) through members' value-based self-sacrifice and a common sense of higher purpose that applies to both leaders and followers (Gill, 2006). Within this tradition, Politis (2001, 2002) tests the elements of transformational and transactional leadership and finds that transformational leadership is more strongly related to knowledge acquisition than transactional leadership. Kelloway and Barling (2000) identify the positive effect of transformational leadership on SECI as well as on advantageous conditions such as commitment and trust. Srivastava et al. (2006) analyse the effects of empowering leadership on followers' knowledge sharing. Their results demonstrate that empowerment is positively related to knowledge sharing and team efficacy, both of which relate positively to performance. Gagne (2009) also hypothesizes that transformational leadership satisfies followers' needs for autonomy, competence, and relatedness, which are important for effective knowledge creation (Nonaka, 1994). In a similar vein, Goh (1998) proposes a mix of strategic and what he calls 'shared' leadership that involves empowering followers, showing strong commitment to the organization, and encouraging a culture of experimentation.

Empowerment relates to the concept of autonomy in the organization, elaborated, for example, in work on self-managed teams (Robertson et al., 2003; Sarker et al., 2009). While Robertson et al. (2003) acknowledge that autonomy supports knowledge creation, they also demonstrate that centralized coordination by top management can exist without depleting self-management at 'lower' levels in the organization. However, they do not intend to elaborate on how such disparate leadership approaches may co-exist in an organization. This also applies for Couillard and Lapierre (2003), who propose an

organizational separation between distributed leadership for what they call ‘competency or solution creation activities’, and central leadership for ‘routine and operational activities’. In contrast, we seek to propose an explanation for such co-existence in a new theoretical framework to be presented later in this article.

It is interesting to note that while new leadership theory increasingly focuses on empowerment and autonomy in knowledge creation, the emphasis is mainly on factors like care, support, and higher goals, which are generally assumed to be provided by central leadership. For example, Gagne (2009) finds transformational leadership supports followers’ need for autonomy because of its emphasis on autonomous motivation.^[2] But, although we see a few attempts to view empowerment and autonomy in relation to organizational knowledge, the literature has neither critically examined the boundaries of central leadership, nor abandoned a strong central leadership perspective.

Finally, our review shows that there are several contributions that: (1) focus on one or a few SECI processes and propose leadership attributes within these (e.g. Bell DeTienne et al., 2004; Gagne, 2009; Kulkarni et al., 2006; Liebowitz, 1999); or (2) suggest different leadership attributes for different SECI processes (Bryant, 2003; Reinmoeller, 2004). While we agree with Kulkarni et al. (2006) that leadership issues having to do with explicit knowledge may be different from those to do with tacit knowledge, a ‘fixed’ localization of leadership within socialization, externalization, combination, and internalization processes could fail to show how such leadership plays out in organizations. Note that not every article in the overview that looks at specific SECI processes necessarily assumes different leadership for different SECI processes. Related to the second point, Reinmoeller (2004) argues that ‘focused’ top management teams engage more easily in separate SECI processes: depending on their size and homogeneity, they might be more or less conducive to individual processes. In a similar vein, Bryant (2003) finds transformational leadership to be more appropriate for socialization, externalization, and internalization, while transactional leadership is more suitable for combination. Without specifying how leaders should adapt to changing SECI processes, the understanding of leadership could be ‘trapped’ within specific processes. While acknowledging that these occur simultaneously, there has been no elaboration in the literature about how leadership might adapt to different processes, or how a variety of leadership activities and roles might coexist in SECI processes.

Leadership in Knowledge Assets

While knowledge assets are crucial to knowledge creation, they seldom appear in scholarly work on leadership. Our review found that work on leadership and knowledge assets can be categorized according to two predominant camps: ‘hard’ and ‘soft’. ‘Hard’ assets include information technology (IT) and other knowledge management (KM) tools, and ‘soft’ assets cover organizational culture, values, trust, and routines. Most articles view these assets as part of KM implementation and other knowledge processes and hence do not hypothesize any difference in leadership for assets than for the knowledge processes (see Table I).

The IT and KM tools, whether they are labelled transactive memory systems (Rosen et al., 2007), knowledge repositories (Liebowitz, 1999), expert webs (Eppler and Sukowski, 2000), or technology infrastructure (Anantatmula, 2008), emphasize codification, collection, and storing of knowledge in systems that enable later retrieval (Bryant, 2003; Lakshman, 2007). Bryant (2003) argues that transactional leadership is better suited for the initiation of KM and IT systems than transformational leadership, since the former emphasizes the development of specific goals, implying routine actions, rules, and procedures.

Some authors also consider trust and a high level of care among organizational members important for enabling knowledge creation, and recognize the role of leaders in fostering these values (Bell DeTienne et al., 2004; Bollinger and Smith, 2001; Gagne, 2009; Goh, 2002; Holsapple and Joshi, 2000; Huang et al., 2008; Zárraga and Bonache, 2003). Gagne (2009) hypothesizes that transformational leadership fosters trust, team cohesion, commitment, and motivation. Yet, it has been shown that there are clear limits to managing, ‘engineering’, or ‘controlling’ an organizational culture (Robertson and Swan, 2003). Even though much work emphasizes the importance of the organizational culture, an explicit link between this asset and leadership is often elusive (e.g. Ho, 2009; Riege, 2005; Skyrme and Amidon, 1997).

Pan and Scarbrough’s (1998, 1999) analyses of knowledge sharing from a socio-technical perspective are rare examples of a comprehensive view of knowledge assets that distinguishes between ‘infrastructure’ (communication-enabling hardware and software), ‘infostructure’ (formal rules that govern exchange, and cognitive resources, such as metaphors and common language), and ‘infoculture’ (the stock of background knowledge embedded in social relations). They propose a mix of strategic leadership and role-modelling for fostering these knowledge assets – the same leadership prescriptions proposed within the context of SECI (Pan and Scarbrough, 1998, 1999).

The general trend seems to be that transformational leadership approaches are recommended for ‘soft’ assets, and more structure and control for ‘hard’ assets. However, as we will show later, we believe such prescriptions may be dependent on context. For example, the sharing of tacit knowledge between individuals in a practice calls for different assets than the sharing of explicit knowledge in the form of databases across the organization. Further, in the reviewed literature the provision of assets is considered a concern of upper-echelon leaders. However, knowledge assets such as cultural values and trust could just as well arise in micro-communities without any centralized leadership, a point we will attend to in our proposed framework.

Leadership in Context

Some of the papers we reviewed only connect leadership indirectly to *Ba*, for example by meeting structures that enable *Ba*, such as work-outs or councils (Lakshman, 2005, 2007) and social events (Robertson et al., 2003). These indirect measures for *Ba* are mainly treated as part of the knowledge management process, and so the role of leadership is often considered the same for *Ba* as for SECI.

Other authors allude to *Ba* without explicitly connecting the context they examine and the role of leadership. Informal networks (McDermott and O’Dell, 2001), learning

communities (Martiny, 1998), and virtual environments (Sarker et al., 2009)^[3] can be contexts for knowledge creation. Yet, these contributions do not explicitly define a role for leadership in *Ba*.

A few papers explicitly discuss how leadership provides *Ba*. Zárrega and Bonache (2003) see *Ba* as an ‘atmosphere or climate for collaboration’ that includes physical space (e.g. offices) and virtual space (e.g. e-mail). A transformational team leader is responsible for providing a variety of spaces to nurture trust among employees (Zárrega and Bonache, 2003). Eppler and Sukowski (2000) also refer to the role of team leaders in providing *Ba*, but leave open the question of what type of leadership would be effective in providing or building it. However, they make an important remark by proposing different *Ba* for different knowledge processes. Kodama (2005a) argues that *Ba* exists within so-called ‘strategic communities’ in the organization that tend to be directed and coordinated by leadership, but does not theorize further. Chourides et al. (2003) interpret the creation of *Ba* as part of the leadership task of fostering knowledge in organizations, but do not clarify how *Ba* and leadership impact on each other. To summarize, discussions of leadership in context have been prescriptive with minimal examination of its relation to assets or knowledge processes. Further, as emphasized in connection with leadership’s role for knowledge assets, the contributions that hypothesize leaders’ impact on *Ba*, tend to take on an upper-echelon perspective. However, *Ba* could also emerge without central leaders’ intervention, for example as informal meetings between peers.

Critique of Leadership in Knowledge Creation: A Summary

Our literature review yields two main results. First, the focus is clearly on centralized leadership, which resonates with prior criticism of organizational knowledge creation theory. While many authors embrace the idea that knowledge creation is context-dependent and needs to be enabled (e.g. Becerra-Fernandez and Sabherwal, 2001; Beech et al., 2002; Engeström, 1999), the concept of leadership in the theory is strongly controversial. In a critical commentary, Gourlay (2006) argues that organizational knowledge creation theory redefines ‘knowledge’ to mean leaders’ beliefs about the viability of information and ideas. Knowledge is created when leaders decide that something represents ‘knowledge’ for the organization. For example, leaders evaluate and decide on the relevance, suitability, or attractiveness of people’s ideas in new product development. Knowledge as ‘justified true belief’ means ideas and plans have been sanctioned by leaders because they fit with criteria such as budget constraints, timing of product introduction, and technological challenges. This sanction, rooted in the beliefs of a privileged few, contrasts with knowledge based on objective, scientific criteria. In Gourlay’s (2006) interpretation, knowledge is created by followers and is evaluated against leaders’ subjective criteria, rather than objective criteria. Essers and Schreinemakers (1997) suggest that this form of subjectivity might lead to ‘dangerous’ outcomes for an organization, for example people neglecting the local facts of work while pursuing various ‘fictions’. The idea resembles the ‘superstitious learning’ in March and Olsen’s (1976) model of organizational learning. This is a learning deficiency that results from organizational members ignoring feedback from the organization’s environment when making decisions and taking action. The review of the existing literature shows that

Gourlay's (2006) observation of a centralized bias is correct, epitomized through the strong focus on strategic, style, and transformational leadership theory in knowledge creation (see Table I).

Gourlay's (2006) claims are also related to Tsoukas' argument (1996) that writers on organizational knowledge often take a naïve view of leadership. While Tsoukas picks out identifying, developing, and protecting an organization's knowledge assets (e.g. Liebeskind, 1996) as core leadership activities, he argues that such an understanding ignores the fact that no leader or authority can fully comprehend an organization's knowledge. Whereas leaders' limited comprehension might hold for any type of knowledge, it is probably more pronounced for knowledge leaning towards the tacit end of the continuum. Pursuing this line of argument further, Gourlay (2006) joins Lado and Wilson (1994) in concluding that leaders' decisions might be 'bad' for tacit knowledge. Pursuing what they believe are good intentions, leaders attempt to establish a context for knowledge creation, create knowledge visions, foster organizational culture, define incentives, and develop systems and organizational forms. Such activities may have several unintended negative consequences, the most grave and unethical being the manipulation of individuals' unconscious behaviour and the distortion of their learning. This criticism, of course, may hold for many theories and models of leadership; construing leadership, authority, and power in organizations without a discussion of levels, limits, value, commitment, and responsibility is problematic (e.g. Hosking et al., 1995). However, organizational knowledge creation is particularly sensitive to this criticism because it deals with individuals' contributions to the organization through the ideas they generate, what they internalize, and what they share. Knowledge-based work often requires individuals explicitly to seek autonomy in their methods of acquiring and applying their knowledge. Their sense of value and identity is tied to what they know (DeNisi et al., 2003; see also Newell et al., 2002; Patriotta, 2003). Thus, hope that the creation of knowledge in organizations lies with exceptional leaders is unrealistic and reminiscent of the 'great man' theory of leadership (Woods, 1913).

While organizational knowledge creation theory recognizes individual contributions to knowledge creation, it has not explicitly considered the synergies or tensions between distributed and centralized leadership. Autonomy, empowerment, and, to a lesser degree, shared or distributed leadership, have been adopted in the literature reviewed. Nevertheless, where autonomy and empowerment have been seen in the light of centralized leadership, the nature of distributed or shared leadership in knowledge creation has rarely been specified (e.g. Couillard and Lapierre, 2003). Even in important contributions such as Robertson et al. (2003), which explicitly combine centralized and shared leadership, the question of how these leadership activities interrelate in a specific organizational situation remains. The critique represents an important vantage point for advancing a new theoretical framework of leadership in organizational knowledge creation.

Second, our review demonstrates that the existing work does not explicitly examine the tripartite relationship of SECI, *Ba*, and knowledge assets, but rather analyses specific parts of the model. Different leadership has been suggested for different SECI processes, but without differential treatment of leadership associated with context and assets. Thus, leadership in organizational knowledge has been limited to specific processes, and not yet understood holistically, combining processes, contexts, and knowledge assets. This

finding is consistent with House and Aditya (1997), who pointed out that leadership has been studied in an organizational vacuum, and called for research on the organizational context of leadership. Exempt from this comment are papers that only examine specific SECI processes, but these specify a narrow location of leadership, as we argued above. To fill the gaps identified, in the next section we develop a theoretical framework that attempts to show how distributed leadership might coexist together with centralized leadership to engage participants in the SECI process within an organization.

CENTRALIZED VERSUS DISTRIBUTED LEADERSHIP

In most of the theory reviewed in the second section, leadership was perceived as a position, process, or activity controlled by some central authority. Another perspective is that leadership is distributed among individuals, members of a team, or organizational units. Recently, leadership theory and research have taken an increasing interest in distributed leadership, where two or more individuals in teams share leadership roles, responsibilities, activities, and functions (Barry, 1991; Brown and Hosking, 1986; Carson et al., 2007; Ensley et al., 2006; Gibb, 1954; Gronn, 2002; Pearce and Conger, 2003; Timperley, 2005; Wood, 2005). In organizational knowledge creation theory, these ideas were discussed in terms of moving knowledge from the middle, to the top, and down (Nonaka, 1994) and elaborated in later works (e.g. Nonaka et al., 2000a, 2000b). Gibb (1954, p. 884) suggested:

Leadership is a group quality, . . . a set of functions which must be carried out by the group. This concept of 'distributed leadership' is an important one. If there are leadership functions which must be performed in any group, and if these functions may be 'focused' or 'distributed', then leaders will be identifiable both in terms of the frequency and in terms of the multiplicity or patterns of functions performed.

In effect, responsibility for leadership functions will be distributed in various ways throughout the organization (Heller and Firestone, 1995). Gronn (2002) suggests the shift towards distributed leadership in contemporary organizations is warranted by new divisions of labour, new interdependencies and coordination between tasks, the extensive use of technology, and multiple team practices that shape knowledge-intensive work. For example, the study of a management consulting organization by Carson et al. (2007) demonstrated that when leadership is distributed between several members of a team, the team's effectiveness increases and becomes an important resource for the organization to deliver services to end-users and customers. In this way, distributed leadership becomes an important organizational capacity (see also Brown and Hosking, 1986; Gronn, 2002).

According to Drath et al. (2008), distributed leadership challenges the conventional assumption of a central leader who exerts influence over followers to achieve an outcome. Leadership is rather an outcome of cooperation between individuals that manifests itself in their shared direction, the alignment of their behaviour, and their mutual commitment to a particular practice. Leadership should be understood as embedded in that practice, rather than an exogenous force or an independent or intervening variable (Spillane et al., 2004).

Table II. Dimensions of leadership in knowledge creation

	<i>Centralized leadership</i>	<i>Distributed leadership</i>
Form of collaboration	Planned, directed	Spontaneous, intuitive
Beliefs	Autocratic	Participative
Process	Practice in form	Formalizing practice
Authority in decision making	Stable, solid	Fluid
Skills	Separable skills: lead or follow	Integrative skills: lead and follow
Development	Selection of skills	Diffusion of skills

Drawing upon and synthesizing work on distributed leadership, we propose that leadership in organizational knowledge creation is based on a continuum between centralized and distributed leadership along six dimensions (see Table II). For the most part, leadership in organizational knowledge creation appears somewhere between the two extremes.

Dimensions of Leadership in Knowledge Creation

Collaboration between individuals is an essential part of organizational knowledge creation. Collaboration is mostly planned and directed through organizational structures, processes, and mechanisms. Planned and directed collaboration regulates how leaders work with followers in solving tasks, for example selecting project members, establishing communication protocols, defining project goals and timeline, monitoring, etc. (Hedlund, 1994). Yet, knowledge creation often involves spontaneous collaboration between individuals and teams in organizations (Nonaka and Takeuchi, 1995). Two or more individuals with different skills and abilities from across different organizational levels and functions recognize a task at hand and intuitively believe it to be important for their work or interests. Practitioners pool their explicit and tacit knowledge and mutually adjust their conduct to tackle the task in a creative manner (Gronn, 2002; Pearce and Sims, 2002). Drath et al. (2008) argue that the outcome of this pooling is alignment of individual interests and activities; individuals subordinate their personal interests and contribute their knowledge for a collective reward. Practitioners at various levels, rather than central, upper-echelon leaders, exercise leadership by deciding whom to collaborate with and why.

Spontaneous collaboration implies that practitioners collectively identify opportunities to rely on others' knowledge, interest, and efforts. They develop a context of interpersonal relationships, or what Gronn (2002) refers to as 'intuitive working relations' and Weick and Roberts (1993) term 'heedful interrelating'. Intuitive working relations are characterized by people paying heed to the knowledge of others through interactions where shared norms, values, trust, empathy, and judgment evolve.

Drath et al. (2008) suggest that practitioners' beliefs about leadership impact on the outcome of their cooperation. Beliefs are shaped through ideals of what leadership should be like, or experiences with types of leadership that have worked or failed in the

past. Some believe that leadership should be autocratic, for example, tied to the behaviour of role models within the organization (e.g. Goh, 2002; Rosen et al., 2007), while others believe it should be participative. Beliefs about leadership encompass the process of rising to leadership, the characteristics of leader–follower relations, participation in decision-making and action, the nature of authority, and the sources and legitimization of power. Drath et al. (2008) point out that focusing on beliefs about leadership is advantageous for theorizing and empirical research: beliefs can be expressed and examined, and indicate behavioural disposition in specific situations. Consider, for example, the case of product development at the company Phonak, which creates, manufactures, and sells advanced digital hearing aid devices (von Krogh et al., 2000). Many individuals, from manufacturing, marketing, product development, and sales, participated in generating and evaluating ideas for new products. Phonak employees believed this broad participation (a form of shared leadership) was necessary for product development because it resulted in more and better product ideas and more thorough evaluation.

Organizational forms are structural relations among organizational members that become formalized, designed, or adapted (Gronn, 2002). Centralized leadership practices such forms; it reinforces structural relations by defining and partitioning tasks, designing communication channels, and controlling the flow of knowledge and information (Galbraith, 1974; Stinchcombe, 1990). However, organizational form is not carved in stone: for example, individuals' dissatisfaction with the status quo of structural relations encountered in the course of new tasks can trigger a search for new forms that imply new structural relations (e.g. MacIntyre, 1984). In this way spontaneous collaboration and emerging working relations become a source of new formalized practices. Leadership grafts these new elements onto existing arrangements and the organization may adapt its routines to a successful new practice.

The idea of organizational forms emerging through the interaction of individuals within and between practices is consistent with the heterarchy, N-form, or hypertext form in knowledge-based theories of organization (Hedlund, 1986; Hedlund and Nonaka, 1993; Nonaka, 1994). Common to these forms is flexibility: each provides a new context in which knowledge creation emerges spontaneously to solve a task, instigate change, or innovate. For example, the invention of the world's first pocket organizer took place at Sharp in the early 1980s. The project was initiated by a marketing manager who was dissatisfied with the slowing market for calculators in Japan. To create new knowledge for product development, Sharp brought together engineers, marketing experts, and sales executives from a variety of groups, including LCD monitors, microelectronics, and the calculator division. In six months, Sharp created the pocket organizer and successfully launched it on the Japanese market. New knowledge in product development, manufacturing, sales, and marketing brought with it a new practice where employees engaged in developing new product generations. This practice was later formalized within Sharp, giving rise to a new organizational unit (Nonaka and Takeuchi, 1995).

Authority is a key dimension in leadership theories (Avolio et al., 2009). Cox et al. (2003) argue that distributed leadership assumes individuals can exchange authority, and in this way joint leadership becomes a shared role in the organization. The notion of authority in knowledge creation does not necessarily imply formal, hierarchical position; more usually, it signifies interaction between individuals, teams, and practices. Individu-

als acquire positions of authority through their knowledge, recognition, and understanding of tasks, as well as the formulation of related problems and solutions. In other words, practitioners' authority is linked to their contribution to the task at hand (Erden et al., 2008; Sarker et al., 2009). Authority often originates in practitioners' 'personal magnetism, consideration of others' viewpoints, and a sense of timing' in bringing knowledge to bear on tasks (Nonaka et al., 2008). For example, to improve quality and reduce costs, drug manufacturing in the 1980s needed to replace a production process based on the extraction of natural substances with new technical knowledge of fermentation and biosynthesis. This entailed a reshuffling of authority in the organization, leading to a new breed of managers in the industry. Frequently, however, authority is not bestowed on experts who know how to follow new procedures but on individuals who can manage the 'contradictions' between new and existing knowledge (Nonaka et al., 2008). They mediate between individuals who defend their skill base and those who advocate the use of new knowledge. Thus, leadership activities are recognized by organizational members as 'virtuous acts' by individuals who serve their practices beyond their short-term self-interest. In contrast to centralized leadership, which relies on stable authority, in distributed leadership authority is fluid, depending on the knowledge and interests of group participants (Mehra et al., 2006; Pearce and Sims, 2002). Those who manage the contradictions represented by new knowledge can hold on to authority.

From a traditional viewpoint, leadership skill is separable by position: between leaders and followers (Gronn, 2002). On the one hand, effective centralized leadership relies on the skills of individuals to influence and motivate followers. On the other hand, followers develop skills in interpreting signals of leaders' needs, acting appropriately, communicating, and adjusting. In contrast, distributed leadership requires particular skills in dealing with peer influence (Drath et al., 2008). Because authority is fluid and shifts between individuals, participants in knowledge creation need integrated skills to follow and lead. Skilled participants who exercise distributed leadership intuitively and quickly grasp the particulars of a situation, perform their work effortlessly, switching between being a leader and a follower, in many cases unhindered by overly analytical deliberations (see Dreyfus and Dreyfus, 1986; Flyvbjerg, 2001). They intuitively grasp the particulars of a task, social relations, and how performance of work relates to the 'big picture' (Nonaka et al., 2008). Distributed leadership skills are acquired by individuals exposed to organizational situations: 'successful' or 'unsuccessful' events, 'nimble' or 'slow' processes, 'easy' or 'difficult' areas, 'good' or 'bad' functions, 'easy' or 'complex' tasks, 'smart' or 'foolish' technologies in the organization. Distributed leadership hinges on skills that matter in the here and now in knowledge creation, which centralized leadership is unable to provide.

Our discussion accentuates a distinction in leader development. In centralized leadership, leaders are selected according to predefined criteria of what constitutes effective leadership in knowledge creation. For example, adopting a strategic leadership theory, leaders would be chosen on the basis of their ability to formulate a strategic direction in the organization. Leadership development programmes support the same criteria (Ulrich and Smallwood, 2007). In a distributed model, leadership needs to be 'stretched' over situations and individuals who are leaders and followers (Spillane et al., 2004), and is therefore characterized by concerted activities rather than aggregated individual activities

(Drath et al., 2008; Gronn, 2002). Distributed leadership seeks to diffuse personal growth and development among participants so that they may take on leadership and followership in a peer structure (House and Aditya, 1997; Spillane et al., 2004). Developing these skills is not simply a question of instruction and the teaching of rule-based behaviour (Day et al., 2004). Rather, the practice of care, helping behaviour, mentoring, guidance, and teaching-by-doing between peers will develop individuals' distributed leadership skills (Halverson, 2004; Spillane et al., 2004; von Krogh, 1998). Because they are removed from specific situations and processes of local knowledge creation, central, upper-echelon leaders cannot substitute for peers in diffusing these skills among participants.

TOWARDS A NEW LEADERSHIP FRAMEWORK

In the following, we propose a theoretical framework for leadership that meets the challenges discussed in the literature review. The framework uses the dichotomy between centralized and distributed leadership and proposes their connection to context, process, and knowledge assets. Our aim is a formative theoretical framework in the tradition of organizational knowledge creation theory (Nonaka, 1994; Nonaka and von Krogh, 2009; Nonaka et al., 2000a) to guide future empirical research and theorizing on the topic. Alongside other work on distributed leadership (Spillane et al., 2004), we consider leadership to be performing a set of situated knowledge creation activities (Cole and Engeström, 1993). The focus on activity rather than roles or leadership traits is important for understanding the complex interplay between participants, processes, artefacts, and contexts in shaping leadership (Timperley, 2005). Our understanding of situated leadership is also consistent with ideas in the contingency theories mentioned earlier (Fiedler, 1964, 1967; Fiedler and Garcia, 1987), which endorse different leadership types depending on the situation – in this case the activities that must be performed – and on an extension of these theories that allows us to capture simultaneous leadership strata within one organization. While contingency theories tend to focus on centralized leaders' impact on subordinates, our framework opens up situated leadership activities for both centralized and distributed leaders.

The framework (Figure 1) contains activities relating to context, knowledge assets, and the knowledge creation process at three leadership strata. The strata underline the long-standing debate in organization theory on the distinction between formal and informal organizations (see, e.g. Bernard, 1988; Wren, 1987). The formal organization is characterized by formal structures, management responsibilities, control, and division of labour, while the informal organization is characterized by natural social groups that delegate authority and responsibility (Scott, 1961). As famously remarked by Selznick (1948, p. 25), 'as we inspect formal structures, we begin to see that they never succeed in conquering the non-rational dimensions of organizational behavior. The latter remain at once indispensable to the continued existence of the system of coordination and at the same time the source of friction, dilemma, doubt, and ruin.' Selznick explains this by the fact that people act as 'wholes', with their passions, interests, and desires, not only as occupants of predefined and specified roles, so that formal systems can never fully capture the informal organizational life to which they refer. From an organizational perspective, the intersection where informal organizational life meets formal structures

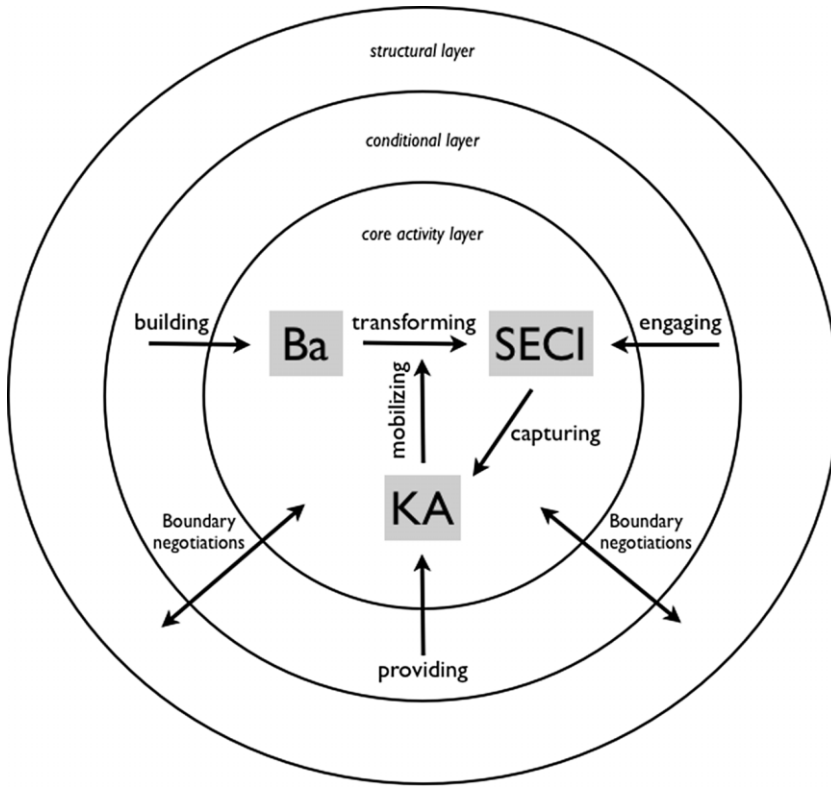


Figure 1. Theoretical framework of the paper

and processes is of particular interest. However, in contrast to Selznick’s pessimistic remark, informal organization is indispensable for organizational knowledge creation, creativity, and innovation. While occurring within formal structures, organizational knowledge creation is highly dynamic, dependent on individual contributions, and subject to serendipity (Nonaka and von Krogh, 2009). Thus, examining leadership in organizational knowledge creation requires attention to the intersections between distributed leadership – which may be associated with more informal organization – and centralized leadership activities associated with more formal organization. We try to visualize this conjunction by introducing three layers of activity that span formal and informal organizations. In the ‘core activity’, or informal layer, knowledge is being created through direct contact and collaboration between employees. These activities take place in practices and often in small groups (Tsoukas, 1996). Tacit knowledge sharing mainly takes place in small groups (von Krogh et al., 2000). Applied to Nonaka’s (1994) concept of the hypertext organization, this layer is consistent with the project team layer, in which collaboration emerges in an unstructured environment. The ‘structural’ layer hosts formal and structured processes. The leader activities at this level structure the entire organization through overseeing, coordination, control and building of a vision, and formulation of procedures and goals. In between the core activity and the structural layer, we identify activities that connect the opposite layers. As shown in organizational

knowledge creation theory (e.g. Nonaka and Takeuchi, 1995), top- and middle-level managers enable lower-level group interaction by intervening and providing access to critical resources. The leadership activities in the 'conditional' layer are crucial for the organization in connecting the knowledge creation processes with the overlying formal structures.

In the core activity layer, we find distributed leadership transforming the potential of *Ba* into functioning SECI processes. Leadership here initiates and sustains knowledge creation by using and capturing knowledge assets. In the conditional layer, distributed and centralized leadership activities shape conditions necessary for the interplay between *Ba*, knowledge assets, and the SECI process. The structural layer comprises centralized leadership activities, including allocating resources, defining organizational forms, developing a knowledge vision, formulating strategies and goals for knowledge creation, controlling and monitoring activities. The term 'structural' does not refer to organizational structure per se, but denotes structuring activities (see also Giddens, 1984) that maintain the coherence of knowledge creation throughout the organization, linking contexts, processes, and assets, and coordinating with other organizational processes.

Core Activity Layer

Transforming. Knowledge creation is context-specific in terms of who participates and how. As we discussed in the first section of the paper, *Ba* is cultural, social, and historical; but it is also physical (for example, a meeting place infused with technology and artefacts), virtual (electronic networks of communication), and mental (a shared 'cognitive map' of participants' knowledge and interests). *Ba* allows participants to interpret information and create meanings across time and space. It represents a potential for interaction among people and is a necessary but not sufficient condition for knowledge creation. At some point, passive bystanders become active participants, unleashing their energy in knowledge creation. Distributed leadership plays a particular role in transforming this potential into SECI: How does this happen?

Prior work has argued that SECI processes can only flourish in an empowered and autonomous environment (Nonaka and Toyama, 2002). However, even in autonomous and non-hierarchical knowledge creation, leadership arises to guide and direct the interplay between SECI, knowledge assets, and *Ba*. Further, in organizations, the motivation for sharing and creating knowledge might be limited, and people often try to protect what they know, which accentuates the need for leadership (Cabrera and Cabrera, 2002; Osterloh and Frey, 2000). Yet within the framework of distributed leadership, the means for enforcing knowledge processes is limited. Bryant (2003) and Politis (2002, 2001) show that transactional means for enforcing knowledge processes, such as material rewards, are not necessarily as efficient as transformational means, such as higher goals. Therefore, in line with theories of transformational leadership, participants emphasize the collective identification and promotion of higher goals for which all members strive through distributed leadership. For example, a higher goal might be the pursuit of high-quality knowledge to solve complex and novel tasks. In distributed leadership, dynamic and transient leaders continuously look for the common interests in the group to establish consensus on higher levels of values and common goals, while

benefiting from the creativity that results from a variety of knowledge contributed by participants. It is clear that people need to transcend individual goals and contribute towards group values, norms, goals, and vision (Burns, 1978). When participants focus on these higher goals, the potential in *Ba* can transform into SECI.

When *Ba* and SECI meet, collaboration is self-organized; it arises spontaneously and is often based on participants' intuition about the need for collaboration to solve tasks or pursue interests. Collaboration can involve co-performance of tasks by individuals who are physically co-located, or collective performance by participants who are distributed over time and space, for example, communicating via electronic networks (Gronn, 2002). Participants raise ideas, interpretations, or questions that lead others to reflect and react. Through dialogue, they gradually realize opportunities to rely on others' knowledge, interests, and efforts to create meaning, ideas, and solve tasks (Nonaka, 1994; Tsoukas, 2009). The shared belief among participants is that people are leaders by virtue of their ideas, knowledge, experience, or energy, not by their position in a hierarchy.

Knowledge creation is set in motion by participants who spontaneously collaborate and shift between leading and following, and gradually seek to formalize their practice to secure the collective pursuit of their interests. This view of knowledge creation is consistent with the view of distributed leadership as activities aimed to formalize successful practices (Gronn, 2002). Sartre (1976) suggested that people who start by being part of a loose gathering begin to form a more coherent group when sharing their (explicit or tacit) knowledge. This implies that they establish reciprocal relationships, discuss pressing issues and ideas, or fix future meetings. Sartre suggested this coherent group becomes a fused group when participants recognize their common interests, individual needs, and unique areas of expertise. A shared group is driven by a curiosity about other people and what they know. Here, participants externalize some part of their knowledge, which results in a sense of 'interdependence' (Gronn, 2002), founded on a common belief that tasks require the input and collaboration of group members (without requiring central leadership). Interdependence results from complementarity in participants' knowledge, or from overlaps, so that the capacity of the group to formulate and solve tasks is enhanced. At this stage, shared knowledge is largely explicit and knowledge creation occurs through combination.

Finally, a group formalizes its knowledge creation practice by making a pledge that organizes participants' rights and duties. Explicit knowledge is supplemented with knowledge of the pledge and participants' interests, as well as shared tacit knowledge (transactive memory) about the group process, including emotions and commitments. At this stage of the transformation participants may internalize shared tacit knowledge (von Krogh et al., 2000).

Consistent with distributed leadership theory, authority is fluid in a self-organized transformation where groups within *Ba* move towards knowledge creation (SECI). As a consequence of the growing interdependence of participants, authority cannot be presupposed or established in advance; it will depend on tasks, interests, and knowledge. Curiosity about other participants also drives continuous shifts in authority, as members ask questions, gradually externalize knowledge, define tasks and pledges, discover what others know and how they contribute, guide the discussion, or succumb to collective

decisions. Copland (2003, p. 378) synthesized this situated nature of distributed leadership as follows: 'Decisions about who leads and who follows are dictated by the task or problem situation, not necessarily by where one sits in the hierarchy.' We would add that in knowledge creation, each group participant has the authority to choose what knowledge to externalize or internalize (see also Grant, 1996; Osterloh and Frey, 2000).

In moving from a loose gathering to a pledged group, leading and following skills diffuse across participants. This is particularly relevant for understanding the micro-dynamics of group processes, such as listening, speaking, and taking turns (Tsoukas, 2009). Expressing interests, externalizing knowledge or an idea, or motivating people's listening are spontaneous and recognizable leadership skills that pass swiftly between practitioners (Kroeger and Thuesen, 1992). Distributed leadership skills also have an instructional quality: explaining ideas, concepts, artefacts, and actions to other participants (Southworth, 1990). This is complemented by the following skills: maintaining curiosity, following a line of argumentation, seeking to understand the rationale behind an idea, or trying a recommended action. In the words of Gronn (2002, p. 431), distributed leadership leads to 'a sense of synergy', where group participants take turns at instructing and listening. As Mehra et al. (2006) argue, the effectiveness of distributed leadership for group work depends on whether or not participants believe that others are effective leaders, given the task at hand.

Yet, keeping the notion of situational leadership when transforming the potential of *Ba* to SECI, there are no ex-ante criteria for leadership and followership. As practitioners gradually shape the micro-dynamics of group processes and engage in knowledge creation, they use or develop the skills to do both as the situation demands. As Timperley (2005) noted, distributing leadership over people in this way is a risky business: if people do not actively share and create 'high-quality' knowledge, in other words, improve what they know, distributed leadership may result in distributed incompetence. Effective knowledge creation usually results from conflicting or contrasting ideas, arguments, and viewpoints, a point to which we will return later.

Mobilizing. Knowledge assets moderate how *Ba* functions as a platform for the knowledge creating process; the extent to which a group can create new knowledge hinges on the degree to which knowledge assets can be mobilized.

Distributed leadership mobilizes knowledge assets necessary for the transformation of *Ba* for knowledge creation. How does this happen? By participating in the group, individuals bring personal or shared tacit and explicit knowledge to the transformation process as described above. In addition, participants develop transactive memory of group interactions (Wegner et al., 1985), and prior interactions outside the group to other specialized sources of knowledge important for the tasks. Wegner (1987) calls the process where people share knowledge assets 'retrieval' from transactive memory, and it is a precondition for the use of knowledge assets in SECI.

Participants' application of knowledge assets in the SECI process is spontaneous, but guided by beliefs about leadership. A belief that centralized leadership should be present and provide knowledge assets in a concrete situation of SECI would run counter to the transformation process we have described. Rather, knowledge creation is a participative

process to which several individuals bring their own knowledge assets and from which they retrieve other assets through transactive memory.

As the transformation proceeds, formalization of knowledge creation is mediated by knowledge assets. For example, access to a database, an outside organizational unit, or an individual may be time-limited, and need to be repeatedly coordinated within the group. As the group proceeds towards defining a mutual pledge in knowledge creation, participants seek to formalize the practice so that this access can be secured for future fulfilment of the pledge. The needs of the group, combined with direct or indirect access to knowledge assets, will strengthen or weaken the formalization of practices. We will return to this point later.

Distributed leadership in the mobilization of knowledge assets implies that participants have the authority at any point to decide what knowledge assets to contribute, and so shape when, how, and how quickly the transformation proceeds. Participants lead, in the instructional sense, by presenting, discussing, and demonstrating knowledge assets; they also follow by listening, reviewing, using, or adjusting assets in the SECI process. Mobilization of knowledge assets is enhanced when leading and following skills are diffused among group members. The extent to which knowledge assets can be mobilized through distributed leadership impacts on the extent to which the potential of *Ba* can be transformed into the SECI process.

Capturing. Knowledge assets resulting from SECI need to be captured for value creation and improvement (Alavi and Leidner, 2001; Teece, 1998; Wiig, 1997). Some assets exist as explicit knowledge, or symbolic expressions of ideas and concepts; others as experiences of individual participants, reflecting their learning from SECI. It is clear from our discussion of mobilization activities that the relationships between participants (transactive memory), including shared values, norms, attitudes, and interests that emerge from the process, are also assets. In this way, distributed leadership facilitates the capture of knowledge assets. While centralized leadership often recognizes the value of a routine, a product concept, or a process improvement, and may seek to formalize and reuse this throughout the organization, the most comprehensive knowledge asset capture is by participants who are directly involved in SECI. For example, transactive memory (Moreland, 1999; Wegner et al., 1985) of who holds task-relevant knowledge assets in the group, how to apply these assets efficiently, or the strengths of ties between members, presupposes direct experience of the process. Participants obtain an integral understanding of knowledge creation and memory of distributed leadership. The memory of formalized practices, spontaneous and intuitive collaboration, following and leading skills, the fluid authority that comes with the application of knowledge assets in the SECI process, or the gradual diffusion of skills – all these are elements in the effective capture of knowledge assets.

Conditional Layer

So far, the framework shows that knowledge creation occurs in self-organized, spontaneous, autonomous groups spread in a ubiquitous manner throughout the organization, where distributed leadership forms an integral part of group activities. Thus, knowledge creation is close to practice and cannot be directly controlled by an external authority

(Nonaka and von Krogh, 2009). Yet, as we proposed in the third section of the paper, an organization displays a range of leadership between the two extremes of centralized and distributed, depending on situation. Knowledge creation situations are no exception – the mix of leadership forms conditions for organizational knowledge creation. At the conditional layer, centralized and distributed leadership are both present to: (1) facilitate the integration of *Ba*, SECI, and knowledge assets; and (2) provide the flow of resources, people, connections, and information for knowledge creation. We propose three leadership activities to accomplish this: building, providing, and engaging.

Building. As we discussed above, *Ba* represents a potential for knowledge creation that has to be transformed into process. Thus, *Ba* needs to be built within the organization, for example by allowing people to meet in a spontaneous manner. As suggested in prior work, leaders design effective workspaces, champion the use of electronic networks, establish communication protocols, motivate and reward people, keep projects to schedule, coordinate the development of task descriptions, define goals, or prioritize issues (Kusunoki et al., 1998). All the aspects of centralized leadership we have discussed here are important in facilitating knowledge creation in this manner, including directing relationships, meeting people, shaping beliefs and expectations to stable, hierarchical leadership, stable authority in decision making, and leadership skills based on definition and selection. Centralized leadership, while not directly part of the transformation, mobilization, or capturing processes, stabilizes the working conditions of *Ba* by connecting and integrating people formally or informally through organizational hierarchy and networks – in a directed, not haphazard, manner. In this way leaders help build the potential for *Ba*, but as we argued above, whether or not this potential is transformed into SECI hinges on distributed leadership and self-organization. Centralized leadership is not sufficient; distributed leadership builds *Ba* through practitioners who are on the intersection between vertical and horizontal information flows within the organization, and whose intuition and experience allow them to read the situation, form groups at the right time, and draw on weak or strong ties between participants. Distributed leadership also energizes *Ba* by motivating participants to contribute their knowledge assets.

As Gronn (2002) noted, distributed leadership benefits from various types of synergy between people and processes: people engage in negotiations of role boundaries, blurring or expanding them, to realize cross-hierarchical synergies. One outcome of negotiations can be that people from different hierarchical levels work in peer-like groups aimed at solving tasks that would normally exceed the authority of any one member. In building *Ba*, participants shape, of their own accord, new role-task specialization, differentiations, and complementarities that represent a new context for knowledge creation. These new frameworks may impose strong limits on any participant's control of the process through centralized leadership, but are necessary for potentially transforming *Ba* into SECI. Knowledge creation is found at the edge between order and chaos (Nonaka et al., 2000a). While the transformation from *Ba* to SECI may arise spontaneously out of new and existing working relationships between practitioners, it happens within boundaries set by hierarchy, process, goals, and visions, defined by the next 'structural' layer (Kogut and Zander, 1992). Thus, 'order' might be thought of as centralized leadership and 'chaos' as stimulated by distributed leadership. Boundary expansion through negotia-

tion, as Gronn (2002) suggests, requires the preparedness of organizational superiors exercising central leadership to include colleagues at lower levels within the locus of their formal and stable authority. The studies that Gronn (2002) reviews show that boundary expansion through negotiations is often problematic due to differences in expectations about authority, skills, or incentives. It often takes lengthy collaboration to develop the trust needed to expand across hierarchical levels. The establishment of trust among people at various organizational levels may hinge on the development of skills related to distributed leadership, that is, integrated leading and following skills.

Providing. Centralized leadership is essential to spanning organizational boundaries, units, departments, groups, and individuals in providing – and to some degree ‘controlling’ – the flow of knowledge assets to SECI. Asset provision in this context may signify documents, databases, patents, product concepts, engineering, designs, expertise, etc. Distributed leadership provides softer or more intangible people-related routines and experiential knowledge assets to the core layer, for example through identification, invitation, and selection of participants in the transformation.

A major challenge of leadership is negotiation for control of flow and synchronization of knowledge assets for mobilization. In any organization, there are countless knowledge assets that can be used for knowledge creation, and participants close to knowledge creation will judge the suitability and applicability of assets for the tasks at hand. For those assets whose flows are controlled by participants, ‘mobilization’ is a matter of individuals providing access to the group (e.g. by externalizing knowledge). Yet, the flow of many useful knowledge assets may be beyond the control of any group member. When centralized leadership shares information about these assets with the group, it indicates increased scope for group action (Hansen, 1999, 2009). Yet, the participants’ definition and understanding of tasks and their transactive memory are preconditions to judging the quality and appropriateness of any assets, for example avoiding ‘toxic’ assets, such as outdated information or knowledge that is too costly to integrate.

Next, participants negotiate with centralized leadership for access to assets whose flows are beyond group control and need to be synchronized. For example, a group may need access to a powerful computer and software to undertake a simulation of complex dynamics for a product prototype. However, this requires synchronization with other groups’ computer access throughout the organization. Access is coordinated by participants exercising distributed leadership, for example giving one to two people responsibility for working with people or units outside the group. In addition, distributed leadership of knowledge assets that extend beyond local knowledge creation needs to be complemented by centralized leadership. Centralized leadership connects and diffuses information on the many *Bas* and knowledge creation processes that co-exist in the organization (Nonaka et al., 2000a), and so synchronizes the flow of knowledge assets beyond the control of the group. The role of centralized leadership is not merely to provide mechanisms to integrate knowledge from various groups throughout the organization (Felin and Hesterly, 2007; Grant, 1996), but rather to synchronize the temporary flow of assets among groups and *Bas* so that groups can integrate knowledge when the situation demands it. Access to assets does not guarantee their use by the group.

Assets need to be mobilized, as we proposed earlier. ‘Soft’ and ‘hard’ assets will be aligned with different leadership approaches, similarly to the leadership prescriptions revealed in our literature review.

Engaging. Centralized leadership attempts to design and implement systems, rules, and procedures in the organization that impact on the extent to which group participants have a motive, time, and resources to engage in knowledge creation. Centralized leadership also impacts on the conditions for knowledge creation by designing and communicating incentives that signal the costs and benefits of knowledge creation to *Ba* practitioners. While material incentives often fail to motivate knowledge creation, as we discussed above (Osterloh and Frey, 2000), they do signal importance and engagement in the SECI process. Organizational forms impact on participants’ engagement by outlining reporting lines, information flows, and decision-making authority.

Centralized leadership is important because it provides and controls knowledge asset flows beyond the group, and also helps to ‘fill the voids’ (Pearce, 2004). Voids become apparent throughout the knowledge creation process; they represent lack of access to important expertise, skills, or capabilities. For example, if distributed leadership fails to mobilize assets important for knowledge creation processes because one or more participants refuse to share or access assets, centralized leadership may temporarily motivate more effort, train the participant(s), provide resources for facilitation, emphasize the value and importance of shared leadership (Pearce and Sims, 2002), and show by example how other *Bas* have performed. In this manner, centralized leadership provides an important safety valve for knowledge creation in organizations. However, because extensive autonomy and empowerment are necessary conditions for knowledge creation, these interventions may easily fail and produce unwanted effects, such as the termination of the SECI process.

In the example of natural synthesis in the pharmaceutical industry, which we touched on earlier, knowledge creation often emerges through the resolution of conflicting ideas, insights, and arguments. Whereas agreements are assumed to be reached at group level, there is also space for centralized leadership to mediate between participants in the process. In doing this, leaders do not define or justify what knowledge is appropriate (Gourlay, 2006), but rather keep participants focused on knowledge creation. In this mediating role, centralized leadership may also secure ‘procedural justice’, as suggested by Kim and Mauborgne (1998), by exposing ideas to criticism and facilitating selection of the best ideas, indirectly motivating participants to stay engaged. Nevertheless, the intervention of centralized leadership in organizational knowledge creation should not be understood as ‘management-by-exception’ (Bass, 1990). The mediating role of centralized leadership is interplay at the conditional layer. If the intervention is excessive, it can undermine the essential building of trust we discussed earlier.

Distributed leadership, on the other hand, is tied to SECI, as we showed in the second section. The engagement in organizational knowledge creation is therefore the result of a mix of participants’ repeated exposure to material or immaterial incentives, systems, and organizational forms impacted by centralized leadership, as well as fluid authority and emergent leader–follower relations in the group. Where they provide consistent working conditions, the two forms of leadership mutually reinforce people’s engagement

in the SECI process. Pearce and Conger (2003) argue that inconsistent working conditions are a feature of distributed leadership, with people visibly trying to negotiate an upward influence in the hierarchy. Negotiations between people who hold centralized leadership roles, and group participants engaged in knowledge creation, impact on the extent of their engagement in the process. An important part of negotiation around knowledge creation is participants' ability to connect the outcome of the process (assets) to the organization's vision, overall strategic themes, or priorities. In this way, distributed leadership also performs an instrumental function in legitimizing knowledge creation at various levels.

To conclude, at the conditional layer, the SECI process occurs on the boundary between centralized and distributed leadership. The outcome of negotiations between group participants and leaders in the hierarchy will provide important conditions for sustaining organizational knowledge creation.

Structural Layer

The third layer of leadership provides structures that connect knowledge creation contexts, processes, and knowledge assets throughout the organization. Most literature on organizational knowledge emphasizes the activities of centralized leadership or management in creating, transferring, and exploiting knowledge (Argote et al., 2003; Boisot and MacMillan, 2004; Nonaka and Takeuchi, 1995). Centralized leadership performs three key activities for knowledge creation. First, as shown in the literature review, strategic leadership theory prevails in the understanding of the role of leadership in organizational knowledge creation, an area on which there is controversy about leadership and organizational knowledge (Gourlay, 2006; Lado and Wilson, 1994). At the structural layer, centralized leadership formulates knowledge visions and breaks these down into parts that may trigger and support overall direction in various units, groups, and sub-groups. Knowledge visions articulate existing fields of knowledge in the organization and tie these to areas where new knowledge should be sought. They may also provide an important justification for organizational members to engage in knowledge-related work, and outline a variety of tasks or issues to be tackled (von Krogh and Grand, 2000; von Krogh et al., 2000, 2001). Because they are aspirational (higher order goals), knowledge visions also motivate participants. However, one should keep in mind that the creation and application of knowledge assets, and the provision of benchmarks against which they can be measured, are embedded in knowledge creation groups throughout the organization (see section on the core activity layer).

Second, centralized leadership also formulates, implements, and motivates around incentive and communication systems, procedures, rules, and organizational forms (Nonaka et al., 2006) that impact directly or indirectly on leadership activities in the conditional and core layers. Boundaries of various leadership activities, ranging from central to distributed, are impacted by systems, procedures, and rules and are revealed in the extent of goal formulation, strategies, policies, information sharing, participating in human resource development, using technologies, and so on. The extent to which centralized leadership enables or hinders knowledge creation is impacted by boundary negotiations in the conditional layer where group participants exert upward influence.

Hence, there is constant interaction between the structural and the core activity layer in the conditional layer.

Third, organizational knowledge creation must be understood as a mundane and continuous activity, but one that also continuously changes an organization. This is an important dialectic in an organization that strives to combine creation of new knowledge with use of existing knowledge assets (Nonaka and Toyama, 2002). This dialectic has recently been analysed in the literature on organizational ambidexterity (Raisch et al., 2009). Centralized leadership balances knowledge creation and the application of knowledge assets, to safeguard economic efficiency. At the structural layer, this balance is accomplished by allocating resources to both activities (March, 1991). However, there are several obstacles that make resource allocation inefficient and put particular demands on centralized leadership. As we have argued here, knowledge creation is often local, atomistic, and opaque to centralized leadership, and frequently proceeds without clear metrics for resource allocation because it is about creating something entirely new, such as process and product performance, cost estimators, market growth, or market share (Chen and Edgington, 2005; Christensen, 1997). Another obstacle is that local knowledge creation does not necessarily disseminate the 'best' knowledge assets around the organization (Pfeffer and Sutton, 2000). Thus, to accomplish efficient 'ambidexterity', centralized leadership needs to connect *Bas*. This involves using systems, procedures, rules, and forms to synchronize other *Bas* in the organization, and coordinate the access to knowledge assets. Centralized leadership may also motivate more permanent functions, such as boundary spanners, which connect *Bas* at various levels within the organization (Wenger, 1998).

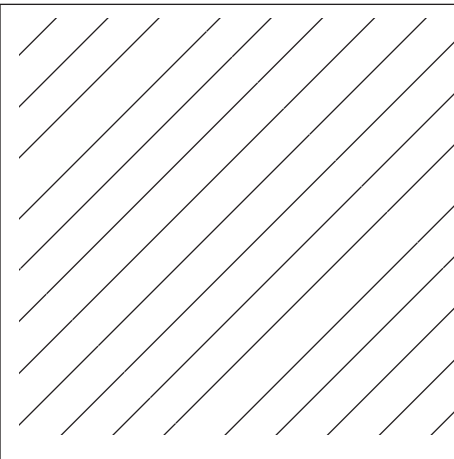
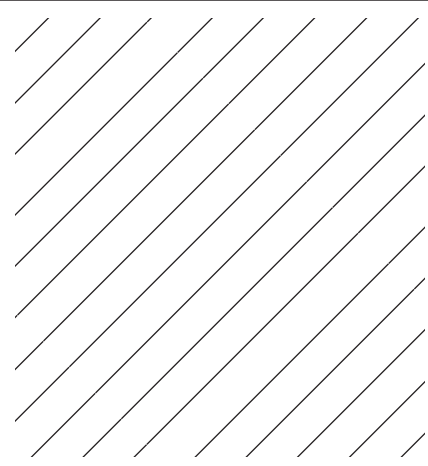
Centralized leadership also relies on local knowledge creation to identify people with leadership potential through their work in *Ba*, their distributed leadership activities, and negotiations of boundaries in the conditional layer. Thus, a connection is forged between leadership development within an organization, leadership selection, and organizational knowledge creation.

Table III summarizes the activities of distributed and centralized leadership at the core activity, conditional and structural layers necessary for organizational knowledge creation. The figure also shows elements of formal and informal organization and how leadership as a concept bridges the two. The theoretical framework clearly demonstrates that centralized leadership (understood as a position, process, or activity controlled by some central authority) is necessary but not sufficient for organizational knowledge creation; distributed leadership tied to a practice is complementary and essential for successful knowledge creation.

DISCUSSION AND CONCLUSION

This paper tackles the question of how leadership impacts on knowledge creation in an organization through a literature review and the development of a new theoretical framework. Our review found two challenges in prior work. First, many contributions see leadership as held by a few privileged, upper-echelon participants, exercising strategic, style, and transformational leadership. Second, no single work dealt with the leadership necessary to integrate *Ba*, knowledge assets, and SECI. To contribute to the literature by

Table III. Necessary leadership activities for knowledge creation

	<i>Core activity layer</i>	<i>Conditional layer</i>	<i>Structural layer</i>
Distributed leadership	<ul style="list-style-type: none"> ◆ Transforming potential in <i>Ba</i> in SECI • Leaders look for common interests: e.g. technological advantage • Leaders emphasize and promote higher goal: e.g. knowledge excellence in technological area • Leaders mobilize and coordinate assets to convince participants of transformation: e.g. trust; individual experience ◆ Formalization of practice, SECI processes unfold • Leaders fix meetings and initiate discussions on pressing issues • Leaders capture outcomes of SECI for value creation: i.e. learning; transactive memory 	<ul style="list-style-type: none"> ◆ Building <i>Ba</i> • Based on experience, leaders read situations, help form groups at right time, draw on weak/strong links between participants • Leaders help build peer groups independent of hierarchies ◆ Providing knowledge assets • Leaders provide experiential assets and people-related routines • Leaders judge suitability/applicability of assets at hand ◆ Motivating participants to engage • Leaders connect outcome of knowledge process to knowledge vision 	 <ul style="list-style-type: none"> ◆ Leaders formulate a knowledge vision that ties existing knowledge to new areas where new knowledge should be sought ◆ Leaders formulate, decide, help implement and motivate around incentive, communication systems, rules, organizational forms, and procedures ◆ Leaders balance goals for knowledge creation with economic efficiency ◆ Leaders synchronize <i>Bas</i> and coordinate access to knowledge assets across <i>Bas</i> in organizations
Centralized leadership		<p>Boundary negotiations</p> <ul style="list-style-type: none"> ◆ Leaders stabilize working conditions of <i>Ba</i> by connecting and integrating people formally and informally through organizational hierarchy and networks, e.g. define relationships and shape expectations on stable hierarchical leadership ◆ Leaders provide and steer the flow of assets that are beyond group control, e.g. databases, patents, designs, and synchronize assets between <i>Bas</i> ◆ Leaders design and implement systems, rules, and procedures, and set incentives to engage in knowledge creation ◆ Leaders fill voids of necessary skills through training, resource facilitation, and experience from other <i>Bas</i> 	

meeting these challenges, we developed a new theoretical framework of leadership in organizational knowledge creation. We distinguish between centralized and distributed leadership along six dimensions, and depict situational leadership at three layers in organizational knowledge creation. At the core activity layer, leadership is distributed and tied to self-organized group processes. At the conditional layer, leadership is both distributed and centralized in securing the conditions necessary for local knowledge creation. At the structural layer, leadership is centralized, providing overall coherence and orientation to knowledge creation activities throughout the organization.

The framework contributes to the literature in three ways. First, extending to existing work (e.g. Politis, 2001, 2002; Reinmoeller, 2004; Rowe, 2001; Yang, 2007), it provides a consistent differentiation of leadership's influence on organizational knowledge creation through three leadership strata. It situates leadership in relation to what people actually do when creating knowledge. Second, it relates organizational knowledge creation to new developments in the literature on distributed leadership (e.g. Brown and Hosking, 1986; Gronn, 2002) by contrasting distributed and centralized leadership. Previous work on leadership in organizational knowledge creation viewed leadership and knowledge creation as two separate, but mutually influential, processes. In the framework we show that distributed leadership is an integral part of organizational knowledge creation. We use work on transactive memory to argue that distributed leadership (for example, how to lead and follow spontaneously) becomes part of the pattern of interactions memorized by group members. Distributed leadership is the group's capacity to engage in organizational knowledge creation, rather than a separate condition with a direct or mediating influence on the outcome. The framework also demonstrates the limits of the use of strategic and other centralized leadership theories in organizational knowledge creation theory (see also critique by Gourlay, 2006; Lado and Wilson, 1994; Tsoukas, 1996). Third, the new framework offers an integrated view of the different roles of leadership in the interplay between knowledge processes (SECI), context (*Ba*), and knowledge assets. At the same time, the framework allows for an understanding of simultaneous leadership approaches within one organization. In particular, the framework supplements the contributions that suggest a double-sided model of centralized coordination through top management and lower levels of self-management without intending to describe the form it would take (Couillard and Lapierre, 2003; Robertson et al., 2003).

Future research on leadership in knowledge creation, and (more generally) knowledge processes, should construe and understand leadership exercised at different levels and in different situations. Additional theoretical work is called for that specifies in more detail where knowledge processes are located, who is involved, what assets they use, and for what purpose. Future empirical research should examine the nature of leadership at the three layers, and their consequences for the efficiency and effectiveness of knowledge processes. Particular attention needs to be devoted to the following questions: What is the form and function of 'boundary negotiations' between centralized and distributed leadership at the conditional layer? What are the tensions between centralized and distributed leadership at the core activity and structural layers? Research is needed on the conditions that centralized leadership shape for autonomous, self-organized, local, but ubiquitous knowledge creation in organizations.

Overall, we observed through our review a gradual weakening of theoretical development at the conjunction of organization theory and leadership. This is problematic, as leadership is such an important aspect of understanding the practice of organizations. As we have demonstrated in this paper, new developments in the leadership literature capture a broad range of behaviours, forms, and contingencies of leadership, rendering the traditional 'great man' view of leadership irrelevant, or at least marginal. New developments should open new avenues for organizational researchers to include considerations of leadership in their work, as we have demonstrated in this paper. In addition, there are a number of recent research problems in organization theory that benefit from a stronger inclusion of leadership research, ranging from bargaining power and power constellations (Pfeffer, 2010) to organizational learning through exploration and exploitation (Jansen et al., 2009). Thus, future review work may address the broader research agenda: Where and how may recent theories of leadership advance our theoretical and empirical understanding of organizations?

Another important research conjunction we want to highlight is the combination of micro- and macro-levels in research on organizational processes (Felin and Hesterly, 2007). To advance the understanding of organizational knowledge, the field of management and organization theory may need to embrace an analysis of knowledge at the interaction of the individual, group, and organizational levels, which means abandoning a strict one-sided perspective on the locus of knowledge as either individual or collective. Knowledge creation in organizations relies on individual contributions, but also on organization-level knowledge assets and contexts that extend beyond the work of single individuals. Questions for future research are: How do distributed and centralized leadership safeguard individuals' high-performance contributions to knowledge creation? How does leadership ensure the optimal leverage of knowledge assets and context by individuals?

The theoretical framework may also be helpful to adjacent research areas. For instance, the framework could be adopted for human resource practices. When distributed leaders rise to centralized leadership positions, what implications will we see for training? Will leadership capabilities be transferred between individuals or transformed? How are people recruited to leadership positions, given what we now know about leadership activities at the conditional layer? Applying the framework to gender studies might also provide important insights on gender differences in centralized and distributed leadership. Imbalances between distributed and centralized leadership activities, could perhaps offer an explanation for the so-called 'glass ceiling' often encountered in female career patterns (Kark and Eagly, 2010). Further analyses may propose possible remedies to the problem, for example how to remove career obstacles at the conditional layers through fair and transparent bargaining processes.

An important challenge remains. We did not discuss the relative, and perhaps conflicting, influences of leadership on knowledge creation. We implicitly assumed leadership was tied to knowledge needed for tasks – but there is great scope for identifying the antecedents of spontaneous and intuitive leader and follower relations, such as emotions, in organizational processes. For example, Obholzer (1996) discusses envy in leader–follower relations, which may also be relevant to the study of knowledge creation. As many studies of organizational knowledge creation have argued (Boland and Tenkasi,

1995; Hedlund, 1986; Nonaka, 1994; Nonaka and Takeuchi, 1995), teams of creative people constitute the core of innovation. These groups are often cross-functional, autonomous, redundant in competencies, resourceful, confronted with complex tasks, and given a particular status within the organization. A key quality of leadership is to encourage and stimulate these teams from within, to bring their most creative ideas and best knowledge to the organization. Yet, as Obholzer (1996) suggests, these positive qualities in followers with expertise might stir up envy in the leader, producing a host of negative side effects. While central leaders may refrain from overtly envious attacks on these teams, they may use more subtle tactics, such as gradually narrowing the flow of resources, using new knowledge without giving due credit, or blocking new knowledge through bureaucratic rules or non-responses. It can be postulated that effective centralized leaders act differently, by recognizing that there are many distributively led groups that are better or more creative than formal, centralized leadership. Furthermore, effective leaders encourage groups to 'overtake' them in knowledge creation. In such settings, leaders may need to act humbly to avoid the envy trap (Obholzer, 1996). Future research needs to examine the link between expertise, emotions, and centralized and distributed leadership in knowledge creation.

Our work also holds implications for management practice. Building capacity for distributed leadership requires training and development. The ability of an organization to formulate and implement an HR development agenda for distributed leadership may be one of the most important factors in establishing successful organizational knowledge creation and innovation. According to Pearce and Sims (2002), this kind of training agenda would incorporate at least three areas: how to engage in responsible and constructive leadership in groups; training on how to receive influence in organizational contexts and processes; and training in basic teamwork skills. While these three elements are related to process (SECI) and contexts (*Ba*), our leadership framework suggests additional training should be given on capturing and mobilizing knowledge assets at various levels. This training should enable recognition of important knowledge assets and how to build on them through synchronization. Future applied research should also investigate the effectiveness of various HR development agendas in developing shared leadership for organizational knowledge creation. Particular emphasis should be given to elements of those agendas that are developed bottom-up by teams, and those that are defined and implemented top-down by middle or top management in an organization.

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NOTES

- [1] The Ohio State Leadership Studies, conducted in the 1950s, identified two main types of leadership style: consideration and initiating. The former revolves around the leader's concern for the needs and feelings of followers, while the latter is more focused on task accomplishment (Yukl, 2010).
- [2] Gagne (2009, p. 573) defines autonomous motivation as 'engaging in an activity volitionally – for example, pursuing an activity out of interest and because it is enjoyable (intrinsic motivation), and pursuing it because it is personally meaningful and fits one's value system (identified regulation)'.

- [3] Since Sarker et al. (2009) base their analysis on a virtual environment, a virtual *Ba* is necessarily an indirect part of the analysis. However, the authors do not explicitly mention this.

REFERENCES

- Alavi, M. and Leidner, D. E. (2001). 'Knowledge management and knowledge management systems: conceptual foundations and research issues'. *MIS Quarterly*, **25**, 107–36.
- Anantatmula, V. S. (2007). 'Linking KM effectiveness attributes to organizational performance'. *VINE: The Journal of Information and Knowledge Management Systems*, **37**, 133–49.
- Anantatmula, V. S. (2008). 'Leadership role in making effective use of KM'. *VINE: The Journal of Information and Knowledge Management Systems*, **38**, 445–60.
- Argote, L., McEvily, B. and Reagans, R. (2003). 'Managing knowledge in organizations: an integrative framework and review of emerging themes'. *Management Science*, **49**, 571–82.
- Avolio, B. J., Walumbwa, F. O. and Weber, T. J. (2009). 'Leadership: current theories, research, and future directions'. *Annual Review of Psychology*, **60**, 421–49.
- Barry, D. (1991). 'Managing the bossless team: lessons in distributed leadership'. *Organizational Dynamics*, **20**, 31–47.
- Bass, B. M. (1985). *Leadership and Performance Beyond Expectations*. New York: Free Press.
- Bass, B. M. (1990). *Bass and Stogdill's Handbook of Leadership: Theory, Research and Managerial Applications*. New York: Free Press.
- Becerra-Fernandez, I. and Sabherwal, R. (2001). 'Organizational knowledge management: a contingency perspective'. *Journal of Management Information Systems*, **18**, 23–55.
- Beech, N., MacIntosh, R., MacLean, D., Shepherd, J. and Stokes, J. (2002). 'Exploring constraints on developing knowledge: on the need for conflict'. *Management Learning*, **33**, 459–75.
- Bell DeTienne, K., Dyer, G., Hoopes, C. and Harris, S. (2004). 'Towards a model of effective knowledge management and directions for future research: culture, leadership, and CKOs'. *Journal of Leadership and Organizational Studies*, **10**, 26–43.
- Bernard, D. (1988). *From Taylorism to Fordism: A Rational Madness*. London: Free Associated Books.
- Boisot, M. (1998). *Knowledge Assets: Securing Competitive Advantage in the Information Economy*. New York: Oxford University Press.
- Boisot, M. and MacMillan, I. C. (2004). 'Crossing epistemological boundaries: managerial and entrepreneurial approaches to knowledge management'. *Long Range Planning*, **37**, 505–24.
- Boland, R. J. and Tenkasi, R. V. (1995). 'Perspective making and perspective taking in communities of knowing'. *Organization Science*, **6**, 350–72.
- Bollinger, A. S. and Smith, R. D. (2001). 'Managing organizational knowledge as a strategic asset'. *Journal of Knowledge Management*, **5**, 8–18.
- Bontis, N. and Fitz-enz, J. (2002). 'Intellectual capital ROI: a causal map of human capital antecedents and consequents'. *Journal of Intellectual Capital*, **3**, 223–47.
- Brown, M. H. and Hosking, D. M. (1986). 'Distributed leadership and skilled performance as successful organization in social movements'. *Human Relations*, **39**, 65–79.
- Bryant, S. E. (2003). 'The role of transformational and transactional leadership in creating, sharing and exploiting organizational knowledge'. *Journal of Leadership and Organizational Studies*, **9**, 32–44.
- Burns, J. M. (1978). *Leadership*. New York: Harper and Row.
- Cabrera, A. and Cabrera, E. F. (2002). 'Knowledge-sharing dilemmas'. *Organization Studies*, **23**, 687–710.
- Carson, J. B., Tesluk, P. E. and Marrone, J. A. (2007). 'Shared leadership in teams: an investigation of antecedent conditions and performance'. *Academy of Management Journal*, **50**, 1217–34.
- Chen, A. N. K. and Edgington, T. M. (2005). 'Assessing value in organizational knowledge creation: considerations for knowledge workers'. *MIS Quarterly*, **29**, 279–309.
- Chen, L. Y. and Barnes, F. B. (2006). 'Leadership behaviors and knowledge sharing in professional service firms engaged in strategic alliances'. *Journal of Applied Management and Entrepreneurship*, **11**, 51–70.
- Chou, S.-W. and He, M.-Y. (2004). 'Knowledge management: the distinctive roles of knowledge assets in facilitating knowledge creation'. *Journal of Information Science*, **30**, 146–64.
- Chourides, P., Longbottom, D. and Murphy, W. (2003). 'Excellence in knowledge management: an empirical study to identify critical factors and performance measures'. *Measuring Business Excellence*, **7**, 29–45.
- Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press.

- Cole, M. and Engeström, Y. (1993). 'A cultural-historical approach to distributed cognition'. In Salomon, G. (Ed.), *Distributed Cognitions: Psychological and Educational Considerations*. Cambridge: Cambridge University Press, 1–46.
- Copland, M. A. (2003). 'Leadership of inquiry: building and sustaining capacity for school improvement'. *Educational Evaluation and Policy Analysis*, **25**, 375–95.
- Couillard, D. and Lapierre, J. (2003). 'Leadership, learning and resources for the high-tech firm: an integrated view of technology management'. *International Journal of Technology Management*, **26**, 767–87.
- Cox, J. F., Pearce, C. L. and Perry, M. L. (2003). 'Toward a model of shared leadership and distributed influence in the innovation process: how shared leadership can enhance new product development team dynamics and effectiveness'. In Pearce, C. L. and Conger, J. A. (Eds), *Shared Leadership: Reframing the Hows and Whys of Leadership*. Thousand Oaks, CA: Sage, 48–76.
- Day, D. V., Gronn, P. and Salas, E. (2004). 'Leadership capacity in teams'. *The Leadership Quarterly*, **15**, 857–80.
- DeNisi, A. S., Hitt, M. A. and Jackson, S. E. (2003). 'The knowledge-based approach to sustainable competitive advantage'. In Jackson, S. E., Hitt, M. A. and DeNisi, A. S. (Eds), *Managing Knowledge for Sustained Competitive Advantage: Designing Strategies for Effective Human Resource Management*. San Francisco, CA: Jossey-Bass, 3–33.
- Drath, W. H., McCauley, C. D., Palus, C. J., Van Velsor, E., O'Connor, P. M. G. and McGuire, J. B. (2008). 'Direction, alignment, commitment: toward a more integrative ontology of leadership'. *The Leadership Quarterly*, **19**, 635–53.
- Dreyfus, H. L. and Dreyfus, S. E. (1986). *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*. New York: Free Press.
- Engeström, Y. (1999). 'Innovative learning in work teams: analyzing cycles of knowledge creation in practice'. In Engeström, Y., Miettinen, R. and Punamäki, R.-L. (Eds), *Perspectives on Activity Theory*. Cambridge: Cambridge University Press, 377–404.
- Ensley, M. D., Hmieleski, K. M. and Pearce, C. L. (2006). 'The importance of vertical and shared leadership within new venture top management teams: implications for the performance of startups'. *The Leadership Quarterly*, **17**, 217–31.
- Eppler, M. J. and Sukowski, O. (2000). 'Managing team knowledge: core processes, tools and enabling factors'. *European Management Journal*, **18**, 334–41.
- Erden, Z., von Krogh, G. and Nonaka, I. (2008). 'The quality of group tacit knowledge'. *Journal of Strategic Information Systems*, **17**, 4–18.
- Essers, J. and Schreinemakers, J. (1997). 'Nonaka's subjectivist conception of knowledge in corporate knowledge management'. *Knowledge Organization*, **24**, 24–32.
- Fedor, D. B., Ghosh, S., Caldwell, S. D., Maurer, T. J. and Singhal, V. R. (2003). 'The effects of knowledge management on team members' ratings of project success and impact'. *Decision Sciences*, **34**, 513–39.
- Felin, T. and Hesterly, W. S. (2007). 'The knowledge-based view, nested heterogeneity, and new value creation: philosophical considerations on the locus of knowledge'. *Academy of Management Review*, **32**, 195–218.
- Fiedler, F. E. (1964). 'A contingency model of leadership effectiveness'. In Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology*. New York: Academic Press, 1, 149–90.
- Fiedler, F. E. (1967). *A Theory of Leadership Effectiveness*. New York: McGraw-Hill.
- Fiedler, F. E. and Garcia, J. E. (1987). *New Approaches to Effective Leadership: Cognitive Resources and Organizational Performance*. New York: John Wiley & Sons.
- Flyvbjerg, B. (2001). *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again*. Cambridge: Cambridge University Press.
- Gagne, M. (2009). 'A model of knowledge-sharing motivation'. *Human Resource Management*, **48**, 571–89.
- Galbraith, J. R. (1974). 'Organization design: an information processing view'. *Interfaces*, **4**, 28–36.
- Gibb, C. A. (1954). 'Leadership'. In Lindzey, G. (Ed.), *Handbook of Social Psychology*. Reading, MA: Addison-Wesley, 2, 877–917.
- Giddens, A. (1984). *The Constitution of Society. Outline of the Theory of Structuration*. Cambridge: Polity.
- Gill, R. (2006). *Theory and Practice of Leadership*. London: Sage.
- Goh, S. C. (1998). 'Toward a learning organization: the strategic building blocks'. *SAM – Advanced Management Journal*, **63**, 15–22.
- Goh, S. C. (2002). 'Managing effective knowledge transfer: an integrative framework and some practice implications'. *Journal of Knowledge Management*, **6**, 23–30.
- Gourlay, S. (2006). 'Conceptualizing knowledge creation: a critique of Nonaka's theory'. *Journal of Management Studies*, **43**, 1415–36.

- Gowen, C. R., Henagan, S. C. and McFadden, K. L. (2009). 'Knowledge management as a mediator for the efficacy of transformational leadership and quality management initiatives in U.S. health care'. *Health Care Management Review*, **34**, 129–40.
- Grant, R. M. (1996). 'Toward a knowledge-based theory of the firm'. *Strategic Management Journal*, **17**, 109–22.
- Gratton, L., Voigt, A. and Erickson, T. (2007). 'Bridging faultlines in diverse teams'. *MIT Sloan Management Review*, **48**, 22–9.
- Gronn, P. (2002). 'Distributed leadership as a unit of analysis'. *The Leadership Quarterly*, **13**, 423–51.
- Halverson, R. (2004). 'Accessing, documenting, and communicating practical wisdom: the pronesis of school leadership practice'. *American Journal of Education*, **111**, 90–121.
- Hansen, M. (1999). 'The search-transfer problem: the role of weak ties in sharing knowledge across organization subunits'. *Administrative Science Quarterly*, **44**, 82–111.
- Hansen, M. (2009). *Collaboration: How Leaders Avoid the Traps, Create Unity, and Reap Big Results*. Boston, MA: Harvard Business School Publishing.
- Hedlund, G. (1986). 'The hypermodern MNC – a heterarchy?'. *Human Resource Management*, **25**, 9–25.
- Hedlund, G. (1994). 'A model of knowledge management and the N-form corporation'. *Strategic Management Journal*, **15**, 73–90.
- Hedlund, G. and Nonaka, I. (1993). 'Models of knowledge management in the West and Japan'. In Lorange, P., Chakravarthy, B. G., Roos, J. and Van de Ven, H. (Eds), *Implementing Strategic Processes, Change, Learning, and Cooperation*. London: Basil Blackwell, 117–44.
- Heller, M. F. and Firestone, W. A. (1995). 'Who's in charge here? Sources of leadership for change in eight schools'. *The Elementary School Journal*, **96**, 65–86.
- Ho, C.-T. (2009). 'The relationship between knowledge management enablers and performance'. *Industrial Management & Data Systems*, **109**, 98–117.
- Holsapple, C. W. and Joshi, K. D. (2000). 'An investigation of factors that influence the management of knowledge in organizations'. *Journal of Strategic Information Systems*, **9**, 235–61.
- Hosking, D. M., Dachler, H. P. and Gergen, K. J. (1995). *Management and Organization: Relational Alternatives to Individualism*. Aldershot: Avebury.
- House, R. J. and Aditya, R. N. (1997). 'The social scientific study of leadership: quo vadis?'. *Journal of Management*, **23**, 409–73.
- Huang, Q., Davison, R. M., Liu, H. and Gu, J. (2008). 'The impact of leadership style on knowledge-sharing intentions in China'. *Journal of Global Information Management*, **16**, 67–91.
- Inkpen, A. (1998). 'Learning, knowledge acquisition, and strategic alliances'. *European Management Journal*, **16**, 223–9.
- Jansen, J. J. P., Vera, D. and Crossan, M. (2009). 'Strategic leadership for exploration and exploitation: the moderating role of environmental dynamism'. *The Leadership Quarterly*, **20**, 5–18.
- Kark, R. and Eagly, A. H. (2010). 'Gender and leadership: negotiating the labyrinth'. In Chrisler, J. C. and McCreary, D. R. (Eds), *Handbook of Gender Research in Psychology. Volume 2: Gender Research in Social and Applied Psychology*. New York: Springer, 443–68.
- Kelloway, E. K. and Barling, J. (2000). 'Knowledge work as organizational behavior'. *International Journal of Management Reviews*, **2**, 287–304.
- Kim, W. C. and Mauborgne, R. (1998). 'Procedural justice, strategic decision making, and the knowledge economy'. *Strategic Management Journal*, **19**, 323–38.
- Kodama, M. (2004). 'Strategic community-based theory of firms: case study of dialectical management at NTT DoCoMo'. *Systems Research and Behavioral Science*, **21**, 603–34.
- Kodama, M. (2005a). 'Knowledge creation through networked strategic communities: case studies on new product development in Japanese companies'. *Long Range Planning*, **38**, 27–49.
- Kodama, M. (2005b). 'New knowledge creation through leadership-based strategic community – a case of new product development in IT and multimedia business fields'. *Technovation*, **25**, 895–908.
- Kodama, M. (2006a). 'Strategic community: foundation of knowledge creation'. *Research-Technology Management*, **49**, 49–58.
- Kodama, M. (2006b). 'New knowledge creation through leadership-based strategic communities: case studies in Japan'. *Systems Research and Behavioral Science*, **23**, 21–38.
- Kodama, M. (2007). 'Innovation and knowledge creation through leadership-based strategic community: case study on high-tech company in Japan'. *Technovation*, **27**, 115–32.
- Kogut, B. and Zander, U. (1992). 'Knowledge of the firm, combinative capabilities, and the replication of technology'. *Organization Science*, **3**, 383–97.
- Kroeger, O. and Thuesen, J. M. (1992). *Type Talk at Work: How the 16 Personality Types Determine Your Success on the Job*. New York: Bantam Doubleday Dell.

- Kulkarni, U. R., Ravindran, S. and Freeze, R. (2006). 'A knowledge management success model: theoretical development and empirical validation'. *Journal of Management Information Systems*, **23**, 309–47.
- Kusunoki, K., Nonaka, I. and Nagata, A. (1998). 'Organizational capabilities in product development of Japanese firms: a conceptual framework and empirical findings'. *Organization Science*, **9**, 699–718.
- Lado, A. A. and Wilson, M. C. (1994). 'Human resource systems and sustained competitive advantage: a competency-based perspective'. *Academy of Management Review*, **19**, 699–727.
- Lakshman, C. (2005). 'Top executive knowledge leadership: managing knowledge to lead change at General Electric'. *Journal of Change Management*, **5**, 429–46.
- Lakshman, C. (2007). 'Organizational knowledge leadership: a grounded theory approach'. *Leadership & Organization Development Journal*, **28**, 51–75.
- Liebeskind, J. P. (1996). 'Knowledge, strategy, and the theory of the firm'. *Strategic Management Journal*, **17**, 93–107.
- Liebowitz, J. (1999). 'Key ingredients to the success of an organization's knowledge management strategy'. *Knowledge and Process Management*, **6**, 37–40.
- MacIntyre, A. (1984). *After Virtue*. Notre Dame, IN: University of Notre Dame Press.
- Magalhães, R. (1998). 'Organizational knowledge and learning'. In von Krogh, G., Roos, J. and Kleine, D. (Eds), *Knowing in Firms: Understanding, Managing and Measuring Knowledge*. London: Sage, 87–122.
- March, J. G. (1991). 'Exploration and exploitation in organizational learning'. *Organization Science*, **2**, 71–87.
- March, J. G. and Olsen, J. P. (1976). *Ambiguity and Choice in Organizations*. Bergen: Universitetsforlaget.
- Martiny, M. (1998). 'Knowledge management at HP consulting'. *Organizational Dynamics*, **27**, 71–7.
- McDermott, R. and O'Dell, C. (2001). 'Overcoming cultural barriers to sharing knowledge'. *Journal of Knowledge Management*, **5**, 76–85.
- Mehra, A., Smith, B. R., Dixon, A. L. and Robertson, B. (2006). 'Distributed leadership in teams: the network of leadership perceptions and team performance'. *The Leadership Quarterly*, **17**, 232–45.
- Moreland, R. L. (1999). 'Transactive memory: learning who knows what in work groups and organizations'. In Thompson, L. L., Levine, J. M. and Messick, D. M. (Eds), *Shared Cognition in Organizations: The Management of Knowledge*. Mahwah, NJ: Lawrence Erlbaum Associates, 3–31.
- Newell, S., Robertson, M., Scarbrough, H. and Swan, J. (2002). *Managing Knowledge Work*. Basingstoke: Palgrave.
- Nonaka, I. (1994). 'A dynamic theory of organizational knowledge creation'. *Organization Science*, **5**, 14–37.
- Nonaka, I. and Konno, N. (1998). 'The concept of "Ba": building a foundation for knowledge creation'. *California Management Review*, **40**, 40–54.
- Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.
- Nonaka, I. and Toyama, R. (2002). 'A firm as a dialectical being: towards a dynamic theory of the firm'. *Industrial and Corporate Change*, **11**, 995–1009.
- Nonaka, I. and von Krogh, G. (2009). 'Tacit knowledge and knowledge conversion: controversy and advancement in organizational knowledge creation theory'. *Organization Science*, **20**, 635–52.
- Nonaka, I., Byosiere, P., Borucki, C. C. and Konno, N. (1994). 'Organizational knowledge creation theory: a first comprehensive test'. *International Business Review*, **3**, 337–51.
- Nonaka, I., Toyama, R. and Konno, N. (2000a). 'SECI, Ba and leadership: a unified model of dynamic knowledge creation'. *Long Range Planning*, **33**, 5–34.
- Nonaka, I., Toyama, R. and Nagata, A. (2000b). 'A firm as a knowledge-creating entity: a new perspective on the theory of the firm'. *Industrial and Corporate Change*, **9**, 1–20.
- Nonaka, I., von Krogh, G. and Voelpel, S. (2006). 'Organizational knowledge creation theory: evolutionary paths and future advances'. *Organization Studies*, **27**, 1179–208.
- Nonaka, I., Toyama, R. and Hirata, T. (2008). *Managing Flow: A Process Theory of the Knowledge-Based Firm*. New York: Palgrave Macmillan.
- Obholzer, A. (1996). 'Psychoanalytic contributions to authority and leadership issues'. *Leadership & Organization Development Journal*, **17**, 53–6.
- Osterloh, M. and Frey, B. (2000). 'Motivation, knowledge transfer, and organizational forms'. *Organization Science*, **11**, 538–50.
- Pan, S. L. and Scarbrough, H. (1998). 'A socio-technical view of knowledge-sharing at Buckman Laboratories'. *Journal of Knowledge Management*, **2**, 55–66.
- Pan, S. L. and Scarbrough, H. (1999). 'Knowledge management in practice: an exploratory case study'. *Technology Analysis & Strategic Management*, **11**, 359–74.
- Patriotta, G. (2003). 'Sensemaking on the shop floor: narratives of knowledge in organizations'. *Journal of Management Studies*, **40**, 349–75.

- Pearce, C. L. (2004). 'The future of leadership: combining vertical and shared leadership to transform knowledge work'. *Academy of Management Executive*, **18**, 47–57.
- Pearce, C. L. and Conger, J. A. (2003). *Shared Leadership: Reframing the Hows and Whys of Leadership*. Thousand Oaks, CA: Sage.
- Pearce, C. L. and Sims, H. P. Jr (2002). 'Vertical versus shared leadership as predictors of the effectiveness of change management teams: an examination of aversive, directive, transactional, transformational, and empowering leader behaviors'. *Group Dynamics*, **6**, 172–97.
- Pfeffer, J. (2010). *Power: Why Some People Have It – And Others Don't*. New York: HarperBusiness.
- Pfeffer, J. and Sutton, R. I. (2000). *The Knowing-Doing Gap: How Smart Companies Turn Knowledge into Action*. Boston, MA: Harvard Business School Press.
- Politis, J. D. (2001). 'The relationship of various leadership styles to knowledge management'. *Leadership & Organization Development Journal*, **22**, 354–64.
- Politis, J. D. (2002). 'Transformational and transactional leadership enabling (disabling) knowledge acquisition of self-managed teams: the consequences for performance'. *Leadership & Organization Development Journal*, **23**, 186–97.
- Raisch, S., Birkinshaw, J., Probst, G. and Tushman, M. L. (2009). 'Organizational ambidexterity: balancing exploitation and exploration for sustained performance'. *Organization Science*, **20**, 685–95.
- Reinmoeller, P. (2004). 'The knowledge-based view of the firm and upper echelon theory: exploring the agency of TMT'. *International Journal of Learning and Intellectual Capital*, **1**, 91–104.
- Rivière, V. M. and Sitar, A. S. (2003). 'Critical role of leadership in nurturing a knowledge-supporting culture'. *Knowledge Management Research & Practice*, **1**, 39–48.
- Riege, A. (2005). 'Three-dozen knowledge-sharing barriers managers must consider'. *Journal of Knowledge Management*, **9**, 18–35.
- Robertson, M. and Swan, J. (2003). 'Control – what control? Culture and ambiguity within a knowledge intensive firm'. *Journal of Management Studies*, **40**, 831–58.
- Robertson, M., Scarbrough, H. and Swan, J. (2003). 'Knowledge creation in professional service firms: institutional effects'. *Organization Studies*, **24**, 831–57.
- Rosen, B., Furst, S. and Blackburn, R. (2007). 'Overcoming barriers to knowledge sharing in virtual teams'. *Organizational Dynamics*, **36**, 259–73.
- Rowe, W. G. (2001). 'Creating wealth in organizations: the role of strategic leadership'. *Academy of Management Executive*, **15**, 81–94.
- Sarker, S., Sarker, S. and Schneider, C. (2009). 'Seeing remote team members as leaders: a study of US-Scandinavian teams'. *IEEE Transactions on Professional Communication*, **52**, 75–94.
- Sartre, J. P. (1976). *Critique of Dialectical Reason*. New York: New Left Books.
- Scott, W. G. (1961). 'Organization theory: an overview and an appraisal'. *Journal of the Academy of Management*, **4**, 7–26.
- Selznick, P. (1948). 'Foundations of the theory of organization'. *American Sociological Review*, **13**, 25–35.
- Simonin, B. L. and Özsoy, A. (2009). 'Knowledge processes and learning outcomes in MNCS: an empirical investigation of the role of HRM practices in foreign subsidiaries'. *Human Resource Management*, **48**, 505–30.
- Singh, S. K. (2008). 'Role of leadership in knowledge management: a study'. *Journal of Knowledge Management*, **12**, 3–15.
- Skyrme, D. and Amidon, D. (1997). 'The knowledge agenda'. *Journal of Knowledge Management*, **1**, 27–37.
- Soosay, C. and Hyland, P. (2008). 'Managing knowledge transfer as a strategic approach to competitive advantage'. *International Journal of Technology Management*, **42**, 143–57.
- Southworth, G. (1990). 'Leadership, headship and effective primary schools'. *School Leadership & Management*, **10**, 3–16.
- Spillane, J. P., Halverson, R. and Diamond, J. B. (2004). 'Towards a theory of leadership practice: a distributed perspective'. *Journal of Curriculum Studies*, **36**, 3–34.
- Srivastava, A., Bartol, K. and Locke, E. A. (2006). 'Empowering leadership in management teams: effects on knowledge sharing, efficacy, and performance'. *Academy of Management Journal*, **49**, 1239–51.
- Stinchcombe, A. L. (1990). *Information and Organizations*. Berkeley and Los Angeles, CA: University of California Press.
- Teece, D. (1998). 'Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets'. *California Management Review*, **40**, 55–79.
- Timperley, H. S. (2005). 'Distributed leadership: developing theory from practice'. *Journal of Curriculum Studies*, **37**, 395–420.

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- Tsoukas, H. (1996). 'The firm as a distributed knowledge system: a constructionist approach'. *Strategic Management Journal*, **17**, 11–25.
- Tsoukas, H. (2009). 'A dialogical approach to the creation of new knowledge in organizations'. *Organization Science*, **20**, 941–57.
- Ulrich, D. and Smallwood, N. (2007). 'Building a leadership brand'. *Harvard Business Review*, **85**, 92–100.
- von Krogh, G. (1998). 'Care in knowledge creation'. *California Management Review*, **40**, 133–53.
- von Krogh, G. and Grand, S. (2000). 'Justification in knowledge creation: dominant logic in management discourses'. In von Krogh, G., Nonaka, I. and Nishiguchi, T. (Eds), *Knowledge Creation: A Source of Value*. Houndmills/New York: Palgrave, 13–35.
- von Krogh, G., Ichijo, K. and Nonaka, I. (2000). *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*. New York: Oxford University Press.
- von Krogh, G., Nonaka, I. and Aben, M. (2001). 'Making the most of your company's knowledge: a strategic framework'. *Long Range Planning*, **34**, 421–39.
- Wegner, D. M. (1987). 'Transactive memory: a contemporary analysis of the group mind'. In Mullen, B. and Goethals, G. R. (Eds), *Theories of Group Behavior*. New York: Springer-Verlag, 185–208.
- Wegner, D. M., Giuliano, T. and Hertel, P. (1985). 'Cognitive interdependence in close relationships'. In Ickes, W. J. (Ed.), *Compatible and Incompatible Relationships*. New York: Springer-Verlag, 253–76.
- Weick, K. E. and Roberts, K. H. (1993). 'Collective mind in organizations: heedful interrelating on flight decks'. *Administrative Science Quarterly*, **38**, 357–81.
- Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.
- Wiig, K. M. (1997). 'Integrating intellectual capital and knowledge management'. *Long Range Planning*, **30**, 399–405.
- Wong, K. Y. (2005). 'Critical success factors for implementing knowledge management in small and medium enterprises'. *Industrial Management & Data Systems*, **105**, 261–79.
- Wood, M. (2005). 'The fallacy of misplaced leadership'. *Journal of Management Studies*, **42**, 1101–21.
- Woods, F. A. (1913). *The Influence of Monarchs*. New York: Macmillan.
- Wren, D. (1987). *The Evolution of Management Thought*, 3rd edition. New York: Wiley.
- Yang, J.-T. (2007). 'Knowledge sharing: investigating appropriate leadership roles and collaborative culture'. *Tourism Management*, **28**, 530–43.
- Yeh, Y.-J., Lai, S.-Q. and Ho, C.-T. (2006). 'Knowledge management enablers: a case study'. *Industrial Management & Data Systems*, **106**, 793–810.
- Yukl, G. (2010). *Leadership in Organizations*, 7th edition. Upper Saddle River, NJ: Pearson Education.
- Zaleznik, A. (1977). 'Managers and leaders: are they different'. *Harvard Business Review*, **55**, 67–78.
- Zárraga, C. and Bonache, J. (2003). 'Assessing the team environment for knowledge sharing: an empirical analysis'. *International Journal of Human Resource Management*, **14**, 1227–45.