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AN EXPANDED MODEL OF DISTRIBUTED LEADERSHIP IN ORGANIZATIONAL KNOWLEDGE CREATION

Forthcoming In *Long Range Planning*

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ABSTRACT

Based on a three-year qualitative, longitudinal case study of a social venture partnership, we extend the understanding of distributed leadership in organizational knowledge creation. We develop an expanded model of distributed leadership that identifies the antecedents, different forms, and enablers of distributed leadership in knowledge creation. Our findings move beyond a static and monolithic understanding of distributed leadership to illustrate how an expanded model informs the situational leadership framework and spiral of knowledge creation across an organization's hierarchy and boundary in the context of social entrepreneurship.

INTRODUCTION

The ability to create and sustain knowledge is of long-standing interest to academics and practitioners. Over the past few decades, organizational knowledge creation theory (Nonaka, 1994) has approached near-paradigmatic status in management and organization studies (e.g., Choo and Bontis, 2002; LeBreton-Miller and Miller, 2014; Peterson, 2002, Tsai and Li, 2007). It provides an explanatory framework that integrates knowledge processes, assets, context, and leadership (e.g., Kodama, 2005; Nonaka, 1994; Nonaka et al., 2000; and von Krogh et al., 2012). While the importance of leadership in knowledge creation is widely recognized (e.g., Bryant, 2003; Lakshman, 2005; Politis, 2001; Zarraga and Bonache, 2003), it has often been perceived as an auxiliary factor (von Krogh et al., 2012), resulting in an oversimplified and naïve view of its impact (Gourlay, 2006; Tsoukas, 2006).

Leadership is generally treated as a static component of the organizational knowledge creation process, often as a centralized function controlled by the upper echelon of the organization (Gourlay, 2006; Lado and Wilson, 1994; Tsoukas, 1996). Such an approach is consistent with traditional research in the area of leadership that has often focused on a single leader (Gronn, 2000). However, more recent research calls attention to distributed leadership as

“an integral part of organizational knowledge creation” (von Krogh et al., 2012: 269).

Distributed leadership is defined as an emergent group where two or more individuals share the roles and functions of leadership (Bolden, 2011; Gronn, 2000). Although its acknowledgement is an important step forward, our understanding of distributed leadership in organizational knowledge creation remains embryonic² for a number of reasons. First, distributed leadership research has grown substantially in organizational studies over the last two decades but has only recently been acknowledged in organizational knowledge creation (von Krogh et al., 2012). Second, our understanding is limited by treating distributed leadership as a monolithic construct, which fails to account for a wider and more complex range of possible forms of distributed leadership. Third, the role of distributed leadership in organizational knowledge creation has yet to be examined empirically, thereby limiting our understanding to its proposed rather than actual role in the process. To address these gaps, we conducted a three-year qualitative, longitudinal case study of a social venture partnership to understand how distributed leadership emerges and develops within the process of knowledge creation transcending across an organization’s hierarchy and boundary over time.

Our study makes three primary contributions. First, we examine and extend the situational leadership framework of organizational knowledge creation, calling attention to the importance of distributed leadership. As a first empirical study of distributed leadership in knowledge creation, we extend the theorized view of distributed leadership as monolithic and static by offering an expanded model of distributed leadership that accounts for its evolution and effects over time. In so doing, we identify the antecedents, different forms, and enablers of distributed leadership in organizational knowledge creation and show how the different forms of

² We thank a reviewer for calling our attention to the nascent stage of distributed leadership in organizational knowledge creation.

distributed leadership develop across multiple cycles over time. Second, we contribute to an understanding of how different forms of distributed leadership and knowledge creation occur across organizational boundaries. We show how leadership transcends organizational boundaries as a means of creating a new context for the continuous spiral of organizational knowledge. Finally, we illustrate how the context of social entrepreneurship complements our understanding of organizational knowledge creation by focusing on organizations with more porous boundaries and a stronger social orientation, by explaining how organizational knowledge creation influences who an organization becomes, and by informing the scaling of social value.

THEORETICAL BACKGROUND

Leadership and organizational knowledge creation theory

According to organizational knowledge creation theory, new knowledge is created through the interaction of tacit and explicit knowledge in the four-phase process of SECI (*Socialization, Externalization, Combination, and Internalization*) in the context of Ba (the place where knowledge creation occurs) to generate new knowledge assets (Nonaka, 1994; Nonaka et al., 2000). A knowledge asset is defined as any explicitly qualified source of knowledge that can solve problems relevant to the organization's success and offer input to future knowledge accumulation (Dyck et al., 2005; Nonaka, 1994; Nonaka et al., 2000). The SECI cycle is completed when knowledge assets become embedded in organizational routines (Dyck et al., 2005). Knowledge creation is a continuous process where individual and organizational boundaries are transcended to develop a new context for knowledge (von Krogh et al., 2012).

Despite its importance, leadership has received little systematic scholarly attention in organizational knowledge creation theory (Nonaka et al., 2000). Leadership “is often mentioned

in passing as an auxiliary factor or a practical implication of theory development...concepts of leadership have received limited systematic, analytical exposure in the study of organizational knowledge creation” (von Krogh et al., 2012: p. 240). Past research has been criticized for focusing on centralized leadership of a privileged few senior executives in the upper echelon of an organization (Gourlay, 2006; Lado and Wilson, 1994; and Tsoukas, 1996). Such an approach obfuscates leadership activities throughout different levels of the organization and fails to account for the move beyond the ‘great man’ view of leadership to a more distributed perspective (von Krogh et al., 2012). Furthermore, research has focused on specific parts of the SECI process without considering the entire model (e.g., Bell DeTienne et al., 2004; Gagne, 2009; Kulkarni et al., 2006; Liebowitz, 1999) or the integration of knowledge processes, contexts, and assets (Lakshman, 2005; Robertson et al., 2003). Much of this research has focused on knowledge creation in an organizational vacuum (House and Abitya, 1997; von Krogh et al., 2012), without accounting for contextual contingencies. While scholars have recognized that organizational knowledge creation is context-dependent (Becerra-Fernandez and Sabherwal, 2001; Chou and He, 2004; Nonaka and von Krogh, 2009), they have only recently theorized about how different forms of leadership may enable or constrain knowledge creation (von Krogh et al, 2012).

Situational leadership model of knowledge creation

To address these shortcomings, scholars developed a situational leadership approach to organizational knowledge creation (von Krogh et al., 2012). This model builds on contingency theories (Fiedler, 1964; Fiedler and Garcia, 1987) that suggest different forms of leadership depend on the specifics of the situation, including the knowledge creation activity (Cole and

Engestrom, 1993). The situational leadership approach explains how centralized and distributed leadership connect the knowledge process, context, and assets (von Krogh et al., 2012). Similar to organizational knowledge creation theory (Nonaka, 1994), this approach was developed as a formative framework to guide future theoretical and empirical research on the relationship between leadership and knowledge creation (von Krogh et al., 2012).

Centralized leadership provides vision and organizational structure for organizational knowledge creation. Centralized leaders shape vision, goals, and incentives in formulating the organization's overall knowledge strategy (March, 1991; Nonaka and Toyama, 2002; von Krogh et al. 2012). Centralized leaders stabilize the *Ba*, gain assets beyond the group's control, design and implement systems, and fill voids of necessary skills through training and experience (von Krogh et al., 2012). As considerable research in organization studies and emerging research in knowledge creation have focused on centralized leadership, we shift our attention to distributed leadership to better understand how it develops and informs knowledge creation.

Distributed leadership

Distributed leadership is seen as a "...group activity that works through and within relationships rather than individual action" (Bennett et al., 2003, p.3) and endows the network with a capacity for leadership distinct from the aggregation of its members' individual activities (Gronn, 2000). From its inception, it has been considered as a group quality (Gibb, 1954).

The distributed leadership perspective may be thought of as a direct reaction to counter the "heroic" individual leader approach by emphasizing the structures and processes of leadership in the context of organizational activities (Badaracco, 2001; Leithwood et al., 2009; Northouse, 2007). By nature, it is malleable across organizational boundaries and relationships

(Bennett et al., 2003). It relies on the relationships and configurations that surround and enable multiple people to assume leadership capabilities and expertise in a variety of roles (Bolden, 2011; Uhl-Bein, 2006). Distributed leadership focuses on leadership systems and shared practice both relationally and contextually (Bennet et al., 2003; Spillane and Diamond, 2007).

Building on this foundation, we view distributed leadership as a system in which various actors, in different positions within and between organizations, participate in directing and coordinating work with varying degrees of success (Bolden, 2011; Pearce, 2004; Pye and Knight, 2005). These actions and interactions develop into patterns that uniquely define the leadership configurations for the organization (Gronn, 2008; 2009; 2010).

Distributed leadership in knowledge creation

In the situational model of knowledge creation, distributed leadership is theorized to serve a number of important functions at different layers. Distributed leadership at the informal layer works through continuous interaction resulting in creativity and innovation (von Krogh et al., 2012). Collaboration among organizational members generates knowledge as distributed leadership develops based on a person's energy, ideas, and knowledge rather than on their hierarchical position. Leaders look for common interests, promote higher goals, and convince participants to engage as they transform the potential of *Ba* (von Krogh et al., 2012). Distributed leadership connects the knowledge creation activities at the core layer with the formal structures of the structural layer (von Krogh et al., 2012). Distributed leadership builds *Ba* between participants and motivates their engagement (von Krogh et al., 2012).

Distributed leadership is crucial to knowledge creation for at least two reasons. First, the growing interdependence of participants and dynamic interaction of the knowledge creation

process makes it difficult to determine a priori who will lead various parts of the process (von Krogh et al., 2012). Reflecting this situated nature of leadership in knowledge creation, “decisions about who leads and who follows are dictated by the task or problem situation, not necessarily where one sits in the hierarchy” (Copland, 2003: 378). Second, the increasing demands of knowledge work make it difficult for a centralized leader to be able to lead the complex process. In this way, distributed leadership may be more beneficial than centralized leadership for enhancing the process of knowledge creation because “it is ever more difficult for any leader from above to have all of the knowledge, skills, and abilities necessary to lead all aspects of knowledge work” (Pearce and Manz, 2005: 132).

While the situational leadership framework in knowledge creation has introduced the role of distributed leadership, it has failed to account for its diversity and dynamism, presenting distributed leadership as static and monolithic. Yet, the emergent and dynamic nature of knowledge creation suggests such an approach may not fully explain how distributed leadership emerges and evolves in knowledge creation as it spirals vertically and horizontally through an increasing number of actors across different levels in an organization and across organizational boundaries (Nonaka, 1994; Nonaka et al., 2000; Nonaka and Toyama, 2003). To more fully understand the continuous, interactive process of knowledge creation that takes place intra- and inter-organizationally, it is important to develop a more complete model of distributed leadership.

Research has called for an analysis of distributed leadership to examine the processes that influence and are influenced by it (Bolden, 2011; Gordon, 2010; Gronn, 2009; McCrimmon, 2005; Pye and Knight, 2005; Youngs, 2009). Scholars suggest “the (distributed leadership) process often involves peer, or lateral, influence and other times involves upward or downward

hierarchical influence” (Conger and Pearce, 2003, p. 1). Yet, there is little research on understanding or distinguishing these forms of distributed leadership. The primary issue is not that leadership is distributed but “*how* leadership is distributed” (Spillane, 2006: 102-103). In addition, the patterns of interaction are expected to change over time (Gronn, 2000), but relatively little is known about how different forms of distributed leadership emerge and evolve (Bolden, 2011). Recognizing the dynamic and context-dependent path of knowledge creation, we seek to extend the understanding of distributed leadership by examining how different forms of it emerge, develop, and change across knowledge cycles and organizational boundaries.

METHODS

To address the gaps in our understanding of organizational knowledge creation and distributed leadership across hierarchical and organizational boundaries, we conducted a three-year longitudinal, qualitative case study of a social venture partnership between a non-governmental organization [NGO] and a nonprofit university [UNIVERSITY]³.

Research site

We selected this case for three reasons. First, it presented an appropriate opportunity for purposeful and theoretical sampling (Patton, 2002) to study leadership in organizational knowledge creation theory. The partnership received an innovation award by the leading social entrepreneurial support organization as a best-in-class example of teaching, learning, and partnership practices in the social entrepreneurship field because the organizational knowledge platform was scaled to many additional organizations. This focus and recognition provided

³ The names of the NGO and university were eliminated to assist in the double-blind review process and to increase the validity of the data as two of the co-authors were involved in the partnership.

external evidence of successful development of knowledge assets.⁴ In this way, it represented an ideal case to study the processes of organizational knowledge creation. The presence of a partnership, rather than a single organization, suggested that leadership was distributed and knowledge was created across organizational boundaries, the focus of our study (Kreiner et al., 2009; Tracey and Jarvis, 2007). The partnership also involved fewer than 30 employees, thus fitting “desirable characteristics for a study of knowledge creation” (Dyck et al., 2005, p. 395).

Second, the case provided excellent access to data, such as email records over a three-year period, because two of the co-authors were actively involved in building the partnership. This practice is relatively common in qualitative studies because it helps enhance the validity of the results by facilitating access to formal and informal conversations, as well as frequent field observations (e.g., Amabile et al., 2001; Dacin et al., 2010; Larsson, 1993; Lucas, 1974; Tracey and Jarvis, 2007). This kind of access was important “because it is difficult for researchers to gain access to ‘suitable’ organizations” for empirical studies on knowledge creation (Dyck et al., 2005, p 338). It also allowed us to collect data for a sufficient length of interaction, well beyond the two years suggested as the minimum for generating empirical insights into organizational knowledge creation theory (von Krogh et al., 2012).

Finally, the context of the partnership offered a novel setting distinct from the traditional Japanese roots where organizational knowledge creation theory was developed (Glisby and Holden, 2003; Weir and Hutchins, 2005). Specifically, the context of social entrepreneurship was deemed appropriate because of a primary focus on value creation rather than value capture (Santos, 2012). We expected this context to reduce the concern for agency and opportunism

⁴ The partnership was recently nominated for the hall of fame by the support organization due to the knowledge assets that were created by the partnership.

often associated with value capture of a for-profit organization and encourage the use of distributed leadership due to resource constraints of the partner organizations.

Brief historical background

Table 1 presents the timeline of the nearly three years we followed the partnership from inception through the development of three knowledge assets. Our data trace back to the first contact between the two organizations in November 2008, when the social entrepreneur who founded NGO was invited as a speaker at the UNIVERSITY. After the visit, the leader of the UNIVERSITY's program visited Guatemala to see the work of the NGO first-hand. In the summer, a number of undergraduate students from the UNIVERSITY participated in an internship program in Guatemala. In 2010, the partnership was officially announced at a major conference on social entrepreneurship. In 2011, a dedicated research center was established at the UNIVERSITY to serve as a knowledge repository and hosting platform for all the joint initiatives of the partnership. During the three-year period, three knowledge assets were created: (1) a pair of academic research papers about the development model of micro-consignment (hereafter, MCM), (2) a research center dedicated to building a knowledge repository about MCM, and (3) an international workshop to scale the knowledge and impact of MCM by other social entrepreneurs, academics, and investors. The MCM is a development model, building on micro-credit and micro-franchising, that uses micro-entrepreneurs to create access to basic products such as clean water and solar lamps in developing countries (Kistruck et al., 2013).

Insert Table 1 about here

Data collection

We collected data from multiple sources, including archival data, email correspondence, recordings of meetings and public speeches, PowerPoint presentations, internship program flyers, newspaper articles, follow-up interviews with key informants, and peer-reviewed articles published by the two organizations, as shown in Table 2. Based on the complete email correspondence, beginning with the first email exchange and continuing for nearly three years and 900+ emails between the key decision makers of the UNIVERSITY and NGO, we built a comprehensive event history database. This database included a record of all the activities that took place between November 2008 and June 2011 within and outside the partnership, including projects, brain-storming sessions, meetings, public speeches, and publications. We then cross-checked the database records with key informants from both organizations to enhance the validity and reliability of the data through triangulation (Jick, 1979; Tracey and Jarvis, 2007; Van de Ven and Poole, 1990). The database was organized in chronological order with a total of 187 events. Follow-up interviews were conducted with members of both partner organizations and with individuals beyond the partnership who were identified in the database.

Insert Table 2 about here

Analytical procedure

First, we identified and coded knowledge creation activities. Two co-authors, who did not participate in the data collection, independently analyzed each event against a set of established criteria to assess the pertinence to a specific process of knowledge creation. An activity was coded as ‘knowledge-creating’ when interaction moved beyond ad-hoc problem solving or

information processing to defining a specific problem and developing new knowledge (Nonaka, 1994, p. 14). For example, activities such as brainstorming sessions on scaling strategy, class discussions with the social entrepreneur, or meetings with prospective investors were considered ‘knowledge-creating’ because they implied dialogical exchanges (Tsoukas, 2009). But, we excluded activities, such as systematically listing open projects, if they did not suggest the creation of knowledge. The outcome of the coding process was a set of 63 knowledge-creation activities (e.g. “Meeting with investors”; “Brainstorming on strategy”) occurring multiple times over three years.

The second step was to “operationalize” the SECI process, including the stage of the process, the different forms of leadership, and the layer of activity. This included the number, type, and leadership role of the actors involved in each knowledge creation activity (Table 3, 4, and 5). Internal documents and communication were particularly useful in providing unbiased sources of information. To determine the stage of the SECI process, we induced criteria from extant literature on organizational knowledge creation theory. For example, to be labeled as *socialization*, activities implied a flow of knowledge from one actor to another by preserving its tacit form. Accordingly, informal meetings between students and the social entrepreneur, students’ internships in Guatemala, or data collection campaigns were classified as socialization activities because they did not presume any statement of general validity when knowledge moved from one actor to the other.

For each activity, we also identified which actor(s) assumed the role of leader(s) (as indicated in Tables 3, 4, and 5 with “*”). Two non-participating authors independently reviewed each knowledge-creation activity by identifying the role of leader(s) according to the nature of the event itself and relying on information available beyond the event-history database, such as

interviews and emails. After coding the role of leaders, we then sought to understand the various forms of leadership that emerged. Within our data, we identified three common forms:

distributed leadership at the upper echelon (DL-UE), *distributed leadership at lower hierarchical levels (DL-LHL)*, and *distributed leadership beyond partnership boundaries (DL-BPB)*. Activities were coded DL-UE when leaders of the NGO and UNIVERSITY shared leadership roles and functions. Activities were coded DL-LHL when leadership was shared with at least one middle-manager(s) at lower levels in the partnership. Activities were coded DL-BPB when leadership was shared with at least one individual beyond the two partner organizations.

We then coded each activity by the layer where it occurred (core, conditional, or structural), based on the definitions developed by Von Krogh et al (2012). Activities were coded as *core layer* when they involved the creation of practical and theoretical insights directly ascribable to the MCM model, such as data collection in the field. Activities were coded as *conditional layer* when they aimed at building the conditions to favor the development of the SECI spiral, such as a meeting with potential investors. Activities were coded as *structural layer* when the activities focused on the partnership strategy, such as setting the knowledge and scaling vision. All coding processes required substantial agreement between the coders, with open discussion resolving any discrepancies. In addition, staff members from the two partner organizations provided a final round of validation.

Next, we identified the end of one knowledge cycle and the beginning of a new cycle. Given the lack of prior relevant research, we relied on insights from the conceptual literature and utilized the concept of systemic knowledge assets to operationalize the completion of a knowledge cycle (Nonaka, 1994; Nonaka et al., 2000). We identified three main cycles of knowledge creation shown in Tables 3-5. In the final step, we created a leadership distribution

index to measure the degree of dispersed leadership ranging from 0 to 1, with higher values indicating a greater degree of dispersed forms, such as DL-BPB. To create this measure, each form of leadership was assigned a value along a continuum, ranging from 1 (DL-UE) to 5 (DL-BPB). The degree of distribution was calculated as a weighted average of the percentage of activities within each layer and each cycle.⁵

Follow-up interviews

We conducted 26 follow-up interviews to better understand the distribution of leadership across organizational and partnership boundaries. Based on the content of the emails between key decision-makers in the UNIVERSITY and NGO, we conducted 11 exploratory interviews with informants who played different roles in knowledge creation, such as students, faculty, and staff. We augmented this evidence with direct observation of the partnership and archival data from the personal diaries. To validate and extend our findings, we conducted an additional round of 15 interviews with questions focused directly on understanding the different forms of distributed leadership and how they emerged. Key informants in this round included the leader and local managers of NGO, one manager of the UNIVERSITY's research center, and one ex-student intern now employed full time by NGO. Interviews lasted 30-60 minutes and were recorded and professionally transcribed verbatim.

Two of the co-authors coded the interviews for general themes to identify key factors that led to the distribution of leadership across organizational and partnership boundaries. This allowed us to identify a set of first-order codes (Kreiner et al., 2015). In the next coding round,

⁵ The leadership distribution index assumes these forms of distributed leadership exist along a continuum ranging from more concentrated to more dispersed forms of distributed leadership. At each layer, the degree of distributed leadership was calculated as follow: $((\% \text{centralized} \times 1 + \% \text{distributed within} \times 3 + \% \text{distributed outside} \times 5) - 1) / 4$

we looked for a connection between the first-order codes to allow us to collapse the codes into a small number of second-order codes. The analysis continued, moving back and forth between data and theory, until we recognized codes related to distributing leadership across different types of boundaries (Phillips et al., 2013). Given that two of the authors were close to the case, we used internal and external member checks to mitigate the potential for bias. According to Lincoln and Guba, member check is “the most crucial technique for establishing credibility” (1985, p. 314) because it allows “the validity procedure [to shift] from the researchers to participants” (Creswell and Miller, 2000, p. 127). We used one of the co-authors, involved in the case but not involved in the coding, to provide feedback on the model. In addition, we also used the leader of the NGO as an external member of the team to provide feedback on the overall coding and process model.

FINDINGS

To preview our findings and to serve as a guide throughout this section, we developed a process map of an expanded model of distributed leadership in organizational knowledge creation. The expanded model moves beyond a monolithic and static understanding of distributed leadership by identifying the antecedents, different forms, and enablers of distributed leadership as shown in Figure 1. In our case study, we found the different forms of distributed leadership emerged expanding both vertically, occurring across hierarchical levels and horizontally, transcending organizational and partnership boundaries during the continuous spiral of knowledge creation. As the cycles of knowledge creation continued, distributed leadership beyond partnership boundaries was used more extensively to access knowledge that transcended the organizational boundary. Distributed leadership occurred not only at the core and conditional

layers but also at the structural layer, previously considered the exclusive domain of centralized leadership. We conclude with a typology of distributed leadership in knowledge creation.

Insert Figure 1 about here

Different forms of distributed leadership and their antecedents

In our study, we found substantial evidence of three forms of distributed leadership and three antecedents that emerged for each of these forms. We refer to these three forms of distributed leadership as: (1) *distributed leadership at the upper echelon of the partnership* (DL-UE), (2) *distributed leadership at lower hierarchical levels of the partnership* (DL-LHL), and (3) *distributed leadership beyond partnership boundaries* (DL-BPB).

Insert Figure 2 about here

The first form of distributed leadership we found in inter-organizational knowledge creation was DL-UE between the executive director of the NGO (hereafter, NGO leader) and the director of the center at the UNIVERSITY (hereafter, UNIVERSITY leader). This form shared leadership roles and functions across the organizational boundaries of NGO and UNIVERSITY, but *within* the boundary of the partnership as illustrated in Figure 2. For example, the UNIVERSITY leader invited the NGO leader to campus to teach the university students. In this way, the UNIVERSITY leader gave the NGO leader the opportunity to communicate explicit field knowledge about the MCM to the students that the UNIVERSITY leader could not.

Three antecedents of DL-UE were: trust, alignment, and complementary knowledge. We identified supporting evidence for the factors through follow-up interviews, as shown in Table 3.

Insert Table 3 about here

The first antecedent to DL-UE was *trust* from the shared history of the NGO and UNIVERSITY leaders. Trust enables people to take risks: "where there is trust there is the feeling that others will not take advantage of me" (Porter et al., 1975: 497). In this way, trust served as an important foundation for engaging in the distributed leadership between the UNIVERSITY and NGO leaders. As the UNIVERSITY leader suggested, "As fate would have it, I guess we had a couple of things in common. We were both marketing majors who graduated from the UNIVERSITY in the same year, and we both developed a passion or calling in the area of social entrepreneurship." Both leaders also had many shared friends. As the NGO leader said, "We've got the intentions of trust and respect at the start of the relationship, and we started to build on that." The second factor that facilitated DL-UE was *alignment*. This alignment was a macro-level agreement of how knowledge creation occurs, regardless of the organizational boundary. For example, as the NGO leader reflected on their distributed leadership, he suggested:

We are pretty much 100% aligned...we have lots of judgment that we each have to make in our partnership, but what keeps us true – our North Star – include common beliefs on things like do no harm, dignity, respect, sustainable solutions, creating opportunities for marginalized people, and critical success factors. We have total confidence in where the other person is coming from.

This alignment allowed the two to more easily to share leadership functions. As the NGO leader commented, "We believe in a certain philosophy and approach to do this kind of work and this allowed us to distribute knowledge, experience, and opportunities."

The third antecedent of DL-UE was *complementary knowledge*. Complementary knowledge is generally considered to be similar to the primary base of knowledge but without substantial overlap. In this way, complementary knowledge facilitates efficient transfer through similarity but extends the initial base of knowledge in important ways (Buckley and Carter, 2004). As such, complementary knowledge served as an important mechanism to facilitate distributed leadership. For example, the UNIVERSITY leader remarked to the NGO leader, “From my vantage point, I learned about your knowledge and was willing [for you] to come teach my class because you had an awful lot of knowledge I didn’t have – knowledge that you built up by experience, knowledge that you built up by learning and by doing.” The complementary knowledge of the NGO leader made it easier for the UNIVERSITY leader to share the role of disseminating knowledge to a class.

Secondly, we found distributed leadership occurred at least partly at lower levels of the organization. This form of DL-LHL occurred among people at different hierarchical levels of the partner organizations. For example, Table 5 shows how in cycle 2 of the knowledge creation process, the UNIVERSITY leader shared leadership roles with NGO middle managers to collaboratively pilot an online pre-departure course for preparing students to work with the NGO in developing countries.

We found three antecedents for DL-LHL: trusted introduction, contextual knowledge, and empathy. First, the distributed leadership was facilitated by a *trusted introduction*. The use of a trusted introduction conveyed credibility and legitimacy not only across the organizations but also across levels of the organization. The credibility and legitimacy across levels was important because the lower hierarchical level lacked the formal power associated with a positional rank of the upper echelon. As one of the NGO middle-managers described:

I think of it like a wall, indicating the boundaries of the organization. People like our NGO leader and UNIVERSITY leader are able to speak above the wall, but other constituents aren't. The minute the NGO leader facilitates a trusted introduction between me and the UNIVERSITY leader, the wall crumbles a little bit and is lowered so I can now see and speak above the wall. This visibility and recognition allows for the transfer of knowledge, resources, and activities that span the organizational boundary.

Second, the DL-LHL was facilitated by *contextual knowledge*. In the process of knowledge creation, it was often the knowledge worker at the lower hierarchical level that understood how things worked at an operational and local level. This type of knowledge of contextual knowledge was important for developing effective knowledge assets. For example, in the development and testing of the online course, the UNIVERSITY leader suggested:

The field staff of the NGO provided us with contextual understanding of place in which learning was going to take place. While the NGO leader possessed some of this information, the understanding of the field staff was more current and fully reflected the local conditions for the approaching summer.

At other times, the NGO middle-level managers and UNIVERSITY students shared DL-LHL. For example, the NGO staff and UNIVERSITY students shared leadership to run the program in Guatemala. One student explained:

I just finished my first week of work in the field, and it was amazing. I was able to lead a project as a consultant on marketing and publicity, explain the products, such as a new solar light, do a ton of publicity on campaigns to sell items, and then actually gave a bunch of eye exams.

At this level, we found a third antecedent of DL-LHL: *empathy*. Empathy is defined as an affective state that stems from the apprehension of another's emotional state or condition. It includes a congruence with this affective state and can include vicarious experiencing of the emotions of another or emotional matching with others (Eisenberg and Miller, 1987). In our study, empathy was found to be a tool that facilitated DL-LHL by providing a more complete understanding and appreciation of another's perspective that enabled the distribution of

leadership to that person because of the increased understanding. One NGO staff member suggested:

I was there to truly live alongside of them to work to overcome challenges together. That was communicated oftentimes in broken Spanish, but the time spent living in the homes of families, abiding by cultural norms, and simply offering a willingness to learn made all of the difference.

The third form of distributed leadership we found in inter-organizational knowledge creation was DL-BPB. This form was most surprising because it also extended leadership to people beyond the formal boundary of the partnership. For example, Table 6 shows how researchers outside the UNIVERSITY were brought in to lead a research project. While the UNIVERSITY leader initiated partnership, much of the research project was led by a university leader from another institution. And, the NGO leader was willing to share leadership beyond the partnership to *share and mitigate risk*: “Research is, well, exploratory. When it comes to distributing leadership, I was willing to do this because the research gave us an opportunity to learn something new about our model with very little use of our own resources.”

Another example of DL-BPB included involving other social entrepreneurial leaders to scale MCM to new geographies, as shown in Table 6. In this context, another antecedent of DL-BPB was *shared passion*. Entrepreneurial passion is defined as “consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the identity of the entrepreneur” (Cardon et al., 2009: 519). In our study, the entrepreneurial passion centered on the social impact of the work and became a common binding mechanism for partners beyond the partnership and overrode agency concerns of moral hazard and opportunism. The shared passion aligned the goals among the organizations of the DL-BPB. For example, a NGO staff who participated in the expansion efforts recalled:

In the case of expansion to Peru, the NGO leaders were looking to share leadership to scale the model. However, the social entrepreneur partner had to be not only equally passionate about being a part of a global solution to eradicate poverty generally but also passionate about learning from and implementing the model of MCM specifically.

In a similar way, *mutual accountability* served as another antecedent for DL-BPB. Consistent with shared passion, the notion of mutual (rather than individual) accountability allowed the distributing of leadership beyond the partnership boundaries while reducing agency concerns. As the UNIVERSITY leader explained, “While scaling of knowledge and impact is nice, it is not possible unless there is mutual accountability from both parties.” A NGO staff member reiterated, by saying:

It’s a mutually beneficial activity for NGO and the social entrepreneurial organization. It is an opportunity for them to contribute and serve a mission they are passionate about with their unique skill sets. But, this benefit only happened when there was a clearly articulated and consistent relationship.

In conclusion, we found three different forms of distributed leadership and identified antecedents to these various forms in this case study. DL-UE was facilitated by trust, alignment, and complementary knowledge. DL-LHL was facilitated by a trusted introduction, contextual knowledge, and empathy. DL-BPB was facilitated by mitigated risk, shared passion, and mutual accountability. We now focus on the enablers of distributed leadership.

Enablers of distributed leadership

In addition to the antecedents and different forms of distributed leadership, we also identified three enablers of distributed leadership in organizational knowledge creation. Each of these conditions led to an increased reliance on distributed leadership over the course of our study. The three enablers of distributed leadership were: task complexity, resource constraints, and successful usage of distributed leadership.

While the creation of new knowledge is often considered complex, we found the *task complexity* of the potential knowledge asset to lead to a willingness to distribute leadership. For example, in the second cycle of knowledge creation, the task complexity of designing a MCM center contributed to distributing leadership beyond partnership boundaries (DL-BPB). As the UNIVERSITY leader explained, “The task complexity of designing the components of a center, especially the research components, required us to leverage not only the knowledge of those within our two organizations but also to reach beyond our organizations.” In turn, task complexity led to an increased number of knowledge activities, from 10 in the first cycle to 19 in the second cycle, and the number of knowledge workers increased, from 70 in the first cycle to 225 in the second cycle. In this way, task complexity increased the usage and reliance of different forms of distributed leadership in the process of knowledge creation.

The second enabler of distributed leadership were *resource constraints*. In the context of the social venture partnership, the NGO was attempting to tackle a major problem of creating access to basic products in developing countries. However, their funding was very limited. As a result, the NGO was willing to share the leadership function of knowledge creation across organizational and partnership boundaries to scale the impact of their work. As the NGO leader suggested, “In order to scale our work with limited time and resources, while maintaining quality, we have found that distributed leadership is essential.” As the knowledge work and scaling progressed, so too did the distribution of leadership, with DL-UE vertically extending across organizational hierarchies to DL-LHL to horizontally extending to DL-BPB across partnership boundaries.

In our study, the third enabler of distributed leadership was the *successful usage of distributed leadership* in the past. While distributed leadership is a departure from the more

traditional and common view and usage of centralized leadership, we found that successful experimentation with distributed leadership in organizational knowledge creation led to a greater willingness to engage in additional and more distributed forms of leadership. As the NGO leader explained, “In our experience, I would say that successful distributed leadership begets more distributed leadership.” As the use of DL-UE was effective, the leader of the NGO was willing to distribute leadership to lower hierarchical levels within and across organizational boundaries. As the NGO leader continued, “We first began doing this with the UNIVERSITY leader and his team, and then naturally, we engaged with new partners who shared the same ethos we used the same approach.” Finally, we found that the practice of distributing leadership can become embedded in an organization. The NGO leader concluded, “This distributed leadership approach became a new ‘muscle’ that we strengthened through use and continued to use it...Once we began distributing leadership, we found it became not only an effective strategy, but it became instilled in our culture...We began to create structures, systems, and culture whereby everybody feels empowered to be a leader.” We now focus on how different forms of leadership occurred across cycles of knowledge creation.

Evolution of distributed leadership across cycles and layers over time

To better understand how different forms of distributed leadership changed over time, we examined the three cycles of knowledge creation activities over time. The first cycle lasted nine months, included 10 knowledge creation activities and 70 knowledge workers, and resulted in the two academic journal articles about MCM, as illustrated in Table 4. In this cycle, we found evidence of DL-UE and DL-LHL. The two forms were not equally represented, with the DL-UE leading the majority (80%) activities, as summarized in the last column (“Total”) in Table 4.

Insert Table 4 about here

The second cycle of knowledge creation also lasted nine months, comprised 19 knowledge creation activities and 225 knowledge workers, and resulted in the creation of the Center for MCM. In this cycle, we found all three forms of distributed leadership. In the second cycle, we again find a substantial use of DL-UE and some use of DL-LHL. Similar to the first cycle, the DL-LHL still generally involved at least one of the senior leaders from the NGO or UNIVERSITY. Again, DL-UE led the majority (60%+) of the knowledge creation activities, with DL-BPB representing more than 20%. as shown in Table 5. Yet, DL-BPB included more than one-fifth of the total knowledge creation activities, resulting in the second knowledge asset, which served as an input into the third knowledge creation cycle. For each activity, DL-BPB always involved at least one of the senior leaders of the NGO or UNIVERSITY, suggesting a horizontal distribution across the partnership boundary.

Insert Table 5 about here

In the third cycle of knowledge creation, which comprised 34 knowledge creation activities and 684 knowledge workers and lasted 14 months, we again found that all forms of distributed leadership contributed to develop the knowledge asset – an international workshop to promote scaling of MCM. In this cycle, all three forms of distributed leadership are used, with DL-UE still substantially represented (29%) and DL-BPB is the most prominent form,

representing the majority (65%) of the knowledge creation activities, as shown in Table 6. In this cycle, DL-BPB did not always include UNIVERSITY or NGO DL-UE.

Insert Table 6 about here

Across the three knowledge creation cycles, we found an increasing number of activities, from 10 in the first cycle to 34 in the third. We also find a decreasing reliance on DL-UE, from 80% in the first cycle to 29% in the third. In addition, we found a substantial increase in DL-BPB leading knowledge creation, from 0% in the first cycle to 65% in the third, as seen in Figure 3.

Insert Figure 3 about here

Next, we examined the different forms of distributed leadership within and between the formal and informal layers of organizational knowledge creation across cycles. As previously described, we created a leadership distribution index to measure the degree to which individuals shared leadership across organizational levels and boundaries, ranging from 0 to 1. The higher numbers reflected a greater degree of distribution, such as DL-BPB. In the first cycle, we found differences in the form of distributed leadership at the different layers of activity. In the core layer, DL-UE led 60% of the activities. In the conditional and structural layers, DL-UE led 100% of the activities. Thus, in the first cycle, the leadership distribution index was 0.20 at the core layer and 0 at conditional and structural layers, suggesting the organizational knowledge creation activities at all layers were largely dependent on the NGO and UNIVERSITY leaders. This is seen in the overall leadership distribution index of 0.10.

In the second cycle, we found a shift toward more dispersed forms of distributed leadership in knowledge creation at the core and conditional layers. At the core layer, DL-UE led 25% of the knowledge creation activities, DL-LHL led 25%, and DL-BPB led 50%. At the conditional layer, DL-UE led 75% of the knowledge creation activities, and DL-LHL led 25%. At the structural level, DL-UE led 100% of the knowledge creation activities. In this cycle, the leadership distribution index was 0.63 at the core layer, 0.13 at the conditional layer, and 0 at the structural layer. The overall degree of dispersion was 0.29, suggesting the leadership was more dispersed, and led by more dispersed forms than in the first cycle.

In the third cycle, we continued to find a shift toward more DL-BPB across all layers of activity. DL-BPB accounted for 70% of the activities at the core layer, 90% of activities at the conditional layer, and more than 40% of activities at the structural layer. In the third cycle, the leadership distribution index was 0.70 at the core layer, 0.90 at the conditional layer, and 0.50 at the structural layer, as shown in Table 8. The overall leadership distribution index was 0.68, suggesting the leadership was substantially dispersed throughout DL-BPB. Overall, the degree of leadership distribution increased at each layer (core, conditional, and structural) and across each of the three cycles of knowledge creation, as shown in Figure 4.

Insert Figure 4 about here

A typology of distributed leadership

To integrate our findings with the literature on distributed leadership, we developed a 2 x 2 matrix identifying a typology of different forms of distributed leadership, as shown in Figure 5. While we found substantial evidence of three forms of distributed leadership, we also found

initial evidence of a fourth form of distributed leadership occurring beyond partnership boundaries, suggesting DL-BPB boundaries may occur at the upper echelon or at lower hierarchical levels beyond the partnership. While this only occurs in a few activities⁶, it does provide some initial evidence of vertical (within the partnership) and horizontal (beyond the partnership) distributed leadership that results in the third cycle of knowledge creation.

Insert Figure 5 about here

The top axis refers to the *horizontal* distribution of leadership that ranges from within to beyond a certain organizational boundary. In our study, the organizational boundary of the partnership formed this demarcation. The left side axis refers to the *vertical* distribution of leadership along the hierarchical levels of an organization, ranging from the lower hierarchical levels to the upper echelon of organizations. These axes form a matrix detailing four distinct forms of distributed leaders. The first form we label as *lateral internal distributed leadership*. This form refers to leadership that is distributed only at the upper echelon of the organization and within organizational boundaries as shown in the upper left hand box. In our study, this was referred to as DL-UE. The second form we label as *vertical internal distributed leadership*. This form refers to leadership distributed with at least one leader at the lower hierarchical level of the organization and within the boundaries of the organization as shown in the lower left hand box. This was referred to as DL-LHL in our study. As previously described, the third and fourth forms of distributed leadership were integrated into a single label in our study referred to as DL-BPB. In the matrix, we separate these categories for conceptual clarity. The third form is *lateral*

⁶ As this form of distributed leadership only occurs in a few activities, we did not separate DL-BPB into a vertical and horizontal category in the primary analysis. However, its presence is important for advancing our understanding of how leadership is distributed in organizational knowledge creation.

external distributed leadership. This refers to distributed leadership at the upper echelon of two organizations with at least one leader beyond an organizational boundary and is shown in the upper right hand box. The fourth form we label *vertical external distributed leadership*. This form of distributed leadership occurs when at least one leader at lower hierarchical levels is beyond the organizational boundary. The typology of different forms of distributed leadership is an important step forward for the literatures on distributed leadership and leadership within organizational knowledge creation. In our case, we found that distributed leadership progressed sequentially through its various forms, beginning with lateral internal DL, continuing with vertical internal DL, then moving to lateral external DL, and concluding with some initial examples of vertical external DL.

We show how different forms of distributed leadership emerge in a sequence, beginning with lower degrees of distribution and advancing to greater degrees. This sequence starts at the upper echelon through lateral internal distribution (upper left box), and is followed by more dispersed leadership to lower hierarchical levels through vertical internal distribution (lower left box). After gaining experience and success with these forms of distributed leadership, leaders are more willing to distribute leadership horizontally beyond the boundary of the partnership at the upper echelon through lateral external distribution (upper right box) and is followed by more dispersed leadership beyond the partnership boundary at lower hierarchical levels through vertical external distribution (lower right box).

DISCUSSION

In this study, we sought to increase our understanding of how organizations employ distributed leadership during the knowledge creation process over time by examining a three-

year social venture partnership. Our findings contribute to research on leadership in organizational knowledge creation, distributed leadership, and social entrepreneurship.

An expanded model of distributed leadership in knowledge creation over time

First, we make a theoretical contribution to the situational leadership framework in organizational knowledge creation (von Krogh et al., 2012). One of our primary contributions is the development of an expanded model of distributed leadership in organizational knowledge creation. While the situational framework refers to distributed leadership as a single configuration (von Krogh et al., 2012), we find distributed leadership occurs in several different forms throughout the process of knowledge creation. Our expanded model identifies a wider and more complex range of possible forms of distributed leadership in knowledge creation. It also responds to the calls to better understand not only *how* leadership itself is distributed (Spillane, 2006), but also how different leadership forms may interact with one another within a ‘hybrid configuration’ of practice (Gronn, 2009). Our model illustrates the prominence and sequencing of distributed leadership across layers, cycles, and time.

As an initial empirical study, we find similarities but also important differences to the proposed situational framework of leadership. Consistent with the framework, we found distributed leadership is used at both the core and conditional layers of leadership strata to transform the potential of *Ba*, formalize the practice of SECI processes, provide knowledge assets, and motivate knowledge activists. However, we also found distributed leadership has a more prominent role and takes many different forms than previously theorized. We found distributed leadership was prevalent in the structural layer of leadership strata, extending beyond the primary domain of centralized leadership. At the structural layer, leadership was used to

formulate a knowledge vision, create incentives, and coordinate access to knowledge assets across *Bas*. Yet, contrary to theory, these functions were carried out through distributed leadership in our study. Although the situational model of leadership acknowledges the importance of distributed leadership, it may not go far enough in explicating how and why distributed leadership enables knowledge creation throughout the organization and beyond its boundaries. It may even be the case that distributed leadership structures are *more* important to certain aspects of knowledge creation, especially as organizational forms and inter-organizational relationships grow in variety and complexity. Future research should examine how and why centralized and distributed leadership may be effective compliments or substitutes for one another in facilitating knowledge creation.

Our expanded model highlights the importance of this temporal dimension often lacking in managerial and organizational studies (Lee and Liebenau, 1999; Mosakowski and Earley, 2000). While the theory of organizational knowledge creation suggests a spiral of knowledge creation over time (Nonaka, 1994), very few studies capture more than a single cycle of knowledge creation (for two exceptions, see Dyck et al., 2005; and Peltokorpi et al., 2007). This is surprising given its importance to theory which suggests a stable leadership structure at each layer of activity (von Krogh et al., 2012). In our case, we link the changes in micro-level knowledge activities with the changes in macro-level leadership configurations. The different forms of distributed leadership changed across each layer of activity (core, conditional, and structural) and across each cycle of knowledge creation, with leadership being more distributed across organizational boundaries over time due partly to successful experience with distributed leadership in previous cycles and forms. This sequence suggests a path dependence and identifies the importance of learning effects of distributed leadership (Brown and Hosking, 1986). In this

way, we are able to show the self-reinforcing and dynamic nature of the knowledge creation spiral and the ways in which the successful distribution of leadership amplifies organizations' knowledge creation capabilities over time. Failure to include these changes may limit the generalizability of the framework to different cultural settings and temporal situations (Glisby and Holden, 2003; von Krogh et al., 2012; Weir and Hutchins, 2005). Therefore, the framework, designed to overcome universalistic assumptions by leveraging a situational leadership model, will suffer from the same critiques it was designed to alleviate. Understanding the sequencing of distributed leadership may be crucial to understanding an organization's likelihood, willingness, and effectiveness in employing distributed leadership for knowledge creation. Future research should consider a longer time horizon as elements may continue to change during the spiral of knowledge creation.

For the literature on distributed leadership, our expanded model brings together disparate strands of research on distributed, shared, and collective leadership by specifying different categories of how leadership may be distributed. We show how these forms may be identified and measured, may relate to each other, and may occur across organizational boundaries (Bolden et al., 2009; Conger and Pearce, 2003; Collinson and Collinson, 2009; Gronn, 2009). A better understanding of distributed leadership forms may help reconcile the inconsistent evidence of their impact on organizational performance (Harris, 2009). Our leadership distribution index may enable researchers to capture the degree of horizontal and vertical leadership distribution within and beyond organizational boundaries. This approach adds to the sparse research that attempts to measure distributed leadership (e.g., Carson et al., 2007) and complements social network approaches (e.g., Mehra et al., 2006), which focus on the relational distribution as measured by network density or centrality (D'Innocenzo and Mathieu, 2014). We offer an explanation by of

spatial distribution within and beyond organizational boundaries, more consistent with structuration theory (Giddens, 1984) and identify the four forms of distributed leadership and the leadership distribution index as a scaffold for future research.

Inter-organizational boundary transcendence

Our study also contributes to the understanding of organizational knowledge creation and distributed leadership *across* organizational boundaries. While much of the research on organizational knowledge creation and distributed leadership has been conducted within a single organization (Bereiter, 2002; Bolden, 2011), the promise of the spiral of knowledge creation rests on extending across organizational boundaries to access new forms of knowledge, knowledge contexts, and knowledge activists (Nonaka, 1994; Nonaka et al., 2000). Ours is one of the few studies to examine organizational knowledge creation theory at the inter-organizational level (Bereiter, 2002; Peltokorpi et al., 2007).

We found leadership to be an important mechanism for stretching over the organizational boundary. Antecedents such as shared passion and mutual accountability contributed to distributed leadership across organizational boundaries while limiting the opportunistic and exploitation concerns of inter-organizational learning (Larsson et al., 1998). While prior research on organizational knowledge creation has identified the importance of ‘self-transcendence’ to move beyond the boundary of the individual, we found that distributed leadership is one mechanism for organizational boundary transcendence crucial to accessing new knowledge, extending the knowledge context, and advancing the theorized spiral of knowledge creation (Nonaka et al., 2000; Nonaka and Toyama, 2003). For example, the distribution of leadership across organizational boundaries in the second cycle of our study led to field-based research and

the creation of the second knowledge asset of the center as a knowledge repository. This knowledge activity and asset would not likely have come into existence if the NGO leader would have been unwilling to distribute leadership outside the organizational boundary to gain access to the knowledge activists of other faculty researchers. As the second knowledge asset of the center contributed to the development of the third knowledge asset of international workshop, a primary reliance on centralized leadership or distributed leadership within organizational boundaries may have minimized (or eliminated) the trajectory of the spiral of knowledge that led to the international workshop. In our case, distributed leadership across organizational boundaries led to the realization of the spiral of knowledge. While our study focused on the effective creation of organizational knowledge through distributed leadership, it is also possible that distributed leadership, like centralized leadership, may lead to negative outcomes such as distributed incompetence (von Krogh et al., 2012). Future research will need to examine how different forms of distributed leadership may or may not lead to effective outcomes, opportunity costs, and the potential dark side of distributed leadership.

We also augment the sparse research on the antecedents of distributed leadership across organizational boundaries (e.g., Bolden, 2011; Carson et al., 2007). Our findings complement antecedents such as internal team environment and external mentoring in distributed leadership (Carson et al., 2007). This is an important step in setting the foundation for studying distributed leadership in different organizational arrangements, including joint ventures, alliances, and partnerships. In our study, different boundaries are associated with different antecedents, suggesting the importance of specifying the type of organizational boundary and level of analysis in future research.

Knowledge creation in the context of social entrepreneurship

Our findings extend prior research on organizational knowledge creation to the context of social entrepreneurship. In this way, we extend the generalizability of constructs and processes of distributed leadership generally studied in the education sector and organizational knowledge creation often examined in a Japanese context (Gronn, 2002; Nonaka, 1994). The context of social entrepreneurship is useful because its primary focus on value creation reduces some of the agency costs often associated with value appropriation (Santos, 2012), thereby allowing us to better understand the dynamics of knowledge creation as it develops over time with limited self-interested contingencies. This approach is consistent with research in social entrepreneurship where scholars attempt to understand the boundary conditions of management theories (e.g., Kistruck et al., 2013).

While these patterns of distributed leadership in knowledge creation occurred in social entrepreneurship, we believe they also apply to a range of organizational settings that share similar attributes and desired outcomes including those with more porous boundaries and a stronger social orientation. Research on open innovation, joint ventures, and strategic alliances often use more porous boundaries in high technology environments characterized by high task complexity and severe resource constraints (Chesborough, 1998), similar to our study. For example, open innovation is often pursued in conjunction with knowledge partners or innovation intermediaries such as universities. Our study may help inform the types of distributed leadership structures that may be useful and need to be developed in these environments. Insights from our expanded model may inform partner selection that move beyond technical capabilities to focus on distributed leadership capabilities in inter-organizational partnerships and alliances especially in open innovation (Larsson et al., 1998). Such an approach may highlight the need for training and development in distributed leadership within and across organizations to fully leverage the

potential benefits of knowledge creation (von Krogh et al., 2012). Training may include: constructing leadership groups, giving and receiving influence in organizational processes, and increasing teamwork and communication skills up and down an organization (Pearce and Sims, 2002). In these ways, our findings illuminate a path to maximizing knowledge creation in more open organizational settings.

We also provide insights into pursuing and partnering with organizations focused on social value creation by providing a better understanding of the factors and leadership structures that may drive those organizations. As many publicly-held corporations pursue some form of corporate social responsibility internally or through partnerships with NGOs (Margolis and Walsh, 2003), our model informs how leadership may be distributed internally or externally in pursuit of social or hybrid goals. Despite these potential commonalities, additional research is needed in contexts such as open innovation and corporate social responsibility to better understand how our findings may generalize to other contexts where value appropriation is still an important consideration.

Our findings also contribute to entrepreneurship and social entrepreneurship. Entrepreneurs seek legitimacy by making identity claims of ‘who they are’ and ‘what they do’, often before such claims are even fully developed (Navis and Glynn, 2011). While knowledge creation is often viewed as an organizational output, it also influences the nature of who organizations become especially for entrepreneurial organizations (Nonaka et al., 2006). As illustrated in our case study, the leaders within and outside of entrepreneurial organizations must be aligned as they lead the knowledge creation process because it shapes the entrepreneurial identity claims of who the organization becomes and what they do in the future. When multiple leaders are aligned, they advance the knowledge and goals of the organization. However, when they are moving in

different or fragmented directions, the outcomes and identity claims of the entrepreneurial organization may be marginalized (Mehra et al., 2006).

Our study also contributes to the literature on social entrepreneurship. Social entrepreneurial organizations seek to solve some of the world's most intractable social problems by developing a solution to the social problem and scaling the solution to other impacted areas or people (Dees et al., 2003). As a result, scaling is widely considered one of the most important dependent variables in social entrepreneurship research (Bloom and Chatterji, 2009), and the drivers of scaling are generally considered to be different forms of capital and capabilities (Bloom and Chatterji, 2009; Bloom and Smith, 2010). Our study suggests that distributed leadership may serve as important capability used in the scaling up of social impact because it may allow organizations to access and create new knowledge, especially beyond organizational boundaries. Given the common mismatch between the size of the social problem (e.g., poverty) and the size of the organization targeting the problem (e.g., startup social entrepreneurial organization), the development of a distributed leadership capability holds tremendous promise for scaling by gaining new access to knowledge partners, activists, and contexts. However, scaling through partnership – especially across an organization's hierarchy and boundary – may lead to positive or unproductive outcomes, depending on the alignment, identity, and motivation of the leaders (Smith et al., 2014). Future research on scaling of impact and knowledge in resource-constrained environments may benefit from close attention to the role that different forms of distributed leadership play.

Practical implications for distributed leadership and knowledge creation

In addition to advancing research, our findings offer a number of practical implications. First, it is useful for organizational leaders and managers to understand that not all forms of distributed leadership are created equal. Leaders and managers need to be intentional about how they distribute leadership internally and externally and how they foster the conditions that lead to different forms of leadership in the knowledge creation process. Second, leaders and managers may gain a greater appreciation that knowledge creation is more an evolving process than a snapshot. In this way, leaders need to continually gain and share institutional knowledge to understand how previous cycles of knowledge creation influence the current cycle, how the current contributes to future cycles, and how different forms of leadership may enable or constrain these cycles. Third, leaders and managers may gain insights about how successful distributed leadership begets more distributed leadership. This may require training on ways to facilitate distributed leadership and encourage opportunities to experiment with distributed leadership in appropriate situations.

LIMITATIONS and CONCLUSION

Our work extends the influential theory of organizational knowledge creation and the role of distributed leadership in the knowledge creation processes. We develop an event-history database and fine-grained qualitative evidence from access to rich data based on involvement in a social venture partnership. In line with work in similar settings (e.g. Thompson and MacMillan, 2010), two of the co-authors were also involved with the partnership and provided a unique, ‘behind-the-scenes’ access that strengthened the theoretical sampling rationale for our single case. These strengths also bring important limitations.

First, we acknowledge the usual limitations to generalizing from a single case study. While our investigation demonstrates the generalizability of organizational knowledge creation theory beyond studies in Japanese settings, we recognize that the setting of social entrepreneurship does not apply to all organizational settings, especially given the focus on value creation. Second, we relied primarily on three years of email exchanges between the leaders of the two organizations, and this type of data may not fully capture the spectrum of communication in the partnership. To mitigate this concern, we complemented our email correspondence with other forms of data collection, including 26 interviews and member checks. Though our inclusion of two authors insured the representativeness of the results, it may also raise concerns about the objectivity of the findings. We tried to counterbalance these concerns by giving responsibility to the other co-authors in the development of the event-history database and of the coding structure based on qualitative data. This approach is consistent with other important organizational studies that leveraged author participants (e.g., Tracey and Jarvis, 2007).

Our study focuses exclusively on the role of distributed leadership in knowledge creation. As much research has been conducted on centralized leadership and our data provided unique access to understanding the collective leadership of the partnership, we focused exclusively on distributed leadership. Therefore, we cannot make claims about how centralized and distributed leadership may interact. This approach was taken because of the vast literature on centralized leadership and the limited research on distributed leadership. Future studies will need to assess the interaction of both forms of leadership within and across organizations. Finally, we developed a process model in which different forms of distributed leadership contribute to organizational knowledge. In our

model, leadership emerges in the creation of knowledge. However, we recognize the role of leadership and knowledge creation may be mutually recursive and motivated by individual level factors, as mentioned in the discussion.

In conclusion, we investigated how different forms of distributed leadership emerge during inter-organizational knowledge creation over time in the context of social entrepreneurship. Our findings move beyond a static and monolithic understanding of distributed leadership to illustrate how an expanded model informs the situational leadership framework and spiral of knowledge creation across an organization's hierarchy and boundary. While our study contributes to this area, we hope our study also encourages future work at the intersection of leadership and organizational knowledge creation across organizational boundaries.

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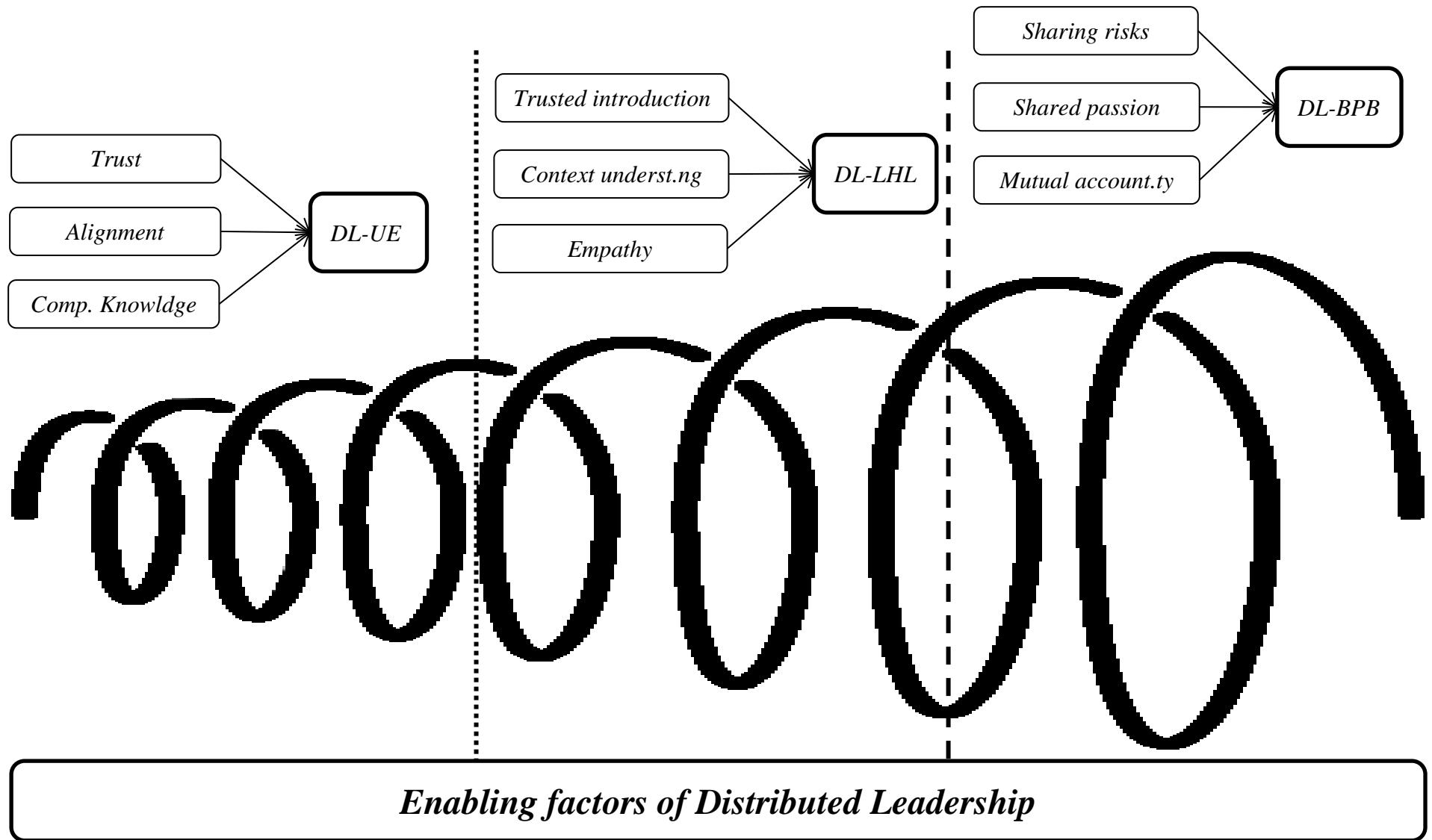
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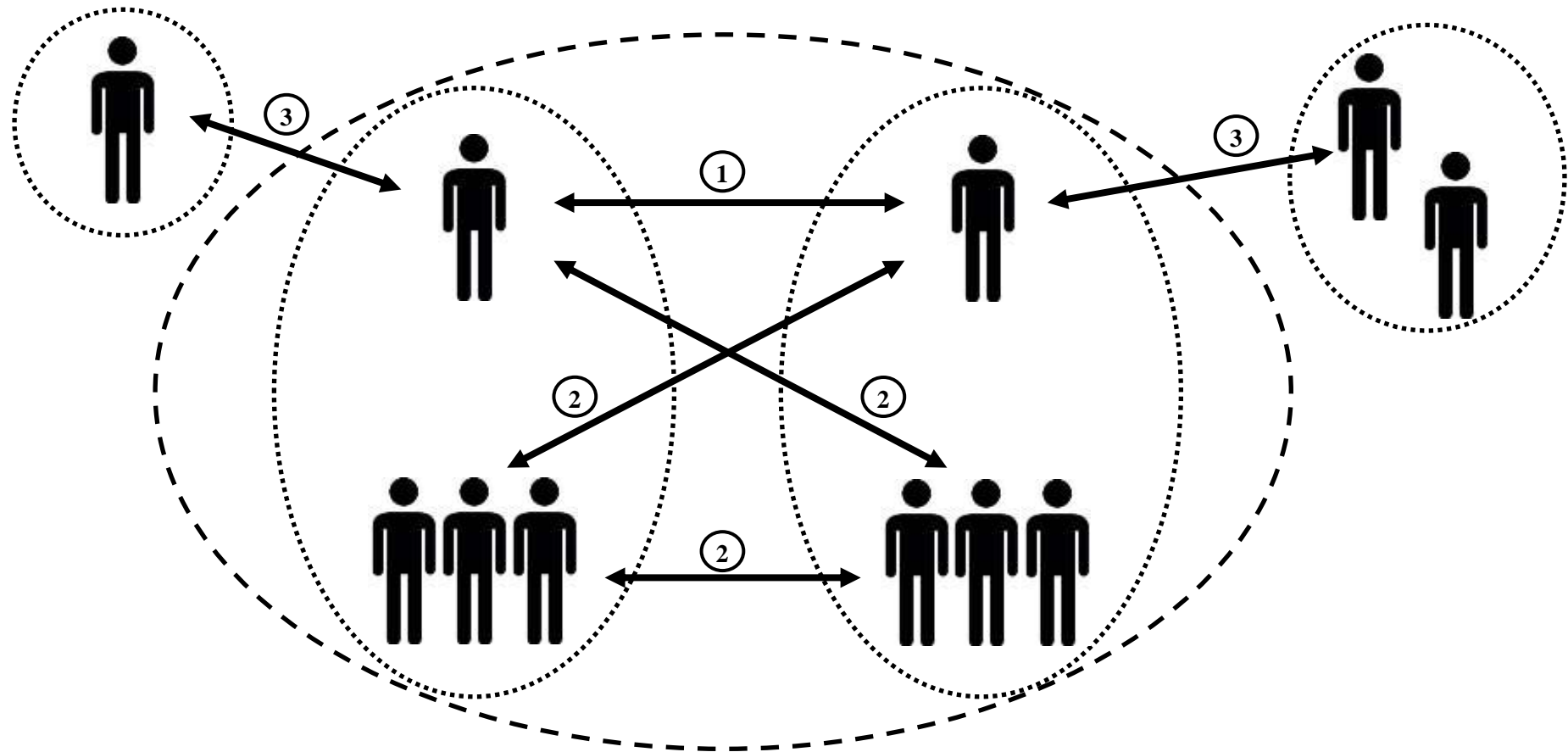
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Figure 1 An expanded model of distributed leadership in organizational knowledge creation



- Organizational boundary
- - - Partnership boundary

Figure 2 Different forms of distributed leadership



..... Organizational boundary

- - - Partnership boundary

- ① Distributed leadership at the *Upper Echelon Level (DL-UE)*
- ② Distributed leadership at the *Lower Hierarchical Level (DL-LHL)*
- ③ Distributed leadership *Beyond the Partnership Boundary (DL-BPB)*

Table 1 Timeline of the partnership

Date (month)	Event	Description
November 2008 – April 2009	First contact	The social entrepreneur gives lecture at the mid-western university. About 10 students interested in the internship program in Guatemala. UNIVERSITY commit \$ 10.000 to support internships. First visit of the faculty leader in Guatemala.
May 2009 – August 2009	First internship program	Five students from the mid-western university join the internship. The social entrepreneur and the faculty leader write together an article on MCM.
September 2009 – December 2009	New research program	New research program involving two faculty members from another major US university. First data collection in Guatemala. New internship programs are conceived. The social entrepreneur receive the Ashoka Globalizer nomination. The MCM model is presented by the faculty leader in a workshop in Milan. Mid-western university receive funding from a major foundation to develop a workshop model on MCM.
January 2010 – March 2010	Planning the center for MCM	First brainstorming about a center fully dedicated to MCM. UNIVERSITY provide funding for the development of an on-line course on MCM. First contact with potential investors and sponsors. Explore opportunity for collaboration in teaching and researching MCM with faculty members from other universities.
April 2010 – July 2010	Growing up	Meetings with several multinational companies to create distribution synergies through MCM. Meeting with social entrepreneurs to replicate the model in South Africa, Asia and South America. A former student from the mid-western university is employed full time by the social organization. The social entrepreneur is included in the Siemens “Tech for Human Needs”.
August 2010	Ashoka Change maker Award	The social organization won the Ashoka Change maker Award. Exploration of new sponsor opportunities with multinational companies and social investment funds.
September 2010 – November 2010	Partnership officially announced	Press release announcing the partnership between the social organization and UNIVERSITY. Partnership with a ear devices producer for distribution through MCM. Faculty leader gives lectures on MCM to other universities in US. Meeting with potential donors and investors to support the center for MCM.
December 2010	Fund raising for the center for MCM	First funding to the center for MCM.
January 2011	The center for MCM win the Ashoka U Excellence	Center for MCM awarded at the Ashoka U Excellence. Social organization reach the final six at Schwab Foundation. Funding to the social organization form a major foundation in US.
April 2011	First annual workshop on MCM in Guatemala	First annual workshop in Guatemala on MCM, involving about 40 people among social entrepreneurs, academics, sponsors and investors from around the World.

Table 2 Data sources

Data sources	Type of data	Use in the analysis
Archival data	Email exchange between the leaders of the two organizations > 900 emails (1109 pages) between the leader of NGO and the director of the Center for Social Entrepreneurship at UNIVERSITY between Nov. 2008 and Jun. 2011.	Building a comprehensive event history database including all the knowledge creating events occurred under the period of observation. Concept coding for the follow-up qualitative analysis.
	Miami students diaries during internships at CES Scanned copies of 6 diaries (60 pages) written by UNIVERSITY students over internship periods at CES.	Favoring a deeper understanding of the knowledge created during the internship periods. Concept coding for the follow-up qualitative analysis.
	Peer-reviewed articles about Micro-Consignment 3 papers on Micro-Consignment model published in academic journals or presented to conferences/seminars.	Deeper understanding of the object around which knowledge is created (i.e. Micro-Consignment model) and acknowledgement of the knowledge assets.
	Communication materials Ppt presentations, recording of meetings and newspaper articles on either the Micro-Consignment model, the institutional partnership or the internship program offered by NGO.	Building a comprehensive event history database including all the knowledge creating events occurred under the period of observation. Deeper understanding of the object around which knowledge is created (i.e. Micro-Consignment model) and acknowledgement of the knowledge assets.
Interviews	Cross-check interviews Ongoing interaction with staff members of both NGO and UNIVERSITY over the entire period of quantitative data analysis.	Integrating and validating the event history database.
	Semi-structured interviews - first round 11 interviews with the leader of NGO, UNIVERSITY students and staff members of the two institutions.	Gaining initial insights about the contextual factors leading favoring organizational knowledge creation (i.e. qualitative analysis).
	Semi-structured interviews - second round 15 interviews with the leader of NGO, UNIVERSITY students and staff members of the two institutions.	Gaining further insights about the contextual factors leading favoring organizational knowledge creation (i.e. qualitative analysis).

Table 3 Data structure

Second-Order Themes and First-Order Categories	Representative Quotations
<i>A. Distributed leadership at the Upper Echelon Level</i>	
1. Trust	“I think - you know - one when you go back to the collaborative spirit and I think that we both enter relationships with trust.”
2. Alignment	“And so, for someone like you who recognizes that, “Hey, if we’re not the ones doing micro-consignment, but it’s still be doing in a different part of the world, that’s a good thing”. Well, that’s a person that I’m interested in working with because you get the big picture.”
3. Complementary knowledge	“The reason why you take the lead on stuff is because - you know - I know that you're good at what you do. I know that I have my own limitations and the things that you can do better than me either overall or just given a certain time, right? If I can't do this now, you do this, right? So either you're just better at it or it is a better time or there's sort of a better way to do it.”
<i>B. Distributed leadership at the Lower Hierarchical Level</i>	
4. Trusted introduction	“Having a trusted introduction for relationships to build more efficiently, and effectively, if the introduction is properly given, and received. I think a trusted introduction may be transferred when communication has taken place by the 'introducer's', and confirmation has been received. So, let's take NGO LEADER, Albeina, and myself: They talk and collaborate. They agree that I should implement the collaboration initiatives. It takes both them to appropriately 'introduce' me the notion of the collaboration, with the appropriate parties ahead of time.”
5. Contextual understanding	“... we provided them with contextual understanding... it was provided at different times- both pre-field work, during field-work, and in reflection time after the field work took place. Leadership became something they were consistently working on and a process that took place over time throughout their learning.”
6. Empathy	“I knew for him at that moment, getting to know each other was critical for him to feel trust and hope that we could 'do' together. That's what led me to spend more time and critically learn the language of 'doing, solving, and working together'.”
<i>C. Distributed leadership Beyond the Boundaries of the Partnership</i>	
7. Sharing and mitigating risk	“Another benefit of extending a research opportunity is the protection of core/critical business operations. It's not like either leader encouraged others to implement a new accounting system on behalf of the organization.”
8. Shared passion	“But if I'm looking at both leaders, I feel like there should be a shared enthusiasm for the 'shared partnership' before the partnership takes place, during the partnership activity, and post activity...this is a long-term gig and there are no quick fixes to 'sharing leadership' effectively without putting effort and care into the partnership over the long run.”
9. Mutual accountability	“In some ways, I feel as though the root of MCM has to be one of mutual ownership and accountability. As NGO LEADER wanted to scale MCM to every single developing country. He could easily do that if he had taken all of the leadership and imposed an almost vertical relationship among country-parties. I think this is similar to what happened in South Africa (and why NGO no longer operates there). Instead, by transferring leadership and saying "it's in your hands", it really does hold the host-country and organization accountable for implementing and scaling...which in turn creates a whole heck of a lot more sustainability in the long-run.”

Table 4 Cycle 1 (Nov. 2008 to Jul. 2009)

Number of actors involved in the process	Typology of actors involved in the process															
	S	E	C	I	Total	WITHIN the partnership				OUTSIDE the partnership				TOTAL	LEADERSHIP	LAYER
NGO staff						NGO LEAD	UNI LEAD	UNI Students	Other faculty	Spns & Invsts	Other Soc Ep	Other Students				
1 First contact between SE and Faculty leader	2						1*	1*					2	DL-UE	Conditional	
2 SE teaching to UNI students		32					1*	1*	30				32	DL-UE	Core	
3 Faculty leaders' trip to Guatemala		6				4*	1*	1*					6	DL-LHL	Core	
4 Students program in Guatemala	17					10*	1	1	5*				17	DL-LHL	Core	
5 Research article design paper #1			2				1*	1*					2	DL-UE	Core	
6 Meeting with investors			3				1*	1*		1			3	DL-UE	Conditional	
7 Brainstorming on strategy				2			1*	1*					2	DL-UE	Structural	
8 Brainstorming on strategy				2			1*	1*					2	DL-UE	Structural	
9 Research article design paper #2			2				1*	1*					2	DL-UE	Core	
10 Brainstorming on strategy				2			1*	1*					2	DL-UE	Structural	
<i>Total Cycle 1</i>	<i>19</i>	<i>38</i>	<i>7</i>	<i>6</i>	<i>70</i>	<i>14</i>	<i>10</i>	<i>10</i>	<i>35</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>70</i>		
KNOWLEDGE ASSET #1: Academic Papers																

Table 5 Cycle 2 (Aug. 2009 to Apr. 2010)

Description	Number of actors involved in the process					Typology of actors involved in the process										
	S	E	C	I	Total	WITHIN the partnership				OUTSIDE the partnership			TOTAL	LEADERSHIP	LAYER	
Project/activity name						NGO staff	NGO LEAD	UNI LEAD	UNI Students	Other faculty	Spns & Invsts	Other Soc Ep				Other Students
1 SE meets UNI students	32						1*	1*	30					32	DL-UE	Core
2 Brainstorming on research opportunities		4					1	1*		2*				4	DL-BPB	Core
3 Brainstorming on new teaching prog			3			1	1	1*						3	DL-UE	Core
4 New teaching program				32			1*	1*	25		5*			32	DL-BPB	Core
5 Research design			3				1	1*		1*				3	DL-BPB	Core
6 Presentation of MC in Milan		30				1*		1*		1			27	30	DL-LHL	Conditional
7 Brainstorming on strategy				2			1*	1*						2	DL-UE	Structural
8 Data collection in Guatemala	32					31*				1*				32	DL-BPB	Core
9 Planning of the center for MC		2					1*	1*						2	DL-UE	Structural
10 Test online course				21		10*	1	1*	7				2	21	DL-LHL	Core
11 Brainstorming for strategy				3			1*	1*				1		3	DL-UE	Structural
12 Proposal to investors			7				1*	1*			5			7	DL-UE	Conditional
13 Students program in Guatemala	14					10*	1	1	2*					14	DL-LHL	Core
14 Brainstorming with other faculty			3				1*	1*		1				3	DL-UE	Structural
15 Meeting with investors			4				1*	1*			2			4	DL-UE	Conditional
16 Brainstorming for strategy				4			1*	1*				2		4	DL-UE	Structural
17 Brainstorming for strategy				3			1*	1*			1			3	DL-UE	Structural
18 Brainstorming for strategy				3			1*	1*	1					3	DL-UE	Structural
19 Meeting with investors			23				1*	1*			1		20	23	DL-UE	Conditional
<i>Total Cycle 2</i>	<i>78</i>	<i>36</i>	<i>43</i>	<i>68</i>	<i>225</i>	<i>53</i>	<i>17</i>	<i>18</i>	<i>65</i>	<i>6</i>	<i>14</i>	<i>3</i>	<i>49</i>	<i>225</i>		
KNOWLEDGE ASSET #2: Center for McM																

Table 6 Cycle 3 (May 2010 to Jun. 2011)

Project/activity name	Number of actors involved in the process					Typology of actors involved in the process											
	S	E	C	I	Total	WITHIN the partnership				OUTSIDE the partnership				TOTAL	LEADERSHIP	LAYER	
						NGO staff	NGO LEAD	UNI LEAD	UNI Students	Other faculty	Spns & Invsts	Other Soc Ep	Other Students				
1 Data collection in Guatemala	59					55	1	1*		2*				59	DL-BPB	Core	
2 Teaching in Guatemala		59				10	1	1*	2	2*			43	59	DL-BPB	Core	
3 Follow up with investors			7				1*	1*			5*			7	DL-BPB	Conditional	
4 Brainstorming for strategy				2			1*	1*						2	DL-UE	Structural	
5 Brainstorming with students		42						1*		1*			40*	42	DL-BPB	Core	
6 SE teaching to UNI students		32						1*	1*	30				32	DL-UE	Core	
7 Students program in South Africa	9							1	1	5*			1*	1*	9	DL-BPB	Core
8 Meeting with investors			4						1*		3*			4	DL-BPB	Conditional	
9 Running online course		16						1*	1*	13				1	16	DL-UE	Core
10 Meeting with editors				4				1	1*		2*			4	DL-BPB	Structural	
11 Brainstorming for strategy				2				1*	1*					2	DL-UE	Structural	
12 Follow up with investors			4					1*	1*		2*			4	DL-BPB	Conditional	
13 Brainstorming for strategy				9		7*		1*	1*					9	DL-LHL	Structural	
14 Brainstorming for strategy				2				1*	1*					2	DL-UE	Structural	
15 Brainstorming for strategy				3				1*	1*				1*	3	DL-BPB	Structural	
16 Students program in South Africa	17					10*		1			1		5*	17	DL-BPB	Core	
17 Follow up with investors			4						1*		3*			4	DL-BPB	Conditional	
18 Workshop (Clinton Global Initiative)				16				1*					15*	16	DL-BPB	Core	
19 Brainstorming for strategy				2				1*	1*					2	DL-UE	Structural	
20 Brainstorming for strategy				3				1*					2*	3	DL-BPB	Structural	
21 Students program in Guatemala	19					10*		1	1		2*		5*	19	DL-BPB	Core	
22 Brainstorming for strategy				2				1*	1*					2	DL-UE	Structural	
23 Brainstorming for strategy				2				1*	1*					2	DL-UE	Structural	
24 SE teaching to MW students		32						1*	1*	30				32	DL-UE	Core	
25 Follow up with investors			3					1*	1*		1*			3	DL-BPB	Conditional	
26 Brainstorming for direct learning			2					1*	1*					2	DL-UE	Conditional	
27 Brainstorming for teaching		3											3*	3	DL-BPB	Conditional	
28 Brainstorming for strategy				3				1*	1*		1*			3	DL-BPB	Structural	
29 Brainstorming for strategy				4		2*		1*	1*					4	DL-LHL	Structural	
30 Workshop Ashoka U excellence				216				1*	1*	180			14*	20	216	DL-BPB	Conditional
31 Design new teaching initiative			52					1*	1*	10*				40	52	DL-BPB	Conditional
32 Brainstorming for expansion strategy				6				1*	1*				4*	6	DL-BPB	Structural	
33 Brainstorming for expansion strategy				3				1*	1*				1*	3	DL-BPB	Structural	
34 Workshop in Guatemala				41		10*		1*	1*	5*	5*		19*	41	DL-BPB	Conditional	
<i>Total Cycle 3</i>	<i>104</i>	<i>184</i>	<i>76</i>	<i>320</i>	<i>684</i>	<i>104</i>	<i>30</i>	<i>30</i>	<i>80</i>	<i>205</i>	<i>20</i>	<i>60</i>	<i>155</i>	<i>684</i>			
KNOWLEDGE ASSET #3: Intl. Workshop																	

Figure 3 Leadership evolution by types

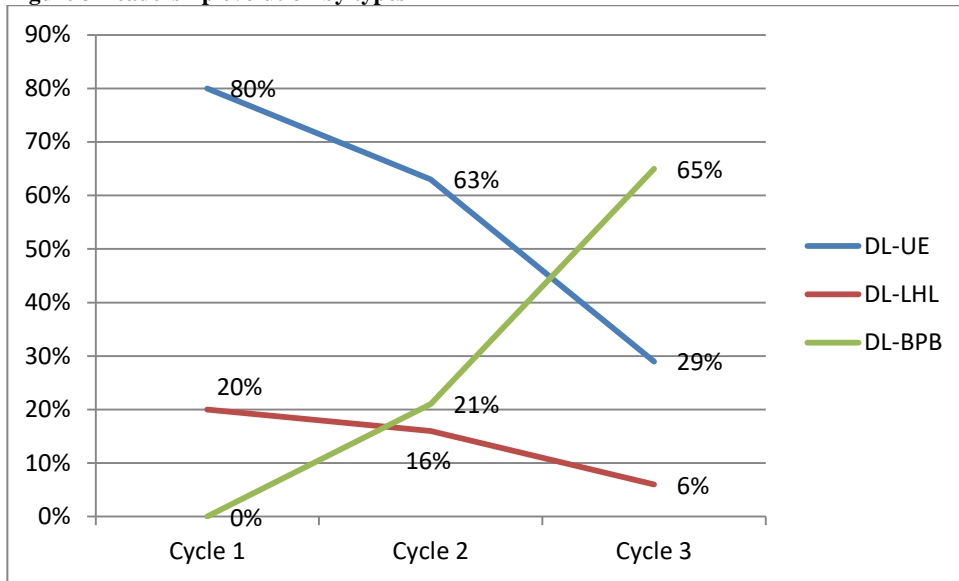


Figure 4 Leadership distribution by layers

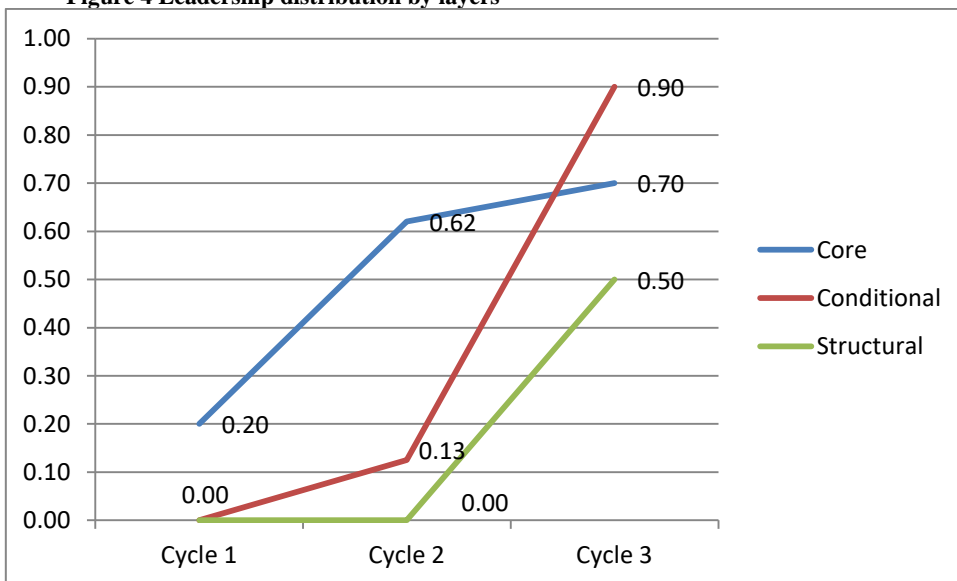


Figure 5 Distributed leadership matrix

Horizontal

		Within	Outside
<i>Vertical</i>	Upper Echelon	Lateral internal DL	Lateral external DL
	Lower Hierarchical Level	Vertical internal DL	Vertical external DL