

Nonaka's SECI Framework: Case Study Evidence and an Extension

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Abstract

Nonaka's SECI framework (1994) describes the *process* of creating knowledge and how it is transferred from the smallest part of the organization – the individual – to the broader organization-wide context. We provide case study evidence that is consistent with the SECI framework for not only a single organization but also for more complex organizational settings such as multiple organizations in partnership, and in a confederation of diverse and autonomous groups within a single unifying structure.

We then extend this work to the more difficult and complex case of knowledge transfer between academics and practitioners, who do not operate in a single organization-wide context. A Knowledge Transfer Continuum (Finley, 2012) is introduced, involving seven translator *roles* that are pivotal for closing the gaps in the transfer of knowledge between academics and practitioners. Emerging evidence suggests that multiple handoffs occur between the seven roles to bridge the knowledge transfer gap between practitioners and academics. Further, the flow of information through the Knowledge Transfer Continuum is not necessarily sequential, hierarchal, systematic or complete.

A key benefit of the Knowledge Transfer Continuum is the ability to clearly identify important differences between specific roles. Further, knowledge transfer between adjacent, more closely related roles is significantly easier and more expedient than attempting to bridge the larger gap between a pure practitioner and a pure academic.

In summary, Nonaka's SECI framework describes four major processes for knowledge creation and transfer, and the Knowledge Transfer Continuum builds on this work by highlighting the interaction between adjacent roles engaged in those processes. Together, these two frameworks provide a more comprehensive and versatile approach for knowledge creation and mobilization. Organizational capacity can be built by focusing on the translator roles to address the knowledge transfer gaps.

Keywords: *SECI, knowledge, transfer, gap, translator*

INTRODUCTION

Nonaka (1994) describes knowledge creation as an “upward spiral process, starting at the individual level, moving up to the collective (group) level, and then to the organizational level, sometimes reaching out to the inter-organizational level” (p. 20). His SECI framework describes a complex series of steps by which personal knowledge is created, transferred and becomes embedded within the fabric of an organization. The SECI framework describes the processes involved in creating knowledge, with individuals as the “essential actors” (Nonaka, 1994, p. 34).

In this paper, we build on Nonaka’s seminal work to examine where breakdowns in the knowledge transfer process might occur and how to bridge these gaps in diverse organizational settings. We extend his work by introducing two pivotal concepts: the Knowledge Transfer Continuum, and seven key knowledge translator roles that are pivotal for closing knowledge transfer gaps.

We begin by demonstrating the versatility of the SECI framework and its use to analyze knowledge creation and transfer in increasingly complex organizational settings. We then show how a Knowledge Transfer Continuum can be built upon the SECI framework.

OVERVIEW OF NONAKA’S SECI FRAMEWORK

Nonaka’s (1994) SECI model of knowledge creation is shown in **Figure 1**. This model identifies four specific types of knowledge conversion that occur as an individual’s tacit knowledge becomes an organization’s explicit knowledge: *Socialization*, *Externalization*, *Combination* and *Internalization* (SECI). The framework enables organizations to anticipate and diagnose where gaps in the process exist, and where effort needs to be applied in order to overcome the gaps.

Socialization (from tacit knowledge to tacit knowledge) occurs when tacit knowledge is created through shared experience between individuals (Nonaka & Konno, 1998; see **Figure 2**). Such conversion may occur through joint activities such as face-to-face interaction (Posner, 2009), and working in the same environment. ‘Management by

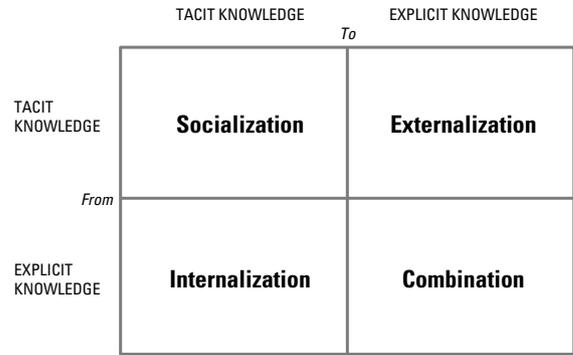


Figure 1: Nonaka’s (1994) Modes of the Knowledge Creation

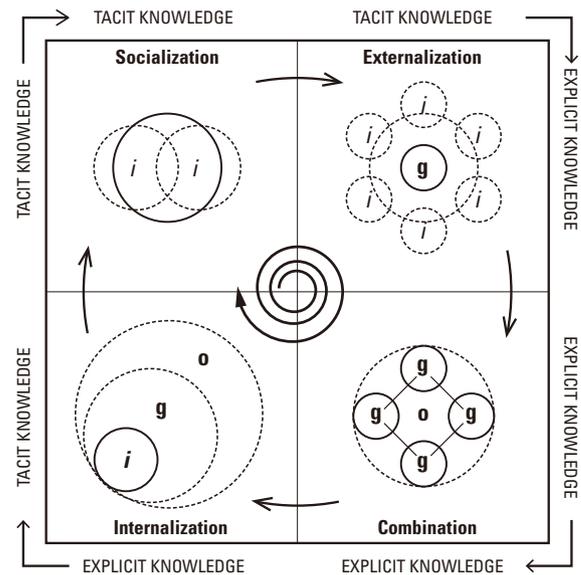


Figure 2: Nonaka & Konno (1998)

walking around’ is an example of non-verbal knowledge transfer based on joint observation (Nonaka & Konno, 1998).

Externalization (from tacit knowledge to explicit knowledge) occurs when an individual’s tacit knowledge is translated into comprehensible forms that can be understood and expressed by others. Knowledge has been successfully transferred when tacit knowledge (i.e., management wisdom) becomes explicitly stated, often through exchange mechanisms such as two-way dialogue, active listening and the visual depiction of ideas and concepts (Nonaka & Konno, 1998; see **Figure 2**). According to Posner (2009), the knowledge transfer gap is most evident when tacit knowledge is con-

Figure 3: Cases Examined using SECI

Case	Context of Knowledge Gap	Structure	SECI Quadrant of Focused Effort
Calgary Philharmonic Orchestra	Knowledge Sharing – Diverse Stakeholders within One Organization Approach: High Stakeholder Engagement and Capacity Building	Single Organization	E, C, I
Calgary French & International School	Sharing Knowledge and Working Together in a Public / Private Partnership Approach: Environment (Knowledge Creation and Application with External Partners)	Multiple Organizations	E, C, I, S
University of Calgary	Process of Stakeholder Engagement Across 16 Diverse Faculties to arrive at a Single Learner Segmentation Model Approach: Knowledge Adoption and Application – Large Number of Diverse and Autonomous Groups in a Confederation Structure	Groups in a Confederated Structure	C, I
Practitioner to Academic Continuum	Introduction of the Knowledge Transfer Continuum and Knowledge Translator Roles	Multi-sector; Trans-disciplinary	S, E, C, I

verted to explicit knowledge (*Externalization*).

Combination (from explicit knowledge to explicit knowledge) occurs when individuals or groups exchange and combine their different bodies of explicit knowledge through social interactions thereby amplifying the explicit knowledge (see **Figure 2**). Nonaka and Konno (1998) explain that this conversion relies on three processes: collecting and combining externalized knowledge; disseminating this knowledge; and, revising and reconceptualizing the explicit knowledge to make it more usable and understandable. *Combination* examples include academic forums and research processes (Posner, 2009), as well as face-to-face meetings and audio or web-based conversations. Nonaka (1994) connects *combination* with information processing.

Internalization (from explicit knowledge to tacit knowledge) occurs when newly created explicit knowledge is converted into the organization's tacit knowledge (Nonaka & Konno, 1998). This process can occur at an individual, group or organizational level. Nonaka and Konno (1998) explain that explicit knowledge needs to be embodied in action and practice, and internalized through "learning by doing" (p. 45). Examples of *internalization* include practicums, on-the-job training,

simulations and experiments. Nonaka (1994) associates *internalization* with organizational learning and action.

We now examine how the SECI framework can be used to analyze knowledge transfer in three cases involving increasing organizational complexity: (1) A single organization, (2) Multiple organizations in partnership, and (3) A confederation of diverse and autonomous groups in a single unifying structure (see **Figure 3**). Later, we will analyze a fourth case involving knowledge transfer between practitioners and academics.

THREE CASE STUDIES

A "case study" is typically associated with teaching and exploratory research but, as Yin (1984, 2003) has pointed out, it can also be used as a research design for theory development and testing via *analytical* generalization:

Critics typically state that single cases offer a poor basis for generalizing... *This analogy to samples and universes is incorrect when dealing with case studies.* This is because survey research relies on *statistical* generalization, whereas case studies (as with experiments) rely on *analytical* generalization. In analytical

generalization, the investigator is striving to generalize a particular set of results to some broader theory (Yin, 1984, p. 39, *emphasis is in the original*).

Understood in this light, what the three case studies that follow suggest is that the theory underlying Nonaka's well-accepted SECI framework can be analytically generalized to increasingly complex organizational settings.

Case Study #1: Calgary Philharmonic Orchestra

Background

In 2002, after almost 50 years of performing, the Calgary Philharmonic Orchestra (CPO), Canada's fifth-largest, was seeking bankruptcy protection despite its location in a strong and economically vibrant community. A lack of leadership, declining ticket sales, breakdown in customer service and a changing environment had all contributed to organizational failure (Finley, Gralen & Fichtner, 2006a). In addition, a four-week long lock-out of musicians (as a result of a breakdown in contract negotiations) had further eroded trust, communication, knowledge sharing and the ability to find solutions. Internal dissensions prevented the Board, staff and musicians from working together to collectively address the critical issues. In short, there were big knowledge transfer gaps between the key constituents. These problems were not unique to the CPO. Across North America many prestigious orchestras had to cease or suspend their operations due to similar circumstances (Finley, Gralen & Fichtner, 2006a).

Knowledge Creation and Transfer and the SECI Model

The catalyst for renewal started with the knowledge and experience of a single individual from outside the performing arts sector. This phronetic leader²⁾ quickly ascertained the uniqueness of the CPO's situation and designed a high-engagement process by establishing a core team of influential musicians, staff and Board members. The core team met daily through the crises to address key issues by sharing their individual knowledge and perspectives in order to develop shared understanding (i.e., acting in the *Externalization* quadrant of the SECI frame-

work). These core team members then led multiple task teams (*Combination*), over the span of seven weeks and 8,000 hours of work (Finley, Gralen & Fichtner, 2006a). These teams pooled their knowledge around critical topics that resulted in a greater collective understanding, acceptance and inspiration to apply new approaches to recurring problems. Where traditionally these types of arts organizations would have operated in silos, separated from each others' issues, CPO's interdisciplinary teams purposefully engaged to work together collaboratively, across issues, in order to understand the gravity of the situation and unite to create and support solutions that would work in support of the whole organization. To immediately infuse a new level of management skill into the organization, CPO's transitional leader enticed six professional firms, with simply a sponsorship package as compensation, to provide "essential skills and leadership until such time that a new and better-qualified administrative team could be hired" (Finley, Gralen & Fichtner, 2006b, p. 43).

Pivotal to successful transformation was understanding and buy-in by the CPO musicians in all aspects of renewal. They were required to work on transition teams for fundraising, media appearances, and phone calls (Finley, Gralen & Fichtner, 2006a). The impact of deliberately engaging musicians in every facet of transformation and renewal not only created willingness to accept the degree of change, it also made it possible to sign a three-year collective agreement. This involved musicians taking responsibility for all aspects of the organization that were essential to operations: office cleaning, answering phones to field irate customer complaints and subscription-renewals, and performing mundane clerical tasks of every type (Finley, Gralen & Fichtner, 2006a). The level of understanding and collaboration it created was powerful. "Once the season resumed, the musicians shook the hands of customers as they entered the concert hall" (Finley, Gralen & Fichtner, 2006a, p. 15), a testament to the personal investment each musician made to the turnaround.

Results

The endowment grew from less than \$900K in 2002, to \$25 million in 2008, and in 2011, the CPO posted

its ninth consecutive season in the black with a record 27 sold-out concerts. It was not just about numbers however. More significantly, the organization moved to “the *Socialization* quadrant” where knowledge creation and sharing had become a driving force for sustainability. Outsiders to the organization described the CPO’s renewal as “a ringing, rousing, thrilling and altogether magnificent interpretation - full of precision, drive, spirit, wit, and yes, a whole-lot of heart” (Calgary Herald, June 11, 2011). Where trust and collaboration had been the greatest barrier, now through high stakeholder engagement and capacity building, these elements had become the CPO’s greatest strength.

Case Study #2: Calgary French and International School

Background

The Calgary French School (CFS) was a small, non-profit, preschool to Grade 6 independent school operating in a rental facility. When their lease was terminated, intensive work was required to transition the school into another location. The school had limited ability to raise sufficient capital to build a new facility in a short period of time. In addition, it was necessary to expand the school’s program from Grade 6 to Grade 12 to financially support a new facility. Further requirements involved the introduction of new language programs, and a re-thinking of the school’s purpose in the broader educational community in order to re-establish its relevancy, distinctiveness and value proposition. The situation was complicated by a lack of knowledge, experience and expertise within the school to successfully address issues that required leadership, courageous decision-making and aggressive fundraising. This was the knowledge transfer gap to be addressed.

Knowledge Creation and Transfer and the SECI Model

Motivated by not being able to financially afford the new vision on its own, CFS forged external strategic partnerships and collaborations. From the beginning, the focus was on achieving goals through public-private partnerships (P-3) for mutual benefit of community and school (Finley, 2009). This approach can be viewed through the SECI construct

where a group of external individuals each with specific skills, knowledge and experience (*Externalization*) were drawn into the organization to drive a new level of performance and build capacity (*Combination*). These external experts infused the school with knowledge and practices pertaining to commercial real estate, legal positions, finance, market research, architectural design as well as curriculum design and development. All had to embrace CFS’s vision and agree to contribute to it by creating new policies and procedures that leveraged each others’ strengths, revenue sources and networks (*Internalization*). Through a series of formal partnership agreements, these approaches and practices were embedded within the school’s routine operations (*Socialization*).

Noteworthy within the P-3 relationships were specific initiatives to create and share knowledge for mutual benefit. CFS forged a partnership with The Language Research Centre (LRC) from the University of Calgary’s Language Department to promote the creation and dissemination of best practices in language education. The creation of ten demonstration classrooms in CFS’s new campus enabled university researchers to design and conduct research projects on language learning within a living laboratory setting. This partnership resulted in improved program quality, expanded program offerings, new funding opportunities and increased profile (Finley, 2009).

Results

Calgary French & International School (CFIS) successfully raised \$20 million dollars and constructed a 120,000 square foot facility on budget within 4 years with a high degree of parent satisfaction and community collaboration. Fundraising grew from a \$30K annual effort (based primarily on ad hoc sales of chocolate bars and bottle drives), to an innovative \$300K annual campaign of sophisticated financing and partnering arrangements. The curriculum underwent major expansion to an intensive three-language program for 320 (Preschool to Grade 6) students in the year 2000, to 754 (Preschool to Grade 12) in 2012. A comprehensive rebranding effort repositioned the school provincially in the language education community. As further evidence of sustainable success, the school recently

acquired an additional 5 acres adjacent to their original 10-acre site. CFIS is a benchmark used by the City of Calgary and Alberta Government as a P-3 success and nominated for several community awards (Finley, 2009).

Case Study #3: University of Calgary

Background

University of Calgary (U of C) embarked on a major institutional transformation effort as it entered its second 30 years as a research university (Yeager, Rogers & Finley, 1997). This effort was aimed at significant cultural change within the University in order to ensure its prosperity in a rapidly changing environment. Some of the conditions that precipitated this effort were declining government funding and student and faculty satisfaction; a national external university ranking report whose results placed the U of C at the bottom across numerous rating criteria, and a desire to improve the University's ability to attract and retain high quality researchers, learners and faculty. University environments present a unique set of circumstances where knowledge is created, shared and applied. However, a culture of autonomy, tradition and diverse 'views' of the world, including varied intellectual purposes, often challenge their ability to make and implement macro-level, unified, institutional-wide decisions (Finley, Rogers & Galloway, 2001). These were the knowledge transfer gaps to be overcome.

Knowledge Creation and Transfer and the SECI Model

One initiative central to determining how the U of C would adapt, grow and remain relevant to its stakeholders was segmenting its undergraduate learner population (Rogers & Finley, 1999; Rogers, Finley & Kline, 2001). At the time, this concept was highly contentious for a public post-secondary educational institution. Each of U of C's sixteen Faculties and key governing bodies needed to reach consensus in selecting target learner segments and adapting institutional image, recruitment, curriculum policy and procedures, and student services and fundraising around these learners' unique needs (Rogers & Finley, 1999; Rogers, Finley & Kline, 2001).

The critical knowledge transfer gap occurred between Nonaka's *Combination* and *Internalization* phases as the 16 Faculties held widely diverse opinions about learner segmentation as well as different and strongly held beliefs about their responsibility to *all* learners.

Meaningful dialogue between members of the university community was central to creating new knowledge and this required a closing of the gap. Yeager, Rogers and Finley (1997) describe a campus-wide series of interdisciplinary teams, drawn from faculty, staff, learners and alumni, led by an external facilitator, that worked together to share *individual* perspectives and create an environment where fears could be addressed and new learning, acceptance and support could take place (*Combination*). Care was taken to focus conversation on a limited number of high priority areas that were of prime importance to the entire institution and critical for engaging the external communities. Teams worked in a coordinated manner and completed design and assessment tasks through intensive interdisciplinary engagement across the campus. In this way, all key stakeholders had full ownership of the process (*Internalization*) for setting and implementing new strategic directions (Yeager, Rogers & Finley, 1997).

Results

All Faculty governing bodies and the Board of Governors unanimously agreed to proactively recruit, admit and retain a subset of learner segments that best aligned with the institution's key strengths and with the unique attributes of its external community (the Canadian city of Calgary within the Province of Alberta). Evidence of the University's effectiveness in its efforts to better serve target learners was the significant growth in the relative percentage of these segments within its undergraduate population after just four years of renewed emphasis (e.g., from 12% to greater than 30% in one learner segment).

UNDERSTANDING THE 'PRACTITIONER TO ACADEMIC' CONTINUUM

Background

The case study evidence presented so far indicates that the theory underlying Nonaka's SECI frame-

work can be analytically generalized to increasingly complex organizational settings—within a single organization, multiple organizations in partnership, and multiple groups within a confederated structure. We now extend his work to examine the more difficult case of knowledge transfer between practitioners and academics, who do not operate within a single organization-wide context.

A knowledge transfer gap exists in nearly all disciplines in which there are both academics and practitioners engaged in problem solving. Academics have debated the existence of this gap, the causes of the gap, and the potential ways to bridge the gap for over 40 years. However, this knowledge transfer gap continues to exist, and some have argued it is widening (e.g., Schön, 1983; Fook, 2002; Keiser & Leiner, 2009; Posner, 2009).

In terms of the SECI framework, academics and practitioners do not operate within a single organization-wide context. This is therefore a useful setting in which to examine how knowledge transfer takes place when the interaction within the “community” (in this case, of academics and practitioners) is much weaker—and the opportunities for socialization within the community are far more limited—than is the case within a single organization, or even within the range of organizational settings we observed in the prior cases.

Both practitioners and academics are involved in the creation, dissemination and implementation of knowledge. Jarvis (1999) describes practitioners as the frontline creators and implementers of ‘*microtheories*’. Organizational effectiveness professionals participate in developing theory, implementing that theory in their practice and evaluating its appropriateness and effectiveness by analyzing how well it worked. Through this iterative process, knowledge is created, shared and improved upon.

In contrast, academics create and disseminate ‘*metatheories*’ (Jarvis, 1999). Researchers of organizational effectiveness study organizations and develop frameworks and models to help improve performance; however, they may or may not participate in the implementation and evaluation of those ‘*metatheories*’.

We find that an understanding of *both* the knowledge transfer *processes and roles* is required to bridge the knowledge transfer gap between aca-

demics and practitioners.

Knowledge Creation Continuum and the SECI Model

Nonaka and Konno (1998) describe “knowledge activists” as those who “manage and live as catalysts of knowledge creation and connectors of present initiative and foresight” (p. 54). Finley (2012) builds on this work to introduce roles within a Knowledge Transfer Continuum to describe in detail how knowledge is created, shaped, refined, reconsidered, translated, disseminated and implemented by practitioners and academics. When looking at one end of the Continuum, there is a cluster of roles played by practitioners. At the opposite end of the Continuum, there is a cluster of roles played by academics. Most interesting is the cluster of roles in the middle of the Continuum, which form a bridging role between practitioners and academics (Finley, 2012).

Finley (2012) extracted seven knowledge translator roles from the literature. A subsequent Delphi research study engaging 10 practitioners and 10 academics from business and non-profit fields confirmed that seven distinct knowledge translator roles exist and are aligned along a continuum (see **Figure 4**). These seven roles were validated, and their definitions clarified and advanced through three rounds of Delphi research (Finley, 2012):

- **Pure Practitioner** - A Practitioner who performs their job based on informal reflection and deliberation.
- **Reflective Practitioner** - A Practitioner who explicitly thinks about why they are doing their job and how to perform it by taking a deliberate ‘plan-do-review-adjust’ approach to his / her work.
- **Practitioner Researcher** - A Practitioner who deliberately uses formal, systematic research approaches to improve organizational performance and / or client outcomes.
- **Pracademic** - An experienced Practitioner who also holds an academic appointment and has established legitimacy / credibility in both Academic and Practitioner worlds by virtue of their reputation as a subject matter expert, publication record, and ability to

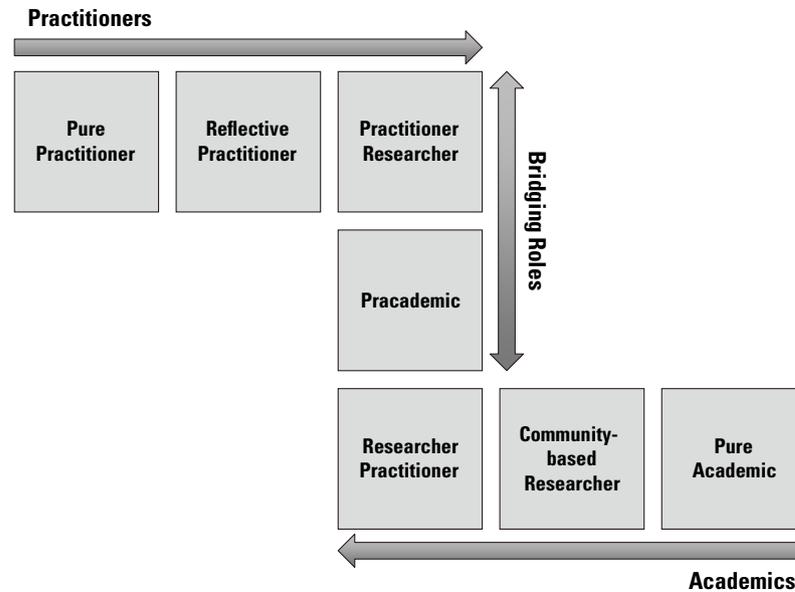


Figure 4: Finley (2012) Knowledge Transfer Continuum

achieve sustained business results.

- **Researcher Practitioner** - An Academic who is able to conduct academic research as part of his / her job in a practice setting.
- **Community-based Researcher** - An Academic who uses research approaches designed to engage with community stakeholders to ensure the relevance of proposed research and to create opportunities for knowledge translation and capacity building.
- **Pure Academic** - An Academic who conducts research which has no community connection, and undertakes teaching and service within the confines of the institution.

Results

This study identified seven distinct roles that help to bridge the knowledge transfer gap between academics and practitioners. Each role: 1) uses different processes; 2) has a different interpretation; 3) operates within a different context; 4) perceives different barriers and key success factors; and, 5) ultimately performs different functions in the process of transferring knowledge. Differences, although subtle and gradual along the Continuum from Pure Practitioner to Pure Academic, distinguish the knowledge transfer roles and drive their motivation

to create, share and use knowledge (Finley, 2012).

Emerging evidence suggests that between the seven roles, multiple handoffs are available to bridge the knowledge transfer gap between the two ends of the spectrum - practitioners and academics. Further, the flow of information through the Knowledge Transfer Continuum is not necessarily sequential, hierarchical, systematic or complete. A key benefit of the Knowledge Transfer Continuum is the ability to clearly identify important differences between specific roles. Furthermore, bridging between adjacent, more closely related roles is significantly easier and more expedient than attempting to bridge the larger gap between a pure practitioner and a pure academic. Thus, while Nonaka's SECI framework describes four major types of knowledge creation and transfer, Finley's Knowledge Transfer Continuum builds on this work by highlighting the interaction between adjacent roles engaged in that process.

CONCLUSION

We extend Nonaka's SECI framework by incorporating the specific roles involved in the *process* of knowledge creation and transfer. The SECI framework describes the process of creating knowledge and how it is transferred from the smallest part of the organization – the individual – to the broader organizational wide context. The evidence in the

first three cases we examined indicate that the theory underlying the SECI framework can be analytically generalized to increasingly complex organization settings and reveals not only the knowledge creation and transfer process but also the potential knowledge transfer gaps. Using the more difficult case of knowledge transfer between academics and practitioners—who do not operate within a single organization-wide context—we then extend the SECI framework by showing how Finley's Knowledge Transfer Continuum and the key translator roles can help to bridge these gaps.

Extending the SECI framework with the Knowledge Transfer Continuum thus provides a more comprehensive and versatile approach for creating and supporting knowledge mobilization. Organizational capacity is built by developing these knowledge transfer roles to bridge the knowledge transfer gaps.

NOTE

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- 2) Nonaka and Toyama (2007) describe phronetic leaders as being able to “synthesize contextual knowledge accumulated through experience, with universal knowledge gained through training” (p. 379).

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Figure 2: Figure 1 in "Spiral Evolution of Knowledge Conversion and Self-transcending Process" from "The Concept of 'Ba': Building a Foundation for Knowledge Creation" by Ikujiro Nonaka and Noboru Konno in *California Management Review*, vol. 40, no. 3, Spring 1998. © 1998 by the Regents of the University of California. Published by the University of California Press.

Figure 3: Based on Donna Finley, "Using the Delphi Method to Enhance the Transfer of Organisational Knowledge: A Bridge for Practitioners and Academics", Ph. D. dissertation, University of Calgary, 2012.

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