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Culture at the Network Level

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Interorganizational Networks as Generative Social Systems: Building Innovation Capacity and Sustainable Culture at the Network Level

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Abstract: This explores the potential of interorganizational networks (IONs) to serve as innovation networks that contribute to long-term organizational effectiveness and the emergence of sustainable culture. Using the construct of innovation capacity as a framework for exploring complementary themes found in multidisciplinary literature, this considers whether IONs, when managed for the purpose of fostering generative relationships of trust and processes that support organizational learning at the network level, might evolve systemically in ways that engender continuous, adaptive innovation within turbulent environments that are the prevailing condition of 21st century organizational life, thereby giving rise to emergent network cultures that contribute to both organizational and societal sustainability. These premises are found to be supported by the weight of empirical evidence and current theory reviewed in this brief treatment of the topic. This is an emerging area of knowledge that can benefit from further studies that explore the dynamic tensions and synergies that may be found to exist among the various theoretical constructs treated here, as further refined and applied in various interorganizational settings.

Keywords: Interorganizational Networks, Social Systems, Organizational Culture, Innovation, Capacity Building, Sustainability, Organizational Learning, Generative Relationships

INTRODUCTION

In the decades since the introduction into the social sciences of Ludwig von Bertalanffy's (1968) general systems theory, business managers, organizational consultants and social scientists have gained important insights by inquiring into the implications of systems theory for understanding organizational development and organizational dynamics. Among these implications is the notion that a firm is a form of socio-technical system (De Green 1990; Emery and Trist 1973). Like all systems, a firm is embedded within one or more larger systems, consisting of social, economic, technological and ecological variables that form the environmental context in which the firm operates. No firm exists in isolation, and interactions between the firm and its environment give rise to resource dependencies that may require strategic external relationships with other entities. This concept of embeddedness, along with a growing awareness of the importance of inter-firm alliances as a way to aggregate resources and build social capital, has engendered growing interest in the study and effective utilization of inter-organizational networks (IONs) (Brondizio et al. 2009; Nahapiet 2008; Provan et al. 2007; Folke et al. 2005; Gulati and Gargiulo 1999).

As we adjust to life in the 21st century, processes of cultural and economic globalization propelled by revolutionary advancements in communications and data-processing technologies are bringing about unprecedented levels of social, economic, technological and ecological interdependency. Today, more than ever before, organizational managers must grapple with com-

mensurate challenges and opportunities at multiple levels of scale. Networking strategies help organizations manage change within the turbulent field created by the many complex challenges and opportunities playing out on the global stage (Lomi et al. 2008; Aughton 1996; Emery and Trist 1973; 1960). Rather than becoming overwhelmed with the scale and complexity of today's challenges, many emerging leaders are exploring opportunities "to realize a globalization that works for all: a future that finds strength in diversity, is environmentally sustainable, assures peace, promotes justice, provides health and generates wealth" (Waddell 2011, xiv).

A cumulating body of ION literature reveals that a diversity of theoretical and methodological approaches has been applied to ION research, reflecting a wide range of issues and questions that are found to be consequential with regard to collaborative relationships between organizations (Provan et al. 2007). A common thread running through all this ION-related research is a shared interest in the observable patterns and dynamics of relationships among "organizations that are pursuing a mutual interest while also remaining independent and autonomous, thus retaining separate interests" (Cropper et al. 2008, 9). Investigating organizational systems from multiple disciplinary perspectives, researchers today are exploring the emergent characteristics and strategic implications of IONs, including their potential to transform conventional notions of competitive advantage and enterprise sustainability by enabling new forms of cooperative governance and resource-sharing that are rapidly becoming the hallmarks of organizational life within today's highly-networked global economy.

IONs take advantage of a broader set of resources and increased capacity necessary to help solve some of the more wicked problems facing businesses and societies. Increasingly networks are being seen as enabling structures creating greater opportunities for advanced innovation, improved service delivery, distributed risks, and shared accountability (Hoberecht et al. 2011).

Among the principle benefits of inter-organizational networking identified in the literature are:

risk sharing; obtaining access to new markets and technologies; speeding products to market; pooling complementary skills; safeguarding property rights when complete or contingent contracts are not possible; and acting as a key vehicle for obtaining access to external knowledge (Pittaway et al. 2005).

A predominant theme in ION research relevant to studies conducted at the network level is that of network effectiveness. As documented in a review by Provan and Milward (2001), studies conducted over the past several decades have focused on the nature, quality and durability of relationships within complex, multi-level systems of inter-organizational relationship. This focus on effectiveness has allowed researchers to hone in on key factors pertaining to ION formation and development, communications pathways, trust-building, relational risk, governance structures, boundary characteristics and other useful constructs and associated metrics for understanding the functioning of IONs. These and other factors and variables, in any given case, may spell the difference between success or failure (Provan et al. 2007). Recently, however, researchers and practitioners around the world have become interested in the generative and transformative characteristics of IONs, viewing them as open systems that evolve within ever changing environments to foster *innovation* as a strategy for achieving sustainability. (Russo and Rossi 2009; Nooteboom 2008, 2006; Szeto 2000).

This paper explores (albeit briefly) the following four topics: (1) how today's IONs may serve as innovation networks that contribute to long-term organizational effectiveness *and* the emergence of sustainable culture; (2) how concepts and tools of behavioral science, as applied within the field of organizational systems, may aid policymakers and business managers in building capacity for innovation at the network level; (3) how intervention strategies involving

intentionally-guided organizational learning processes at the ION level may contribute to evolutionary dynamics involving the propagation and strengthening of generative relationships that over time contribute to the sustainability of organizational innovativeness; and (4) how by investigating innovation capacity building strategies through the lens of organizational cultural change, organizational leaders may foster the emergence, at the network scale, of systemically embedded cultures of innovation capable of enduring and evolving within turbulent socio-technical environments.

IONs as Innovation Networks for a Sustainable Society

Recent ION studies have examined the factors or conditions that may contribute to building innovation capacity as a strategy for sustainability. Pittaway et al. defined innovation as “the successful exploitation of ideas” (2005, 143). This definition distinguishes the concept of innovation from among the potentially endless range of creative ideas and activities that may or may not succeed in the sense of generating intended outcomes. However, the definition is limited in that it begs the question of whether or to what extent innovation serves some beneficial purpose, either to the ION, its constituent organizations, or to the society in general. Dutch researcher Bart Nooteboom (2006) expands on the definition of innovation to include not only exploitation of ideas, but *exploration*, with radical breakthroughs that develop into new dominant designs.” (Nooteboom 2006, 1). This definition allows for the exploration of innovation as a function of organizational learning, consistent with the concept of double-loop learning developed by Argyris (1976). Szeto (2000, 150) reflects this more expansive notion of innovation by defining the term to mean:

adaptable new ideas for product or service development with improved features, quality manufacturing and appreciated aesthetics to meet the needs of existing or potential markets in an incremental *or radical movement* and [that] may create profit with minimum cost. [italics added].

As with the Nooteboom definition above, this formulation by Szeto is not limited to effective exploitation of ideas. Rather it allows us to understand innovation as being fundamentally a process of organizational adaptation and learning. Yet, Szeto observes that this definition of “innovation” still lacks the element of sustainability, an omission which is remedied through reference to the associated concept of “innovative capacity.” Szeto defines this latter term as: “*a continuous improvement of the overall capability of firms to generate innovation for developing new products to meet market needs.*” (2000, 150; italics added). Szeto found that two factors: continuous supply of innovation resources and accumulation of innovation knowledge, were crucial in building innovation capacity, and that such capacity building was facilitated through a dynamic interplay between these two factors via inter-firm collaboration.

However, the suggestion that innovative capacity may be increased by means of network level collaboration raises a suite of further questions: Given the multiple challenges of managing complex, often high risk, interactions among heterogeneous firms and their employees, should managers simply accept as a given that inter-firm relationships will contribute to the kinds of stable and open-ended patterns of interaction that serve to build innovative capacity? If not, what actions must be taken, or conditions created, to foster innovation through IONs and thereby justify the commitments of staff and resources required to sustain collaborative network relationships over time? Furthermore, if under the conventional definition, innovation tends to be viewed as an outcome rather than a process, what hidden potentials might be realized if capacity building were to become an explicit part of the purpose or mission of a given ION? What can we learn by reviewing those cases where, by conscious design, IONs have evolved to serve as *innovation networks* (Russo and Rossi 2009), *relational resource assets* (O’Connor et al. 2007) or *innovation ecosystems* (Russell 2010)?

Concepts and Tools for Investigating Network Level Innovation Capacity

In this ever-changing 21st century world, the notion of sustainability can only make sense if it is understood to involve some capacity for managing uncertainty and adaptively responding to changed circumstances when they arise. To better understand the actual or potential role of IONs in this changing context, organizational researchers must equip themselves with workable concepts and methodological tools that allow for critical, evidence-based inquiry. The following is a representative sampling of current literature intended to elucidate the diversity of such useful concepts and tools have been employed, thereby offering guidance for those who may be contemplating further research in this important and evolving area of behavioral science.

Pittaway et al. (2005) reviewed current knowledge in the literature regarding the relationship between innovation and networking activities in the UK private sector. Their purpose was to find evidence in support of certain bold conclusions reached in a 2003 report commissioned by the UK's Department of Trade and Industry (Porter and Ketels 2003, 138). The authors of this report presented a challenge to policy-makers by asserting unambiguously that "inter-organizational networking is critical for the development of innovative ability in firms." To confirm this *prima facie* assertion, Pittaway et al. (2005) undertook a "systemic review of the evidence" (Porter and Ketels 2003, 146) and found substantial empirical support showing that those firms that failed to pursue networking and cooperative inter-firm relationships, or engage in some manner of formal or informal knowledge exchange, over the long term tended to experience decline in their ability to enter such mutually beneficial relationships, including productive relationships with suppliers, customers, professional and trade associations. Yet these beneficial relationships were essential if firms were to thrive and participate in the diffusion of innovations that make enterprises sustainable in today's economy. Pittaway et al. also found that, despite an extensive and growing body of research focusing on innovative products and marketing, many significant gaps exist within the research literature regarding *process* and *organizational* innovation. Consistent with the above findings, we may consider innovative capacity as a desirable outcome of ION development. We should take care not to simply equate innovation with the familiar types of outcomes that we typically associate with organizational performance, such as production of high quality goods and services. Process and organizational innovation is better understood as a capacity found within the collective, embodied intelligence of the human actors that form the organization as a dynamically evolving social system and tied to the IONs ability to exhibit the characteristics of resiliency and generativity over time, similar to the characteristics we might expect to observe in healthy ecosystems. In this vein, perhaps the health metaphor may be useful as a way for us to understand the relationship between ION-level innovative capacity and sustainability.

Similar investigations into the relationship between network activity and innovation have been conducted in continental Europe. For example, Nooteboom (2006) who has written extensively on the relationship between networking activity and organizational learning, utilizes the constructivist-interactionist concept of "cognitive distance" as a framework for investigating the capacity of firms to take advantage of opportunities for innovation, and he found that this framework was particularly useful for purposes of evaluating innovation capacity within networked relationships (*ibid.*, 3). Specifically, he and his colleagues investigated the effects of ION collaboration on network-level learning capacity. The construct of learning capacity, as used by Nooteboom, is closely related to the concept of innovative capacity when applied to the ION context, insofar as the latter concept is understood to involve learning either through the dissemination of practical knowledge between persons or entities, or through the generation and practical application of new ideas via co-creative interaction that benefits from the heterogeneity of networked relationships (*ibid.*).

By focusing on the cognitive and relational factors that may determine learning outcomes at the network level, therefore, Nooteboom (2006) offers a disciplined approach to the evaluation

of innovation capacity in IONs. He offers the theoretical proposition that firms, in their efforts to overcome cognitive distance by aligning cognition enough to effectively utilize their internal complementary capabilities, tend also to develop an organizational cognitive focus that becomes a form of *organizational myopia*. According to Nooteboom, this intra-organizational focusing thus inhibits innovation in ways that can be overcome by means of outside relations with other firms, at larger cognitive distance. Nooteboom uses the term “open innovation” to describe the strategy emerging from a recognition of the “need [for] outside relationships for innovation, in the development of new products, production processes markets, or forms of organization, and for learning, in the development of new competencies” (*ibid.*, 1; see also Nooteboom 2008, 619–623; Vanhaverbeke 2005).

In a separate study conducted that same year, Nooteboom et al. (2006) empirically tested the relationship between cognitive distance and innovation performance among networked firms, and confirmed their hypothesis of an inverted “U” shaped relationship between these two variables. This finding is consistent with the notion that generative inter-firm relationships can be managed to achieve an optimal balance between two opposing forces: “a novelty effect that increases with larger cognitive distance and an absorptive effect that decreases with larger cognitive distance” (2006, 6). Managers and researchers alike should take notice of this result, as it underscores the potential importance of organizational development tools that may help to surface mental models that may account for greater or lesser degrees of cognitive distance between heterogeneous actors within a networked system.

Jørgensen and Ulhøi found within the context of a longitudinal study of small to medium size enterprise (SME) innovation systems that network relationships formed during the early stages of a firm’s life cycle “played a critical role in developing the firm’s capacity for sustained innovation” (2010, 397). The authors of this study posited that “the ways networks are formed may critically influence subsequent behaviour of the individual members and the network, including how knowledge is created, shared and exploited” (*ibid.*). They also found that because newly formed SMEs, given their size limitations, tend to rely on external knowledge and collaboration to overcome lack of access to resources, the formation of such network relationships early in the development of small and medium firms will enhance a firm’s capacity for innovation (*ibid.*).

Using a thematic analysis of interview data derived from six regional technology clusters, Hibbert et al. provide some insight into the limitations to learning that may exist in the ION context “by showing that process learning in inter-organizational, collaborative contexts is hindered by ‘authority’ and ‘anomie’” (2010, 454). Specifically, this study found that learning in clusters “is hindered by confused and uncertain patterns of power and trust between partner organizations” (*ibid.*). This finding provides a valuable perspective in support of our understanding innovative capacity at the network level, as it suggests that managers should not assume as a propositional given that improvements in organizational learning will necessarily follow from moving from the organizational to the ION level of engagement. The development and evolution of ION relationships in support of collaborative knowledge acquisition, creation, and diffusion requires that careful attention be given to whether the inter-organizational governance structures and processes are genuinely facilitative of relationships that support broad participation and trust-building.

Another European study explored the concept of “generative relationships” as a useful construct for evaluating innovative capacity of IONs. Russo and Rossi (2009), in a study commissioned by the Tavistock Institute in support of an Italian innovation policy programme, used a combination of ethnography and social network analysis to observe social interactions generated by “supporting networks of cooperation among heterogeneous actors” (*ibid.*, 75). They found that these networked interactions, occurring among SMEs within a given regional economic system, created an important locus of innovation. Building on early work by Lane and Maxfield (1997) exploring the attributes of generative relationships between firms, Russo and

Rossi developed a conceptual framework explicitly set within the inter-organizational context and grounded in a systems perspective. Within this holistic framework, Russo and Rossi were able to offer a more expansive definition of “innovation” that encompasses its systemic, relational and generative dimensions. They defined it as: “a process comprising cognitive, social, technical, economic and political elements, unfolding at multiple levels of social organization and across multiple temporal scales” (2009, 78). Using this whole system framework, Russo and Rossi offered a multi-dimensional lens through which to evaluate the structural characteristics and dynamic interactions emerging from generative relationships among firms. In doing so, they were able to show how structures and interactions produced within generative relationships can “induce changes in how agents interpret themselves, other agents, and artifacts” in ways that “*are frequently cumulative and in turn create conditions for new generative relationships* [italics added].” They concluded that “this boot-strap dynamic is a major feature of the dynamics of innovation” (*ibid.*).

The Russo and Rossi (2009) study, therefore, makes a significant contribution to our understanding of the relationship between innovation capacity and sustainability within the context of inter-organizational networks. By virtue of their research, we are invited to view innovation capacity, not as a structural limitation in the conventional sense of the term “capacity,” but as a dynamic, self-reinforcing *developmental process*. This research also invites further inquiry into the systemic characteristics of IONs, in particular those having to do with learning and process; thereby reinforcing the above-mentioned conclusions reached by Pittaway et al. (2005) and Nooteboom et al. (2006). Such productive areas of inquiry that can offer insights into the role of IONs as entities that, when competently managed, can support societal transformation and progress toward a sustainable future.

IONs, Innovation Capacity, and Sustainable Culture

The foregoing selection of current studies reveals an empirical basis for the premise that IONs, as social systems, can function as evolving learning communities to build network-level innovation capacity over time by virtue of their dynamic and emergent characteristics. With this understanding, a further implication of this research can now be considered through the lens of *organization culture change*.

To begin, we can observe that those factors identified in the literature as indicators of network-level innovative capacity appear to coincide with factors known to contribute to the dynamics of managed culture change within organizations (Hoberecht et al. 2011). For example, Pittaway et al. (2005), Nooteboom (2006) and Russo and Rossi (2009) in complementary ways illuminated the *self-reinforcing* characteristics of generative, trusting relationships between heterogeneous firms acting in coordination through their managers and workers. This finding invites consideration, from the standpoint of leadership and management practice, of whether the dynamic, self-reinforcing characteristics of inter-firm relationships might contribute to the dissemination of more reflective practices among firms and stakeholders, and within the larger society. The concept of the organization as evolutionary learning system, as explored in Banathy (2000) and related works, may provide an integrative framework for considering this question. Other useful constructs worth considering and found in the current theoretical literature include concepts of: “resilience” (Zolli and Healy 2012; Scharmer et al. 2011; Gulati 2009), “global action networks” (Waddell 2011; Christakis and Bausch 2006), “collaborative capital” (Southern 2005), and “syntony” (Laszlo and Laszlo 2004). Again, from a whole systems perspective and with a view to informing practice, stakeholders engaged in disciplined inquiry might consider whether properly-managed, consciously-evolving knowledge networks might foster the emergence of organizational norms that encourage cross-disciplinary engagement and reflective, co-creative learning. In other words, how might consciously-guided normative changes within firms serve to increase relational generativity, design competence and other as-

pects of collective intelligence in the face of complexity? Furthermore, just as Csikszentmihalyi (1993), almost two decades ago prescribed a self-psychology for the 21st century grounded in evolutionary theory, and Banathy (2000) expanded the evolutionary analysis to encompass conscious social system design as a participatory, transformative and future-creating process, the stage appears to be set for exploration of the potential of IONs to function as evolutionary design systems. We can now consider whether and how IONs might be managed through stakeholder participation for the explicit purpose of guiding the trajectory of organizational culture change in the direction of resiliency, diversity and cross-disciplinary integration within an emerging sustainable culture that functions well at all levels of scale.

Although studies of organizational culture have focused on the level of the firm, the concept of network culture is particularly relevant to the study of IONs. Kong (2007) describes network culture as “another social force, in addition to market, technology, bureaucracy and organizational culture” (2007, 4). Building on Edgar Schein’s (1992) model of organizational culture as a composite of both adaptive and design activity, Kong suggests that:

[i]nter-organizational network culture controls organizations’ behavior and enhances inter-organizational coordination within networks. A network, as a whole of organizations, exerts its cultural influence to control the patterns of inter-organizational behavior by shaping the organizations’ perceptions of the assumptions, providing affective energy for their mobilization, and identifying the network boundary. [citations omitted] Network culture regulates organizations’ behavior by stifling initiations of chaos and anomie, and encouraging conformity and compliances to network rules. (Kong 2007, 10).

At first glance, the idea that “cultures of innovation” can emerge among heterogeneous firms at the network level may seem counterintuitive; insofar as innovation is thought of as a process of challenging conventions, where an exchange of information and ideas by means of external alliances may encounter internal resistance due to being perceived as a threat to prevailing organizational norms or organizational cohesiveness. Similarly, as noted by Djelic et al. (2005, 41), “capacity for innovation and capacity for weathering change in the socio-economic environment and markets are not necessarily one and the same.” Therefore, when we approach innovation at the micro level, we should not assume in any given case that firm management will perceive a strategic benefit in pursuing generative network relationships, or that a firm will opt for novel practices in response to the changes imposed by turbulent environments. These assumptions would be unfounded insofar as they are contradicted by evidence suggesting that, in some cases, “firms have made a strategic choice to reject previous innovations and return to pre-existing ‘stocked’ ideas and practices” (*ibid.*).

However, when innovation strategy is approached as a process of evolutionary learning and whole system capacity building (Laszlo and Laszlo 2004; Wright 2006), it is possible to entertain a conceptual synthesis between the concepts of innovative capacity and innovative culture, where innovative capacity at the network level is understood as an emergent quality of relationships and processes of interaction existing between heterogeneous firms. Such a synthesis that emphasizes process innovation, rather than focusing exclusively on innovative outcomes, is warranted when guided organizational learning processes become normative to the point where they contribute to the sustainability of organizational innovativeness via the emergence of an embedded, self-sustaining culture of innovation capable of enduring and evolving within turbulent socio-technical environments.

A study of Australian public sector innovation initiatives illustrates this point. O’Connor et al. (2007), investigated the elements that support innovation in the context of an evaluative case study of an Australian public sector organizational innovation programme, where embedding policy innovation capacity was considered essential to effectively address public concerns while responding to the social needs of diverse stakeholders. Public sector policy systems, such

as the one involved in this study, are subjected to broad scale environmental influences and constant change to an extent that is even greater than that typically found in the case of private sector networks. According to O'Connor et al.:

the characteristics of modern policy-making leading into the future will be “forward looking, outward looking, integrated and participatory, inclusive of the views, values, objectives and practices of all concerned parties and based on lessons systematically learned from ongoing experience.” (2007, 534; quoting Marton and Phillips).

The study specifically focused on “the organizational elements *including culture* that support or hinder innovation in public organizations” (*ibid.*; italics added). The authors distinguish resource and transformational assets, and identified a series of asset groupings, including organizational, physical, monetary, human and relational assets, as being relevant to innovation capacity. The authors describe two of these types of assets, human and relational, as pertaining to a “supply or resource to the organization that potentially ‘fuels’ the latent capacity of the transformative assets.” (*ibid.*, 538). The authors further distinguished innovation *capability*, which focuses on the outcomes, from innovation *capacity*, which focuses on the internal potential to enable outcomes. They found this distinction to be particularly important in the context of a public sector study, where innovation capacity at the network level has a significant bearing on the individual and collective ability of firms to respond to a changing policy environment.

In light of these findings, it becomes clear that when innovative capacity is developed at the network level, by virtue of embedded transformative potentials, including human resource potentials (competence, attitude and intellectual agility), and relational resource potentials (social/network capital and supportive leadership style), it behooves researchers and managers alike to entertain a conceptual linkage between such capacity building and those systemically evolving factors that shape inter-organizational culture. This linkage is made explicit via the conscious enactment of evolutionary learning systems by managers who, taking the long view in the face of complexity and uncertainty, perceive the mutual value to be attained through collaborative engagement that fosters the emergence of innovation culture on a broad scale. Consistent with Kong’s (2007) description of network culture as “a socially constructed, invisible, determinate, unobservable, and modifiable force behind organizational activities within the network,” such innovation culture would provide a facilitative social environment where innovation and collaboration alike are considered integral to the visioning and mission-driven activities of each firm. Such a broad-scale and self-reinforcing culture may be expected to assume the characteristics of an innovation ecosystem, where human mastery of complexity at all levels is expressed through organizational networks having the emergent qualities of adaptability and resilience akin to the qualities of highly evolved, well-functioning natural systems. Finally, through conscious design, IONs may be guided to function as evolutionary learning systems (Banathy 2000) which, by building capacity for innovation, can play a significant role in fostering emergence of sustainable culture within the society as a whole.

In sum, managers and consultants involved with ION governance can promote business excellence and sustainability by artfully mediating the dynamic/creative tensions that allow generative inter-firm relationships to co-evolve with organizational cultures that encourage innovation as an overarching “way of being” and part of the collective DNA. (Prabhu et al. 2010; O'Connor et al. 2005, 550).

Conclusion

In today’s rapidly changing world, organizations and their managers face the daunting challenge of dealing with complexity and fulfilling their organizational missions within the context of turbulent external environments. As societies become increasingly networked and interdepend-

ence becomes, more and more, the prevailing condition of life in the 21st century, IONs have formed as strategic alliances that allow firms to remain effective and become more sustainable by aggregating productive resources and developing social capital through heterogeneous inter-firm relationships. In this paper, we considered whether IONs, when managed for the purpose of building innovative capacity by means of generative relationships of trust and cooperative engagement, might evolve systemically in ways that foster conditions for transformative learning and the emergent qualities of resilience, adaptability and complexity at the network level. Consistent with the writings of Scharmer (2011), Banathy (2000) and other leading thinkers in evolutionary learning theory as applied to the field of organizational systems research, it is posited that innovative network cultures might function like well-integrated and healthy natural ecosystems, promoting business excellence on a broad scale, while ultimately becoming a force for cultural change needed to secure a sustainable future for all.

The current theoretical and empirical works reviewed in this brief treatment of the topic warrant the conclusion that IONs may play a significant role in fostering the emergence of sustainable culture, especially when they are governed to facilitate the emergence of generative relationships and co-creative learning processes that build capacity for innovation. However, the suggestion that building network-level innovation capacity leads to sustainability reflects a dynamic systems perspective that should not be taken as a given. Further study is needed to determine how intentionality, transformative vision and moral guidance as culturally-bound leadership functions might guide the trajectory of innovation-driven change.

Furthermore, the above perspectives reflect an emerging area of knowledge that can benefit from further studies that explore the application of the various theoretical constructs treated in this paper to a diversity of inter-organizational settings. Additional research is needed to clarify how the particular characteristics and implications of an emerging innovation culture might vary between networks depending upon whether they are mainly comprised of public sector versus private or non-profit sector firms. Likewise, research is needed to consider the potential challenges that may arise when the actual or perceived benefits of collaboration are not shared equally among participating firms.

In the context of globally-distributed networks, research is needed to investigate the dynamic relationship between innovation, organizational culture, and national (or ethnic) culture. For example, studies of intercultural cooperation reveal that evolutionary pressures generated by ever-changing business environments around the world may be increasing cultural diversity at the group, organizational and network levels, even as information technology, climate change and other factors contributing to global interdependency are strengthening incentives for collaboration and “peaceful co-existence of moral circles.” (Hofstede et al. 473).

Finally, it should be noted that the overlay of inter-firm and inter-cultural dynamics suggested by these and other topics for future research impose a level of complexity that may warrant new methodological approaches emphasizing democratic participation and conscious design of evolutionary learning systems. As we gain better understanding of the generative characteristics of inter-organizational networks, we may learn to master complexity as a practical and evolutionary imperative, allowing us to more fully realize the benefits of diversity in an increasingly interdependent world.

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