

Co-operative networks as a source of organizational innovation

Sonja Novkovic and Wendy Holm

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Abstract

The paper examines co-operative networks as a foundation of organizational innovation. Theory suggests that co-operative network formation is a basis of innovation, as well as a source of competitive advantage. We argue co-operatives that adhere to the principle of co-operation among co-operatives are more likely to create innovative solutions for their members, but we also make a case that when the vision of the drivers of innovation is clear and member-focused, complex networks are more likely to be created. The most unique characteristic of complex networks is their dynamic adaptability: driven by shared buy-in, linkages are created that result in unplanned outcomes which resonate across the network. The theory and evidence of co-operative network formation is examined, and conditions for the creation of complex co-operative networks are explored. We support the proposition that co-operatives are the drivers of innovative solutions with two case studies of multi-stakeholder co-operative networks that provide public goods.

“For co-operatives, networking is not one opportunity among many others, but rather it is the normal way of operating as a result of their solidaristic dimension.”
Menzani & V. Zamagni 2010

Introduction

Innovation can be related to products, processes, or organizations (Boer and During, 2001). Although all three types are interrelated, organizational ability to learn and adapt to a changing environment is at the heart of discussions about viable systems in general, and organizations in particular. Organizational innovation refers to the creation or adoption of an idea or behaviour new to the organization (Lam 2004). One strand of literature deals with *organizational innovation as a structural issue*, and explores particular organizational structures that are more likely to result in product or process innovations. The other two strands of literature look at *organizational cognitive processes and learning capacity* (i.e. how organizations develop new ideas for problem solving); and *organizational change, adaptation, and the process of creation of new organizational forms* (Lam 2004). We focus on the latter two understandings of organizational innovation to make the point, based on the two case studies of innovative co-operative organizations, that co-operative networks are complex organizational forms that emerge as a response to the external environment, but also influence and shape it. Moreover, co-ops lead the process of complex (multi-organizational) network formation, since they are driven by their problem-solving nature and a common purpose of the members. In particular, as our cases illustrate, they are the leaders in creating new organizational forms when motivated by the provision of public goods, placing the cooperative model at the forefront of social innovation and entrepreneurship.

The paper is organized as follows. Social network theory and its application to cooperatives is described in the next section, followed by a discussion about cooperative network creation and supporting institutions. We outline the typology of cooperative networks, and

describe complex, multi-stakeholder networks in the context of complex adaptive systems as the source of innovative ideas and organizational forms. . Making the case that cooperative networks are the architects of organizational innovations, we end with two case studies of innovative cooperatives, and offer some concluding remarks.

Social network theory and cooperatives

Markets, hierarchies and networks

Adaptation to a changing environment is the central challenge for organizations (Williamson 1991). Adaptive capacity can be located in the market, where price signals are understood to serve the (anonymous) coordination purpose, or in the internal organization, where coordination among actors is deliberate, and often hierarchical¹. Williamson considers networks to belong to a third, 'hybrid'² form of organization, and finds them particularly effective under conditions where firm reputation matters. While Williamson acknowledges that networks may be an effective mechanism for cost reduction under some circumstances, he argues they are less effective under increased uncertainty because transaction costs increase as consensus decision-making can be time consuming. This is also true when confidentiality is an issue, especially in presence of strategic technological innovation. But Williamson's concern with what he perceives as a potential of networks to create higher transaction costs warrants further scrutiny.

The transactions costs approach is based on the premise that networking is driven by the individual agent's quest of cost reduction. Jones, Hesterly & Borgatti 1997 augment the

¹ See the transactions costs literature, lead by Williamson 1975.

² Eccles 1981 uses the term 'quasi-firms'

transactions costs analysis by incorporating social network³ theory to describe ‘how social mechanisms influence the costs of transacting exchanges’ (p 913). They identify conditions for network governance and explore why networks, rather than markets or hierarchies, are employed, and conclude that the presence of social mechanisms enables network creation and adaptation in the rapidly changing market environment.

Following Jones et al, Bijman 2005 makes a case for cooperative firms as hybrid governance structures that depend upon three organizational mechanisms – norms, price and authority – in their decision making. The price mechanism is used by agricultural co-operatives in transactions between members and the co-operative firm; authority (hierarchy) is applied as the control mechanism in the relationship between member-owners (represented by the board of directors) and management; and social norms (or network mechanism) are used in inter- member relations⁴.

The balance between the use of different mechanisms – market, hierarchy, and networking - shifts with the changing environment, resulting in organizational change that can strengthen or weaken the (social) character of co-operative organizations⁵.

³ Generally speaking, networks are referred to in the literature either as inter-organizational linkages, or as mechanism of support to entrepreneurs in which case they refer to personal social networks. We consider networks among organizations, but often these imply personal connections as well.

⁴ Jones et al 1997 discuss four social mechanisms: the macroculture of organizations; restricted access to the network; social sanctions; and reputation. All four of these mechanisms apply to cooperatives (Bijman 2005)

⁵ When the balance shifts in favour of market mechanisms or hierarchy, it is described in the co-op literature as the lack of member-engagement, ‘identity crisis’ of co-operatives (Cote 2001.), or the degeneration of co-operatives that may end in demutualization in extreme cases (Cook, 1994).

Co-operative networks and complexity

Co-operation among co-operatives⁶ is a consideration for all co-operative organizations. While worker co-operative networks of the industrial cluster type are relatively rare (Halary 2006, Smith 2001, 2004a,b), worker co-operatives as well as other cooperative types form federations to perform a number of functions. Co-ops are often connected in sector networks - e.g. federations of worker co-ops, agricultural co-ops, consumer and financial co-ops - or in regional support and co-op development networks – e.g. leagues or councils.

Federations are a hybrid form of governance of economic activity that can be stronger than alliances and joint ventures, and range from loosely linked confederations to well integrated socio-economic systems (Johnstad 1997; Byrnes, Holm & Matthews 2011). Federations can secure scale economies and ensure cost reduction for their members, but more importantly they provide essential types of services to their member-cooperatives, including research and development support, social benefits, and political voice among others (see Smith 2001). The purpose and advantage of networking among Italian co-operatives, for example, has been to achieve economies of scale and scope, marketing by common branding, and adaptability to a changing environment (Menzani and Zamagni 2010).

It is often stressed that the co-operative form of organization is a ‘natural’ fit for network governance because of its social component (associational character), its democratic decision making, and the co-operative identity⁷ (Halary 2006, Simmons and Birchall 2008, for example). Often, however, low co-operative density stands in a way of applying the principle of co-operation among co-operatives to their advantage — there are simply not enough co-operatives

⁶ Co-operative identity statement, ICA 1995 the Sixth Principle of Co-operation.

⁷Ibid.

in the particular industry or region to form co-operative chains. When a larger group of co-operatives are present in a region, a number of positive network externalities emerge. These include access to particular management skills, social networking and learning, social capital, access to finance, supply chain linkages, and others (Halary 2006, Smith 2004). There is also the ability to share knowledge with like-minded organizations and compete against (potentially more capitalized) investor-owned firms (Novkovic 2007). In cases where there are supporting institutions/networks, such as federations or leagues, the advantages of network externalities are particularly accessible. For Italian co-operatives, and, one may argue, co-operatives in general, networks are a way of doing business (Menzani & Zamagni 2010); therefore co-operative networking is 'thicker' and far more strategic (with alliances formed through the leagues/federations and with diverse co-operatives) than in capitalist businesses.

While the transactions costs literature concentrates on the formation of networks as a cost-reducing mechanism for an individual organization, network externalities and complementarities among co-operatives may produce benefits beyond individual organizations as well (Smith 2004a, p 186), with the co-operative model serving as a mechanism for social coordination.

We identify five types of co-operative networks:

1. Co-operatives themselves can be viewed as networks of independent producers/members (e.g. agriculture; crafts; artists)
2. Independent co-operative firms form inter-organizational networks for particular purpose (e.g. second-tier co-operatives; co-operative federations)

3. Co-operatives form supply chain networks with other co-operatives (example fair trade chains)
4. Co-ops take membership in professional (or co-op development) networks/associations to provide them with particular member services (e.g. sectoral federations or regional associations/councils)
5. Co-ops form networks with other co-ops, individuals, businesses or government agencies for a particular purpose, often outside of their core business. We call these *complex networks* to indicate their multi-stakeholder character. Often, these complex networks are formed to provide a public good – e.g. education, R&D, healthcare or social care.

The focus of our paper is on the fifth form - complex networks- since they produce unexpected linkages between various agents and are likely to result in innovative organizational forms. They also lend themselves to the complex adaptive systems approach to organizations (see Soos et al 2007, for example).

Cooperative networks share common characteristics with complex organizations (Cillier, 2005). They are both *based on relationships and interactions* among the members and they are *open systems* that interact with other organizations and with their environment, and therefore shape and are shaped by them. Co-operative networks abide by the principle of open membership, leaving the boundaries of the organization open to external influence and re-examination of its purpose and functioning. *Unpredictable (emergent) behaviours and outcomes are possible* in cooperative networks since co-operatives are run democratically. *Nonlinearity* of interactions manifested by the ‘whole being greater than the sum of its parts’ is present in co-

operative networks, and there is also *context and path dependency*: local and/or internal solutions and social innovations dominate in successful co-operatives. Finally, both systems are *decentralized*; they *self-organize* and respond to a perceived need⁸.

Networks and innovation

As argued above, creation of independent umbrella networks may provide needed institutional support to not only assist co-operative development, survival and growth of the sector, but also to provide a platform for innovation in finance, marketing and other areas of co-operative economic and social activity. Smith's proposal rests on evidence of network externalities in both Mondragon Cooperative Corporation (MCC) and La Lega co-operative networks. Among other areas⁹, the author discusses joint ventures and strategic alliances of the co-operative network (with other types of businesses and with government) as one of the innovative functions for the umbrella organizations. This same function is viewed by Soots, Perry & Cowan (2007) in the framework of complex adaptive networks applied to the case of the Nova Scotia Co-operative Council (NSCC). Soots et al describe the activities of the NSCC as the hub which is building and facilitating linkages among various support groups in the network.

Industrial networks are sources of innovation and an advantage under global competition. Halary (2006) identifies worker co-operative networks exhibiting network externalities in Italy, Spain (Smith 2004b) and France. Because the co-op business model contains the elements of social interactions required for effective inter-organizational linkages - from trust and reciprocity

⁸ Member needs in case of co-operatives.

⁹ The functions of the umbrella organization (federation or league) examined in Smith 2004b are to support entry, reduce exit, sustain democratic ownership and control, solve organizational problems, explore joint ventures and strategic alliances, innovation and technology transfer, finance, mitigate risk, employment policies.

to durable relationships and social cohesion – Halary argues that co-operative business forms have a strong advantage over their capitalist cousins in network creation and, thereby, social coordination.

Looking at the probability of adaptation of new technology through a network or inter-related firms, Taylor & Levitt¹⁰(2005) find some common threads that make these adaptations more likely. Beneficial qualities of adaptive networks are relational stability embodied in long-term relationships among firms (that are not based on choosing the lowest price offer); mutual interest (rather than their own self-interest); flexible boundaries and roles, instead of rigid division of tasks; and presence of an agent for change at the network level.

Taylor & Levitt's findings apply to co-operative networks (Smith 2004a,b) in general, since their relationships are long term; their purpose is common gain (solidarity is a shared value, often explicit in co-op relations); their boundaries are flexible and likely to be present where solidarity is entrenched among co-ops in a network; and agents for change are often embodied in co-op leagues, federations or councils (Smith 2004a). On the last point, private sector firms cannot easily access strategic collaboration, either because as competitors they don't readily perceive the benefits or, when they do, the process of pursuing those benefits attracts the interests of combines regulators. Co-operatives have an advantage, as it is natural for them to discuss how they can work together to reduce costs, access new technology or increase market share, (Menzani & Zamagni 2010).

But what is it about networking that prompts innovative organizational forms? And what drives co-operatives to seek partnerships with others, including non-co-operative organizations? While transaction costs may be one type of incentive, we look at co-operatives as “collective

¹⁰ Taylor and Levitt 2005 draw their findings from the construction business. We believe their conclusions are relevant for other industries, but this warrants further research.

problem solvers” (Borzaga 2011), rather than profit maximizers. While financial viability is necessary, it is not co-operatives’ *raison d’être*.

Co-ops and innovative network creation

Complex cooperative networks, innovation and entrepreneurship

Besides other factors, the building of networks requires ‘champions’ who lead the effort of network building. The elements of success of the Nova Scotia’s co-op development system featured in Soots et al 2007 are the combination of institutional support, social entrepreneurship and vision, and strategic partnerships. But how are the partnerships formed, and what is the driving force behind them? We conjecture that common purpose drives co-operative entrepreneurs to seek partnerships to find solutions to a particular problem. We also infer that complex (multi-stakeholder) co-operative networks are the breeding ground for innovative organizational forms, judged by the prerequisites for successful adaptive organizations (Lam 2004, Bijman 2005, Halary 2006, Taylor&Levitt 2005).

Complex co-operative networks can then be examined in the framework of complex adaptive systems. Social and business network theories increasingly draw on the theory of complex biological systems and self-organizing systems, indicating the need for adaptive, learning organizations which are decentralized, rather than hierarchical.

CAS management and the co-operative advantage

Some success stories of companies that created an adaptive self-regulated business environment have emerged, such as Brazil's Semco, or Suma in the UK, among others. These democratic organizations thrive on the understanding that people in organizations are the most effective problem-solvers in dynamic environments. To be effective, they require knowledge and freedom to act¹¹, rather than hierarchical structures that are slow to respond to frequent changes.

These successes underline the basic premise of complex adaptive systems (CAS) that the 'whole is larger than the sum of its parts' (McMillan 2005). As noted previously, CAS share some common characteristics: they require diversity to be able to create new ideas; they are a system of interconnected independent agents; they possess adaptive capacity and ability to learn; decision-making is decentralized; relations between individuals are more important than the individuals themselves (e.g. sports teams); they are non-linear, and path dependent (Zimmerman, Lindberg & Plsek 1998). It is therefore important, in managing CAS, to provide an enabling environment in the form of communications learning and clear goals, rather than top down decisions (Espinosa, Harnden & Walker 2007).

The innovative governance practices arising from complex adaptive networks are credited with the success of California's water planning and management process (CALFED), for example. The group introduced collaborative heuristics amongst multi-stakeholders, including a nonlinear planning method, to produce a self-organizing systems behaviour and adaptation for the real-time environmental use of water while protecting a reliable supply for agriculture and urban interests (Booher and Innes, 2010).

¹¹ Stocki, Prokopowicz and Zmuda 2010 talk about Total participation, and identify need for total participation management (TPM). Also see Hough and Novkovic (2011)

We conjecture that co-operatives have the potential to effectively apply CAS management because of their democratic and participatory nature. This is particularly so when communication and understanding of the purpose of the co-operative is shared by the members. Complex systems require independence of individual agents and the formation of new organizational arrangements at a different level to manage the complex interactions (Espinosa et.al 2007). The requisite participatory, democratic management of such complex systems is the *modus operandi* of co-operative organizations.

Looking at complex network creation from the business purpose perspective, a clear focused vision of the *purpose* of the enterprise is key to driving the agenda. The initial drivers may be individuals, but in the co-operative network context, the sooner they become groups of people and institutions, the more powerful the results. (See McMillan 2005 for a case of the Open University in the UK). Why is the purpose a critical component? Having a clear vision of a purpose driven by member-needs allows the actors to define their ‘fit’ differently and pursue the goal more effectively¹². The basis of co-operation (with government, private business, other co-ops) becomes a *shared values-based platform*, rather than one guided by profit (see Bennet & Bennet n/d, for example). Co-ops are leaders in complex network creation i.e. social coordination, particularly in the case of public goods (the ‘commons’), because of their comparative advantage as values-based businesses.

Our examples below draw on two such cases – one from the education sector and one from the healthcare field. The healthcare case is a complex network centered on a ‘league’ (NS

¹² The Darwinian ‘survival of the fittest’ often translates to ‘most profitable’ in economics literature. Co-operatives often operate in hostile / non-supportive environments, and need a different measure of fitness. This will depend on their purpose and membership. Fitness can also be a ‘moving target’, i.e. changing over time – another feature of complex systems.

Co-op Council) in its initial stages; the education example is driven by a co-op, but one that is also an umbrella organization.

Case studies

Case 1. Co-operative Management Education Co-operative (CMEC)

The Co-operative Management Education Co-operative (CMEC) is a co-operative formed to support the educational development of future co-operative leaders.¹³

Central to co-operation, “education, training and information” is the fifth co-operative principle (ICA 1995). Co-operatives continually invest in the education of their members, but fulfilling the need for business management training that reflects the unique character of the co-operative model is needed if co-ops are to reach their full potential as powerful contributors to the economies of their communities. CMEC was created in 2000 by a forward-looking group of co-operators and academics for a clear purpose: to provide management education based on the values and principles of co-operation. Championed by Tom Webb¹⁴ who recognized a need for management training specific to co-operatives, and supported by Sidney Pobihuschy (Co-op Atlantic) and Dennis Deters (The Co-operators Insurance), the idea of a graduate program in co-operative management was born and put to action.

Coming together as cooperatives to fulfil their social mandate, CMEC’s members (fifty five co-operatives and credit unions, co-op associations, educational institutions and individuals) formed a complex network to deliver a specific public good: co-op management education based on ethical principles.

¹³ CMEC <http://www.smu.ca/academic/sobey/mm/cmec.html>

¹⁴ MMCCU designer and program’s first manager.

Within a year, a masters-level degree program curriculum¹⁵ was developed and approved by Saint Mary's University in Halifax and the Maritime Provinces' Higher Education Commission, and close to \$1 million was raised from member donations. Housed in the Sobey School of Business at Saint Mary's University the Master of Management-Co-operatives and Credit Unions program (MMCCU) accepted its first students in 2003.

Today, CMEC collaborates with members in six countries, has faculty in four, and students and graduates in seven. Co-op enterprises represented include food, agriculture, credit unions, and worker co-ops, as well as federations and associations. Additionally, CMEC has formed partnerships with eight educational institutions in six countries. CMEC is democratically governed and decision-making is decentralized. The network is dependent on the relationships and interactions between its members, who provide governance and financial support for the program development and refer students to the program.

Observations

CMEC offers a good example of how, in a multi-stakeholder environment, a shared-values platform can create innovation. CMEC has produced a product – the MMCCU program – that links together different types of members in delivering and supporting a program that is unique in its offerings, structure and delivery.

Characteristics of a complex system are evident: CMEC network is built on relationships between various agents, it is decentralized and democratically governed, and it deepens

¹⁵ Comparable to a conventional Master of Business Administration program, the MMCCU program is unique in that it places traditional business knowledge and skills – e.g. accounting, finance, marketing, and people management - within the broader context of the co-operative model; fulfilling the requirements of a business school but guided by and responsive to co-operatives and their priorities.

relationships between co-operative managers in the network. Emergent behaviour and unplanned outcomes are also apparent. For many of the students, the experience has been – in their own words - life changing. Below are some comments from MMCCU graduates:¹⁶

“When we went to Spain on the Study Visit, it was a life-changing event. I remember thinking, ‘What if we had this in the U.S.? What if we had this partnering and working together, this kind of concern for community, for helping other co-ops?’ A lot of the content of the MMCCU program is not widely available here yet. To some extent, we are co-op management pioneers—helping to create and test the growing body of knowledge.”

“I will leave this program with a great feeling of hope for our future.”

“The trip to Mondragon alone...was a pinnacle experience, a validation of my work and of the co-op model.”

“Orientation helped us form such great relationships... when we got online to read and respond to one another’s postings, that’s when the application occurs, that’s the real learning opportunity.”

“The MMCCU program brings the fundamental co-operative elements to the forefront of your mind, on a day-to-day basis.”

“This program made me see the co-operative model as a method of sustainable development that is clearly attainable.”

The program has turned into career changing experience for faculty and staff as well.

While the MMCCU degree was not necessarily structured as a research program, it has drawn a number of graduate students who excel in research and produce academic publications.

Saint Mary’s University is a member of the CMEC co-operative; an unusual institutional arrangement that resulted in positive feedback from the business school accreditation body- also an unexpected outcome.

New networks have been created that span co-op owners, institutional partners, faculty, students and alumni. From these networks, linkages have emerged, particularly among graduates

¹⁶ http://www.smu.ca/academic/sobey/mm/about_student.html

who are in the process of creating an alumni association and participate in governance of CMEC. A research network and international centre to house CMEC, the research network, and other certificate programs for more targeted co-operative education, is in the process of development.

In just over a decade, CMEC has evolved from a loose network of interested co-operators to a successful example of a co-op network coming together to meet their educational needs and empower the next generation of managers to advance the co-operative movement. CMEC is currently undergoing succession challenges that will require engagement from all stakeholders to create an enabling environment for further adaptation. A greater investment in a management structure and resources conducive to an adaptive system will likely be required.

Case 2. HealthConnex

Like CMEC, HealthConnex Health and Wellness Cooperative is a network of independent, interconnected agents (cooperatives, physicians, technology providers, medical staff) who have come together under co-op leadership to provide a public good, in this case health care services.

Owned and governed by 13 co-operatives and credit unions, HealthConnex provides a web-based health and wellness portal that allows Nova Scotians to build and access their own health records, record test results or consultations with medical care professionals, peruse an on-line library of trusted, hi-quality, doctor-reviewed medical information, use an interactive symptom checker to see if and when they need to consult a doctor, and obtain an emergency health card that will let health care professionals access their on-line medical history instantly. It also includes a “trackers” program that will help subscribers establish and track goals, and a

“reminders” program that can be set up to trigger emails for anything from “time to renew your prescription” to “time for your next eye appointment”. Patients can also, through this portal, interact with their doctors (who they nominate to become part of the HealthConnex network) to renew prescriptions, book real and virtual appointments and request medical advice.

HealthConnex was born of the passion and commitment of two doctors studying inflammatory bowel disease at Dalhousie’s school of medicine. Because Dalhousie is the only IBD research hospital in the Maritimes, many patients travel long distances for diagnosis and treatment. Doctors David Zitner and John Ginn believed patients would have better health outcomes if they had better access to communities of interest and reliable medical information to proactively manage their illness. Working on it off the side of their desks for 6 months, they then approached Nova Scotia Co-operative Council with an idea to create a new health and wellness co-operative to, as Zitner puts it, “meet the needs of the community and give patients the care they deserve.”

According to NSCC CEO Dianne Kelderman, it then became a simple matter of “synchronicity and destiny.” Each year, NSCC’s Innovation Council asks its 402 co-operative and credit union members to propose innovative ideas worthy of growth and encouragement or commercialization. In 2007, HealthConnex was chosen that year’s \$1 million winner and NSCC was given the green light to move HealthConnex from research to implementation. Their target market is the 308,000 members of Nova Scotia’s provincial co-ops. Within 2 months of its February 2011 launch, HealthConnex had already enrolled over 500 Nova Scotians. Zitner estimates subscription to HealthConnex will cost patients approximately \$120 - \$150 a year for basic participation.

The HealthConnex Board is comprised of 7 directors: four represent the owners (13 founding co-operatives and credit unions), two seats are held by Praxis (representing the medical doctors), founder Dr. David Zitner is the seventh director. HealthConnex also works closely with the NS Department of Economic Development and interacts with other organizations within the cooperative sector.

Of the \$3 million start-up funding, approximately \$1.8 million came from the 13 co-operative and credit union members. Today, HealthConnex is 100 percent funded by member equity, and has roughly \$3 million in the bank.¹⁷

Observations

HealthConnex offers a good example of how co-operation among co-operatives is more likely to create innovative solutions for their members. The need filled by HealthConnex was not met by the private and public sector. It wasn't until it was championed by the cooperative sector itself that the parties critical to making it happen were brought together to look for solutions. It is also a good example of how, when the vision of the drivers of innovation – in this case the physicians involved, and NSCC CEO - is both clear and member-focused, complex networks are created. For Nova Scotia's cooperatives and credit unions, moving into the health care field was something completely new. Based on Zitner's common-sense vision to improve health outcomes for Nova Scotians, cooperative community values were mobilized to create buy-in to a new shared vision of community wellness.

¹⁷ In 2010, HealthConnex raised close to half a million from 19 individuals who purchased shares under the province's Equity Tax Credit program.

HealthConnex network is a non-hierarchical system that interacts with other organizations – doctors, health care providers, other cooperatives, NS Co-op Council and the general public. Decision-making is decentralized in the hands of clients and their doctors. The open and diverse, relationship-driven system ensures that the network is both responsive to community needs and well-positioned to meet those needs. The importance of the service provided by this complex network is undeniable. More importantly, in the Canadian context of public healthcare provision, and an aversion to its privatization, this not-for profit multi-stakeholder arrangement is a winning solution. Subscribing doctors believe HealthConnex will make their practice more efficient by reducing wait times, providing administrative benefits (on-line appointment booking and prescription refills) and improving access for sick patients. By reducing chronic, non-acute medical visits and improving overall patient health outcomes, HealthConnex can be expected to lower taxpayer expenditures for medical costs as well. There are also benefits for small businesses: with HealthConnex, much of the time taken by employees to attend doctors' offices for routine medical needs can be shortened to a simple phone call.

HealthConnex is a good example of how social mechanisms foster networks and adaptation in a rapidly changing market environment: through HealthConnex, local networks of health care practitioners will emerge to meet the needs of a more health conscious society. This will contribute positively not only to the personal health of residents but also to the economic health of the region.

HealthConnex, like other complex networks, has already produced unexpected linkages and interactions within the system's building blocks that have resulted in innovative but unplanned outcomes. For example, several Nova Scotia credit unions are interested in creating in-branch

HealthConnex kiosks - staffed by employees - to help members for whom computer technology is a barrier, access its benefits. The credit unions are also discussing offering subsidized or free memberships to low income members. This represents a very important step for the credit unions. Fostering healthy communities has always been part of their mandate. Removing access barriers to Nova Scotia's new co-operative health and wellness network is a creative and innovative way of supporting community wellness.

Also unintended by the original proponents was the adaptability of this system to the needs of communities beyond Nova Scotia. Discussions with The Cooperators to tailor it for their membership and expressions of interest from a US credit union evidence the resonance this approach has for communities outside of Nova Scotia. This creates "export" revenue for the co-op, supports jobs (design, software, sales) in Nova Scotia and creates the potential for scale efficiencies at a national and international level.

The creation of a new partnership with Nova Scotia's ministry of economic development was also unexpected. Traditionally, funding for such an initiative would have been from the Ministry of Health. The fact that the funding came from Nova Scotia's Department of Economic Development confirms the economic and entrepreneurial benefits created by this innovative approach to providing healthcare. Nova Scotia economic development officials saw HealthConnex as not only economically viable and replicable, but also exportable, with job creation benefits.

An important source of reputational currency and hard cash was created when — to solve problems of access and scale — HealthConnex purchased Beneworth, a management system serving 80 percent (1,800) of Nova Scotia physicians. Today, over \$200 million a year flows

from provincial medical plans to doctor's offices through HealthConnex's Beneworth subsidiary. By acquiring Beneworth, HealthConnex turned the provinces' doctors into valued clients, amplifying network buy-in. By piggy backing onto existing medical billing systems, HealthConnex was able to upgrade and enhance services offered to doctors by including, for example, on-line prescription renewals, e-consults and web-booked appointments.

Summary and conclusions

In this paper we examined social network theory and its application to co-operatives as hybrid forms of business organizations that rely not only on market exchanges and hierarchy, but also - by their very nature as member associations - on social interactions . The paper examines various types of networks formed by co-operatives, and focuses on the complex form where co-operatives champion partnerships with diverse stakeholders. We conjecture that the driving force of such co-operative network creation is in the problem solving nature of co-operation, rather than cost minimization, particularly in the case of creation of public goods and/or positive externalities.

We highlighted the role of complex, multi-stakeholder co-operative networks as architects of organizational innovation, making a case that social and organizational innovations through networking, either among co-operatives in a supply chain, or in a complex adaptive framework, are driven by the clear purpose of a co-operative (or a group of stakeholders). This type of collective entrepreneurship highlights the co-operative form of organization as a medium for social coordination through economic activity. Similar to recognition of opportunities in the

entrepreneurial context, the clear purpose, or vision, of co-operatives to produce social benefit will drive the ‘champions’ to look for the right solutions to overcome all obstacles.

We consider co-operative networking to be the driver of organizational innovations, in that it may guide creation of strategic alliances and innovative institutions to support a particular purpose, or it may result in a complex organization. Co-operatives have an advantage in finding solutions through social networking with like-minded organizations sharing common values. Their role as leaders in the formation of complex networks is particularly evident in the provision of public goods, as evidenced by our two cases. CMEC and HealthConnex, two multi-stakeholder co-operative networks, are presented as examples of complex adaptive systems that arose as a result of social entrepreneurship, driven by a common purpose of the agents in the network.

Both CMEC and HealthConnex were convened by co-operative entrepreneurs who shared a clear and member-focused vision with all stakeholders. In both cases, the result was the creation of an important public good – co-op management education and an innovative health and wellness network— to meet needs not addressed by other sectors in the economy. In both cases, the focus has been member benefits, rather than financial gains. And in both cases, had the cooperative sector not stepped in to build the networks, they would not exist today. Moreover, the co-operative model offers an innovative way to deal with the quasi-public ownership arrangement when member-control is vital but private ownership is not the best solution, such as the case of Canadian healthcare.

For both CMEC and HealthConnex, shared buy-in and democratic decision-making by the membership was critical to their success and expansion. The dynamic and autonomous

linkages arising from co-operative networks have resulted in numerous unplanned actions that continue to influence and shape the outcomes of both networks in beneficial and resonant ways.

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