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CO-OPERATIVES DEVELOPING NETWORKS: A VIEW OF CO-OPERATIVES THROUGH ACTOR NETWORK THEORY

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ABSTRACT

The comparative advantage of the embeddedness of the co-operative within a community will be discussed as a component of actor network theory. Through a semi-structured interview process and a document review of nine food co-operatives in Ontario, Canada this paper will present the views of co-operative managers on the role of their co-operative within their communities. The managers saw their co-operatives acting as a bridge between different socio-economic groups. The discussion will continue outlining the challenges of managing larger networks as a co-operative grows. The importance of physical location and shared stories in building community networks with shared beliefs will be presented as a comparative advantage for co-operatives. This research seeks to answer the questions on what role food co-operatives play in network development within their communities and how actor network theory can inform this network development role.

INTRODUCTION

Literature on networked systems has focused on static lattice like networks exogenous to the behavior being studied (Nowak and May, 1992; Bergstrom and Stark, 1993; Eshel and Samuelson, 1998). Moving away from a static network structure, Watts (1999a, 1999b) examined networks as partly ordered, partly random systems, but still placed the network external to the behaviours being studied. It has been only recently that authors such as Skyrms and Permantel (2000), Jackson and Watts (2002) and Hanaki et al. (2007) have introduced endogenous relationships within the network as a component of the network itself.

In Hanaki et al.'s (2007) work there is a focus on two main contributions including 1) extending the standard modeling framework to include partner choice or interaction dynamics as well as action choice or behavioural dynamics, and 2) examining the effect of triadic closure bias, which is the tendency of an individual to connect to a friend of a friend. Hanaki et al. (2007) examine the triadic closure bias within the framework of the scalability problem. The scalability problem is what Hanaki et al. called the issue of increased difficulty in maintaining co-operation within a large network due to the free rider problem. Hanaki et al. believe that it is possible to have decentralized co-operation within small networks (friends of friends), but as the network grows it is not possible to scale co-operation with larger group size. Hanaki et al.'s work brings in the

component of multi-person interaction into the prisoners' dilemma game. While the analysis of co-operation through game theory helps us to understand potential outcomes of co-operation it lacks the embeddedness component of the co-operative within their environment that is needed to understand the development of co-operatives in the marketplace.

Where Actor Network Theory (ANT) is unique, and fits the food system more so than other theories, is in its use of a material-semiotic approach where ANT maps relationships that are material (between things, e.g. food) as well as conceptual, i.e. semiotic (e.g. co-operation) (Latour, 1987). Murdoch et al. (2000) look to ANT to help explain the linkages in the globalized food system. The ANT model is considered a constructivist approach - that is to say, an approach where groups construct knowledge for one another developing a culture around shared meanings (Latour, 1987).

The ANT model is shown to be a contested process of acting at a distance with the power of the network related to the length of the network's reach (Latour, 1987; Murdoch, 1995). Thus a globalized network would be considered powerful compared to a short food supply chains (SFSC). With SFSC focusing on shortening the distances between producers and consumers, SFSC appear to be acting in contradiction to the formation of a strong network. It is, however, in the stronger relationships that SFSC develops where the strength of the network exists. As will be seen in this study the small and medium co-operatives offer greater participation within their networks that provide a comparative advantage for their co-operative community.

Latour (2005) shows how ANT deconstructs power by demonstrating the difficulty in maintaining the various relationships within an extended network. A general destabilizing of the global food system network in favour of SFSC is due to the complex and long distance relationships that the global food system relies on. The mutual expectations that are built into the practices, routines, agreements, informal, and institutional relationships are the binding agents of a network, which ANT outlines. Should these mutual expectations vary between actors in the network, the network as a whole destabilizes (Salais and Storper, 1992). As SFSC rely on more direct contact with actors in the network it is easier to maintain and define these mutual expectations.

This paper will examine the question of how food co-operative managers view their networks, or communities, within the framework of ANT creating a comparative advantage for their firm. The role of embeddedness, as a comparative advantage for the firm through the building of a sense of social connection, reciprocity and trust for the co-operative will be examined. To accomplish these two goals the paper will begin with a background on the theories to be discussed. A section on the methods used to solicit input from managers on their communities will be presented next, followed by an outline of the results from the semi-structured interviews and documentation review conducted. A discussion that will link the theory and the empirical results from this study will be followed by a conclusion and potential future research areas of focus will conclude the paper.

THEORETICAL CONSIDERATIONS

To better understand the complex networks created by food co-operatives it is possible to look at the networks through the lens of ANT. ANT is a framework that considers the effects of infrastructure and technology on human actions (Callon, 1991; Latour, 1992). ANT assigns agency to both human and non-human actors within a system. There is no attempt by ANT to explain why networks exist, how they were formed or why they may fall part, only that networks are affected by surrounding factors. There is a presumption that behind every action lies an intention. Someone, somewhere, willed something and so caused it to happen. ANT seeks to remove the dualism of intention and action when considering agency.

ANT rejects the idea that networks are affected solely by humans through their mastery of technology. Instead of consciousness being seen as the fulcrum of power, the focus in ANT is on the organization powers of combinations or agencement (Callon, 2007). Agencement refers to effects of an association. It is the combination of cultural mores with technology that creates effects on networks (Munro, 2009). The complex networks that develop within a co-operative due to the social relationships are based partially on the membership status of those who are involved with the co-operative. The assignment of membership to those who interact within the co-operative exerts an affect on the relationship between co-operative members. Systems can take on agency like powers (Mingers, 2002).

Along with systems, materials are also considered to have an effect within the ANT framework. Materials can affect activities within a system. For example, X-rays can effect a patient's decision on treatment. Balance sheets can effect business decisions and the packaging in the supermarket aisle can effect purchasing decisions (Barrey, 2007). It is this incorporation of materials into social rules that leads from the apparent relativity of ANT's idea of translation to Latour's (1986) startling thesis of 'society being made durable'.

Latour (1986) outlines how the introduction of a heavy hotel key acts on hotel patrons by changing their attitude about the key from one of a convenience, when the key is light and easy to carry, to one of inconvenience due to the added weight onto the key. The effect of the added material changes the behaviour of the patron to act in a more durable fashion within the system by finding it easier to return the key rather than carry it. The added material also changes the patron's perception of the hotel clerk from one of key supervisor to holder of the key to assist the patron. This translation of the key from a convenience object, to an inconvenient object creates new networks within the system between the patron and the hotel clerk. Actions are changed based on effects from materials with certain characteristics introduced into the system (Latour, 1987).

Techniques are also considered to have an affect on networks within the ANT framework. Where techniques of abstraction such as writing, drawing and cartography develop, representations flow from these processes of abstraction. These inscriptions become, in Labour's (1987) term, 'miniaturised', 'mobile' and 'stable' (Munro, 2009, p.132) meaning that they can be carried throughout the associated network conveying succinct, stable understandings. For example, with formal communication, such as writing, instructions can be sent from distant locations. Through

formal communication strategies 'centres of calculation' can intervene in activities remotely (Cooper, 1992). The food system currently utilizes multinational corporations with headquarters or centres of calculation that can be located in different countries from the market they are trying to provide food to. Callon and Latour (1981) state that these interventions can travel the world and change the world as they go.

As an example of how these remote interventions can change the world, we can look to the food system. In Callon's (1986) study, in an intervention, a self-appointed spokesperson can enroll others, especially the silent or silenced, and represent their views. Using technology the spokesperson can represent the views of the silent in ways that align them to their own views and needs. As an example, the food system can speak for the silenced by incorporating its own needs on the outputs of the system. Food can become more durable for transport to aid shipping companies. Producers can impose production strategies that focus on speed of production rather than quality of outputs to assist in their desire to produce profit. As the distance from the end-user of the products increases the needs of the system can overpower those of the end-user.

For co-operatives the redefinition of the food system is an opportunity and a challenge. The networks that the co-operatives operate help to define the outputs of the system and thus the identity of the system itself, i.e. local food, co-operative food, organic food. Through democratic systems co-operatives develop networks that influence the outputs of the system to address the needs of the community in which they are embedded.

However, according to Munro (2009) identity can become punctualised or defined by the momentary demand. Identity can take on an intense local character and become timed, or limited, to the moment of demand where it will have the most effect. Co- operatives, especially local food co-operatives, have punctuated their co-operative identity with the local food movement as consumers begin to demand changes to the current food system. ANT, Monro (2009) suggests, needs to open up to asymmetries in power that rely on intermittency of linkages such as those found in the fluid environment of co-operative systems.

As co-operatives operate in a democratic environment through the One Member, One Vote principle they can maintain a fluid system based on changing member demands. Taking into consideration the effects of the complex networks that co-operatives develop, as ANT suggests we should, co-operatives can build systems that embeds member preferences into their food systems.

As Hinrichs (2000) indicated, embeddedness is the hallmark, as well as the comparative advantage, of direct agricultural markets, developing a sense of social connection, reciprocity, and trust. Even though Hinrichs (2000) was discussing community supported agriculture (CSA) and farmers' markets, co-operatives do deal directly with members for the direct purchase and sale of goods; thus, they could be considered a direct market system. The issue of embeddedness and the associated development of social capital, reciprocity, and trust are all noneconomic aspects that the co-operative business model encourages.

As social capital, reciprocity, and trust are considered part and parcel of a direct marketing system, Block (1990) would place the co-operative business model higher on his scale of economic instrumentalism. Block conceptualizes two types of continua to describe market relations. The continuum of marketness evaluates transactions, whereas the continuum of instrumentalism evaluates the "motives of economic actors" (Block, 1990, p. 53). In a continuum of marketness, actors decide to buy or sell a good based on price signals (Block, 1990). Co-operatives would be considered to have less marketness as their decisions are not solely based on price signals as co-operatives rely on embedded member preferences, democratic activities as well as price to market their goods. According to Block, an instrumentalism organization would attempt to capture the individual motivation within a transaction. Thus a co-operative organization with an emphasis on embedded member preferences and democratic principles would be relatively high on an instrumentalism scale.

On the other hand, an Investor Owned Firm (IOF) would be higher on the marketness scale attempting to mitigate all interference with the dominance of price with regard to transactions. It is the instrumentalism within the co-operative business model that makes for stronger network and community development processes embedded within the model than those found in the IOF model. While modern co-operatives struggle with the global pressures, moving them higher along the marketness scale toward a more IOF business model, it is imperative that co-operatives maintain the instrumentalism or embeddedness that fosters social capital development and trust as a comparative advantage.

It is this comparative advantage - developed around trust, social capital, reciprocity, and concern for the community - that helps to differentiate the co-operative business model from the IOF model. It is not possible, however, for a co-operative to ignore the basic economic tenets that operate within their environment. Co-operatives must provide a service or product for a competitive price or risk closure of the business (Ketilson, 1990).

It is, however, the concept of service and/or product that is at issue. Ketilson (1990) uses a neoclassical approach to services and products, discounting the noneconomic or embeddedness qualities offered by alternative market systems such as co-operatives. It has been discussed by many authors, (Bessiere, 1998; Lassaut and Sylvander, 1998; Hinrchs, 2000; Kneafsey et al., 2001; Verhaegen and Van Huylenbroeck, 2001; Schneider & Francis, 2005; Kneafsey et al., 2007; Seccombe, 2007) that the value of products and services should be calculated to be more than the simple sum of their direct economic parts. For example, Verhaegen and Van Huylenbroeck (2001) speak of a problem of externalities (both positive and negative) that are not considered part of a product or service by the IOF markets. These externalities include problems such as standardization of products, loss of rural identity and viability, decreased bio-diversity and environment degradation. How does an economic system that is focused on marketness determine the value of bio-diversity or rural identity? Kneafsey et al. (2001) indicate that consumers at farmers' markets value ecological, ethical and community awareness when making food purchases. In a similar vein, the co-operative business model places value on the principles it has been built upon including concern for the community. These co-operative principles provide a comparative advantage, when compared to the IOF business model, if communities place value on externalities.

The aim of this paper is to present the views of co-operative managers in the context of ANT and embeddedness as a comparative advantage for co-operative. This paper does not intend to present the broad analysis of complex systems or embeddedness as they relate to co-operatives as a whole. Its objective will be to consider whether an understanding of the co-operative manager's perspective of the complex food systems affects the role of the co-operative within the community.

In order to achieve the aim of this paper there will be a discussion on the methods used to illicit responses from the managers that outline their perspective on the food system and their co-operative's role within it. The results from implementing the methods will then be presented providing an overview of the combined responses for the nine food co-operative managers. The paper will then present a discussion and conclusion outlining the link between ANT, embeddedness comparative advantage and the perceptions presented by the managers.

METHODS

Nine managers of Ontario, Canada food co-operatives were interviewed including, two from Southwestern Ontario, two from Central Ontario, one from Northern Ontario, one from Eastern Ontario and three from the Golden Horseshoe sub-region. These Ontario regions were chosen to cover the geographic area of Ontario. The Golden Horseshoe sub-region was included due to the high density of the population and the greater concentration of co-operatives in this sub-region. The Golden Horseshoe sub-region covers the western end of Lake Ontario, including population centres such as Toronto and Hamilton, which account for its high population. The sub-region's outer boundaries are marked by Lake Erie to the south and Georgian Bay to the north.

The co-operative managers for this study were selected from lists compiled from On Co-op's online database of Ontario co-operatives, web searchers and subject referrals. On Co-op is the trade association for Ontario co-operatives that seeks to build capacity through education and advocacy for the 1300 co-operative businesses in Ontario (On Co-op, 2014). On Co-op maintains a complete listing of all 1300 co-operatives, which was accessed via their online database, http://www.ontario.coop/find_a_coop. To ensure a complete sampling of Ontario food co-operatives a web search was also conducted and upon commencement of key informant interviews, interviewees were asked for additional co-operative contacts. A list was compiled and invitations for participation in the study were sent to managers of co-operatives that fit the study criteria.

The study criteria outlined that all co-operatives that took part in this study had to maintain a headquarters in Ontario to be considered Ontario co-operatives. The co-operative also had to have a food focused mission and vision statement. The seven co-operative principles as outlined by the International Co-operate Alliance (ICA) in 1995 also had to be included in the business documents or websites maintained by the study participant.

Interviews with the managers of the co-operatives were conducted between April and September, 2013. Interviews were completed in a face-to-face meeting with each manager at their place of work or via Skype when distance was an issue. All responses from the interviewee were recorded on an electronic recorder to ensure accurate capture of responses and the ability to review responses to provide rigour for the analysis. To ensure an unbiased analysis of the responses one individual was responsible for conducting the interview and another was responsible for analyzing the responses.

Managers were asked questions focusing on community and sustainability. The purpose of these questions was to help determine what the manager considered to be their community. The questions were also meant to ascertain how the manager and the co-operative interact within their community in order to understand the embeddedness of the co-operative within the community.

1. How would you define the co-operative's 'community'? (members, physical community, interest groups etc.)

2. What role does the co-operative play within its community?

3. How does it interact with this community?

4. Can you outline the co-operative's definition of sustainable community development?

Analysis of the results was completed using inductive analysis to allow for patterns and themes to emerge from the data (Patton, 1990). The initial two interviews were analyzed to produce basic themes based on the conceptual nature of the responses (Dey,1993). Once the initial themes were determined the remaining seven interviews were analyzed and the responses coded based on the initial themes (Dye et al., 2000). A cross comparison of the responses was conducted to determine the similarities and differences in the statements within each theme area.

Personal and methodological biases were limited through the use of reflexive journaling (Malacrida, 2007). Upon review and analysis of the interview results reflexive journal entries were reviewed to build self-awareness of the values, norms and institutional pressures that could affect the interpretation of the interviews and coding of the interviews. By including Malacrida's (2007) method of reflexive journaling the emotional component and prior standpoint of the researcher on co-operatives and communities was also taken into consideration.

RESULTS

Co-operative Descriptions:

The nine managers interviewed represented a number of different types of co-operatives (See Table 1: Co-operative Types). Within each type of co-operative the operational experience also varied with some co-operatives operating for over forty years and others operating for less than

one-year. The co-operatives were also delineated based on sales revenue with large co-operatives maintaining a revenue stream of over two million dollars in annual sales, medium co-operatives maintaining fifty thousand to two million dollars and small co-operatives having less than fifty thousand in sales revenue. The delineation of the revenue categories came from the initial analysis of the financial results of the co-operatives.

TABLE 1 CO-OPERATIVE TYPES

Consumer	Worker-Owner	Multi-Stakeholder
Consumer Est. 38 yrs Large co-op	Worker-owner Est. 8 yrs Large co-op	Multi-stakeholder Est. 5 yrs Med. co-op
Consumer Est. 11 yrs Med. co-op	Worker-owner Est. 6 yrs Med. co-op	
Consumer Est. 6 yrs Med. co-op	Worker-owner Est. 2 yrs Med. co-op	
Consumer Est. <1 yrs Small co-op		
Consumer Est. 41 yrs Med. co-op		

Community question responses:

1. How would you define the co-operative's 'community'?

When asked to define their communities seven of the nine co-operative managers defined their community through connecting or bridging activities between community members:

> The community is more positioned on the connection the consumer has with the producer. Learning the stories of the producers, understanding the difficulties of seasonal struggle, depending on weather change and just external factors that are out of their control *(Personal Communication with Co-operative Manager, June 20th, 2013).*

> Community is broad but, by nature of the fact that we have a retail location a lot of our community is based on public presences of people

> who come in the store. People who are actively involved in our community over all, just in terms of our volunteers, are active engaged members who may volunteer in the store or on committees and then there's all sorts of members that shop here but also advocate for the purpose of the organization outside of our public location *(Personal Communication with Co-operative Manager, May 27th, 2013).*

The two managers that did not provide a connecting or bridging response when defining their communities were from the two larger co-operatives in the study. These co-operative managers provided responses such as:

> I don't think I would define us as having a community. I think we have networks *(Personal Communication with Co-operative Manager, June 25th, 2013).*

2. What role does the co-operative play within its community?

Six co-operative managers indicated that the role of their co-operative was to act as a bridge to encourage interaction of various community groups that would not normally interact.

> Acts as a bridge between various sections of community that would not normally interact *(Personal Communication with Co-operative Manager, June 4th, 2013).*

> Bridging between various sections of the community that would not normally interact, for example, farmers would be at farmers' market once a week now have access to this market seven days a week *(Personal Communication with Co-operative Manager, June 4th, 2013).*

> The co-operative helps to bring a focus on food and its power in community building and connecting people. How a specific cooperative, can bridge gaps between different communities and socioeconomic groups is important *(Personal Communication with Cooperative Manager, June 5th, 2013).*

Three managers did not outline the role of the co-operative as a bridge between groups. Of these three co-operatives, the two large and the one medium, multistakeholder co-operative provided responses focused on the services they provided to their membership base.

3. How does it (the co-operative) interact with this community?

As a response to the question on interaction with the community eight co-operatives offered food education programs as community activities. Six co-operatives offering food skills training for their members as activities while the other two offered food education programs. The food education programs offered included workshops, lectures, seminars and

conferences on the broader food system including economics, logistics, production, retail and business practices.

The food skills programs provided to the co-operative were hands-on programs for food selection, preparation and storage including programs such as food label reading, cooking, canning, pickling, baking and brewing.

> We also offer...opportunity to learn about food...learn a bit about how to cook food...chance to have a more tangible experience with food. Food relates to so much so it could be international trade, it could be environmental sustainability, it could be community development through localizing of resources....They get a bit of an exposure to that in a fairly accessible, sort of friendly, kind of way. They are sort of invited to participate on any level they feel comfortable *(Personal Communication with Co-operative Manager, June 14th, 2013).*

Both the food education and food skills programs were offered to a broad audience at a cost as a revenue-generating tool for the co-operative. The majority of co-operatives offered the programs on a scaled costs based on the ability of the community member to pay for the program.

4. Can you outline the co-operative's definition of sustainable community development?

Of the nine managers only four provided a formal definition of sustainable community development that was included in the co-operative's documentation. Three out of those four referred to an economically focused definition, referring to local economic development, sustainable local employment, or business sustainability. One of the four referenced both environmental and economic sustainability within their definition of sustainable economic development:

> Create something that is healthy and surviving well and not overboard to the point that you are looking at a corporation that is just trying to suck everything out of it to create profit for its shareholders. What we are trying to do is create an atmosphere where the co-op is an entity where those who participate become involved and receive benefits and create a better place to live in the future as well as starting to transition us to that better place now *(Personal Communication with Co-operative Manager, May 29th, 2013).*

Another co-operative provided a similar environmentally and economically focused definition for sustainable development.

> Balance needs of the environment with the financial needs of the business and the social interaction that all of that can make *(Personal Communication with Co-operative Manager, June 24th, 2013).*

It should be noted that even though there was a split between those co-operatives with a formal definition for sustainable community development and those without, each manager of the co-operatives, save one, without a formal definition had a personal definition for sustainable community development that guided their business practices. For example:

> Approach it in a more practical way...you know...three pillars of sustainability: 1) Economic sustainability, 2) Social and 3) Environmental. In terms of the environmental it is mostly how we make purchasing decisions. Communities (Social Sustainability) ...how do we pay our farmers, what do we charge for the food we sell so that the food is affordable so our farmers make a good wage and as a result our cost of goods tends to be higher than average. Economic is always a challenge...how do we remain viable? (Italics and wording added for clarification) *(Personal Communication with Co-operative Manager, June 14th, 2013).*

> Well-rounded approach recognizing that there is complexity to the balance and that balance must include a piece of the rural and the urban and bridging that gap *(Personal Communication with Co-operative Manager, June 20th, 2013).*

Only one co-operative, a large co-operative, did not supply a definition for sustainable community development. The manager stated:

> Do not speak in that language *(Personal Communication with Cooperative Manager, June 21st, 2013).*

DISCUSSION

When asked to define the co-operative's community the managers that participated in this study defined their communities through interactions. Groups needed to share stories or an understanding of the purpose of the organization to be considered community members. Interactions among community members facilitated by the co-operative can aid in the development of complex networks. Examining communities as complex networks ANT would suggest that the larger the network the more likely it is to destabilize. It is suggested here that destabilization can occur in many forms. The community development role that many of the small and medium co-operatives participate in through the development of mutual understandings between various groups that make up the community becomes destabilized and changes into network development rather than community development as the co-operative grows. As seen in the response by the two larger co-operatives within this study we can see this change of view of the managers as they outline their co-operatives role as building a network, not a community. The larger co-operatives face the scalability problem as they develop larger networks. Larger networks make it more difficult to ensure participation within the co-operative

and with limited participation the community development role of the co-operative becomes destabilized.

The increase in size of a co-operative not only creates participation issues within the network, but also a physical distance issue as well. The physical distance affects the role the co-operative plays within its community due to the extended physical infrastructure needed to operate a complex network. As ANT assigns agency to infrastructure the physical presence of the co-operative should be consider. As one co-operative manager mentioned the physical location is important to building a community through greater public awareness of the organization and its goals. The manager suggests that the physical space encourages community interaction and thus advocates the organizations beliefs to the general public. The addition of a physical space to the development of a community confirms ANT's influence of infrastructure on human interactions. The presence of a physical space allows for community members to interact and learn about the co-operative's goals and beliefs.

During the discussion on the role co-operatives play within a community the small and medium co-operative managers in this study saw the co-operatives as bridges between social groups within the community. As the small and medium co-operative maintained a physical space within the community they are better able to communicate their beliefs to the community they serve by acting as a bridge through direct interaction with community members. The manager's saw the role of the co-operative as connecting different groups in order to develop a mutual understanding for the benefit of the community. As Latour (1987) outlined ANT is a constructivist approach where groups construct knowledge for one another developing a culture around shared meanings. In their role as a bridge between different socio-economic groups within the community the small and medium co-operatives encourage interaction through shortened transaction distances, accessible physical spaces and connecting people through shared beliefs.

Following up on the role of the co-operative the managers were asked how the co-operative interacted with their communities. The small and medium co-operatives in this study encourage interaction between producer and consumer groups to build an understanding of the risks producers take to produce food for the community. The inclusion of hands on food skills programs, as a manager of a small co-operative put it, provided an, "…opportunity to learn about food....". A shared understanding through the sharing of stories between groups within a community helps to develop a strong sense of community. The larger co-operatives, however, must contend with larger networks making interaction across different groups within the network more difficult. Sharing stories from groups that are not only separated by socio-economic factors but by distance as well makes it exceedingly difficult to develop and maintain a community.

The stories and beliefs shared by the small and medium co-operatives within this study help build communities through shared beliefs about sustainable community development. In the discussions on sustainable community development it was found that most of the stories were informal in nature. Managers maintained a definition of sustainable community development, but did not make it a formal component of the co-operative. The co-operative managers offered

views on economic, social and environmental sustainability as part of community development, which affect the co-operatives day-to-day interactions with their communities.

The inclusion of local, organic, natural or sustainable as part of the co-operative's identity tell a story about the products and services offered by the co-operative to its community. This embedded information about the co-operative's products is offered to patrons by small and medium co-operatives through direct communications at time of purchase or during direct interactions with the co-operative. As Hinrichs (2000) suggest this embedded information represents a comparative advantage through the development of social connection, reciprocity and trust through the community networks developed by the co-operative. As the co-operatives develop their community network they encourage the sharing of beliefs through shared stories between diverse socio-economic groups within the community. The community network allows for the dissemination of embedded information on the beliefs that represent the guiding force behind the co-operatives. These shared beliefs act as bridging social capital to bring different socio-economic groups within the community together.

The complex networks that develop as a co-operative grows create unique challenges to the role co-operatives play in community development. Latour's (1987) view of ANT as a constructivist approach, which constructs knowledge and develops culture around shared meanings is seen in the small and medium food co-operatives presented in this study. The inclusion of a physical space within a community facilitates the direct interactions that aid in bridging different socio-economic groups within a community. As the co-operative grows the ability to interact directly becomes difficult and complex networks develop as part of the business of the co-operative. Direct interaction within a local, physical space allows for the informal sharing of meanings around complex topics such as sustainable community development. As these complex topics are shared through stories within the small and medium co-operatives a community is developed or strengthened through shared understandings.

CONCLUSION

The co-operative managers in this study provided insight into the community and network development capabilities of co-operatives. Small and medium co-operatives offer individuals greater participatory interaction allowing for the development of community networks that operate at a local level. The existence of a physical space within a community acts as a catalyst for interaction of different socio-economic groups within the community. Larger co-operatives must contend with complex networks that decrease the local, participatory component of the co-operative affecting community development. Co-operative networks with a greater community development focus offer a comparative advantage by embedding detailed information about complex topics such as sustainable community development, and product offerings through the sharing of stories and beliefs amongst community members. Larger co-operatives must consider new ways of encouraging participation to take advantage of the embedded information that is the comparative advantage of the co-operative business model through the sharing of community stories within the co-operative network. Complex networks are prone to destabilize and without

the development of bridging activities to increase bridging social capital within their community larger co-operatives risk being seen as networks and not communities.

The research presented here is cursory as it focuses on food co-operatives and utilizes co-operative managers as key informants. Additional research into this area would require a broader sample that would include co-operative consumers/members as well as staff and board members.

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