The Conservation Authorities of Ontario, Canada as a Social Innovation:

Applying the Vision as Social Construction Model for Describing Social Innovations

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ABSTRACT

This research uses the Vision as Social Construction model to describe the development of Ontario's Conservation Authorities (CAs) as a historical case of social innovation. Beginning in the early 1900s, our analysis describes the transformation of CAs in Ontario from a simple, broadly defined ideal to a province-wide network of highly institutionalized, quasi-governmental organizations. The original catalytic vision brought people together around the broad idea for integrated resource management at the watershed scale. Multi-level government partnerships were established in the legitimated vision phase with the political authority and financial resources to pursue integrated watershed management. Then, emerging research and grassroots conservation alliances further articulated the vision. The assent or adoption of the Conservation Authorities Act characterized the enacted vision phase. Finally, the embedded vision phase clarified and constrained the roles and responsibilities of CAs for several decades until cycles of crises and opportunity typical of institutionalized organizations marked full entry into the routinized vision phase.

Key words: social innovation, conservation authorities, Southern Ontario, social-ecological resilience

Introduction

Using a well-documented case study of environmental conservation, watershed-based management organizations in Ontario, Canada (Ontario's Conservation Authorities) (Mitchell and Shrubsole, 1992, 2001) this article illustrates the utility of a recently published conceptual model of social innovation, the Vision as Social Construction (VSC) model (McCarthy et al. 2014), to inform social change processes in environmental conservation contexts across Canada. The main goal of this article is to apply the VSC model of social innovation to the evolution of Ontario's Conservation Authorities as a case study of social innovation. In this way, we are both testing the validity of the VSC model as well as to document the evolution of CA's through an innovation lens to inform the efficacy of CA's and to demonstrate how positive social change can occur in environmental conservation contexts.

Environmental planning and management organizations (e.g. civil society environmental movement organizations, government agencies and quasi-government environmental management organizations at various scales) are often cited in the environmental planning literature as having the capacity to address persistent natural resource management conflicts (e.g. Berkes and Folke, 1998; Mitchell, 2005). These organizations are described as needing to be

capable of addressing persistent conflicts between stakeholders and building capacity to respond through decision-making and regulatory processes to political, economic, or ecological changes (Berkes and Folke, 1998; Mitchell, 2005). An archetypical example of such an organization is Ontario's Conservation Authorities (CAs). CAs are quasi-government agencies that plan, coordinate, and manage natural resources on behalf of municipalities within a watershed as part of their mandate "to ensure the conservation, restoration and responsible management of Ontario's water, land and natural habitats through programs that balance human, environmental and economic needs" (Conservation Ontario, 2015a).

Social innovation contributes to social-ecological resilience and helps to address the most complex social-ecological challenges facing the global population (Walker and Salt, 2006; Westley et al., 2011; Olsson et al., 2017). The concept has experienced considerable growth in recent years both as a body of scholarship and as public policy initiatives. This popularity within both the political, public, and private sectors has led to significant investments in social innovation across Canada, Europe and the US. For example, Canada recent established a Steering Group to develop a Social Innovation and Social Finance Strategy for the federal government to support community-level social innovation (Government of Canada, 2017). Other key Canadian initiatives/institutions include the Social Innovation Generation (SiG), McConnell Foundation, and Centre Canadien de Recherche sur les Innovations Sociales (CRISES). The Center for Social Innovation at Stanford University, Ashoka and Skoll Foundations, and the Open University are notable centres for social innovation and systems thinking in the U.S.. Finally, the study and practice of social innovation, transition management, and social-ecological transformations continue to benefit from European centres such as the Young Foundation and Nesta in the UK, the Dutch Research Institute for Transitions (DRIFT), and the Stockholm Resilience Centre.

Within the growing field of social innovation, we apply concepts from social-ecological systems thinking and resilience (Gunderson and Holling, 2002; Walker and Salt, 2006) alongside social theory (Giddens, 1976, 1979, 1984) and, following Biggs et al. (2010), link common social innovation phases to the adaptive cycle. Specifically, we apply the vision as social construction (VSC) model previously developed by McCarthy et al. (2014) to examine the CAs historical case. The unique contribution of the VSC model is that it clearly articulates the dialectic relationship between agency and social structures (systems) (McCarthy et al., 2014) through the notion of an evolving vision throughout the innovation process. In particular, this paper highlights the importance of *critical transitions* or *back-loop* innovations and the avoidance of system *traps* in the context of large-scale, long-term social innovation processes.

The paper has the following structure. The following section synthesizes the relevant literature exploring the advent of social innovation as it relates to CAs, including a full description of the VSC model, especially as it relates to other, existing models of innovation and transition. This section also describes the case study context, specifically the history and mandate of CAs. The third section outlines our methods, while section four presents our analysis of the evolution of CAs using the VSC model and provides commentary on the model's utility. Research limitations, conclusions and future directions are offered in the closing section.

Social innovation in complex social-ecological systems

Widespread growth in social innovation research and practice has been coupled with an increase in, often complimentary but sometimes divergent, definitions and views on what social innovation is and how it is cultivated. This variety and diversity is noted by TESPIE (Theoretical, Empirical and Policy Foundations for Social Innovation in Europe), who view social innovation as a 'quasi-concept' (TESPIE, 2014). As a quasi-concept, social innovation can be usefully malleable when working with diverse audiences and communicating with policy-makers (Caulier-Grice et al. 2012). However, it remains vulnerable to rigorous academic interrogation and requires further empirical study (Grimm et al., 2013; TESPIE 2014). This is a salient concern to social innovation research and practice as a loosely defined term risks avoiding critical approaches and, at worst, being defined by those in power for the purposes of maintain the (neoliberal) status quo (Sincair and Baglioni 2014; Montgomery 2016). There is also risk in the excitement of exploring *good news for a change* and over-reporting a few successful cases at the expense of deep insights offered by critically examining failed social innovations.

Despite its conceptual fuzziness, social innovation has entered mainstream discourse and many new social change initatives are being undertaken under the moniker of, and informed by, social innovation research and practice across the globe. Responding to concerns over whether social innovation is merely a 'buzzword' (Pol and Ville, 2009) or suffering from 'definitional bankruptcy' (Montgomery, 2016), Pel and Bauler (2015) have called for the stabilization of social innovation as an academic field of study. As a transdisciplinary concept in theory and practice, calls for greater empirical research into social innovation have recently been answered in diverse fields such as: urban sustainable development (Angelidou and Psaltoglou, 2017), business management (Agostini et al., 2017), and Indigenous innovation (Walters and Takmura,2015). For current, in-depth reviews of social innovation, we recommend Ayob et al. (2016) and Edwards-Schachter and Wallace (2017).

With respect for the advantages of preceding under a framework that acknowledges multiple perspectives on, and framings of, social innovation and the growing body of scholarship exploring strategies and pathways for fostering such changes in complex social-ecological systems (Geels and Schot, 2007; Biggs et al., 2010; Westley et al., 2011; Moore et al., 2014, Olsson et al. 2017), we define social innovation as:

> any initiative (product, process, program, project, or platform) that challenges and, over time, contributes to changing the defining routines, resource and authority flows or beliefs of the broader social systems in which it is introduced. Successful social innovations reduce vulnerability and enhance resilience. They have durability, scale and transformative impact (SiG Knowledge Hub, 2013).

The conceptual basis for this study is complex systems thinking, resilience and social innovation (Gunderson et al., 1995; Berkes and Folke, 1998; Kay et al., 1999; Berkes et al., 2002; Gunderson and Holling, 2002; Waltner-Toews et al., 2004; Armitage, 2005; Walker and Salt, 2006; Westley et al., 2006; Biggs et al., 2010; Westley and Antadze, 2010; McCarthy et al., 2011). As explained above, this research builds on the VSC model previously developed for research that examined land use and conservation innovations associated with the Oak Ridges

Moraine conservation movement in the Canadian province of Ontario (McCarthy et al., 2014). The following is an abbreviated overview of the model.

Social innovation's conceptual roots date back to the early 1850s when early social theorists such as Marx, Weber and Durkheim were exploring the necessary conditions for societal transformation. More recent work by Giddens (1976, 1979, 1984) on the theory of structuration describes the tension between agents and different types of social structures. Especially relevant to this work, Giddens' research on structuration also explains how individual agents, through repeated behaviour, create different kinds of social structures and that those social structures reciprocally act to facilitate or constrain the behaviour of individuals, groups and organizations. Accordingly, intervening in an agent's knowledge of, or behaviour within, such structures may result in micro-scale changes between and/or among individual agents. However, such changes do not necessarily challenge or transform broader institutional structures (Giddens, 1976, 1979).

Current social innovation literature examines such agent-structure dynamics and explores strategies for fostering transformative change in social systems (Westley et al., 2006; Mulgan et al., 2007; Biggs et al., 2010; Westley and Antadze, 2010; Moore and Westley, 2011; Antadze and Westley, 2012; Moore et al., 2014; Olsson et al. 2017). Just as Holling's (1973, 2001) adaptive cycle describes the dynamics of release and reorganization (often called the *back-loop*) and exploitation and conservation (often called the *front-loop*) in ecological systems, the adaptive cycle can be used to describe processes of continuity and change within complex social systems (Westley et al., 2006; Biggs et al., 2010; Westley and Antadze, 2010). The adaptive cycle was originally developed by C.S. Holling (1973) in the 1970's to describe the dynamics of ecological systems, especially the role of episodes of *creative destruction* (Schumpeter, 1950) (i.e., fire, pest outbreak) in forest ecosystems and the inextricable link between social and ecological systems, especially through management and governance (esp. Gunderson et al.; 1995; Gunderson and Holling, 2001). More recently, this heuristic has also been used extensively to describe radical innovations resulting in systemic social transformation are primarily associated with the back-loop and arise from the opportunities afforded by creative destruction (esp. Westley et al., 2006 and Biggs et al., 2010). We find the work of Biggs et al. (2010) particularly informative in this context as it describes the innovation process using the adaptive cycle to highlight innovation activities associated with both the front-loop and the back-loop as well as key system traps that social innovators must navigate. In particular, Biggs et al. (2010) describe the *poverty trap* (system is not able to reorganize due to a lack of resources) and the *rigidity trap* (system is resistant to new innovations because of bureaucratic structures or vested interests). Examples of both system traps emerged through our analysis of the CAs case study described below. The integration of critical transitions as key triggers for innovation and system traps into the VSC model emerged as a key outcome of the analysis presented below.

The role of agency in social change also has a long history. The works of Parsons (1951), Geertz (1957), and Weber (1947) are notable in the study of agency in social change, as are examinations of the role of transformational leadership (Tushman and Rominelli, 1985; Quist and Vergragt, 2004; Woodhill, 2010) and, more recently, social entrepreneurship (Battilana et al., 2009). Research examining the small-scale dynamics of transformation and the role of agency is rare but growing (notable exceptions include Loorbach and Rotmans, 2006; Geels and

Schot, 2007; Smith, 2007; Geels, 2011; Riddell et al., 2012; Westley et al., 2013). Successful transformation has also been explored through visionary, charismatic, and transformational leadership. The interplay between and among individual action and context/system dynamics through time resonates across these literatures and is emphasized in the VSC model.

Developing and implementing a novel vision is an essential part of the social innovation process (Westley, 1992; McCarthy et al., 2014). However, novel ideas need to be relevant to changes/opportunities/challenges in the social system. Therefore, an innovative vision can demonstrate and embody the interplay between and among individual action and context/system dynamics (Westley, 1992). Westley (1992) first described these relational dynamics as six phases apparent in the evolution of the strategic vision for palliative care:

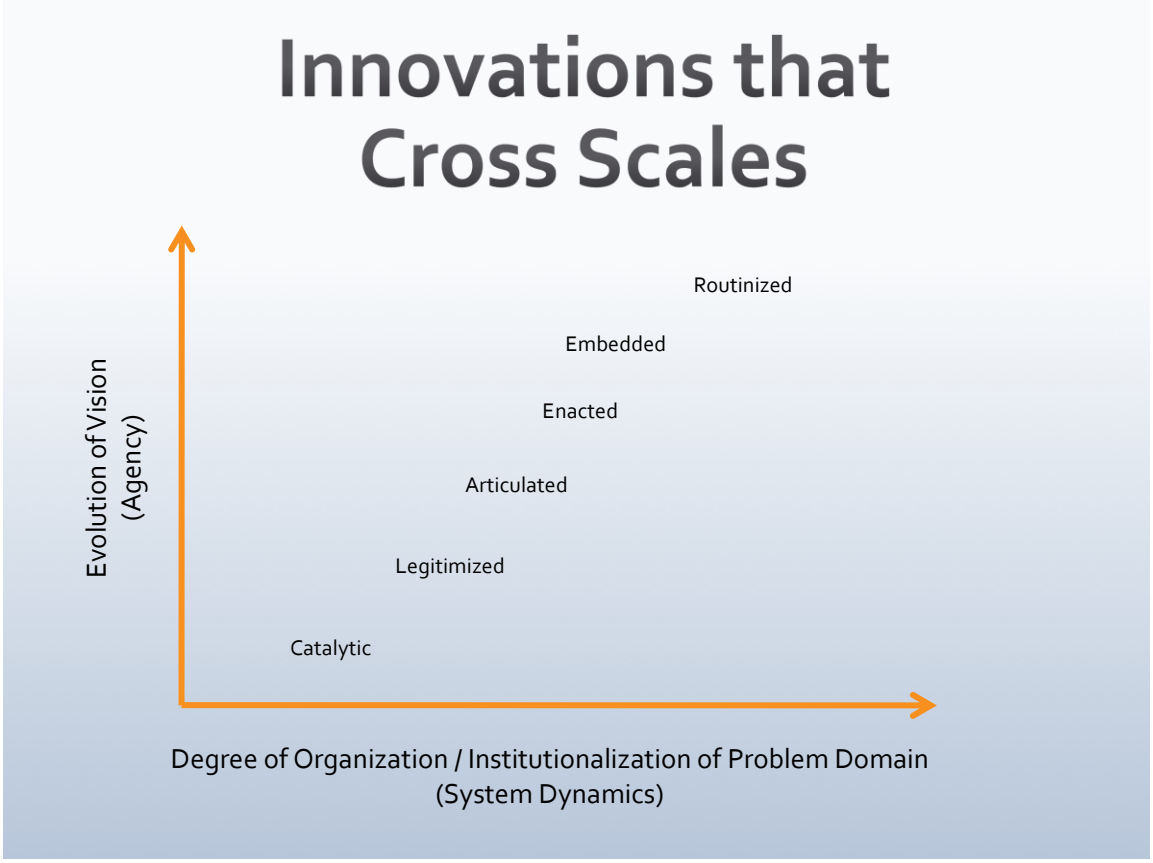
- *Catalytic vision*: urgent stimulus for the creation of the initiative, less a blueprint, than an awareness of an unmet need; highly idealized/simplified; and a search for understanding;
- *Legitimized vision*: highly political process of getting key resources mobilized; and the image of the initiative negotiated;
- *Articulated vision*: need to further *frame* the initiative but lack of precise vision can actually help at this stage with negotiation; articulating the vision to different stakeholders to ensure buy-in; and flexible vision without being disingenuous;
- *Enacted vision*: vision articulated into specific undertakings/ projects; team approach essential; research aspect stressed;
- *Embedded vision*: no initiative has clearly defined boundaries, rather it is bound by formal and informal interactions which sustain, support, and also limit its existence; ongoing resources secured/stabilized; and networks initiated;
- *Routinized vision*: sense of distinction fades/energy diminishes; focus difficult to maintain; uncertainty about the future; budget cuts shrink services; and opportunities for broader system change emerge as the system approaches a potential critical transition (McCarthy et al., 2014: 3).

Expanding on these phases, McCarthy et al. (2014) developed the VSC model to describe front-loop social innovations within complex, social-ecological systems by examining land use and conservation innovations associated with the Oak Ridges Moraine conservation movement in the Canadian province of Ontario. According to McCarthy et al. (2014), social innovations emerge in dynamic tension between the evolution of an agent's vision and the evolution of associated social structures or problem domains (see Figure 1).

McCarthy et al. (2014) present the six vision phases as loose activity clusters that are considered surrogates for the change agent's role in a social innovation. The VSC model sets these phases in relation to a description of the state of the relevant social structures/problem domain (Giddens 1979) or stated differently, the broader social-ecological system dynamics (Gunderson and Holling, 2002; Walker and Salt, 2006). Therefore, the contribution that the VSC model (McCarthy et al., 2014) makes to the relevant literature is that it clearly articulates phases in an innovation process similar to the Transition Management, multi-phase model – predevelopment, take-off, breakthrough and stabilization (Kemp and Loorbach, 2003; Rotmans and Kemp, 2003) or the Biggs et al. (2010) – front-loop (exploitation, conservation), back-loop (release and reorganization). The VSC model describes these phases in greater detail and in

particular, beyond describing the phases of an innovation as the Transition model does, it does so by describing dynamic tension between the agent (individuals, groups, organizations etc.) and the broader social structure (laws, institutions, beliefs etc.) (after Giddens, 1984). Each phase of the VSC model emerges out of the tension between an individual or group's vision for social change and the broader social structure's reaction to that vision and this ongoing dynamic. Therefore, the contribution of the VSC model beyond models such as the Transition, multi-phase model and the Biggs et al. front-loop/back-loop model is that it describes the innovation process as a more nuanced dialectical process, that is, you cannot talk about agents without talking about structure and vice versa (after Giddens, 1984).

Figure 1: The Vision as Social Construction (VSC) Model. The Vision as Social Construction (VSC) model sets these phases of an evolving vision in relation to a description of the state of the relevant social structures/problem domain to describe the process of social innovation.



Source: Authors.

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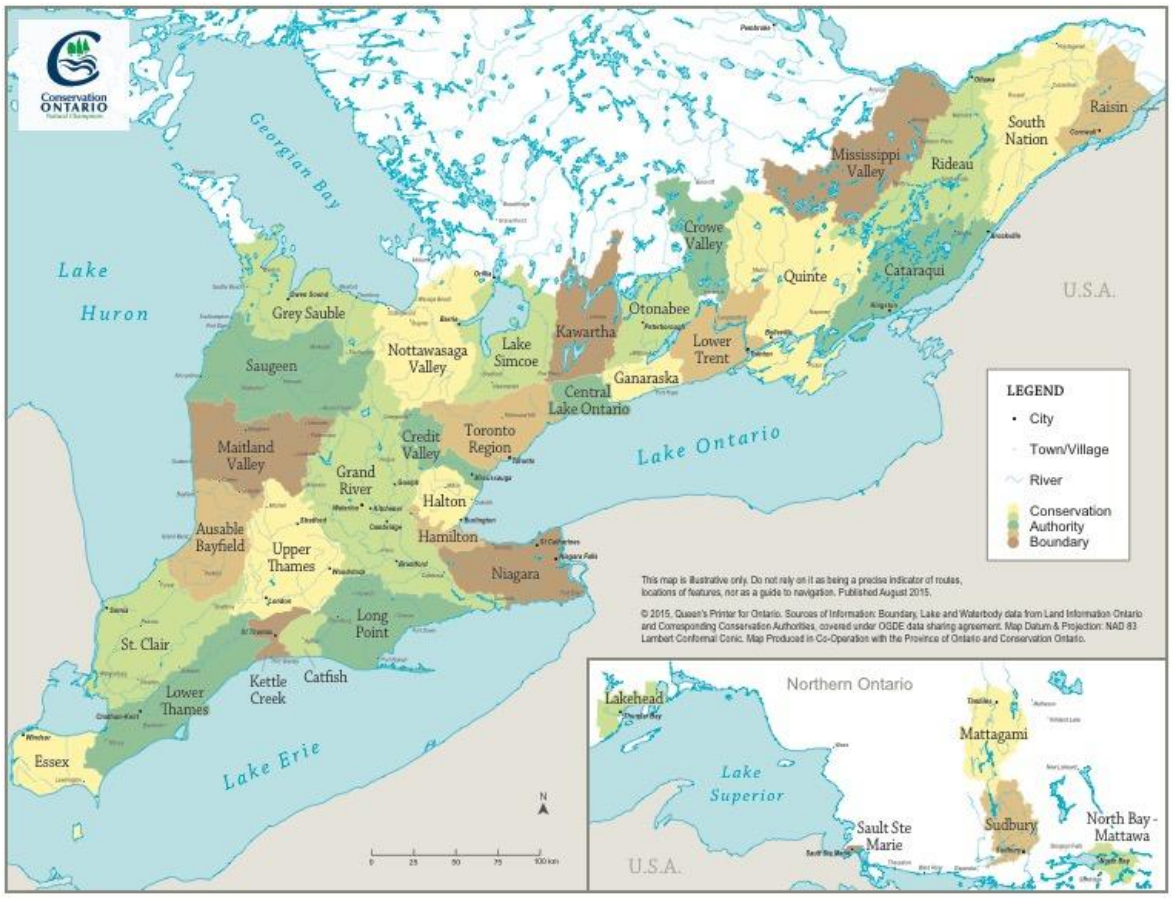
Applying the model to Ontario's Conservation Authorities is intended to provide further empirical grounding, test the model's efficacy and to provide practical insights for conservation organizations as they foster social innovations. The application of the model highlights cross-scalar opportunities for change as smaller-scale systems reach the routinized phase or approach a critical transition as well as providing practitioners with a sense of new opportunities for broader system change as the CA movement reaches the routinized phase as a whole. In particular, this application of the VSC model highlights the importance of such critical transitions and avoiding key system traps in the innovation process (discussed in detail below).

Ontario's Conservation Authorities and Ontario's conservation policy context

Ontario's Conservation Authorities (CAs) are unique environmental planning models (e.g. Mitchell and Shrubsole, 1992, 2001; Krause et al., 2001; Michaels et al., 2006; Mitchell et al., 2014). Created by two or more municipalities in a watershed area as enabled by the 1946 Conservation Authorities Act. The Conservation Authorities Act and other more recent delegations of provincial authority give them powers to regulate certain aspects of land use planning and development in their watershed-based jurisdictions as well as activity with and adjacent to watercourses. They also have the authority to work with their constituent municipalities and community groups to undertake studies and programs for the protection of natural and ecological resources. CAs are internationally recognized for their science-based, locally-responsive approach to watershed management (Mitchell and Shrubsole, 2001; Krause et al., 2001; Michaels et al., 2006; Mitchell et al., 2014) and as a means to conserve natural resources (Michaels et al., 2006; Lord, 1963).

Thirty-six CAs operate in Ontario watersheds, primarily in the south of the province, in which more than 12 million people, or approximately 90 per cent, of the population reside (Conservation Ontario, 2015a) (See Figure 2). CAs are governed by boards of municipally appointed members, 78% of whom are also elected municipal councillors (Conservation Ontario, 2015b). Programs and services delivered by CAs total almost $300 million annually and employ more than 3,000 full-time and seasonal staff (Conservation Ontario, 2015b). Ontario's CAs are funded through municipal levies and special projects (45%), self-generated revenues (38%), provincial grants and special projects including a recent, time-limited investment in drinking water source protection (14%), and federal grants or contracts (3%) (Conservation Ontario, 2015b).

Figure 2 - Map of Ontario's 36 Conservation Authorities



Source: Conservation Ontario, 2016.

One of the CAs' main responsibilities relates specifically to watershed planning. While there have been criticisms of integrated water resources management (IWRM) and watershed planning (e.g., Biswas, 2004, 2008; Grigg, 2008; Jeffrey and Geary, 2006; Molle, 2008), many authors highlight the positive qualities of these frameworks (e.g., Leach and Pelkey, 2001; Stalnacke and Gooch, 2010; Mitchell, 2012) and conservation authorities continue to utilize these frameworks as the basis for much of their work. Despite the internationally-recognized, science-based, watershed approach to environmental land use planning and decision-making the governance and decision-making structure of CA's is inherently political. Over the course of the evolution of CA's there have been numerous attempts by various provincial governments to reduce their role. In some cases, regulatory work ends up as a balance between science-based evidence, public values and political ideology (Thomson and Powell, 1992; Clark, 2000; Miner 2016). Recent media reports highlight some of these inherently political issues by noting that, "complaints have been raised the agencies [CA's] take inconsistent approaches to development proposals, lack accountability, duplicate other government agencies and are poorly governed by municipal appointees" (Miner, 2016).

Approach and Methods

This research is ongoing within the context of a long-term partnership among the University of Waterloo, Queen's University, and the Toronto and Region Conservation Authority (TRCA). Case study methodology is useful for developing rich understandings of complex systems and nuanced descriptions of real-world processes (Berkes and Folke, 1998; Yin, 2014). Historical perspectives are necessary when examining social innovations to capture "the entire lifecycle of the innovation process" and identify dynamics that account for the roles of both agency and structure in social innovations (McGowan & Westley, 2013: 9). Accordingly, our case study includes participant observations, a one-day focus group workshop, key informant interviews, as well as a literature review and document analysis. Although we have used multiple methods, we acknowledge that the workshop was carried out in 2014, in an effort to ensure thorough analysis beyond 2014 we have concentrated on the examination of documents associated with the Province of Ontario's growth strategy, Greenbelt Plan review and evolution of CA networks (e.g. Conservation Authorities Moraine Coalition).

Ongoing participant observations by researcher-practitioners from the TRCA and researchers from the university team provided rich recent-historical, place-based perspectives on the CA movement. Yin (2014: 117) describes participant observation as a key case study method and explains that it affords the opportunity to gain "the viewpoint of someone *inside* a case rather than external to it". Similarly, establishing the Waterloo-Queens-TRCA research partnership opened opportunities to be active within the organization and attend numerous meetings and events otherwise inaccessible to outsiders – all contributing rich contextualized understandings of CAs, past and present. This approach also allowed the focus group to be convened with relative ease.

An intensive, one-day focus group workshop in October 2014 provided the primary empirical data for this research and augmented published research on the history and evolution of CAs in Ontario. Focus groups are useful for observing how individuals "collectively make sense of a phenomenon and construct meanings of it" (Bryman et al., 2009: 168). Specifically, we were interested in how individuals who are, or have been, closely involved with the CA movement would explain how the movement evolved (from 1900 to present). We used the formal and informal networks of the collaborative Waterloo-Queens-TRCA research team to identify reflective practitioners, leading researchers and key stakeholders involved in the work of Ontario's CAs spanning the last 30-40 years. In total, 10 participants attended the focus group, excluding facilitators. These participants included: 5 former and current Chief Administrative Officers of 3 Conservation Authorities (1 large, urban CA, 1 medium-sized, peri-urban CA and 1 small, rural CA); and 5 academic scholars from 4 Universities that are considered experts in the field of water governance and, in particular on the subject of Conservation Authorities. We designed the workshop such that participants would gain useful insights directly applicable to their daily lives and would be a unique opportunity for retired individuals interested in contributing knowledge and experience to current and future leadership in the CA movement.

After an introduction to social innovation and the historical case study methodology, participants collaboratively developed a timeline of important events and trends characterizing the CA movement. Next, participants sorted these events and trends into three different scales:

global, local and individual. Finally, participants were divided into smaller groups and were asked to identify critical transitions in the timeline and, in each transition describe drivers, tensions, innovations and key change agents along the timeline. A final facilitated discussion ended the workshop with real-time, participant-checking of the timeline (Creswell and Miller, 2000). The main outcome of the workshop was a detailed, multi-scale timeline of the CA movement in Ontario, highlighting critical transitions that were essential in the process of social change or innovation. We also asked participants to suggest specific documents relevant to our analysis. In addition to our own literature analysis, we used these documents to verify details of certain events as well as triangulate the focus group and interview results (Berg, 1998; Creswell and Miller, 2000).

We recognize the limitations of the empirical basis for this analysis however, returning to the over-arching goal of the paper – to both test the validity of the VSC model and to document the evolution of CA's through an innovation lens to inform the efficacy of CA's and to demonstrate how positive social change can occur in environmental conservation contexts – we feel that the paper still makes a positive conceptual and empirical contribution. Further application of the VSC model will further validate and ground the framework.

Results and Discussion

The following section provides an analysis of the evolution of CAs using the Vision as Social Construction (VSC) model. The intent in applying the VSC model to this case is to explore the narrative of the development and evolution of the CA's movement in Ontario, Canada as a dynamic tension between the individual agents' vision for the CAs and the broader social system as context.

Catalytic Vision

As described above, the catalytic vision provides the stimulus for the overall initiative and includes the initial system drivers. This highly idealized or simplified vision mobilizes people around a search for understanding and towards a shared vision. First, in the early 1900s, major environmental challenges, including flooding and drought, were exacerbated by over-exploiting natural resources through forestry and agricultural development, resulting in water and wind erosion. This can be interpreted as the first, and perhaps largest, of several *critical transitions* or *release phases* (Biggs et al., 2010) whereby the existing environmental management regime encountered a *rigidity trap* (Biggs et al., 2010). This critical transition called into question the entire management approach, which had become reinforced by resource extraction, vested interests and represented the *back-loop* process that allowed for a new era (or front-loop) of conservation-based management to emerge and begin to evolve. This pronounced environmental change across the landscape sparked a call to understand and address declining environmental conditions. Established in 1909, the Canadian Commission of Conservation (CCC) was an impressive environmental program in the extent of its documentation and policy advocacy. The CCC demonstrated an integrated approach to resource management, incorporating multiple disciplines into its operations and noting the linkages between squandering natural resources and problems associated with urbanization, water resources, erosion, habitat destruction and demands for hydro-electricity. By documenting and communicating these

linkages, the CCC began to bound the problem domain around curbing environmental change in Ontario (Girard, 1991).

Second, water and land management approaches were being re-evaluated internationally during this early time period. Workshop participants identified various models that had emerged in the early 1900s to address environmental challenges in both Canadian and international jurisdictions that influenced early ideas around integrated land and water management. These included: the Canadian Forestry Association (1900), the International Joint Commission (1910), Ontario Provincial Parks (1913), the Ohio Conservancy Districts (1914) and the Tennessee Valley Authority (1933). Specifically, the Ohio Conservancy Districts and the Tennessee Valley Authority served as models for Ontario's CAs. The Ohio Conservancy Act (1914) allowed for the creation of conservancy districts with responsibility for flood prevention, regulating stream channels through alteration, reclamation or filling of wetlands, irrigation, diversion or elimination of water courses (Mitchell and Shrubsole, 1992). The first conservancy district under this Act, the Miami Valley, was established in 1915 to address flood control through single-purpose dams. Although the Muskingum Conservancy District was established later, in 1927, its integrated, participatory approach to flood issues and cooperative funding arrangements made a lasting impression on Ontario officials who toured the conservation district in 1944, 1947 and 1948 (Mitchell and Shrubsole, 1992). The other American model that informed the development of Ontario's CAs, was the Tennessee Valley Authority, established through the Tennessee Valley Act (TVA) in 1933. The TVA gave the Authority the power to control flooding and develop the Tennessee River's potential for both navigation and hydroelectric power. The TVA became a model for multi-purpose projects, acknowledging the linkages between land and water, and explicitly considering socio-economic conditions and change (White, 1969; Mitchell and Shrubsole, 1992).

This catalytic vision phase identified and documented environmental change through the CCC, and connected actors in Ontario with others addressing similar issues in other jurisdictions such as Ohio and Tennessee. The problem domain began to take shape as the catalytic vision of integrated natural resource management formed in Ontario. Critical here is the acknowledgement that the former resource management regime had collapsed, likely due to a rigidity trap, and set the stage for the next phase of front-loop innovation.

Legitimized Vision

In this next phase, the vision is legitimized through more political processes, mobilizing key resources and negotiating the image of the social innovation. The establishment of the Grand River Valley Boards of Trade (GRVBT) in late 1930 marked the first major step in legitimizing the original, catalytic vision. The GRVBT addressed flooding and water management issues on a regional basis and became an effective lobby group that successfully linked local and municipal efforts to the provincial scale (Breithaupt, 1912 as cited in Mitchell and Shrubsole, 1992). Notably, the GRVBT successfully lobbied the provincial government to complete the *Report on Grand River Drainage*, later referred to as the Finlayson Report (1932) after then Minister of Lands and Forests for Ontario. The Finlayson Report demonstrated an inter-municipal and inter-governmental approach to water resource management in the Grand River Basin and recommended flow regulation and storage through the use of multi-purpose dams, reforestation and existing forest cover conservation, and maintaining minimum flows to protect valley

residents' health from sewage effluent discharge (Mitchell and Shrubsole, 1992). Although the GRVBT recognized the potential benefits of the Finlayson recommendations, they could not be realized without continued municipal and provincial cooperation and federal government cost-sharing (Mitchell and Shrubsole, 1992).

Later in 1932, the Province of Ontario's Grand River Conservation Commission (GRCC) Act further legitimized the vision of integrated, watershed based resource management in Ontario by allowing any five municipalities in the Grand River Basin to undertake the legal, financial and administrative steps required to implement the Finlayson Report recommendations. However, it took until early 1939 for the GRCC to successfully negotiate cost-sharing arrangements. Ultimately, the federal and provincial governments covered 75% (37.5% each) and the 25% municipal share was based on each municipality's assessment (e.g., lands and buildings) as well as the benefits (e.g., water supply, flood protection, sewage disposal) each could expect to receive by implementing the Finlayson recommendations. With the necessary political authority and financial resources in place, the GRCC could finally refocus its attention on implementing the Finlayson Report and work began on the 3-year multi-purpose Shand Dam project in late 1939 (Mitchell and Shrubsole, 1992; Richardson, 1974).

A similar, yet ultimately unsuccessful, process was followed in the Thames River Valley to address severe flooding. The *Thames River Preliminary Report on Flood Control* was completed in April 1938 and led to the Thames River Control Act of 1943, providing the necessary authority to appoint a conservation commission similar to the GRCC. However, the Thames River Control Commission was never formed due to the war effort and was considered redundant with the Conservation Authorities Act in 1946 (Richardson, 1974).

The Grand River and Thames River Acts legitimized the concept of integrated, watershed-based resource management in Ontario and are considered precursors to the Conservation Authorities Act. The legitimized vision was realized through an extensive political process that involved negotiating for and mobilizing resources. This process set the context for further problem domain evolution through the articulated vision stage.

Articulated Vision

In the articulated vision phase, the social innovation is further framed and negotiated to integrate stakeholder perspectives. Extensive discussions about resource conservation in Ontario within and between conservation alliances helped to clarify and articulate the vision. Groundbreaking science (notably, the Ganaraska Watershed Study – Richardson, 1944) supported and grounded the articulated vision. Two groups that provided leadership in the conservation movement in the years leading up to the Conservation Authorities Act: the Federation of Ontario Naturalists (FON: a network of naturalists clubs in Ontario now known as Ontario Nature) and the Ontario Conservation and Reforestation Association (OCRA: stakeholders interested in resource management). In 1941, the FON completed the *Natural Resources of King Township* report that summarized a survey detailing natural resource deterioration in King Township and provided the basis for a rehabilitation plan (Richardson, 1974). Although not carried out as the report recommended, the rehabilitation effort further articulated the vision that "conservation cannot be attained by piecemeal methods, but rather that

it must be accomplished with a multi-purpose programme for the renewal of all natural resources in an area" (Richardson, 1974: 3).

Also in 1941, FON and OCRA organized a conference at the Ontario Agricultural College in Guelph, inviting representatives from all organizations active in conservation and restoration in Ontario. This influential group, known as the *Guelph Conference*, comprised the *who's who* of conservation at the time. The Guelph Conference established the following four main objectives:

1) To give coherence and coordination to a programme of conservation.
2) To make available to government or municipal bodies the advice and guidance of its members who are recognized as specialists in their respective fields.
3) To give impetus in every possible way to implementing recommendations regarding conservation measures.
4) To disseminate information relating to the present status of our renewable natural resources and the need for undertaking adequate measures for their restoration (Richardson, 1974: 10).

Through these four objectives, the Guelph Conference provided a forum for key stakeholders and experts to further articulate the vision for conservation in Ontario. Specifically, the Conference created an agenda to describe and assess the present conditions of the province's natural resources, the necessary actions to address resource degradation, and anticipated difficulties (Richardson, 1974). The Guelph Conference concluded that natural resource degradation resulted from, "the unplanned individualistic exploitation of the past hundred years" (the former resource management regime that had collapsed) and required, "planned management based on knowledge and recognizing public as well as private interest" (the emerging, front-loop innovation) (Richardson, 1974: 13).

In August 1941, the Guelph Conference met again to discuss the need for a science-based demonstration survey to act as a model for conservation efforts across Canada. The resulting Ganaraska Study (Richardson, 1944) was a profound achievement and was immediately heralded as "a classic" (Honorable Dana Porter, as cited in Richardson, 1974: 18) and "a landmark in Ontario conservation literature" (Prof. J.R. Dymond, as cited in Richardson, 1974: 17). Designed for both specialists and the public, the Study included surveys of climate, soils, vegetation, forestry, physical and economic aspects of agriculture, plant diseases, water flow and utilization, entomology and wildlife, (Richardson, 1974). The Ganaraska Study contributed to articulating the vision by providing practical recommendations for implementing a watershed-based conservation and restoration program such as woodlot improvement, tree planting, erosion control, dam construction, organization of recreational centres and farm improvement (Richardson, 1974).

Together, the Guelph Conferences and research completed during this phase further framed and negotiated the vision for watershed-based resource management in Ontario. By providing comprehensive surveys of and reasons for environmental degradation, laying out objectives for the conservation community and identifying practical recommendations,

stakeholder buy-in was established and a clear framework for the Conservation Authorities Act in 1946 had been articulated.

Enacted Vision

We interpret the Conservation Authorities Act in 1946 as enacting the original, catalytic vision of integrated conservation and resource management in Ontario. An enacted vision involves implementing the articulated vision into specific undertakings, in this case, creating conservation authorities, establishing science-based inventories, building infrastructure, and supporting on-going stewardship and research.

The collaborative, research-oriented approach characterizing enacted vision phases is evident in the CAs movement. Building on the momentum of the Guelph Conferences, other river valley conferences were held across Ontario in London (1944), Kingston (1945) and Toronto (1946), embodying the CAs movement's grassroots tradition (Mitchell and Shrubsole 1992). Notably, the London Conference in 1944 included an address by the secretary-treasurer of Ohio's Muskingam Conservancy District, the unveiling of the Ganaraska Study findings and the presentation of key resolutions that addressed a need for: "an active programme of conservation of renewable natural resources of Ontario – water, soil, crops, forests, fish and wildlife"; that "all renewable natural resources must always be considered as parts of an integrated whole, and not individually, in all phases of conservation"; and, that "the government of Ontario be urged to establish a conservation authority for Ontario" (Richardson, 1974: 24). Efforts to enact the CAs Act were fully supported by the best research of the day and a grassroots team collaboratively working towards innovation in Ontario resource management and conservation.

At the provincial scale, the now-influential conservation movement prompted Ontario Premier George A. Drew to establish a new ministry in 1944, the Department of Planning and Development. Thus, lessons from the integrated watershed-based approaches to water resource management in the U.S., local research and experience, and the upwelling of support for resource management to be local and democratic came into resonance with key political agents. The first task given to the new Department of Planning and Development was to prepare a bill for the legislature that would eventually become the *Conservation Authorities Act* (CA Act).

The new bill, Bill 81, was prepared for the 1945 legislature but due to the dissolution of the legislature because of an altercation between the government and the opposition, the bill had to wait until the 1946 legislature to be passed. The CA Act allowed CAs to be formed but the provincial government then had to await response from the municipalities. The first two authorities were the Etobicoke Creek Conservation Authority (later to be amalgamated into the Toronto and Region Conservation Authority) and the Ausable River Conservation Authority.

The CA Act had three key principles at its core:

- Watershed as the logical unit/scale on which to manage resources
- Leadership should come from the people who live in the watershed
- Role of province was to provide technical and financial assistance

These three principles represent a highly articulated form of the catalytic vision informed by extensive research and that stressed collaboration and local leadership. These principles would inform watershed planning and management in the Province of Ontario for the next 5 decades.

The CA Act can be interpreted as another key critical transition in this innovation process and emerged out of the dynamic tension between the vision of individual agents and the broader system structures. The Act embodied the vision of the early proponents of conservation in Ontario (i.e. democratic, ecologically-sound and science-based) while addressing some of the key needs of the broader system (addressing drought and flooding and providing employment for war veterans) and working in response to existing structures, i.e. clear roles for both municipal and provincial governments. The Act provided a critical structure to allow the emerging resource management regime to continue to evolve. Without this social structure in place this emerging regime could have become mired in a poverty trap – lacking the resources to move forward (Biggs et al., 2010).

Embedded Vision

A vision becomes embedded over time as it continues to evolve and the problem domain becomes institutionalized. During the embedded vision phase, supporting networks are initiated and requisite resources are secured and stabilized. Although enacted through the CA Act, formal and informal interactions with the broader social system continued to influence the vision by sustaining, supporting and also limiting its scope. Key events that embedded CAs include: Hurricane Hazel (1954), Ontario Water Resources Commissions, several program reviews of the CAs mandate (1967, 1979, 1987) and the formation of what is now known as Conservation Ontario (1981/1997).

Hurricane Hazel was a major event that embedded the authority and expertise of CAs in flood control and prevention (McLean, 2004). In 1954, Hurricane Hazel resulted in a devastating 200 mm of rain in a 48-hour period in the hardest hit areas, causing an estimated $20 million damages and 81 deaths (Richardson, 1974). As a result, flood control and watershed monitoring became a provincial priority and additional regulatory powers for floodplain management and floodplain management were delegated to CAs. Hurricane Hazel was another key, critical transition or *release* phase (Biggs et al., 2010) at a local or regional scale, where the local response to flood needed to be called into question. This local/regional critical transition allowed for the broader CA innovation to become further embedded.

Also in the mid-1950s, water pollution and supply issues led to formation of the Water Resources Committee of Southwestern Ontario (Mitchell and Shrubsole 1992). The Committee argued that "the continued prosperity and progress of Ontario is closely linked with our greatest natural resource – water" (Water Resources Committee of Southwestern Ontario, as cited in Mitchell and Shrubsole, 1992: 70). In response, the Ontario Premier formed the Ontario Water Resources Supply Committee in 1955 and the Ontario government passed the *Water Resources Commission Act* in 1956. The new commission was charged with financing, constructing and operating water supply and sewage treatment for municipalities, effectively limiting the role of CAs in contrast with the original vision of Authorities as key actors in all aspects of watershed planning and management. As the embedded vision continued to evolve, the development of CAs as a social innovation would become increasingly institutionally limited to riverine and coastal erosion and flood control (Mitchell and Shrubsole, 1992).

Three government program reviews shaped the mandate of the CAs. The first program review endorsed CAs as "flexible, people-oriented, locally controlled and has available to it the

full range of government resources and direction" (Ontario 1967, as cited in Mitchell and Shrubsole, 1992: 72). The second program review resulted in the *Report of the Working Group on the Mandate and Role of the Conservation Authorities of Ontario* (1979) (Mitchell and Shrubsole, 1992) and acknowledged the CAs' broad mandate and flexibility to address locally salient resource management issues. The second review recommended that CAs develop watershed plans, coordinate their programs with provincial and municipal government departments and continue to focus on flood and erosion control (Mitchell and Shrubsole, 1992). The third program review in 1987 identified numerous challenges facing CAs. Accordingly, its recommendations sought to clarify and constrain CAs in their roles, for example, by focusing on their legislated mandate to address flooding (Mitchell and Shrubsole, 1992). Based on these findings, the provincial government clarified roles and responsibilities for CAs in 1991 in several ways: the role of CAs in outdoor education was excluded from the core CA mandate; the provincial government provided clearer roles for provincial appointees; and, that financing CAs would be based on a graduated funding scheme.

Throughout their development, CAs participated in formal and informal networks to increase their voice and advance the vision for CAs. Beginning in 1960 the *Chairman's* (*sic*) *Committee*, comprised of individual CAs chairpersons, increased collaboration and communication among CAs. Formed in 1981, the Association of Conservation Authorities of Ontario (ACAO) provided a stronger, more focused voice for the CAs at the provincial level (Conservation Ontario, 2006). Changing its name to Conservation Ontario (CO) in 1997, the former ACAO now exists as an umbrella, non-government organization that works to raise awareness, build relationships and influence decision makers on behalf of Ontario's 36 CAs (Conservation Ontario, 2015c).

During the embedded vision phase, CAs experienced program reviews, policy developments and network support. These developments contributed to defining the formalized role for CAs and deeply embedded and refined the vision of CAs over the long-term.

Routinized Vision

The routinized vision phase is characterized by typical institutionalization processes that result in a lost sense of distinction or direction, difficulty maintaining focus, budgetary and service constraints and uncertainty about the future (Westley, 1992). The Common-Sense Revolution (1995) and the Walkerton Tragedy (2001) are two key events characterizing the routinized vision phase (Cooper, 1998; Prudham, 2004). Ontario entered an era of ostensibly fiscally responsible government when Premier Mike Harris was elected in June 1995. Notable to this case is Harris' *Common Sense Revolution* in fiscal policy. A notorious time for spending cuts in Ontario, Kathleen Cooper (1998: 1) calls Harris' approach "Ontario's Four-Step Strategy to Trashing Environmental Protection" characterized by dismantling environmental laws, weakening the role of government, shutting out the public and privatizing natural resources. As part of this "strategy", the Harris government amended the Conservation Authorities Act to allow municipalities to dissolve CAs and sell off CA lands (ECO, 1997; Cooper, 1998). Drastic cuts to the Ministry of Environment (MOE) (31% of staff laid off) and the Ministry of Natural Resources (MNR) (40% of staff laid off) led to reductions in MNR funding of CAs from 33% to 5% (ECO, 1997). Workshop participants emphasized that budgetary and service constraints during this time decreased organizational capacity and increased feelings of uncertainty.

The Walkerton water tragedy in May 2000 marked another pivotal event affecting CAs during the routinized vision phase.

> In May 2000, Walkerton's drinking water system became contaminated with deadly bacteria, primarily Escherichia coli O157:H7.1 Seven people died, and more than 2,300 became ill. The community was devastated…The tragedy triggered alarm about the safety of drinking water across the province. Immediately, many important questions arose. What actually happened in Walkerton? What were the causes? Who was responsible? How could this have been prevented? Most importantly, how do we make sure this never happens again*?* (O'Connor, 2002a: 2).

CAs and water resource management in the province suffered deep cut-backs under the Harris regime that contributed to the Walkerton Tragedy. The provincial government called an Inquiry led by Justice O'Connor to address these questions. The resulting two-part report outlined the events and causes underlying the Walkerton tragedy and recommended a multi-barrier, watershed-based approach to source water protection. Justice O'Connor (2002*b*: 100) argued for CAs to take on a new role as lead organizations in source water protection planning and delivery, explaining that CAs were:

> well positioned to manage the development of draft watershed-based source protection plans. They have the mandate and, in many cases, the experience and the respect of affected local groups that will be required to coordinate the development of the plans.

In November 2004, the MOE and MNR announced $12.5 million for CAs to prepare for source water protection planning, institutionalizing source water protection responsibilities for CAs (Conservation Ontario, 2004).

Both the Common-Sense Revolution and the Walkerton Tragedy could also be interpreted as critical transitions in the CA innovation process. We interpret the dramatic cuts during Premier Harris' term as an episode of creative destruction or critical transition that could have destabilized this embedded innovation but did not. We see this as the CA innovation as avoiding a key poverty trap (Biggs et al., 2010). The distinction and energy initially surrounding CAs had faded and resulting cuts threatened organizational identity. However, many CAs adapted very quickly to the new funding regime and, as a result, developed stronger ties to their member municipalities and avoided a potential poverty trap where insufficient resources could have destabilized the CAs.

Similar to the Hurricane Hazel critical transition, the Walkerton tragedy was a local/regional episode of creative destruction or release (Biggs et al., 2010) that identified an urgent need for source water protection, opening a window of opportunity to reinvigorate the CA movement with an expanded mandate, more funding and more authority. These cycles of crises and opportunity suggest that the CA movement has reached the conservation phase of the adaptive cycle and the original, catalytic vision has been fully routinized. As the CA movement

has reached the routinization phase, new opportunities for innovation may emerge as the system approaches a critical transition.

More recent activities of CA's, in particular associated with Ontario's Greenbelt Act (2005) and Plan (2005, 2017) have successfully contributed to the Liberal government's overall growth strategy and environmental land use planning regime (Places to Grow Act, 2005; Growth Plan for the Greater Golden Horseshoe, 2006, 2017). For example, the Conservation Authorities Moraine Coalition (CAMC), a coalition of 9 CA's with jurisdiction in the Greenbelt, working with municipalities, civil society organizations and the provincial government prepared planning evidence in support of Greenbelt expansion in association with the recent Greenbelt Plan review. Specifically, "The Report Card on the Environmental Health of the Oak Ridges Moraine and Adjacent Greenbelt Lands" provided scientific monitoring data and synthesis to inform the 10-year review of the Oak Ridges Moraine and associated Greenbelt Plan areas (CAMC, 2015). In combination with CA's demonstrated planning support for Greenbelt implementation through the 10-year plan review process and 10 years of individual development application review, the role of CA's in environmental planning and management in southern Ontario may once again be entering a period of critical transition. That is, moving to bioregional coalitions of CA's through collaborative efforts with civil society and other government agencies to address some of the wicked problems such as climate change, biodiversity loss and threatened ecological services.

The results of our analysis of Ontario's CA's through the VSC model of social innovation suggest that other environmental and conservation management and governance organizations might benefit from similar analyses. For example, UNESCO World Biosphere Reserves, Canadian Model Forest as well as government organizations such as the Niagara Escarpment Commission, the Gulf Islands Trust, and progressive federal, provincial, municipal agencies are attempting to foster broad systemic change in the face of challenges such as biodiversity loss or climate change. And so, an analysis based on a social innovation process framework such as the VSC model could help to diagnose systemic traps and barriers to transformation or innovation of the social ecological system.

Conclusions

This research uses the well-documented, historical case of Ontario's CAs as a social innovation to demonstrate the utility of the VSC model (McCarthy et al., 2014). The results of this application of the VSC model provide two conceptual contributions and three applied contributions.

Conceptual Contributions:

1. The VSC model contributes to the evolving understanding of the social innovation process by providing a nuanced description of the phases of innovation or transition informed by Giddens theory of structuration.

   The VSC model articulates the dialectic relationship between agency and social structures (systems) (McCarthy et al., 2014) through by acknowledging the co-evolution of individual agent's vision with the constraints and opportunities afforded by the broader

social structures throughout the innovation process. Following McCarthy et al. (2014), we recommend extending the VSC model to radical (or back loop) social innovations to provide insight beyond the routinized vision phase.

2. The VSC model can be augmented using concepts from resilience thinking, in particular insights from the application of the adaptive cycle to innovation processes (especially Biggs et al., 2010).

   This application of the VSC model to the CAs case highlights the importance of *critical transitions* or *back-loop* innovations and the avoidance of system *traps* (poverty traps, rigidity traps) (Biggs et al. 2010) in the context of a long-term social innovation process such as the development of Ontario's Conservation Authorities and conservation-based planning and management writ-large. The authors recommend applying the VSC model to historical case studies of social innovation outside the Ontario environmental governance context to add external validity and provide further empirical grounding.

Applied Contributions:

1. The VSC model provides researchers and practitioners a framework for documenting discernable phases in the evolution of historic and ongoing innovation processes.

   Beginning in the early 1900s, our analysis describes the transformation of CAs in Ontario from a simple, broadly defined ideal to a province-wide network of highly institutionalized, quasi-governmental organizations. The original catalytic vision brought people together around the broad idea for integrated resource management at the watershed scale. Multi-level government partnerships were established in the legitimated vision phase with the political authority and financial resources to pursue integrated watershed management. Then, emerging research and grassroots conservation alliances further articulated the vision. The assent of the *Conservation Authorities Act* characterized the enacted vision phase. Finally, the embedded vision phase clarified and constrained the roles and responsibilities of CAs for several decades until cycles of crises and opportunity typical of institutionalized organizations marked full entry into the routinized vision phase.

2. The application of the VSC model can provide practitioners a sense of the current state of the innovation process in order to develop appropriate strategies for intervention and to continue to foster ongoing and potential innovations.

   Although the phases of the VSC model remain loosely defined, its utility as an interpretive tool for cases of social innovation is made clearer through our examination of the CAs case. Further research is recommended to unpack the conceptual linkages between the VSC model and the front loop of the adaptive cycle as described by Biggs et al. (2010). It is recommended that CAs in Ontario use this research to recognize the current phase of development of the CAs as a social innovation (routinized phase) to develop strategies to reinvigorate the CA movement through back-loop innovation dynamics.

3. The application of the VSC model can provide practitioners with a tool for reinterpreting *crises* as windows of opportunity where resources and authority structures are more fluid and amenable to system change or innovation.

   Examining the routinized vision phase of the CAs historical case, specifically the fiscal cuts of 1995 and the Walkerton episode, supports previous research that links moments of crisis with windows of opportunity or policy windows (Kingdon, 1995; Biggs et al., 2010). Reframing problems associated with crisis moments may enable novel meanings or perspectives on the problem to emerge (Biggs et al., 2010), and could thereby further re-invigorate the CA movement.

This research demonstrates that Ontario's CAs represent a social innovation by providing evidence that:

I. CAs have made positive contributions to the environmental management and governance systems in Ontario;
II. that this positive impact has been durable since the original CA Act in 1946, and;
III. that the CA movement has had international influence, that is, the influence of CAs has crossed-scales from the local/regional to the global (Krause et al., 2001; Mitchell and Shrubsole, 2001; Michaels et al., 2006; Mitchell et al., 2014).

Throughout their evolution, CA's have had to balance a science-based approach and the political ideology of the day (both supportive and obstructive) and this ability to adapt and transcend political ideology will be essential if CA's are to continue to have a positive impact on the Ontario environmental planning and management regime. As an ongoing innovation, the CA movement has resulted from the dynamic tension between the vision of the change agents and the system opportunities as described by the *vision as social construction* model of social innovation.

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