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CONSTRUCTING THE EVOLUTION OF SOCIAL INNOVATION:

Methodological Insights from a Multi-Case Study

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KEY WORDS

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ABSTRACT

In this paper, we discuss our methodological challenges we encountered in creating our multi-case volume, The Evolution of Social Innovation. In applying social innovation to eight different historical periods and problem domains, we needed to justify our choices according to our hypothesis of the crucial role of new social phenomena in sparking transformative change; we also utilized visualization techniques to further our comparison and theoretical explorations, and; embracing the ambiguity of social innovation. Resolving these methodological challenges confirmed the importance of a research journey that is responsive to the initial question or hypothesis, not limited by conventional, or discipline boundaries, when exploring social innovation.

1. Introduction

Studying social innovation, especially in the context of complex systems, demands a degree of methodological innovation from researchers. The nature of the question(s) and phenomena under examination challenge our discipline-bound tools (Westley et al., 2013), which can place us in an awkward space, between the flexibility required to understand social innovation, and the rigour necessary in academic inquiry. A social innovation researcher needs to take into account what might help them grasp - at least in part - complex systems and behaviours, while maintaining a degree of replicability and theoretical coherence which help contribute to an emerging field of study.

We began our research journey by asking: could history be a useful medium in which we could empirically examine multiple seemingly transformational products, processes, programs, social arrangements and/or policies - what we would now label social innovations? History has been used to analyze complex systems and systems transitions (Gunderson, Holling & Light, 1995; Mumford, 2002; Mumford & Moertl, 2003; Bures & Kanapaux, 2011; van den Ende & Kemp, 1999;

van Driel & Schot, 2005; Geels, 2006; Geels & Schot, 2007) - but we sought to build multiple cases across problem domains and to identify the new social phenomenon/na that sparks the social innovation (McGowan & Westley, 2015; Arthur, 2009). These were our starting premises in the forthcoming book The Evolution of Social Innovation, a series of historical case studies that we believe allows us to better grasp the roles of adjacent possible (the range of social, technological, political, economic, etc. arrangements one to two degrees removed from our current reality (Kaufman, 2000)) and complexity, agency, and cross-scale dynamics, among many other phenomena associated with the emergence, growth and normalization of social innovation.

This book is the result of a multi-year study of historical social innovations at the University of Waterloo's Waterloo Institute of Social Innovation and Resilience (WISIR), and all the examples included herein are from that work. In this paper, we aim to capture the methodological challenges of this interdisciplinary project that used historical case studies to explore a modern - and often evolving - concept. As such, this paper will explore the methodological knots we needed to untangle to build *The Evolution of Social Innovation*. In this paper we will focus on two major points: 1) the importance of being deliberate in our operationalization of the concept of social innovation as applied to historical events and how that influenced our case selection and 2) constructing cases that captured not only the story of a particular social innovation but also of the evolving social systems in which that story occurs. Both these points required balancing historical context and detail with relevant social innovation theory.

2. Research Aims of the *Evolution of Social Innovation*

To understand our methodological challenges to be discussed below, first we must explain the study's impetus, which The Evolution of Social Innovation began with a insight from an adjacent field. In his 2009 work, The Nature of Technology, Brian Arthur posited that the discovery of new natural phenomena (ideas or insights about the workings of the natural world, consider Benjamin Franklin in a rainstorm flying his kite), and/or new ways of capitalizing on such phenomena (the subsequent harnessing of electricity) catalyzes the creation of new technologies, and new technological combinations. These new phenomena create new path dependencies, and both new avenues to existing (and entirely new) adjacent possibles: borrowed from biochemistry, the adjacent possible includes "all of those molecular species that are not members of the actual, but are one reaction step away from the actual" (original emphasis) (Kauffman, 2000, p. 142) - the analogy to social systems replaces 'molecular species' with 'social arrangements'. Arthur looked to history for examples, and this begged the question for us - can we see a similar origin, the novel phenomena (we focused on social ideas, new concepts about social arrangements, processes, expectations, etc.) as the catalysis for the processes, programs, products, designs and policies we associate with transformative social innovations?

Ergo, history became the preferred territory for exploration because of the breadth and depth of source material (Byrne, 1998; Tilly, 2005; Mumford, 2002; McGowan & Westley, 2015). Although, as with all historical research, researchers should be careful about making definitive claims about causation, they can make informed assumptions about trends, trace innovations and innovators, unearth patents and research papers, and so on. Two important points here: first, we did rely on extant histories, which meant running the risk of accepting the respective authors' case for causation, thereby creating a patchwork of the works of others, and; we possibly run rough shot over the significant historiographical development. The risks of the former will be dealt with in more detail

below, but a note on the latter must be made here; we do not seek to undermine the work of others, and clearly relied on them, but as Fraser (2011) articulated, "We ought to remember that our species has almost 10,000 years of experience," and similarly, we were required to make generalizations in favour of applying the logic of social innovation to the past. By following multiple cases we opened up significant opportunities for analysis and comparison.

These starting conditions necessitated serious methodological consideration on a few points: how do we select our cases to address our question around Arthur's thesis while both appreciating the complexity of any social process over time, and how can we compare multiple cases as we are exploring our hypothesis of the possibility of triggering social phenomena, while looking at cases in different problem domains, temporal and spatial scales.

3. Methodological Challenge

Operationalizing social innovation as a term that can be applied retroactively required us to concretely define the concept, and just with social innovations themselves, this definition contains prophetic starting conditions for greater study. One challenge is to locate a starting point. Mulgan argues that social innovation is primarily a modern, urban, (post)industrial phenomenon, a response to the erosion of pre-modern social arrangements and informal social safety nets (Mulgan, 2006, 145; Nicholls & Murdock, 2012; Godin, 2012). Ayob et al. (2016) are correct to place the term's initial, anemic emergence to the 19th century.

Does our analysis need to rely on the term's conceptualization, or on the phenomena the term seeks to capture? If the former, we are dealing with a moving target; for instance, further shrinking our possible timeline, Mouleart and Mehmood (2011) argue that social innovation was born in the anti-neoliberal radical student spaces of the late 1960s and early 1970s (212-3). For these authors, social innovation is framed in general (if not explicitly) opposition to "mainstream" technological and organizational innovation (213). This exposes a problematic normative judgement, particularly if we take for granted Mulgan's persuasive assertion that "what we now take for granted as social life began as radical innovation" (2006: 145), which largely negates the distinction between "mainstream" and "peripheral" as a question of time and therefore is analytically unhelpful. Indeed, perhaps the institutions student radicals railed against are more appropriately seen as their grandparents' disruptive innovations than the barren soil from which the idea emerged.

The foremost obstacle was how to apply the concept of social innovation to events and campaigns that either pre-dated the term's use or did not fall clearly into the category of making the world a better place (financial derivatives are the best example of the latter). Social innovation itself is flexible and more coherent than previously thought (Edwards-Schachter & Wallace, 2015) and certainly older than frequently framed (Ayob et al., 2016). Yet this surprising cohesion, coalescing many perceptions (Pol & Ville, 2009; Cajaiba-Santana, 2014) did not actually help us in deciding which historical processes qualified as innovations. Edwards-Schachter & Wallace (2015) and Howardlt & Schwartz (2010) identified a range of social innovations, including of new values, new social processes, the outcome of processes, institutional change and social change. There is still too much ambiguity to assume we could apply the term to history without further exploration, particularly when justifying our choice of cases. We needed a finer-grained level of clarity.

4. Methodological Advance

Searching for Originating Phenomena

To understand our case selection and construction process, first we must pause and explain how we built our selection criteria. WISIR generally uses the following definition of social innovation: a social innovation is a process, program, policy, product or design that fundamentally shifts values, authority and resource flows in the system which created the problem in the first place (Westley et al, 2006; Westley et al, 2011). Although we did not challenge this definition in our project, we found it was insufficient in identifying cases, especially as we were curious about the origins of these processes, programs, policies, products or designs - inspired by Arthur (2009)'s new phenomenon argument. We had to abandon a number of cases at the outset because although they seemed to meet both our definition of social innovation, initial examination suggested they would be too broad (i.e. universal education, philosophies of medical care) to create a coherent narrative.

Hence, to select our cases, we opted for discrete stories that met the above definition of social innovation but also had a potentially strong narrative spine (i.e discreteness and coherence). To find this balance, we looked for cases with clear social phenomenon(na), adjacent possib le(s) and targeted resource and authority flows (the latter is explicitly taken from our starting definition of social innovation). Our understanding of the term "social phenomenon" is derived from Durkheim (2014, 1938), who argued that ideas may not be empirically observable, but their impact on people's behaviour is observable and measurable, because people believe them to be true and act accordingly. This qualification eliminated many possible social innovations, which as we traced back, were often the outshoot of a previous disruptive idea, process, program, or design (for instance, we had to abandon the concept of a Truth and Reconciliation Commission on these grounds).

Although this meant selecting ideal cases to an extent, this was an exploratory study, so we felt this limitation was justified. While these choices reflect the research interests of our team, they all meet those criteria of having at their root an actor (or actors) intended to change [something], using a new social phenomenon and their effort was successful [or correlated] with a change in their broader social system. In doing so these actors, and their successors, combined and recombined their new ideas and initiatives with other products, processes and programs that co-existed in time and space, what Kaufman (2000) has termed the adjacent possible.

Ultimately we chose the following cases: the internet, financial derivatives, the US national parks system, the legalization of contraception, the intelligence test, the joint stock company, Canada's residential schools and the Duty to Consult Indigenous peoples recognized by Canadian courts.

Figure 1. Cases by Social Innovation Elements

Case	Social Phenomenon	Adjacent Possible	Resource/Authority Flow
The Internet	Packet Switching (information distribution)	Connected, distributed world	Authority (access to/control of information)
Financial	Monetizing Risk	Broader markets;	Resource (monetized

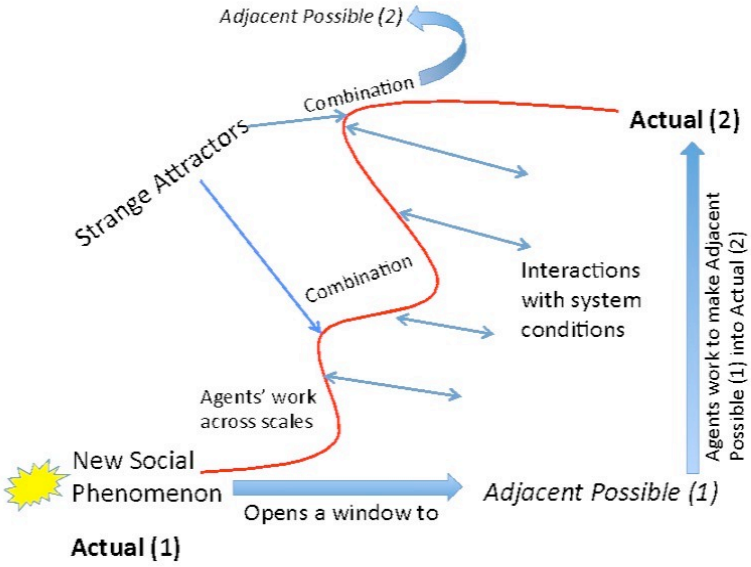
Derivatives			risk)
National Parks	Nature as national resource (rather than an exploitable one)	Protected natural environment	Resource (removing nature from resource pool)
Birth Control	Contraception as a public question (1. To be quashed; 2. To be protected)	1.Moral Control; 2. Greater control for women	Authority (1. Government control; 2. Personal control)
Joint Stock Companies	Open Seas; Money decoupled from land	Free Netherlands (Dutch Golden Age)	Resource (shareholders instead of landholders); Authority (United Provinces)
Intelligence Test	Intelligence; Feeblemindedness	An effective educational system; limited feebleminded	Authority (test implementers controlling takers' destiny)
Residential Schools	Colonialism, European enthocentricity	Indigenous peoples assimilated into Canada	Authority (away from First Nations to the Canadian government)
Duty to Consult	Indigenous title; multiple sovereignties	Reconciliation between Indigenous nations and Canada	Authority (to First Nations); Resource (to First Nations)

As evident from the above chart, our selection ranged over several centuries, two continents, and multiple problem domains, including financial and technological innovations. As this project sought to better understand social innovation generally, we deemed this breadth preferable. We then sought out to trace the development of the originating phenomenon as it became embedded in novel social programs, projects, or products. To construct our cases, we used historical accounts, biographies, academic and government reports - using a snowballing technique of identifying key texts through bibliographies and works cited. Here we were primarily interested in narrative construction, identifying possible key agents and organizations, legal battles and important legal barriers/opportunities. There was, as stated above, a risk here that we simply created a patchwork of other authors' assumptions about causation. Although this could not be entirely prevented, constant internal comparison and conversation, the visualizations, discussed in more detail below, and following an emergent proposed pathway of social innovation (figure 2) often forced us to return to the literature to unearth more evidence, question assumptions and conclusions presented in the historical studies we consulted.

Our proposed social innovation (figure 2) pathway began with two basic propositions contained within our case selection: that the definition of new social phenomena opened up adjacent possibles, and that in working towards realizing that adjacent possible, agents and ideas would interact with landscape conditions and regime rules and structures to create new combinations and

new adjacent possibles. Essentially, we imagined a rugged, nonlinear path of bricolage, action and systems' reaction as agents worked to bring an emergent social phenomenon to become the norm through policies, programs, processes (including social processes) and/or designs.

Figure 2. The Proposed Pathway of Social Innovations in the Evolution of Social Innovation



This pathway began with those two hypotheses, but over the case development, the pathway became more robust. In particular, as we constructed these narratives, we looked to identify the barriers and obstacles that actors encountered and how they surmounted these challenges. We also tried to place these efforts in a broader landscape of contemporaneous events and perspectives. In this work, we committed to taking historical actors at their word and tried to understand them on their own terms, focusing on stated intent at transformation/innovation and trying as much as possible to reconstruct their context; we did not substitute our understanding of resilience or social desirability for theirs, which ultimately created a richer tapestry of social innovations, both those we want to celebrate today and those we must never forget (often labelled social engineering).

This work of mapping cases against the proposed pathway, and avoiding the pitfall of a patchwork of others' conclusions, is best illustrated through a comparative example from our cases: the American National Parks System and the Intelligence test. The cases are geographically and chronologically close - both cases focus on the late 19th and early 20th century America - but represent significantly different social phenomena (nature as a beneficial resource vs. intelligence as a measurable and immutable thing) in different problem domains (conservation vs. psychology).

The National Parks System resides in the American federal government, and therefore we started with the laws that created the original parks and eventually the system, and traced each of those back to the campaigners, especially John Muir, and their organizations, such as the Sierra Club. This process allowed us to see not only how they conceptualized of and sought to shift American attitudes favourably towards the creation of parks (rather than farms or mines for example), as well as the networks that worked to take the social phenomenon of conservation into the reality of a park system. This involved the combination of histories with the remarkable and voluminous writings of John Muir, that offered a rich, clear and consistent window into how he wanted Americans to see their own land. These writings filled in an important gap in our

understanding of this social innovation's process, as they offered us a window into the discourse surrounding the idea of parks as the contemporaries would have read it. Additionally, they provided a direct link between the early 19th century poets and artists whom many asserted had inspired the later conservation movement; being able to see through Muir's words the connection between their conceptualization of pristine wilderness and the parks' celebration as national natural treasures strengthened the argument that there was a common social phenomenon between the two events, rather than a chronological correlation. There were significant gaps in Muir's view of nature; his was a pristine wilderness, with little if any space for the rich and complex Indigenous populations who had occupied that same land, sometimes only a few years before he arrived. These gaps created consequences for Indigenous peoples, but did not halt the path of idea to policy.

By contrast, the Intelligence test had laws and legal cases around it, but those hinged more on the related question of sterilization for those with low test scores - if, when and who could sterilize those deemed feebleminded. Instead, we found contemporaneous academic papers on the intelligence test, especially the works of psychologists Goddard and Yerkes, and the introduction to the 1916 Stanford-Binet test were the most fruitful resource in terms of tracing the path the test took from idea to a tool used in the military, in schools and in sterilization trials. This was of incredible value for two key reasons; first, the authors clearly articulated their goals of being able to quantifiably and (seemingly) reliably rank or sort people according to their ability, but also; the researchers' networks required to get the test (and its promise) in the hands of key decision-makers such as the Surgeon-General of the United States, who allowed psychologists to run a trial test and eventually test 1.5 million American servicemen in First World War.

However, the Intelligence Test case was a good challenge for our commitment to take historical actors in their own context. The psychologists wanted to improve education, immigration and employment through intelligence testing; racism and classicism bled into their science easily and often, including an attempt to stop non-English immigration in 1913 and a stratification of school children in Texas in the 1920s where testers essentially p-hacked their data to justify segregation. We did not want to shy away or erase these influences, as they had real consequences for how the test was used, but we could not assume that because we did not share these views, the testers were cynically exploiting science for nefarious ends. Instead it was a lesson in how conditioned we become to rules and values of our social systems.

5. Method Advance

Cases & Visualization

To date, case studies dominate the study of social innovation (Cabaj et al, 2015; Edward-Schachter, Matti & Alcantara, 2012; Klein, Tremblay & Bussieres, 2010; McLoughlin & Preece, 2010; MacCallum, 2009; Maruyama, Nishikido & Iida, 2007; Alvord, David Brown & Letts, 2004; McElroy, 2002; Mumford & Moertl, 2003; Mumford, 2002). This methodological choice is unsurprising, given the preeminence of a complex adaptive systems approach in many social innovation circles. Case studies can be sensitive to the vagaries and nuance associated with complexity itself, which when especially presented as a longitudinal narrative, can capture at least some of the *autopoesis* and emergence characteristic of complex systems. Additionally, a well-crafted case can take the reader across scales, illustrating the fundamentally textured quality of a social innovation's journey from observation of an extant system to normalcy of a transformative idea, product, process, policy or design.

Yet, a case study is, on its own, a flawed choice that highlights several larger problems with the discipline and study of social innovation. One perspective on case studies is that they should document generalizable pathways or elements (Patton, 1990) - and therefore benefit from being compiled into collections where they can be compared - meaning that assertions of generalizability should never be accepted solely at the author's insistence. Multiple or comparison cases are rarely pursued, and even more rarely across different schools of thought, to test or validate theories of behaviours or phenomena. Often when a second case (or round of cases) is developed, the theory in question is further 'refined', rather than tested or disregarded, making any meaningful comparison of cases a moving target.

This points to two significant problems in our field. The first is a passion - verging on obsession - for theory definition and exploration. Social innovations scholars seem to greatly prefer creating (or defending) a new category of agency (Antadze & McGowan, 2016; Zahra et al, 2009; Dacin Dacin & Mataer, 2010; Mair & Marti. 2006), or a new phenomena of cross-scale dynamics over efforts to validate and test the existing body of theory. Secondly, the study of social innovation has developed in somewhat isolated enclaves, with like-minded scholars (often ones who have worked closely together at think tanks) citing each other and publishing in the same journals. Only recently has there been an effort to bridge and connect the separate enclaves and establish common language, a prerequisite to creating a mature school of thought and a catalogue of robust empirical findings in this area.

Although we are not truly agnostic in this study (we pull our definition and framework from the complexity and resilience theory), our interest in this study was not to serve one brand of social innovation at the exclusion of others. In fact, early iterations of this study borrowed liberally from transitions theory, multi-level perspective, panarchy, institutional, and organizational theories. This effort to borrow liberally from other schools was eventually abandoned in favour of greater coherency, but it points to the possibility of cross-enclave theorization and exploration. If social innovation and complexity merit interdisciplinary study (Westley et al., 2013), surely we are capable of working across social innovation perspectives.

We built our cases primarily using published histories of the social movements, economic developments and political campaigns that we retroactively labelled social innovation. While these created compelling individual narratives, it was far from sufficient to understand the interplay of social innovation theory and the historical human record. To grasp this dynamic, we borrowed a lesson from lab processes of making assumptions visible through visualization (Meadows, 2008; Tiesinga & Berkhout, 2014).

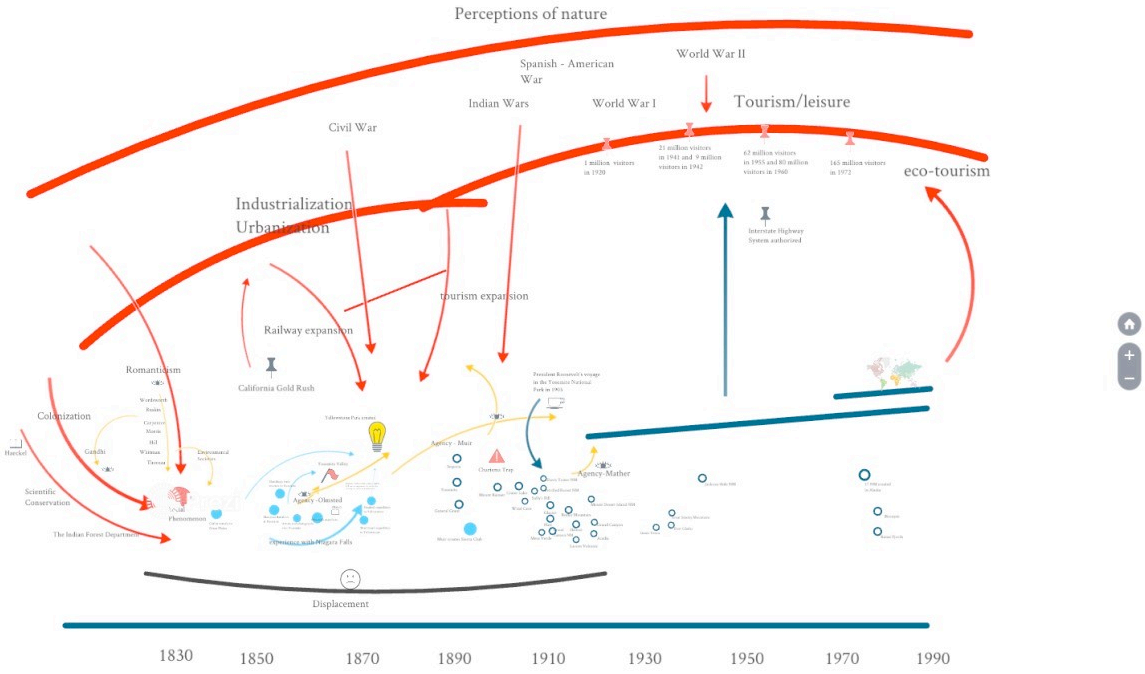
We did this iteratively; each case was the responsibility of an individual author or pair of authors. After creating a bullet-point history with the above topics (figure 2) mapped out, each author constructed a prezi-based timeline of actions observable at the niche, regime and landscape level (see figure 3 below; red refers to ideas, values and beliefs operating at the landscape; dark blue to different relevant regimes that emerge, fade and shift, and light blue capture niches). This process revealed that "regime" was generally too narrowly conceptualized (Geels & Shot, 2007; Geels, 2002; Shot & Geels, 2008) for our messy cases; it worked well in more recent and more technically- or legally-oriented cases such as the Financial Derivatives or the Internet, and less in highly interdisciplinary, older, more emergent cases. We debated abandoning the language of niche and landscape entirely as a result of this frustration, but simplicity and mutual understanding with other similar projects, including those in the transitions and resilience schools, justified their continued use in this work. This is not a criticism of those studies, it is simply that that heuristic proved unhelpful in these cases.

Visualizing our cases highlighted what we did not know, or rather what was not immediately apparent in the earlier historical chronologies. Notably, we observed a pattern of punctuated equilibrium: a flurry of activity, followed by calm periods of relative homeostasis. These gaps or plateaus generally fell into two categories; what was happening between new laws, new products, new processes and social movements (absence of evidence could not be taken as evidence of absence), and also, surprisingly, points of unanticipated overlap between seemingly independent social innovation pathways.

The former category necessitated further research, particularly of adjacent ideas, developments and the social attitudes contemporaneous to, but not immediately linked to, our emergent social innovations. In an effort to avoid unnecessary and misleading sprawl, we sought to avoid simply summarizing what others had written about the time periods in our cases generally, and tried to focus on building the intellectual, social, technological, legal and political (even environmental) context for those innovations.

Take for instance the National Parks case again (as seen below in its broadest form). This diagram indicated to us that our understanding was incomplete: there were significant gap between the Romanticism of the early 19th century, the creation of individual parks starting in the 1860s and the eventual park system in the early 20th century. Individual parks appear below as small blue dots (niches), and we could see there was a distinct tipping point at 1910, when they were organized into a system, but we needed to both explain this trap and how the parks emerged from the trap. This led us to further investigate the campaigners for parks, such as John Muir and the Sierra Club, and thereby to study his writings in depth (discussed above).

Figure 3. Screen Shot of the National Parks Case Visualization

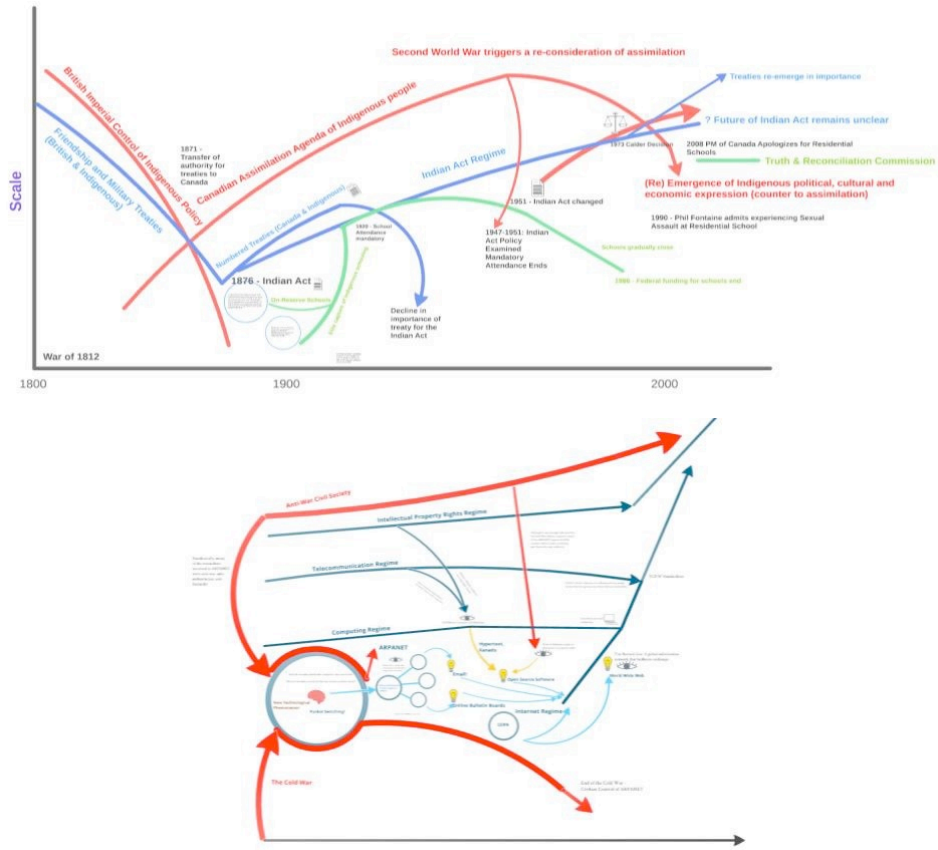


The second great insight that visualization offered us - the significant overlap between cases - created fruitful space for discussion. It is our contention that our cases provide illustrations of the heuristics associated with complexity, including the behaviours of strange attractors (especially as

they emerge from deterministic chaos) the tensions between ordering and disordering patterns (Spier, 2011) and of the value of distributed agency (Riddell, 2013). Additionally, while our cases generally confirmed the value of networks in transformative change, the cases lend more nuance to the relationship between niche and the broader landscape structures. This can be seen clearly above in the National parks case above (figure 3), where railroad companies became unlikely allies (they could make money bringing tourists to the park and negotiate with only one or two landowners - the federal government or state governments - rather than farmers) and distributed agency (especially over time) campaign for individual parks, and then a park system. These insights are the first of hopefully many from this case process.

The overlaps between cases also still require a fair amount of deconstruction. Take for instance, the importance of the First and Second World War in many cases; on the face of it this may mean much or nothing at all. Below are two visualizations, the first for the Residential Schools and the second for the Internet, both of which captured the importance of international conflict in their pathways: the Second World War triggered a re-evaluation of Indigenous policy in Canada, and the Internet gestated in a niche created by the Cold War.

Figure 4. & 5. Visualizations for Residential Schools and the Internet both show the importance of war.



While these wars appeared to offer social innovators windows of opportunity (or a cluster of them), this does not necessarily mean future social innovators should pray for a war. Both conflicts built large civilian armies and initiating significant public investment in technological and social

processes as large industrial societies prepared for total war. This means there are several key possible factors that may make the world wars relevant to social innovation; crisis, industrialization, bureaucratization, civilian and democratic societies, and a robust and diverse academic community (really communities) may each or in some combination be more relevant to our social innovation conversation. Would a war in a different time, or in a different context (or even the same war in a different context) have the same effect?

Therefore there remain several as yet unexplored questions that could advance our understanding of dynamics that facilitate or impede a social innovation. While we tried through our synthesis chapters to deepen our comparative analysis of our cases, our effort at best only scratched the surface of the possible avenues for exploration. The synthesis chapters dealt with transformative agency, adjacent possibles and path dependency, and the last looked at cross-scale dynamics, all using the cases as raw material. The first synthesis chapter, focused on transformative agency, interested in questions like what triggers agents to take action, what strategies can build momentum for an idea, and what strategies agents could use at the regime and landscape levels, using the financial derivatives, residential schools and birth control cases. This chapter found that, contrary to much work on social innovation, and the importance of systems entrepreneurship as a lens, which Olsson (the chapter author) described as "the accumulated, collected quality of individual, often intergenerational, entrepreneurship interacting over long time periods...as an organizing concept can help us analyze and understand the combined strategies of all different forms of entrepreneurship" (Olsson, 2017). Additionally, the importance of changing strategies as contexts move from opaque to hazy (Dorado, 2005).

The second synthesis chapter looked as the Dutch East India, Financial derivatives and Internet cases to understand the exploration of the adjacent possibles and path dependency. What that author found was the importance of the tension between ordering and disordering forces: "in each case, credible disturbances to existing patterns of system behaviour led to periods of deterministic chaos within which new patterns or strange attractors would emerge and if there was an elective affinity within the broader system context, the attractor could become stabilized and reorder the system." (McCarthy, 2017). This chapter suggested desirous/aspirant social innovators "see their work as managing or designing the contest for self-organization" or embrace the chaos rather than develop a "command and control strategy" (McCarthy, 2017).

The final synthesis chapter looked at the cross-scale dynamics in all the historical cases, something crucial to the success of any social innovation, which the author described as both intuitive and poorly theoretically articulated (Moore, 2017). Facing this ambiguity head on, this chapter posited that understanding those dynamics "in detail" can help explain the selective process for transformative social innovations; that slow variables may be as important drivers as exogenous shocks, that the niche can expand and contract over time, and the ambiguity of structures of legitimation and signification: "the historical perspective enabled observations of how an attractor's shadow side plays out across the evolution of different social innovations, sometimes across cases and innovations emerging in the same time period" (Moore, 2017). Take for instance the emergence of Western science that helped build support for birth control, but also offer a veneer of legitimacy to the intelligence test; Western science may be important in both cases, but it did not act in the same way, an important caution for social innovators. This observation about be impossible without a breadth of cases over multiple problem domains; minimizing the number of cases or selecting cases from within one problem domain would likely obscure this variance, giving a specific set of structures of legitimation and/or structuration too much explanatory power.

All three synthesis chapters found that the long-term perspective not only valuable to their discussion, but actually analytically relevant to broader discussions of social innovation. Interestingly, all three authors found that transformative change was less common than anticipated, more distributed than some might like, and often caught between disordering and ordering forces. This is all contingent on the historical perspective, but also gives more weight to one of our methodological challenges; being explicit and deliberate in choosing potential social innovations over different time scales that are consistent with relevant theory but push or challenge those theories, creating comparable cases through internal peer review and visualization, all without overgeneralizing messy historical causation. Resolving these concerns was crucial for the integrity of this and other studies, because "history reveals that truly transformative change is rare" (Moore, 2017).

6. Methodological Advance

The Ambiguity of "Social" in Social Innovation and the Ambiguity of Any Analytical Frame Trying to Grasp It...

At least one recent observation of the field of social innovation should make everyone uncomfortable: the bulk of social innovation studies seek to encourage or foster more social innovation, that they see the phenomena (implicitly or explicitly) as normatively good. Whether this has been commonly realized among researchers is unknown, but it does help explain why assertions like Nicholls and Murdock's (2012) that social innovation is not necessarily a net good, or McGowan & Westley's (2015) study of the intelligence test are the exception rather than the rule.

This leads us to perhaps our most profound insight, to include in our cases programs that either blur the line between social innovation and social engineering, or that ultimately undermine social resilience. While the cases of the intelligence test and financial derivatives required little internal justification (as evidenced in the chart above, they clearly met our own definition of having new social phenomena at their core, working towards an adjacent possible and seeking to shift resource and/or authority flows), the discussion of residential schools was deeply fraught. Residential schools were developed by the Canadian government to assimilate Indigenous children without their parents' consent, where students rarely learned much, and were subject to physical, emotional, mental and sexual abuse (known to but rarely acted upon by either the government or the churches running the schools).

The schools were a failure by any metric: they did not assimilate, they did not educate, and they did not raise the children in their care. We struggled with whether we had the authority or prerogative to claim residential schools as a social innovation, not from fear of our colleagues' reaction but from a desire not to further alienate Indigenous peoples from the stories of their oppression; social innovation is frequently invoked in Indigenous communities as a pathway out of dependency (IIS, 2015), and our discussion of residential schools as social innovation may challenge this burgeoning field. Although we worked with Elders (through constant in depth personal conversation and ceremony) and sought to create a cautionary tale, it is possible we have still not addressed these basic concerns.

This question of who owns a story about a social innovation should perhaps influence the study of social innovation more broadly, as we are frequently discussing niche (community) efforts to restore, revitalize or transform part of their world. Where are the voices of those within the system without power? This was particularly true of the case of the residential schools and the story of the Duty to Consult, but could be seen in the National Parks (erasure of the Indigenous

populations in the areas that became the parks), and the Birth Control case (Margaret Sanger acts as a stand-in for the many faceless, nameless women who sought out her services) at the very least. This is a question of voice and inclusion at the surface, but it is also more fundamental – it speaks to how do we justify our choices and authority as researchers.

Going forward, particularly in developing more historical case studies, we should learn from the decolonized and emancipatory methodologies approaches that are increasingly informing Indigenous scholarships (Kovach, 2015; Smith, 2013; Chinn, 2007; Louis, 2007; Michrina, 2000); we need to shift how we develop questions, approaches, and knowledge generation, ownership and mobilization. Many traditional Western forms of research marginalize Indigenous ways of knowing, and ultimately underline their intellectual legitimacy, and as Louis (2007) points out, the "conspicuous innocence" of researchers that claim not to see this power dynamic risk being shut out of Indigenous communities.

This challenge forces us to answer the questions of why, how and for whom we work; beginning by having tea with Elders may lead us down a different path than would traditional western methods. Indigenous-informed practices like storytelling, naming, song and ceremony (Smith, 2013; Battiste, Bell & Findlay, 2002; Battiste, 2011) may also shift our understanding of the transformative change process in ways not captured through traditional Western (and colonizing) research methods. Hence the ambiguity of both the "social" in social innovation and the ambiguity of the analytical frameworks we use to grasp it. However, even in this haziness there is hope. Here we see an emergent adjacent possible in the research process, another possible space for methodological innovation for scholars of social innovation, bringing in new voices and expertise into the conversation. We may need to give up our power as researchers to do so.

7. Conclusion

We began with our starting premises in the forthcoming book The Evolution of Social Innovation, that eight historical case studies that we believe allows us to better grasp the roles of adjacent possible and complexity, agency, and cross-scale dynamics, as part of a project to capture the emergence, growth and normalization of social innovation. While we found novel social phenomenon in all eight cases, as it was one of our selection criteria, it seems inappropriate to conclude therefore that Arthur's conceptualization of technological innovation can be overlapped directly onto social innovation. Instead, the success of mapping eight cases with a new social phenomenon as a starting criterium is at least consistent with the hypothesis that this may be an important factor to consider in further studies of social innovation. In addition, when considering the deliberate non-conventional visualization work we engaged in to create the cases themselves, it was reassuring was how those differences were generally inconsequential to the trajectory of a social innovation, from new social phenomena to adoption and eventual normalcy.

Instead, our cases and methodological work point to the importance of Fraser's (2011) assertion "We ought to remember that our species has almost 10,000 years of experience," mentioned above, of which we only have a limited understanding. Transformative change, the goal of social innovation, requires the long time lines, the tension between general ordering and disordering forces, and distributed agency, much of which would be missing if we took short term cases, or limited ourselves to a linear pathway of development. The richness of the cases themselves has also helped develop other social innovation-related projects and theories; the game changers project and the moral entrepreneurship work are only two such examples. That rich experience of our species still has much to tell us about how we shaped and continue to shape our social systems.

Ideally, it is our hope that the methodological challenges and solutions detailed above will inspire further studies like ours, hopefully which will both build on and challenge our arguments. We have hardly exhausted the theoretical insights from our own case work, and are hopeful that our methods detailed above may open a window for many additional studies into the dynamics and conditions associated with the rare but crucial process of transformative change.

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