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Enrolment, Technical Mediation, and the Obligatory Passage Point:

A Socio-Technical Examination of the Canada Green Building Council

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Abstract

Building Movements significantly impact society, promoting ideals such as sustainability, modernity, innovation, and well-being, and fundamentally shaping our built environment. In turn, these movements are shaped by society through the direct and indirect action of organizations, individuals, and socio-technical actors. Framed using actor-network theory, this dissertation explores this interrelationship through three related studies. First, the recursive impact of building movements on organizations is explored (Paper 1). Next, a two-part empirical study presents the evolution of the Canada Green Building Council (CaGBC) – a Green Building Movement organization - both in a retrospective history (Paper 2) and in a real-time study as it underwent a significant transition in response to the destabilization of its position in the market (Paper 3). Together, these studies illuminate the role of socio-technical actors in organizations as both internal and external influences. The three papers are organized as follows:

Paper 1 establishes the importance of Building Movements as the sites of negotiation between societal values and management prerogatives. Expanding Burrell and Dale's *emplacement-enchantment-enactment* framework of spatial control, I demonstrate how the *enrolment* of these building movements mediates social values alongside management prerogatives into organizations. This enrolment, in turn, translates the Building Movement to better serve the organizations enrolling it.

Paper 2 follows the evolution of the CaGBC over a 20-year period, from pre-establishment through maturity. Analysing the socio-technical actors, I found that the technical mediation of socio-technical actors was a primary mechanism of CaGBC's *creating* and *maintaining* activities.

In Paper 3, I *followed the actors*, documenting the actions and communications of the CaGBC through a significant period of transition following the destabilization of their market position and their subsequent response to this crisis. Exploring the impacts of organizational structure, brand, and identity, I found that it shifted from a strong-tie to a weak-tie strategy to reposition itself as the *obligatory passage point* to widespread industry transformation

Through this set of studies, I have demonstrated the significant role of socio-technical actors in organizations and the recursive impacts of this enrolment.

Lay Summary of Thesis

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The lay summary is a brief summary intended to facilitate knowledge transfer and enhance accessibility, therefore the language used should be non-technical and suitable for a general audience. Guidance on the lay summary in a thesis. (See the Degree Regulations and Programmes of Study, General Postgraduate Degree Programme Regulations. These regulations are available via: www.drps.ed.ac.uk.)

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This study explores the establishment, growth, and rise to prominence of the Canada Green Building Council (CaGBC), a social movement with a mission to transform the buildings sector to become more sustainable. The study consists of three key investigations, developed as individual journal articles, each focused on exploring an aspect of how physical objects and other non-human elements play key roles in organizational development and evolution.

In the first of these papers, I explore the relationship between building movements and workplaces, drawing from theories of management control and the perceptions of space. I explore how building movements evolve as architects integrate symbols representing societal values into workplace design and how the actual day-to-day use of these spaces impacts how these symbols are perceived, creating a common language associated with these values and the social movement itself. Looking at the organizations using these spaces, I explore how this association with the social movement is used to influence employee behaviour, and thus how these movements ultimately begin to shape the organizations themselves.

In the second of my three papers, I present a retrospective study of the CaGBC from the early discussions that led to its establishment in 2002 through its rise to become the national authority for green buildings by 2020. I consider a range of activities associated with organizational creation and maintenance and uncover the key roles played by physical and virtual objects in these activities. In this study, I determine that the way these objects are imprinted with organizational goals, packaged into products, and are used has a significant influence on how the organization evolves.

In my third paper, I present a concurrent study of the CaGBC as it went through a restructuring process from 2020-2022. Previously, CaGBC had used its primary product (LEED®) as a spokesperson for the organization, having positioned it as the answer to the core question "what is a green building?". In 2017, it lost the license for this product and was faced with an unclear market identity. In response, CaGBC had to re-invent itself and find new questions that would resonate with its target market. This paper explores both the underlying reasons driving CaGBC's transition, the impact of its re-branding activities and re-framing in the market on its identity and structure, and its realization that it was primarily a social movement, rather than a product-centred, organization and its need to seek a position of convening rather than defining in order to achieve this newly-realized role.

In addition to these studies, this dissertation provides Introductory, Discussion, and Concluding chapters to highlight and present its key contributions, a detailed methodology, and a comprehensive review of the literature relevant to the core theory guiding the research (actor-network theory).

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Statement of Own Work

All of the data collection, empirical research, and wrap-around Chapters (1, 2, 3, 7, 8) were completed entirely by me. The three papers included as Chapters 4, 5, and 6, respectively, were entirely drafted and primarily written by me, with editing input and guidance from my supervisors and co-authors, Dr. Stephen Dunne and Dr. Sarah Birrell Ivory. In this dissertation, I use "I" in the Chapters I uniquely wrote, while these co-authored papers use "we" when referring to the authors.

Acknowledgements

I was blessed with the best supervisory team a person could ask for and want to thank Dr. Sarah Ivory and Dr. Stephen Dunne for their constant encouragement, challenging questions, helpful suggestions, and fantastic guidance over the past 2.5 years. I couldn't ask for more understanding supervisors, particularly during the challenges of the pandemic. Thank you, Sarah and Stephen, for making this PhD journey a wonderful experience that I will treasure always. You helped me become the social scientist I am now, challenged me to think differently, to wrestle with the philosophy that had previously scared me, and to explore new ideas. Your enthusiasm for my insights and contributions gave me the confidence I needed to engage fully in my research. I look forward to continuing to collaborate with each of you as our careers progress.

I extend my warmest thanks to the pioneers, leaders, and members of the Canada Green Building Council. I was encouraged and inspired in my many hours of conversation and am delighted to be able to be part of this transformative organization.

I would also like to thank my family – my sons Dominic and Andrew, who encouraged me and let me ramble on about my dissertation ideas – especially Andrew who walked with me as I was writing up my final chapters and let me think out loud as we wandered our neighbourhood. To Jacq, who has been my supportive partner, reminding me to take the rest I needed and being a light in dark times. To Rob, the brother I always wanted but never had, who has always been there to encourage me and who helped me stay in touch with the kids while I was studying in Edinburgh, and to my sister Catherine who was there when I needed her.

Thank you to my chosen family for being there. To Jenn who was there to remind me that I could do it and wrote me innumerable encouraging notes to get me through the final push. To Jason, who was always there with wisdom when I needed it. And to my newfound family at AUC, who gave me a special home in Edinburgh and saw me through some of my darkest times.

Finally, thank you to my Mom and Dad. You raised me to be the capable woman I am, sharing in my successes, and encouraging me to continue to strive.

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1   Introduction

We live in a complex society, increasing influenced and shaped by technology. As we adopt new technologies, they shape our behaviours, our actions, and even our outlooks. Across a multiplicity of disciplines, technical actors are increasingly recognized as playing a significant role in the social, creating new hybrid socio-technical actors that shape our lives. At the same time, we are living in the shadow of the climate crisis. Individuals, organizations, and societies are increasingly focused on overcoming this crisis. As noted by Latour, climate change is a 'hybrid monster' (Latour, 1993/2012, p. 12), created by both social and technical actors and can similarly only be contained by considering both Nature and Society.

At the time of this writing (early 2022), there is a global urgency to address climate change. 2030 looms as a deadline for action to mitigate its worst effects and a waypoint towards the global goal of net-zero carbon by 2050. 'Green Buildings' has become a ubiquitous concept in real estate, recognizing the need for a more sustainable built environment to achieve the 2030 and 2050 goals. Green Building Movement (GBM) organizations promoting the transformation of the built environment formally arose in the 1990s and 2000s and have in many contexts become *de facto* authorities to guide this change. And yet, some stagnate in niches, unable to engage the broader market. How did they get here? And what is necessary for them to be successful?

This dissertation engages with this topic through an empirical study that explores precisely these questions. Specifically, the ***research objective*** guiding this thesis is:

To understand how social movements – specifically building movements – and their representative organizations impact and are impacted by societal and management prerogatives through socio-technical actors.

To achieve this objective, I framed my investigation using three research questions:

(RQ1) How do Building Movements impact – and how are they impacted by – organizations?

(RQ2) What is the role of technical mediation as organizations grow and evolve?

(RQ3) How can a social movement organization reposition or transition to reclaim its market position after a disruption?

Evident from these questions is the framing of this study the lens of actor-network theory (ANT), which serves as the conceptual umbrella for my research. ANT was selected to guide this research for both ontological and epistemological reasons. Ontologically, ANT offers two benefits to this research – one related to the building movement context and the other to that of organizational evolution. First, actors are understood through a lens of *generalized symmetry* (Callon, 1984). This is critical for engaging with socio-technical objects as it both removes the distinction between Nature and Society (Latour, 1993/2012) and does not limit the agency of non-human elements. The climate crisis is what Latour (1993/2012) termed 'hybrid monsters': elements that are neither created by Nature nor by Society and must be both understood – and can only be addressed – by avoiding this distinction. The GBM and its strategies must therefore be considered from this perspective. This has been the typical approach for studies of the sustainable rating tools defining 'green buildings' (Goulden, et al., 2017; Grangaard & Gottlieb, 2019; Stenberg & Räisänen, 2006; Berker, et al., 2013; Spinks, 2011; Schweber & Harty, 2010) as well as the buildings themselves (Buser & Koch, 2012; Berker, et al., 2013; Lovell, 2009; Rydin, 2013; McGuirk, et al., 2019; Goodchild & Walshaw, 2011). Second, the ontological conception of reality as anti-essentialist and constructed, along with ANT's understanding of social structures as temporary, dynamic stabilizations of constantly-transforming heterogeneous actor-networks is extremely valuable for understanding organizational evolution as it conceptualizes organizations as being in a constant state of becoming[1].

Epistemologically, ANT is beneficial for four reasons. First, the avoidance of *a priori* assumptions regarding the identification of actors, their importance, or any relationships between them supports an open-ended exploration and avoids limiting or biasing the results based on preconceived ideas. Second, the principle of *generalized agnosticism* permits a variety of voices to be equally considered in the

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[1] This concept of *becoming* is particularly important for my empirical research as a means to understand how and why the CaGBC evolved as it did. I recognize that other scholars in my place might have chosen to engage with more traditional organizational change theories. I have discussed my reasons for holding to ANT rather than making this decision in Section 8.3.

analysis, further avoiding bias and permitting a more comprehensive documentation of the evolution of both the selected organization and its underlying building and social movements. Third, the lack of distinction between human and non-human actors – *generalized symmetry* – permits the full range of actors to be considered without limiting expectations for their influence or potential agency. Finally, as an atheoretical approach, it supports an empirical and open-ended investigation; this is enhanced by the three previous benefits, which serve to further ensure that the data is collected with minimal bias and is able to speak for itself. The methodology developed was crafted to retain these benefits throughout my empirical research.

Beyond its ontological and epistemological foundations, three significant ANT concepts form a common thread through this dissertation: enrolment, translation, and technical mediation. Enrolment (Callon, 1984; Callon & Law, 1982; Latour, 2005) describes the processes by which one actor recruits another to help it achieve its goals. Callon's (1984) observations regarding its stages and his notion of the obligatory passage point were particularly valuable as a sensitizing heuristic for my second paper. Translation (Callon, 1984; Callon & Law, 1982; Latour, 1994; Latour, 2005; Law, 1987) describes the unexpected and sometimes undesirable impacts of such recruitment. Finally, Latour's (1994) work on technical mediation provides insight on the mechanisms of enrolment and translation, providing insight on how socio-technical actors influence each other. These are discussed in detail in Chapter 2 and their common use across the three studies that follow (Chapters 4, 5, and 6) aligns these studies and their contributions. This approach provides a consistent ontological basis and epistemological approach, integrating and aligning this work while other theories from MOS are introduced in individual chapters to better make sense of the collected data, enriching the insights gained regarding how socio-technical actors influence organizations.

The remainder of this dissertation is structured as-follows. Chapter 2 presents a comprehensive view of ANT, including its emergence, controversy, legacy in management and organization studies. The chapter also introduces the key concepts that will integrate and align the subsequent chapters. In Chapter 3, I present my methodological approach using Blaikie and Priest's (2019) framing. Broadly, the three subsequent chapters then focus on RQ1, RQ2, and RQ3, respectively. Chapter 4 (Paper 1) engages with RQ1, tracing building movements and their enrolment by

organizations throughout the 20th and early into the 21st centuries. The next two chapters (Papers 2 & 3/Chapters 5 & 6) explore this further through my empirical study of the Canada Green Building Council (CaGBC) – the *de facto* authority for the GBM in Canada. The recursive relationship between this GBM organization and other organizations is explored in detail through both a diachronous (Chapter 5; Paper 2) and a synchronous (Chapter 6; Paper 3) study. The former traces CaGBC's history from its pre-establishment, through its growth and maturity, analysing how the technical mediation of LEED® and other actors drove this evolution. The latter study follows its key actors in real time through a transition in response to a destabilization of its market position (2020-2022). The diachronous study focuses primarily on engaging with RQ2, while the synchronous engages with RQ3 – though as noted in the discussion (Chapter 7) the mechanisms observed were present in both. Finally, I conclude in Chapter 8 with a summary of contributions, a discussion of the necessary scoping decisions and their limitations, and insights on fruitful areas of future research.

2 The History, Controversy, and Legacy of Actor-Network Theory

Actor Network Theory (ANT)'s ontological and epistemological positions were extremely valuable in framing the empirical research presented in Chapters 5 & 6. In Chapter 5, I present a diachronous study of the CaGBC, starting with the events leading up to its formation, through its establishment, growth, organization-building phase, and its maturity in its role as the *de facto* voice of the Canadian GBM. In Chapter 6, I present a synchronous study tracking how the CaGBC identified the need for a transition after being destabilized from its market position and evolved to reposition itself anew as the enabler of widespread market adoption of Green Buildings. Both empirical studies are framed using ANT. This chapter describes the development and philosophical underpinnings of ANT, the emergence of ANT as an approach, its controversies, and its operationalization.

The chapter is structured in two parts. The first presents a narrative history of the emergence of ANT, describing its emergence from the sociology of scientific knowledge (SSK) and development through *Laboratory Studies* and *Technology-Society Studies*. This foundation provides insights on the development of several key concepts central to ANT, which are rounded out with my discussion of *technical mediation* in Section 2.1.4. I conclude this first part by synthesizing these into statements regarding ANT's ontological and epistemological positions and acknowledging how these have been questioned by other scholars.

In the second part, I examine ANT's philosophical underpinnings and their legacy. I start by contextualizing ANT within the philosophical traditions of *pragmatism, process philosophy,* and *constructivism,* illustrating how they have informed ANT's ontological and epistemological positions. Next, I consider how ANT was further shaped by the work of Michel Serres, particularly his work on *translation* and *quasi-objects*. Third, I consider the legacy of each of these shaping traditions on Management and Organization Studies (MOS), focusing on those domains most relevant to this dissertation.

The chapter concludes with a brief discussion of how the emergence and philosophical traditions are evidenced in contemporary ANT – and MOS – scholarship and their implications for this dissertation.

2.1 Emergence of ANT

As noted by Murdoch (1997), Actor Network Theory (ANT) is one of several non-dualistic theories[2] within social studies of science[3] that aims to bridge the divide between the natural and human sciences. These three terms warrant a brief explanation. By non-dualistic, Murdoch means avoiding making distinctions between humans and non-humans. By *bridge the divide,* he is referring to the historical distinction made between Nature – what naturally exists and is bound by physical laws, the traditional realm of natural scientists and engineers – and Society – what is constructed by individuals and has historically been the realm of social scientists. To set the stage for ANT, this section begins with a discussion of the *Sociology of Scientific Knowledge,* which is followed by the two lines of inquiry that repeat throughout ANT, particularly within the canonical works of Callon, Latour, Law, and Woolgar: *Laboratory Studies* and *Technology-Sociology Studies.* Both approaches are grounded in empirical case studies and are critical to understanding ANT (Law, 2008). Arising from both lines of inquiry was Latour's (1994) concept of *technical mediation*, which is discussed in Section 2.1.4. Finally, I summarize how these combined to create the ontological and epistemological position that now defines ANT.

2.1.1 Sociology of Scientific Knowledge

A dramatic shift in the understanding of scientific knowledge in the mid-20th century – that science itself could be studied as a sociological process – resulted in the Sociology of Scientific Knowledge (SSK)[4] and significantly impacted ANT's development. Taking a constructivist view of science, SSK explores *why* scientists approach particular problems, *how* they go about their research design, *what* is observed and considered as fact rather than error, and *how* these are synthesized into scientific knowledge. Its origins can be traced back to Robert Merton (1938; 1942), who questioned the integrity and autonomy of science, arguing that its focus, methods and interpretation were driven as much by cultural and political forces as by the pursuit

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[2] Law has argued that ANT is in fact not a theory, but rather an approach in that it is "descriptive rather than foundational in explanatory terms (Law, 2008, p.141). However for the purpose of this paper, I am referring to its underlying concepts as its "theoretical basis".

[3] This is also referred to as "Sociology of Scientific Knowledge" (SSK). This latter term has become more popular, and is used in the remainder of this discussion.

[4] A comprehensive discussion of SSK is presented by Shapin (1995)

of "science" itself. Merton (1942) argued that the sociology surrounding the development of scientific knowledge and the scientists *themselves* warranted study, noting that this sociological study was in fact scientific in itself. He stopped short of proposing the adoption of natural science methods in sociology, however, as he felt would pose a threat to the field.

Kuhn's (1962/2012) argument that the social norms of science were determined by a paradigmatic canon of *legitimate* scientific knowledge and laws (rules) was a critique on the apparent objectivity of *normal science[5]*. He argued that normal science is instead "a subjective and irrational enterprise" (Kuhn, 1962/2012, p. 173) in which the constraining influence of a paradigmatic canon limits both the set of permissible problems and their methods, inscribing the paradigm theory directly into the apparatus used to solve the problem. Science, he argued, is therefore constructivist rather than positivist as well as heavily reliant on the social. As SSK became established, critique of it grew from a methodological as well as a conceptual perspective. In response, practitioners abandoned discourse analysis, which focused on how scientists lobbied to establish the legitimacy of their work, to embrace a *reflexive* program that considers the analysis of the scientists themselves and not simply their modes of inquiry (Shapin, 1995).

Two key schools were established: the Edinburgh School, where the Strong programme dominated and who focused on historical approaches, for example (Barnes, 1974/2013; Barnes, et al., 1996; Bloor, 1996; Shapin, 1982; Shapin, 1995); and the Bath School who focused more on micro-social studies, for example (Collins, 1981; Collins & Evans, 2002). ANT would eventually diverge from both of these, holding to generalized symmetry as they observed (natural) scientists in their laboratories (Murdoch, 1997) and the construction of scientific facts.

Questioning whether it was *scientific* to ascribe agency to objects, the Bath School (Collins & Yearley, 1992) critiques the 'granting of agency' and argue against generalized symmetry as a "misconceived extension of symmetry that takes humans out of their pivotal role" (p. 322). A related – albeit tempered – attack comes from the

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[5] "Normal science" is the term used by Kuhn to describe "the most prevalent contemporary interpretation of the nature and function of scientific method" (1962/2012, p.98) of his time, namely the progressive elaboration, refinement, and validation of existing theories and rejection of alternative theories that contradict the accepted canon of scientific knowledge.

Edinburgh school where Bloor argues that the Strong Program (Alexander & Smith, 1998) "does recognize agency in naturally occurring, non-social things and processes, namely causal agency" (Bloor, 1999, p.91). A supportive argument in response to the *agency* controversy was provided by Sayes, who argued "that ANT presents a coherent methodology for incorporating nonhumans into social scientific accounts" (Sayes, 2014, p. 135), further arguing that non-humans serve as "necessary stabilizers of the human collective" (p.137), mediators, and "members of moral and political associations" (p. 138), frequently serving as the physical manifestation of such associations and the means by which moral or political prerogatives are achieved[6], and thus changing the very fabric of our moral and political associations" (p.139) through their association with the rest of the actor-network. The question of agency was thus a key point of departure for what would become the ANT school, whose practice was often referred to "Science and Technology Studies" (STS) (Martin, et al., 2012).

2.1.2 Laboratory Studies

As noted by Callon, "the development of scientific knowledge and technical systems cannot be understood unless the simultaneous reconstruction of the social contexts of which they form a part is also studied" (Callon, 1986, p. 19). Laboratory Studies aimed to do just this: "create a legitimate space for sociology where none had previously been permitted, in the interpretation or explanation of scientific knowledge" (Shapin, 1995, p. 297). The two seminal papers that defined this field are: "Laboratory life: The construction of scientific facts" (Latour & Woolgar, 1979/2013) and "Following Scientists Around" (Latour, 1987). Together, these capture *Laboratory Studies* as a practice and served as the empirical studies through which ANT concepts were developed and expanded. In the former, Latour and Woolgar used an ethnographic approach to study the activities within the Salk institute, and through this account, establish a *constructivist* view of science and explore the concept of a network as "a

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[6] The example provided by Latour (1994) is that of the seatbelt, which on its own can be used or not used, but whose use can be subject to purely moral or political pressure. By enrolling additional devices, however, engineers can enforce its use through the addition of an alarm (a disincentive), cutting off the ignition when seatbelts are not used (rendering it impossible to achieve the objective of driving without using the seatbelt), or through a self-closing seatbelt that renders the human actor powerless to refuse to wear it.

set of positions within which an object (…) has meaning" (Latour & Woolgar, 1979/2013, p. 107).

Two key findings of this line of inquiry have been that: (1) "nothing epistemologically special was happening" (Knorr Cetina, 1995, p. 146), the pursuit of knowledge was comparable with any other pursuit (e.g. that of power); and (2) that everything – including value judgements on individuals and their methods – is negotiable, and that such negotiations occur within the heterogeneous actor-network. The constructivist view inherent in this work is summarized by Law when he observes their 'startling' claim that "in its practice science *produces* its realities as well as describing them" (Law, 2004, p. 13). As we shall see in the following section, technologies have a similar shaping influence.

2.1.3 Technology-Society Studies

Technology-Sociology Studies focus on nonhumans and quasi-objects (hybrids) in order to account for "the various nonhumans which make up our world and upon which we depend" (Murdoch, 1997, p. 731) such as "the 'hybrid', 'cyborg', 'inhuman' sociologies and geographies that now appear to crowd onto the social science agenda" (ibid. p.733). As summarized by Sovacool and Hess (2017), ANT addresses the interaction between human actors and these hybrids by proposing "that the social alliances in which technology are constructed are bound together by the very artefacts they create, which in turn have agency in heterogeneous, sociomaterial networks" (ibid, p.720). In other words, ANT scholars impute agency to *all* actors, not only human ones.

To explore the relationships between technology and society, Michel Callon undertook a series of investigations into the role played by nonhumans within various contexts. These included electric vehicles, which was first published with a focus primarily on the human and organizational actors (Callon, 1980). He later expanded his purview to discuss the role of non-human actors such as electric vehicles (Callon, 1986) and scallops (Callon, 1984). Throughout these later papers, the role of nonhuman actors was radically reconceptualized as *generalized symmetry* was applied. This meant describing the influence and role of nonhumans with the same

terminology ("actant") as that of human actors and is the first of his key contributions to ANT.

A second key contribution made by Callon was the identification of processes involved in the recruitment and coordination of actors. Callon had recognized several issues in sociological research that he sought to overcome using three guiding principles: *generalized agnosticism, generalized symmetry*, and *free association*. Applying the principle of *generalized agnosticism*, he took a non-judgmental stance in his research, avoiding any "particular 'sociological' interpretation" (Callon, 1984, 221) to the beliefs, opinions, doubts, and assumptions by the researchers, leaving these to be determined through the research findings. *Generalized symmetry* required that Callon carefully ensure that the same language was used to describe interactions between all actors, human and non-human, echoing (Latour & Woolgar, 1979/2013) and previewing Latour's (1993/2012) call to avoid the artificial separation and distinction between Nature and Society. Finally, the principle of *free association* required the deliberate avoidance of any *a priori* assumptions regarding the nature of, or relationship between, actors. These actors were further permitted flexibility in role, recognizing the dynamic and temporary nature of relationships and roles within the actor-network.

In applying these three principles, Callon (1984) traced how a group of researchers enrolled a set of actors (scallops, scallop fishermen, and their scientific colleagues) to address the collapse of the St. Brieuc Bay fishery. Through this process, he defined four processes:

1. *Problematisation:* the process by which an actor defines a problem and suggests that the only way to overcome it is through an *obligatory passage point* (ibid, p.1).
2. *Interessement:* "series of processes by which (actors) sought to lock the other actors into the roles that had. been proposed for them" (ibid)
3. *Enrolment:* "a set of strategies in which (actors) sought to define and interrelate the various roles they had allocated to others" (ibid).
4. *Mobilisation*: the "set of methods used by the (actors) to ensure that supposed spokesmen for various relevant collectivities were properly able to represent those collectivities and not betrayed by the latter *enrolment*" (ibid).

Callon had already explored each of these concepts in previous work. He engaged, albeit briefly, with the concept of *mobilisation* in his discussion of the electric vehicle actor network (Callon, 1980). Laboratory studies provided the basis for the other three concepts; *problematisation* was described at length in a discussion of research question development in laboratory studies (Callon, et al., 1983) while Callon and Law (1982) explored the concepts of *interessement* and *enrolment* in their analysis of the writing and revision of a scientific paper. In the latter, Callon and Law observed how the scientists' aim to "determine the most 'interesting' option available" (Callon & Law, 1982, p. 619), was comparable to that of politicians in their need to "latch on to, and act upon, the imputed interests" (ibid) of their audience in order to secure them in their role. The scientists' failed attempt to enrol their target journal and that of the journal's subsequent success in enrolling the researchers (such that they adjusted their presentation of the facts to match the journal's own interests) show the potential of *enrolment* by multiple actors and the recursive relationship that results.

John Law is recognized as a proponent and contributor of ANT and one who, in addition to his collaborations with Callon, has made significant contributions in its application to organizational studies (Cavalcanti & Alcadipani, 2013). Like Callon (1984) and Latour (2005), Law stresses the importance of using the same vocabulary (generalized symmetry) for both "natural and social adversaries" (Law, 1987, p. 125). Law's analysis of Portuguese explorers (Law, 1987)[7] draws from Callon's network approach to consider how new technologies emerged from these actor networks and their interactions, most notably those involving conflict. Foreshadowing Latour's concept of *black-boxing* (Latour, 1994), Law further argues that "the stability and form of artefacts should be seen as a function of the interaction of heterogeneous elements as these are shaped and assimilated into a network" (ibid, p.124), facilitating the enrolment of other actors such as winds and currents (Russell, et al., 2011).

Law's significant works advancing ANT are his 1987 paper entitled "The structure of sociotechnical engineering—a review of the new sociology of technology" (Law, 1987) and his 1992 "Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity" (Law, 1992). In the former, he discusses the reciprocal influence

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[7] I find it interesting that this forms a chapter in the Social Construction of Technology (SCOT), an approach that Law does not subscribe to because some versions "have argued that the natural world has no role in shaping technological practice…" **Invalid source specified.**

relationship between the social and the natural. In the latter, he discusses the nature of society as a heterogeneous network, agency *as* network. This has two implications: first, that "what counts as a person is an effect generated by a network of heterogeneous, interacting, materials" (ibid, p.382) and second, that such networks "can participate in the social" (ibid)*.* He also discusses the transitory nature of networks and how they may collapse into a new actor. Through his contributions, Law provided additional insight into actor-networks: both their agency *as a network* as well as how this can be collapsed[8] into physical artefacts.

The concepts developed by Callon and Law within Technology-Society Studies were extremely valuable for this dissertation. Analytically, the mechanics of enrolment play a central role, as shown in Chapters 4-6. Epistemologically, the application of principles of generalized agnosticism, generalized symmetry, and avoidance of *a priori* assumptions were core principles informing data collection and analysis in the empirical case (Chapters 5 & 6). Theoretically, Callon's processes of translation formed a valuable sensitizing heuristic for understanding interactions within the actor network, particularly in Chapter 6 where the CaGBC's navigation to the position of the *obligatory passage point* to enrol its stakeholders is evidenced in the data. To understand *how* this is achieved, we now turn to the work of Bruno Latour.

2.1.4 Technical Mediation

While Callon provides insight on the processes of enrolment, in order to understand their *mechanisms* and *impacts* in more detail, we must consider *technical mediation* (Latour, 1994). Latour presents four mechanisms by which actors – both humans and nonhumans – are mediated (enrolled or created) within actor-networks: *translation*, *composition*, *reversible black-boxing*, and *delegation/inscription*. *Translation* builds upon Serres' (1980/1982) articulation of the concept, highlighting the parasitic or redirecting/consuming aspect of this exchange. *Composition* recognizes that subprograms are developed as actors recruit one another and form hybrids or quasi-objects. *Reversible black-boxing* refers to the process by which actor-networks are stabilized through the creation of artefacts. These artefacts are 'opaque' to their users;

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[8] Latour expands upon this concept in his paper "On technical mediation" (Latour, 1994), which I discuss in Section 2.1.4.

the complex negotiations involved in their formation are obscured so that they can be taken for granted and readily used. It is only when we have to take them apart to fix them that we can understand these inner workings. Finally, *delegation/inscription*, which had been introduced well before (Latour & Woolgar, 1979/2013, p. 107), describes the means by which nonhuman actors can embody the goals and *act* on behalf of absent actors. As an illustration of this concept, Latour (1994, p. 38) gives the example of a speed bump created by a transportation engineer to slow traffic, which continues to perform its role far after the engineer has left the scene.

An understanding of technical mediation was extremely valuable as it allowed me to recognize the various types of actor-network negotiations involved in the development and promotion of LEED® Canada by the CaGBC discussed in Chapter 5. Recognizing the reversibility of the *black-boxing* of LEED® permitted the underlying negotiations between the actors involved in its creation to be explored. This investigation revealed the *inscription* of organizational objectives into the tool and its *delegation* to serve as the spokesperson for the CaGBC. In Chapter 6, we see how this delegation *translated* the organization with unforeseen consequences. The technical mediation of the rebranding process, while not the focus of Chapter 6, is also evidenced in the data.

2.1.5 Synthesis into Actor-Network Theory

By integrating Latour's conceptualization of technical mediation with the translation processes developed by Callon and Law, we are in a position to treat ANT as a coherent and imitable theoretical framework, predicated upon the necessity of empirical analysis. Figure 1 summarizes seminal works in the development of ANT as introduced above and as subsequently applied throughout this dissertation.

While Callon and Law (1982) have argued that being pragmatic and descriptive in nature, ANT does not follow traditional ontological and epistemological framing, the early *Laboratory Studies* and *Technology-Society Studies* – along with Latour and Law's further theoretical development – can nevertheless enable ontological and epistemological positioning. These positions – along with how they have been critiqued by prominent MOS scholars, are summarized below.

Theoretical Basis for ANT

(Latour 1991; Law 1992; Latour 1996; Latour 2005)

(Callon & Law, 1982; Law, 1987; Latour, 1994)

Technology-Society Studies

(Callon, 1980; Callon 1984; Callon 1986)

(Latour & Woolgar, 1979; Latour, 1987)

Laboratory Studies
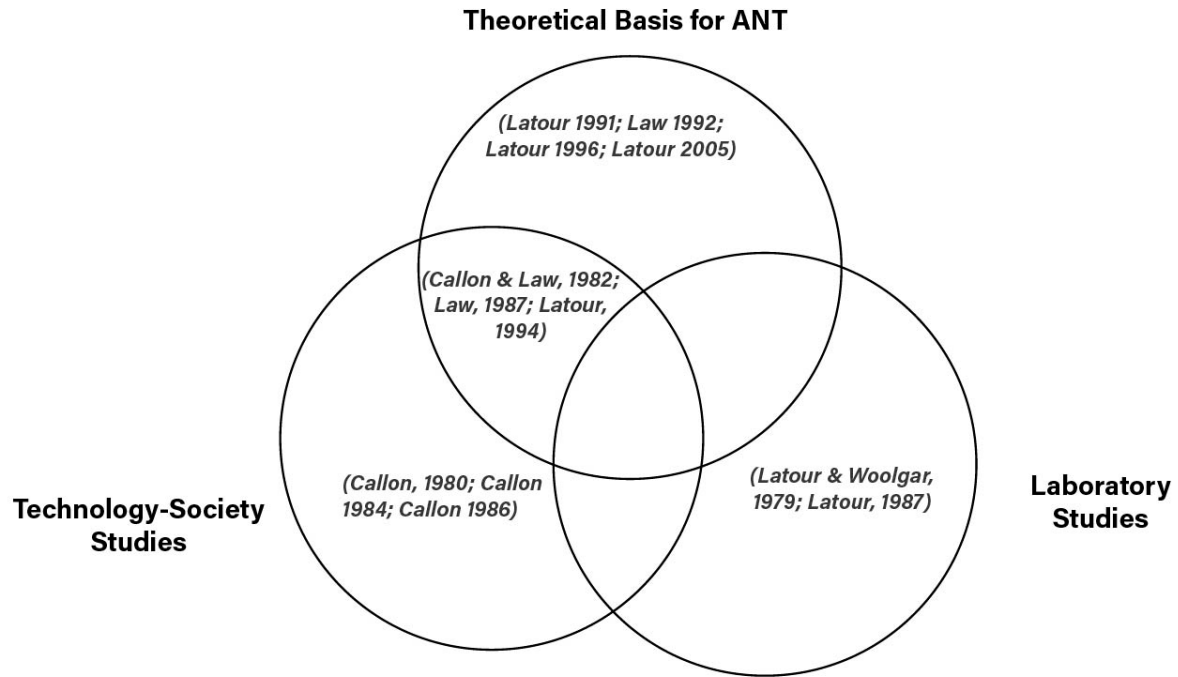
Figure 1 Mapping of key ANT publications[9]

2.1.5.1 Ontology

Consolidating this body of work, the ontological position of ANT is – above all – grounded in a metaphysics that treats social structures as temporary stabilizations of a dynamic actor-network (Latour, 2005). This leads to an anti-essentialist ontological position. Further, ANT is anti-dualist, insisting that Nature and Society cannot and should not be distinguished as mutually exclusive (Latour, 1993/2012). Both should rather be considered as having the same capacity for agency (Latour, 2005; Callon, 1984). It is also ontologically flat, that is, it is "not tied to the axiological myth of a top and a bottom of society; it makes absolutely no assumption whether a specific locus is macro- or micro-" (Latour, 1996a, p. 371). Finally, as already mentioned above, ANT is constructivist, observing that the actor-network itself is the site of the production and negotiation of meaning, as demonstrated through the *Laboratory Studies* documenting scientists' struggles within the actor-network to have a particular interpretation accepted (Latour & Woolgar, 1979/2013). Latour (1993/2012) further noted the translatory effects of technical mediation influencing this construction of meaning: the selection of scientific apparatus necessarily constrains and guides what can and

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[9] Due to the sheer prolificity of ANT's key thinkers – as well as those who have followed in their footsteps – this is y incomplete but is indicative of which contributions have most shaped my understanding and application of ANT.

cannot be discovered (Latour, 1993/2012). Together, these lead to an ontologically flat, constructivist, anti-essentialist, and anti-dualist view of reality.

This ontological positioning has been challenged, notably by Whittle and Spicer (2008)[10], who argue that ANT actually "provides an essentialist account of the capacity of objects and subjects, a dualist division between objects and subjects and has been used to construct deterministic accounts of actor networks" (ibid). Regarding essentialism, they argue that ANT presumes the existence of 'real' properties that can explain the durability of artefacts, which would be problematic because it precludes understanding how they came to have particular meanings or roles. Inherent in this argument is Whittle and Spicer's understanding that blackboxed actor networks become determinate and irreversible; I argue that this is an incomplete reading of ANT, because it overlooks the *reversible* nature of *blackboxing*[11] (Latour, 1994). Their critique of dualism is that "the separation between human and nonhuman is neither natural nor inevitable'" (Whittle & Spicer, 2008, p. 615). Because non-humans (by definition) are not capable of human speech, it is necessary for a human to define their properties, which Whittle and Spicer (2008) argue renders the non-human realm "fundamentally *social*". Given that generalized symmetry (Callon, 1984) treats the social and the natural the same way, this critique has limited practical relevance to my dissertation. Finally, the determinist argument is based on the statement that "by focusing on how actor networks become determinate and irreversible, ANT studies miss the opportunity to uncover causality" (Whittle & Spicer, 2008, p. 616). Again, the assumption of irreversibility is a faulty one as it ignores Latour (1994).

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[10] Their paper "Is Actor-Network Theory Critique" (Whittle & Spicer, 2008) is important to acknowledge in this dissertation as it serves as a key point of entry for MOS scholars into ANT. Question its relevance for critical management scholarship the draw from Fournier and Grey's framework for what denotes CMS as a 'sensitizing heuristic', they argue that "ANT is underpinned by ontological realism, epistemological positivism and political conservatism" (ibid, p.612).

[11] It is precisely this reversibility that has allowed me in Chapter 5 (Paper #2) to explore the various negotiations and decisions that led both to CaGBC's adoption of LEED® as well as its adaptation for the Canadian context. The use of ANT as an empirical framework also guided me to follow the actors to see how various members of the green building movement actor-network has enrolled LEED®. The multiplicity of uses and meanings associated with LEED® varied also significantly: while it served as a guidance for what constitutes a 'green building' for designers, it was seen instead as a regulatory tool by government and a marketing tool by developers and landlords. The understanding of different uses or interpretations of the same technology is by no means limited to this dissertation; Law (2006) noted it repeatedly in his commentary on ANT studies.

Whittle and Spicer have also argued that ANT's framing limits the behaviours of actors and thus it cannot uncover resistance nor account for "a) actors that disrupt the network but are not responses to any translation process, b) resistance that is aimed at disrupting translation but is ineffective, and c) the unintended effects of translation" (ibid, pp.616-617) . I disagree with this interpretation on all three counts, both due to evidence from past theoretical and empirical studies as well as my own research findings. Regarding (a), medical studies using ANT have discussed the disruptive nature of viruses, for example (Hale, 2016) or medical devices (Oudshoorn, 2012), which were not responses to translation processes. Similarly, in Chapter 6, the disruption caused by the USGBC is discussed with its implication the CaGBC's actor-network analysed using ANT. USGBC was in no way a response to translation processes in the disrupted actor-network.

Regarding (b), the accounting standardization study by Troshani et al (2018) gives repeated examples of where accountants resisted standardization, attempting to disrupt the translation of the IFRS taxonomy but were unsuccessful and eventually succumbed. This was also notable during my empirical data collection for Chapter 5, where several actors were noted who aimed to resist the translation of the market through LEED®, particularly the organizations promoting competing standards and approaches[12]. Finally, while ANT studies tend not to discuss non-participating actors, it would be incorrect to argue that they are never considered; for example (Butcher, et al., 2011; Ekman, et al., 2016; Rothgang & Lageman, 2018). Chapter 6 is another example of one study where this non-participation is specifically discussed. Regarding (c), as noted by Latour (1994) and Law (2006), translation *necessarily* has unintended effects – such is its very nature (Serres, 1974). As such, I feel that ANT stands up well to this critique and that its ontological position remains firmly established as anti-essentialist, anti-dualist, and anti-determinist.

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[12] I recognize that this may be phrased very subtly; this was due to inter-organizational sensitivity and a desire by CaGBC to keep some of the data collected confidential and thus omitted from the final papers, but such resistance was certainly identifiable using the ANT empirical approach.

2.1.5.2 Epistemology

Epistemologically, ANT is reflexive and open-ended. It requires the avoidance of *a priori* assumptions regarding who/what the actors are, their relationships nor the existence of a hierarchy (Law, 1987). It requires *generalized symmetry* in observations – using the same vocabulary for both human and nonhuman actors (Callon, 1984; Latour, 1987) – as well as allowing for the agency of nonhuman actors (Latour, 1988a; Law, 1992) and their role as mediators, which can be understood by considering the processes of translation (Callon, 1984) and mechanisms of technical mediation (Latour, 1994). The need for reflexivity was stressed by Law (2004; 2006) and discussed at length by Latour (1988), who suggests that "self-exemplification instead of self-reference" (p.171), "cross-over instead of meta-language" (p.174), and "hybridization instead of disciplinary boundaries" (p.175) as potential reflexive strategies.

Despite its strong roots, Whittle and Spicer reject ANT's claims to reflexivity for three reasons. First, they argue that while claiming to treat all accounts equally, ANT scholars instead privilege their own viewpoint, drawing from Alvesson & Sköldberg (2000) to argue that "a rigorous commitment to reflexivity would treat all accounts as in principle equal, including the one produced by the analyst" (Whittle & Spicer, 2008, p. 618). Second, they critique MOS scholars' use of Callon's (1984) four moments of translation as a model, arguing that it should instead be used as an "analytical heuristic or sensitizing concept employed by the researcher to make sense of complex observations" (Whittle & Spicer, 2008, p. 619)[13]. Third, they argue that ANT is assumed to provide 'built-in reflexivity' (Lee & Hassard, 1999), noting that instead, ANT offers a unique claim on unbiased truth. They conclude that rather than being a 'ready-made' reflexive epistemology, "ANT tends to impose its own theoretical lexicon, attempts to verify and generalize a linear model and engages in limited reflexivity about its own claims to truth" (Whittle & Spicer, 2008, p. 620). While I disagree that the lack of reflexivity is inherent to ANT *per se*, I have carefully reflected upon their epistemological concerns, drawing extensively from Law (2004) to inform a flexible

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[13] It is in this spirit that I have applied Latour's (1994) mechanisms of technical mediation (Chapter 5) and Callon's (1984) concepts of obligatory passage point and problemization (Chapter 6) to make sense of the empirical data. I am in complete agreement with these epistemological concerns.

and reflective research methodology. This flexible and reflective approach shaped the final research methodology, which I present in Chapter 3.

2.1.6 Key ANT Concepts Relevant to This Dissertation

As noted in the Introduction, three ANT concepts form the theoretical common thread through this dissertation: enrolment, translation, and technical mediation. Enrolment and its translation effects, as developed by Callon and Law, were discussed in detail in Section 2.1.3, while technical mediation, presented in Section 2.1.4, provides more detail on its mechanisms. Integrating these concepts leads to a fuller and more comprehensive understanding of enrolment. This section describes how this enriched understanding of enrolment is used in the three papers in this dissertation.

In Chapter 4, I recognized the predominance of thinking about organizational place and space through a Lefebvrian lens generally, and particularly through Dale and Burrell's seminal *emplacement-enchantment*-enactment ('3E') framework. Reflecting on the 3E framework vis-à-vis Lefebvre and considering value and influence on current thinking regarding organizational space alongside the critiques it has received, I recognized the capacity for ANT concepts of *enrolment* and *translation* to both synthesize and augment Dale and Burrell's work to augment the understanding of place and space. Enrolment. As presented in Chapter 4, the 3E framework has been criticized for separating of Lefebvre's triad – and therefore losing the tensions that their interrelationships represent – and for not considering the process by which management exerts spatial control. The addition of *enrolment* (referring to the overall process of actor recruitment described by Callon through the mechanisms identified by Latour) and the *translation* that results, offers new insights on processual nature of the interactions and tensions between different types of space (conceived, perceived, and lived) without reducing the importance of emplacement, enchantment, and enactment as valuable heuristics for understanding how these are used for management control. This overlay of *enrolment* with Dale and Burrell's work, along with the recognition of the tensions resulting from this process resulted in the braiding model presented.

In Chapter 5, the organizational case study was developed using Latour's mechanisms of Technical Mediation as a sensitizing heuristic to understand the enrolment of various actors (including material elements) into the activities of

institutional work. As demonstrated in Chapter 5, this approach results in a rich description of the various means by which material elements were leveraged to support institutional *creating* and *maintaining* activities to establish the CaGBC as the *de facto* authority for Green Buildings in Canada. Because technical mediation mechanisms can be (and often are) overlaid, this approach allows for a much more sophisticated and complex understanding of the various roles played by material elements in institutional work. For example, during CaGBC's formation its vision and mission for market transformation were *composed* and *inscribed* into the LEED® Canada rating system. LEED® Canada was *black-boxed* to allow these organizational objectives and values to be taken for granted and was *delegated* to the role of spokesperson for green building practices, thus – as is further developed in Chapter 6 – positioning CaGBC with LEED® Canada at the obligatory passage point for sustainable transformation of the building sector.

In Chapter 6, Callon's *problemization-interessement-enrolment-mobilization theorization* and its *obligatory passage point* (OPP) was used as a sensitizing heuristic to explore CaGBC's market positioning. This approach revealed how the CaGBC positioned itself at the OPP and how this translated its organizational identity, both initially with its association with LEED® and post-transition as a market convenor. Beyond these insights on identity-shaping, the OPP heuristic provided additional richness to this case study, demonstrating how the rebranding process (including new website development) formed an OPP that the CaGBC needed to pass through to inhabit its post-transition identity. Through this case study, the OPP is demonstrated to be a valuable sensitizing heuristic to understand both SMO (re-)positioning and the e significant role played by (enrolled) non-human actors to achieve it.

As noted in this section, the concept of enrolment is a sensitizing heuristic both for both the building movement study and for the empirical case study. In the former, its overlay permits the tensions noted by Lefebvre to be fully realized with the 3E framework. In the latter, the modes of technical mediation and the process of enrolment and obligatory passage point provide a valuable means to enrich our understanding of how and why the CaGBC evolved the way it did.

2.2 Philosophical Background of ANT and its Legacy

Having presented the analytical resources that this dissertation owes to ANT, this section discusses its philosophical foundations, their influence on MOS, and their implications for operationalization. These foundations are: *pragmatism* (James, 1907), *process philosophy* (Whitehead, 1919/2013; Whitehead, 1919/2013; Deleuze, 1968; Deleuze & Guattari, 1994; Whitehead, 1926), and the related concepts of *translation and quasi-objects* (Serres, 1969; Serres, 1972; Serres, 1974; Serres, 1977/1981; Serres, 1980; Serres, 1980/1982). By exploring these foundations, we will gain significant insight on why ANT takes particular positions and what it is trying to achieve in doing so. To complement this, I will also briefly discuss the emergence of the domain of *Sociology of Scientific Knowledge (SSK)*, because this is necessary to context for the first controversy caused by ANT. By understanding these philosophical roots and their legacies within MOS, this section provides additional insight on ANT's situation within the broader academic discourse.

2.2.1 The Context of ANT: Pragmatism, Process Philosophy, and Constructivism

The pragmatist tradition of William James offers ANT "a method of settling metaphysical disputes that otherwise might be interminable" (James, 1907). James argued that if there is no practical, *consequential* difference between two arguments, then the dispute is insignificant – "whenever a dispute is serious, we ought to be able to show some practical difference that must follow from one side or the other's being right" (ibid). Practically, this means that ANT is less concerned about evaluating the correctness of a particular interpretation; instead, it seeks to present the full range of perspectives present within the actor-network and the tensions and negotiations that result.

Of the many ways pragmatism has impacted ANT, three are of interest to this dissertation: Latour's (2004) new perspective on critique; Stengers' (2005) insights on how different practices should be approached; and Stengers (2011; 2015) insights on reflexivity in research.

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In his essay "Why has critique run out of steam?", Latour (2004)[14] observes that while STS scholars "want to add reality to scientific objects, (…) inevitably, through a sort of tragic bias, we seem always to be subtracting some bit from it" (p.237) and argues that to overcome this requires a return to pragmatism. This leads him to propose a critique focused on "highly complex, historically situated, (and) richly diverse matters of concern" (2004, p. 237), rather than a move away from "matters of fact" (ibid, p. 231), permitting a more comprehensive analysis and additive critique to counteract the "critical barbarity" (ibid, p.240) that he observes within social science. Significant contemporary ANT scholarship, for example (de La Bellacasa, 2011; Mol, 2013; Stengers, 2015), is framed using this new perspective. Like Latour, Stengers was influenced by the reaction of natural scientists in the *Science Wars* controversy. To avoid insulting the practices being studied, she developed the *ecology of practices* (Stengers, 2005). This conceptual tool pragmatically refocuses the study of practices, allowing their divergence and focusing on questions acceptable to practitioners, rather than those making them defensive. To undertake such studies, Stengers *pragmatically* acknowledges that, rather than seeking critical reflexivity, we can benefit instead from situating knowledge (Stengers, 2011) to understand *who* and *what* is being affected in a particular circumstance, *how* they are affected, and *why* this is occurring in that way.

The conception of actor networks as *transitory or dynamic* in nature draws heavily from Alfred North Whitehead's process philosophy and metaphysics (Whitehead, 1927/1978) and several ANT scholars (Latour, 1999; Stengers, 2008) have used Whitehead's *bifurcation of nature* in their arguments to support *generalized symmetry*. The notion of temporary stabilization through physical artefacts (Latour, 2005) is also rooted in process philosophy, as extended in Gilles Deleuze's (1968) *constructivism*. Synthesizing these philosophies, Stengers notes that:

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[14] Particularly for the study of other practices, Latour's context for writing this paper is important. In 1996, the SSK journal *Social Text* released a special issue called "*The Science Wars*" in defence of postmodernism. Physicist Alan Sokal successfully submitted a hoax article to this issue to expose what he felt was the ludicrous basis for SSK, and shortly thereafter collaborated with a colleague to craft a more extensive attack on postmodernist uses of physical science by social scientists (Sokal & Bricmont, 1998/2003). From the widespread reaction to both publications, Latour realized that "scientists reacted to social constructivism as to an aggression" (de La Bellacasa, 2011, p. 89), leading him to reflect upon how STS scholars could feel about the effects of their research. Latour notes the new danger faced by science – "an excessive distrust of good matters of fact disguised as bad ideological biases!" (Latour, 2004, p. 227) for example the 'brownlash' using his arguments regarding the *construction of facts* to undermine climate science. It is in this context that we can best understand Latour's (2004) call to an additive, rather than subtractive, version of critique.

A constructivist approach implies that any new, creative construction testifies explicitly not only to a matter of concern, but also to a commitment (Stengers, 2008, p. 100).

She continues to observe that "Whitehead's *matter of concern* was that the incoherence associated with the bifurcation of nature has been proudly accepted by modern thought and even identified as evidence of us over-coming our childish illusions" (ibid, emphasis mine).

Within constructivism, Deleuze's (1968) notion of the *diagram*, "the synthesiser or 'modulator' of difference" (Vellodi, 2014, p. 84), is important to ANT because it "functions to create a new reality" (ibid, p.85). This statement implies "intensive agency" (ibid, p.89); rather than being a passive element, this diagram is able to *mediate*. Callon references this concept to describe *assemblages* (Çalışkan & Callon, 2010). Reflecting upon *assemblages* and Deleuze's *diagram* leads us to consider the role of quasi-objects; to understand these, we must now turn to the work of Michel Serres.

2.2.2 Shaping ANT: Translation and Quasi-objects

The contribution of Serres' notions of translation and the quasi-object to ANT cannot be overstated; these concepts are central to both Latour's (1994) notions of technical mediation and Callon's (1984) notions of problemization, interessement, mobilisation, enrolment, and denouement. These concepts were first introduced in Serres' *Hermès* series (Serres, 1969; Serres, 1972; Serres, 1974; Serres, 1977/1981; Serres, 1980), which introduces the concept of the 'third man' or intermediary necessary to permit communication between two different entities. A significant metaphor for translation is found in Hermès V (Serres, 1980) where Serres compares the rift between the natural and human sciences to the Northwest passage: an archipelago with multiple channels of possible interaction - spaces where mediation occurs - rather than a simple strait. This metaphor was highly influential to Latour, who noted that his work "The Pasteurization of France" "owes a great deal" (Latour, 1988b, p. 251) to the former as it established a new way of considering the history of science, a topic frequently revisited by Latour over his career. As summarized by Brown (2002), "*translation* appears as the process of making connections, of forging a passage between two domains, or simply as establishing communication" (ibid, p.5; emphasis mine) and "an

act of invention brought about through combining and mixing varied elements" (ibid, p.6).

In his work "The Parasite" (Serres, 1980/1982), Michel Serres observes that the parasite is in fact the intermediary *required* for translation. Exploring this, Brown (2013) explores a series of definitions of translation, which are summarized in Table 1. Empirical examples are provided to show how each definition can manifest in practice.

The concept of transformation through translation was highly influential to the development of ANT (Callon, 1980; Callon, 1984; Latour, 1987; Latour, 1988; Latour, 1994). The effect of this transformation was most strongly made by Law (2006) who suggested that this rendered the notion of "faithful translation" impossible. In fact, he titled his work "Traduction/trahison: Notes on ANT", arguing that translation (*traduction*) is a form of treason (*trahison*).

Table 1 Translation Definitions and Empirical Examples

Definition (Brown, 2013)	Explanation	Examples from Empirical Literature
"to one side of ('para') the location of the event ('site') – the medium or being through which communication must pass" **(Brown, 2013, p. 87)**	The parasite is essential to communication but necessarily introduces something to the exchange.	Shifting form and content of models and practices across political and institutional contexts (Mazza, et al., 2005; Gond & Boxenbaum, 2013; Frenkel, 2005; Mennicken, 2008); translation effect of changing actor dynamics (Mennicken, 2008)
"the 'static' that interrupts the transmission of a message" (ibid, p.88)	The parasite introduces noise to the signal, which is part of the relationship between sender and receiver and can contain its own informational value (e.g. hesitations, body language, tone) (Brown, 2002; Brown, 2013).	This noise leading to translation was noted in studies of accounting systems in an Australian hospital (Chua, 1995); Israeli organizations influenced by state-level politics (Frenkel, 2005); translation of a corporate code of ethics in a Swedish high-tech firm (Jensen, et al., 2009)
"the uninvited guest or 'social' parasite" (ibid*,* p.89) "a living organism that takes without giving as it infects its host" (ibid*,* p.91) "the one who is always near to food, close to the meat "(ibid*,* p.92)	Parasites take (or 'redirect') reproduction and steer it towards their interest, provoking "a new form of complexity" by intercepting, analysing (taking without giving), paralysing (interrupting function), or catalysing (forcing different host action) (Brown, 2002, p. 17).	Three Swedish healthcare organizations found their practices aligning as they connected with one another (Lindberg & Czarniawska, 2006); framing of workforce reduction as social responsibility to make it more palatable (Bergström, 2007); redirection of informed consent from 'patient-protecting' to 'physician-protecting' (Hoeyer, 2009); problematisation of DDT environmental toxicity (Carson, 1962/2002) translated DDT usage practices (Maguire & Hardy, 2009)

As summarized in this table, communication – which requires the parasite – thus suffers from noise and some degree of redirection and thus is always transformed or 'translated'[15], as is evident across contextualization studies.

Serres second contribution to ANT is the *quasi-object*. His sixth definition of a parasite – "a 'thermal exciter', that which catalyses the system to a new equilibrium state" (Brown, 2013, p. 95) is illustrated with the object hunted in a child's game or ball in a rugby game. For Serres, these are not simply objects; rather:

> this quasi-object is not an object, but it is one nevertheless since it is not a subject, since it is in the world; it is also a quasi-subject, since it marks or designates a subject, who, without it, would not be a subject… This quasi-object, when being passed, makes the collective, if it stops it makes the individual. (Serres, 1980/1982, p. 225).

Such quasi-objects are *tokens*, serving also as quasi-subjects, rendering the possessor of any particular token the momentary subject in a complex and dynamic set of relationships. This notion of the 'momentary subject' is central to Latour's ontological understanding, manifest in the absolutely relational nature of actors (Latour, 1999) and the temporary and dynamic nature of their relationships.

2.2.3 Legacy of the Philosophical Foundations in MOS

Drawing from the same philosophical foundations as ANT are several strands of MOS. Pragmatism has a longstanding tradition within this domain, framing research into a variety of topics such as organizational learning and sensemaking (Elkjaer & Simpson, 2011; Weick, 1995), morality and ethics (Wicks & Freeman, 1998; Selznick, 1994), organizational choice (Cohen, et al., 1972), and various other topics (Farjoun, et al., 2015). A resurgence in this tradition was driven by Wick and Freeman (1998), who argued for "pragmatic experimentation" as a means to pursue a research agenda

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[15] It is interesting that "translation" has two meanings – that of interpreting a second language (French: *traduction*), which is the word used by Callon and Latour, and that of geometric displacement (French: *translation*), which is never used by Callon – though there are oblique references by Latour that imply this use, but which nevertheless also captures elements of this transformation. In my own reading of "Technical Mediation", I had assumed that the French term should be *translation* given how well that fit with the image presented by Latour and this was my own 'static' and noise that disrupted (and yet served to enrich) my own understanding of ANT. Other scholars (Wæraas & Nielsen, 2016) have also noted both the geometric and semniotic meanings of *translation*.

combining ethics with organization studies to serve human purposes. In recent years, scholars have gravitated to pragmatism, arguing that these offer insights that are valuable for understanding "the lived and living aspects of organizations and their members" (Elkjaer & Simpson, 2011, p. 76). Elkjaer and Simpson further suggest that pragmatism has specific value for reconceptualizing organizational learning as multi-level (both individual and organizational), continuous, and both socialized and creative. They go on to note pragmatist influences on *sensemaking* (Weick, 1995), proposing further elaboration upon Weick's theory through 'continuity as interplay of past and future in the present', the 'transactional nature of social agency' and the explicit use of reflexivity in social practice theorization (Elkjaer & Simpson, 2011, p. 76).

Process theory has also had a significant impact on organizational studies, particularly with respect to the study of organizational change (Hernes, 2007; Van de Ven & Poole, 2005). Two views of organizational change – the "weak" and the "strong" provide different perspectives. In the "weak" view, process is important but ultimately seen as the action of things, whereas in the "strong" view, processes are primary and are reified into *things* (Tsoukas, 2005), and as such:

> an organization is simply a reification of a set of processes that maintain the organization by continuously structuring it and maintaining its boundaries in a field of other processes that are continuously breaking down the organization and its boundaries (Van de Ven & Poole, 2005, p. 1380)

This has led to an understanding of organizational change as an inherent quality of an organization (Tsoukas & Chia, 2002), which in turn has inspired a significant number of field studies seeking to develop a "process theory of change" (Van de Ven & Poole, 2005, p. 1385). Process theory has also led to organizational notions of *becoming* (Clegg, et al., 2005), new conceptions of sensemaking (Weick, 1995) and decision-making (Holmqvist, 2003), an understanding of routines as stabilizing elements (Feldman, 2000), and insights on actor behaviour (Czarniawska, 2004). The conceptualization of organizations as virtualized, dynamic *foldings* (Deleuze, 1968) has found some traction within organizational studies, for example (Linstead & Thanem, 2007). Several methods have also been established influenced by *process philosophy,* including narrative methods for studying organization (Pentland, 1999)

and variance vs. process methods for organizational change (Van de Ven & Poole, 2005).

The concept of transformation through translation was highly influential to the development of ANT (Callon, 1980; Callon, 1984; Latour, 1987; Latour, 1988; Latour, 1994). The effect of this transformation was most strongly made by Law (2006) who suggested that this rendered the notion of "faithful translation" impossible. In fact, he titled his work "Traduction/trahison: Notes on ANT", arguing that translation (*traduction*) is a form of treason (*trahison*).

Table 1 illustrates a small sample. While the ANT interpretation of translation – including its actors, politics, and dynamic nature – is dominant, there are several non-ANT perspectives, particularly Scandinavian Institutionalism (SI) and theories of learning and Knowledge Management. Of these, SI has most clearly drawn from these philosophical foundations, extending process philosophy with translation to bring them into Institutional Theory (IT). Czarniawska and her colleagues (Czarniawska, 2009; Czarniawska & Sevón, 1996; Lindberg & Czarniawska, 2006) have been particularly influential regarding this application of translation of ideas into and across organizational practices:

> Translating Organizational Change (Czarniawska & Sevón, 1996) (…) introduced the concept of Scandinavian institutionalism and also imported the notion of translation from actor network theory into institutional theory. (…) The institutional approach to translation challenged the notions of isomorphic diffusion that had so far dominated institutional research and became a core feature of Scandinavian institutionalism (Boxenbaum & Pedersen, 2009, p. 185).

The application of translation within SI often resembles within ANT, however there are nuances in the understanding of actors and agency, and particularly whether such agency is embedded (Modell, et al., 2017). Such studies also draw from institutional entrepreneurship, institutional logics, and diffusion and social movement theories, using concepts of dis-embedding and re-embedding, editing rules and practices, and translation rules to explore the diffusion and adaptation of models and ideas (Wæraas & Nielsen, 2016). Through SI, translation has also impacted Institutional Theory (IT) more broadly through studies of organizational change, resistance, and local practice adaptation (Nielsen, et al., 2014). It has also been used

to understand the "institutional pressures reflecting concerns of change, resistance, and nonconformity in fields" (Nielsen, et al., 2014, p. 170).

Given the centrality of embedded agency within the IT tradition (Modell, et al., 2017), however, IT studies approach translation in such processes from a significantly different ontological stance. Other recent studies apply translation with an ANT lens to entrepreneurship (Korsgaard, 2011; Salamzadeh & Arbatani, 2020) and align quasi-objects with MOS studies of boundary objects (Scoles, 2018). Studies in learning and knowledge management also integrate translation, interpreted through a lens of identity work and organizational learning and focusing on concepts related to boundaries and peripheries, and explore issues related to knowledge translation. The SI & IT perspectives are important for this dissertation, particularly given their contributions to understanding green buildings (Rohracher & Ornetzeder, 2012; Stenberg & Räisänen, 2006) and the consideration of actors and material elements in institutional work (Raviola & Norbäck, 2013).

Several MOS scholars have also engaged with Serres' notion of quasi-objects to understand organizations and their artefacts. Within the study of organizations, quasi-objects were observed in the form of Enron's Special Purpose Entities whose circulation organized relationships between investors and employees as long as they persisted (Carr & Downs, 2004), or the inter-organizational agreements enabling a multi-lateral research project (Seijo, 2005). The notions of quasi-objects and quasi-subjects have also been applied to understand digital artefacts such as bugs (Ekbia, 2009) and high-speed financial algorithms (Lange, et al., 2019) and their mediation, as well as their agency, within their actor-networks. This application of translation demonstrates its significant contributions, not only to ANT, but also to broader MOS scholarship.

2.3 Summary

This chapter presented the emergence of ANT and contextualized it with respect to its philosophical foundations. As we have seen, ANT emerged from SSK, diverging from the Bath and Edinburgh Schools over disagreements regarding non-human agency, and developing as an approach through laboratory studies and technology-society studies. These were significant in shaping its *epistemology* of *generalized agnosticism¸ generalized symmetry*, and the rejection of *a priori* assumptions and

theorization to instead simply *follow the actors*.

The ontological foundations of ANT are evident in their underlying philosophy. The *dynamic nature* of actor-networks and their constituents – i.e. that an actor is fundamentally changed by a change in relationship (Latour, 1999) – emerged from Whitehead's process philosophy. The foundations for *generalized symmetry* between subjectivity and materiality emerged from Whitehead's metaphysics and Deleuze's concept of the singularity or *folding*. The notion of a *quasi-object* (and, by extension, and *non-human agency*) is rooted directly in Serres' conception of the *token* (and indirectly in Whiteheadian and Deleuzian metaphysics), which conceives of reality as temporarily stabilized renderings (*events*) of the virtual and actual. Finally, Callon and Latour's concepts of *enrolment, translation, and technical mediation draw* extensively from Serres theorization of the parasite and its influence on communication.

As a result of both its ontological foundations and epistemological approach, ANT has found itself critiqued by both natural scientists and social scientists. Despite its controversies, the broader impact of ANT to the field of MOS has been significant, with an 'explosion of studies' in recent times (Whittle & Spicer, 2008). Across the social sciences, recent collections of ANT studies have been published, exploring issues of race, public health, psychology and psychotherapy, economic valuation, maintenance and repair practices, urban studies, media studies, e-learning, and other diverse topics (Blok, et al., 2019; Williams, 2020). Stretching even into the domain of natural science, ANT is growing in influence as scholars have extended its socio-technical approach from social network analysis into broader studies of digital networks (Venturini, et al., 2019) and as a narrative and descriptive data generation tool within data science (Iyamu, 2018). Even history – which does not on its face lend itself to ANT because of the challenges of retroactively 'following the actors' – has found application in historiographical accounts. "ANTi-history", according to Durepos & Mills (2011) allows the knowledge creation of the past to be understood as an effect of heterogenous actor-networks. This, in turn, makes it possible to "map the socio-past by following the series of socio-politics of actor-networks, to understand how they perform knowledge of the socio-past or do history" (Durepos & Mills, 2011, p. 711). As such, ANT can be operationalized not only in the present, but also in the past, rendering its application nearly limitless. Within this dissertation, ANT is used as both a historiographical and a synchronous approach to trace the evolution of the Green Building Movement.

3   Research Methodology

This Chapter presents my research framework and methodology. The development of an appropriate framework was necessary to answer the question "*given this research question (or theory), what type of evidence is needed to answer the question (or test the theory) in a convincing way*?" (de Vaus, 2001, p. 11). To guide this methodological development, I used the focus-frame-select-distil approach presented by Blaikie and Priest, who – despite coming from a critical realist tradition – developed it to work with multiple paradigms, notably neo-positivist and interpretivist/social constructivist traditions (Blaikie & Priest, 2019, p. 32). Because this research used ANT as a method theory as well as one of multiple paradigms considered in the interpretation of the collected data, this approach was adapted as illustrated in Figure 2. The use of a case study further shaped the methodology, as also noted in this figure.
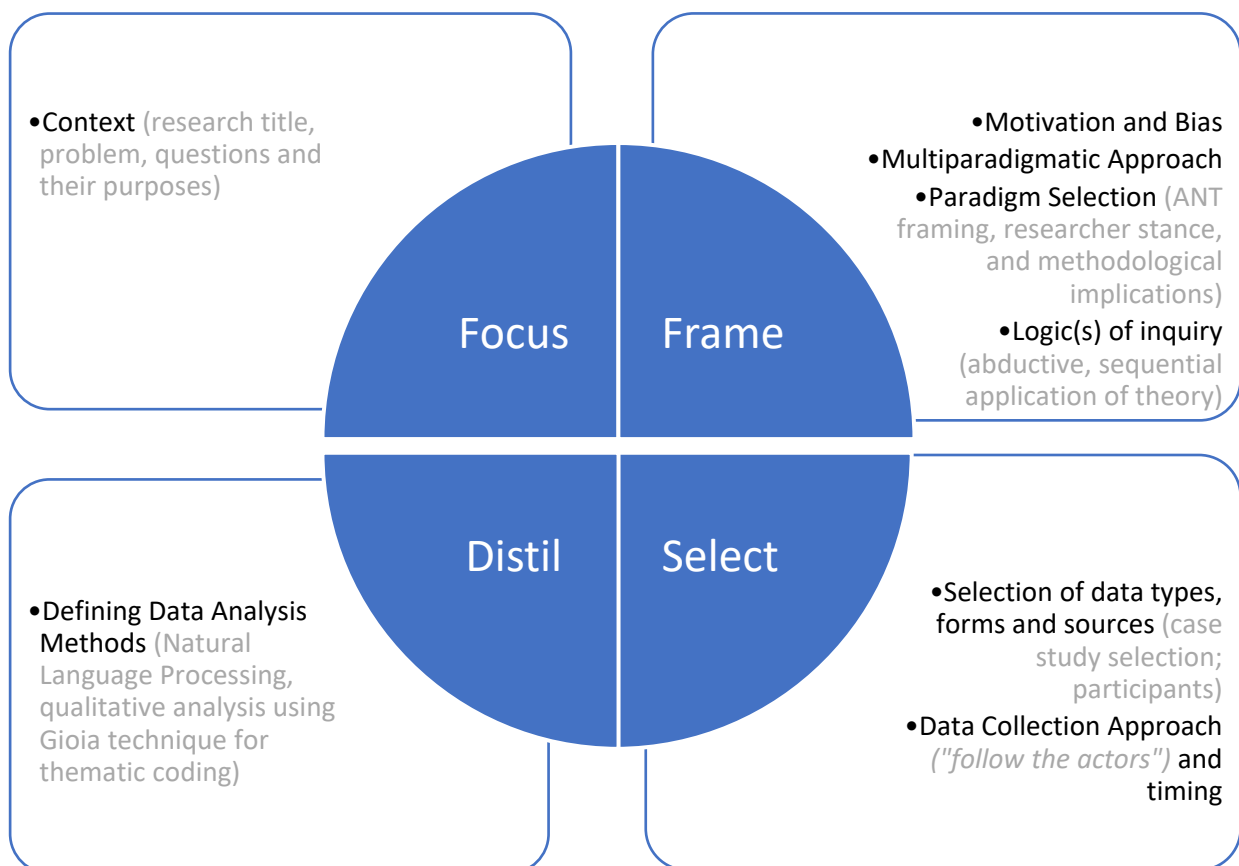
Figure 2 Research Design Framework (Source: Adapted from (Blaikie & Priest, 2019))

The *Focus* phase outlines the context, objective, problem selection and research questions for the overall dissertation. Next, the *Frame* phase describes the motivation for the research, identifies ANT as the research paradigm and explores its methodological implications, and selects the logic(s) of inquiry, the means of

investigation, and the modes of interpretation. The *Select* phase identifies the case study as the primary means of data selection, which participants will be recruited, the stance taken during data collection, the means of collecting data – using semi-structured and narrative interviews to "follow the actors", and its timing. Finally, the *Distil* sections address methods by which data would be analysed. Although this process is roughly sequential, it is presented as portions of a whole because it was often necessary to re-evaluate and reframe the process as data was collected, as discussed below.

3.1 Focus

The focusing task defines the context of the study (political, social, and/or economic), the title or topic of the study, the problem to be investigated and whether it constitutes basic or applied research, the research questions used to investigate the problem identified, and the purpose each question will serve (Blaikie & Priest, 2019, p. 52).

The title was used to provide insight on the essential contribution of the study, alongside its context of the study. This was frequently changed in light of emerging insights and developments iterated as the research developed. The final title is **Enrolment, Technical Mediation, and the Obligatory Passage Point: A Socio-Technical Examination of the Canada Green Building Council.**

The context of this research was knowledge workplaces. These are considered at a macro-scale across the building sector as opposed to individual workplace studies. As demonstrated in Chapter 4 (Paper 1), these workspaces have been strongly influenced by sector-wide building movements (BMs). The **objective** of this research ***to understand how social movements – specifically building movements – and their representative organizations impact and are impacted by societal and management prerogatives through socio-technical actors.*** This was explored through three **research questions**:

(RQ1) How do Building Movements impact – and how are they impacted by – organizations?

(RQ2) What is the role of technical mediation as organizations grow and evolve?

(RQ3) How can a social movement organization reposition or transition to reclaim its market position after a disruption?

As noted in Section 3.2.3, each of these questions was investigated by applying an ANT epistemologically and then sequentially drawing from other theories in the data analysis. Each question thus forms the basis for its own chapter, each drawing from the broader MOS literature in its data analysis while being integrated and aligned under the umbrella of ANT.

I addressed RQ1 through a detailed literature review, conducted as described in section 3.3.1. During this process, it became evident that the overlay of ANT's concept enrolment (and its subsequent translation) had enriching value to understand Lefebvre's principles of spatial control – particularly as applied by Dale and Burrell (Burrell & Dale, 2014; Dale & Burrell, 2007) within knowledge workplaces. As a result, this Chapter evolved into a conceptual paper, extending Dale & Burrell's spatial control framework to revisit Lefebvre's triad and its inherent tensions. Beyond this conceptual contribution, this paper addresses RQ1 by identifying the Green Building Movement (GBM) as a site of ongoing negotiations between management and environmental, social, and governance (ESG) prerogatives.

I addressed the remaining two questions through empirical studies of the evolution of Green Building design and promotion in Canada. An empirical study of the CaGBC – the primary institution in Canada promoting the GBM – forms the site of the investigation for RQ2 and RQ3. Both studies are framed by ANT (Callon, 1980; Callon, 1984; Latour, 1987; Latour, 1994; Latour, 1996).

By *following the actors*, it became evident that the interrelationship between CaGBC and its artefacts was a significant driver in its evolution. To investigate this more fully, this study was broken into two distinct phases, corresponding to Papers 2 (diachronous) and 3 (synchronous), respectively. The first phase was a historical study, drawing from documentary analysis and retrospective interviews to identify key events and negotiations in the history of the CaGBC from its inception through December 2020 and to explore how negotiations surrounding the selection, licensing, adaptation, and marketing of LEED® influenced both it and the organization. The data collected identified the value of technical mediation to explain how material elements play significant roles in the activities of institutional work (Lawrence & Suddaby, 2006), thus addressing RQ2. The second phase follows the actors through the transition process in real time, documenting negotiations, changes in direction, organizational (re)framing, and restructuring activities. This investigation highlighted the importance

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of the obligatory passage point in the repositioning of a social movement organization after a disruption as well as re-affirming the roles of technical mediation in this process.

The **outcomes** of this research are: (1) new insights into actor-network behaviour across the buildings industry, particularly through BMs, and how they impact organizational work; (2) an evaluation of how a Green Building Organization (GBO) evolved as a function of network actor composition; and (3) new insight into how social movements can restore their position in the market after a disruption. While this research does not aim to provide universal or generalized conclusions regarding the nature of BMs, GBOs, or their actor-networks, as is integral to the ANT epistemology, the CaGBC serves as both a deviant case (regarding its success) and a paradigmatic case (regarding the role of material elements in its institution creating and maintaining activities) and as such is extremely valuable to social movement organization scholars.

3.2 Frame

Before discussing the specific framing of my research, my motivations, potential bias, and stance warrant discussion.

3.2.1 Motivations and Potential Bias

My potential sources of bias stem from my motivations for this study, which are grounded in my academic research as a faculty member in a Canadian University. In that role, I lead a team that focuses on the development of Smart Building technologies to support energy conservation and the reduction of carbon emissions. Because of this focus, I am motivated to understand the broader industry context surrounding the Green Building movement so that I can understand and thus better engage with a range of stakeholders.

In addition to my academic research, I have been a member of the Canada Green Building Council since 2011 and have served on local and regional Advisory Boards (2019-present). As such I am both intimately familiar with – and invested in – the mandate and activities of this institution, which represents the GBM in Canada. As a researcher with a background in the building sector, it would be difficult for me to play the part of the detached observer, regardless of the organization selected for the empirical study. I believe that my background and position within the sector was an

asset to this research but has made a level of attachment inevitable. Further, as a member of the Leadership Advisory Board of one of the CaGBC chapters, this detachment was impossible. This was somewhat mitigated by the fact that the Chapter leadership has not been (and will not be) involved in the restructuring during my tenure as a board member. Moreover, given the nature of the research questions and the framing of my research through actor-network theory, my research frame acknowledges the need for researchers to exhibit reflexivity – a recognition that the *detached observer* does not exist, but rather *the act of observation* itself affects the network. As a result, I will adopt the stance of a dialogic facilitator (Blaikie & Priest, 2019), seeking to allow a variety of voices to be expressed – both human and nonhuman – in an attempt to minimize the impact of my own bias and act of observation, but being reflexive in considering my inevitable impact on the study.

3.2.2 Actor-Network Theory and its Methodological Implications

ANT was selected as the research paradigm and because of its unique ontological and epistemological commitments (presented in Chapter 2), it had several methodological implications. This section discusses these implications and how they shaped the methods used to 'follow the actors' in both the diachronous and synchronous studies of the CaGBC's evolution.

Five considerations were considered when undertaking empirical research using ANT. First, I had to avoid pre-supposing any hierarchy or *a priori* relationships between actors (Law, 1987; Latour, 1996). Second, I recognized ANT as being pragmatic and descriptive, rather than explanatory, in nature (Callon & Law, 1982). As such, it has unique ontological and epistemological concerns, discussed in sections 2.5.1 and 2.5.2, respectively. Third, I applied the principle of *generalized symmetry*, ensuring that I used the same vocabulary for both human and nonhuman actors (Latour, 1987). Similarly, the agency of nonhuman actors (Law, 1992; Latour, 1988) and their role as mediators (Latour, 1994) were considered. Fourth, the actor-network *itself* was considered, both as an actant and as the site of production and negotiation of meaning. In order to define and describe the actor network, a snowballing process was used in participant recruitment strategy for both studies (described in Section 3.3.2) to identify all relevant actors, who were subsequently interviewed (human) or analysed (non-human). Finally – and particularly in Paper #2 (Chapter 5), Latour's

principles of technical mediation (Latour, 1994) – namely translation, composition, delegation (inscription), and black-boxing – were used as tools to analyse and describe the influence of new and evolving actors in the ANT analyses.

Reflecting upon the above, I followed the recommendations by John Law, who proposed a 'looser' and 'more generous' approach to method (Law, 2004). This approach emphasized engagement with multiple methodologies to respond to the unique context of the research and to remain open to multiple interpretations of the data, concluding with a call for an *ontological methodology* that embraces new metaphors for understanding the world and our place in it. Applying these principles, I have followed an ANT epistemology in my data collection and analysis, avoiding theorization until it was required to make sense of the trends evident in the data and develop a conceptual frame for their presentation and theoretical analysis.

The application of an ANT epistemology required that data was collected in the absence of *a priori* assumptions in order to permit an open-ended and reflexive analysis (Law, 2004). Callon's own methodological concerns regarding the "paradox" of sociological research (Callon, 1984, p. 197) led him to three principles for analysis in the context of "a society which is considered to be uncertain and disputable" (ibid, p. 199). These – as discussed in Section 2.1.3 are agnosticism (applied to both social and natural science theories), generalized symmetry in the treatment of actors, and 'free association' (ibid, p. 200) to 'follow the actors' (ibid), rather than imposing a predetermined grid to analyse their behaviour. The ANT epistemology, therefore, precludes the selection of a theoretical lens in advance of data collection and analysis.

3.2.3 Logic(s) of Inquiry

Despite its unique epistemological stance and desire to avoid *a priori* assumptions in order to maintain an open-ended investigation, there is significant precedent by ANT scholars to engage with other approaches in order to develop and advance a theory. For example, in his studies of performativity, Callon:

> continued to extend and refine this framework (…) and has even called for more theoretical research on the involvement of emerging, concerned groups in technoscience (…) without ostensibly abandoning his epistemological commitment to ANT (Lukka, et al., 2022, p. 144).

The legacy of Callon's performativity (Callon, 1998; Callon, 2007) in accounting provides significant insight on how this is possible for ANT scholars. Reviewing the body of work that has combined an ANT epistemological stance with other theories, Lukka et al. (2022) observed that:

1. Callon's theoretical development, while rooted in the same social constructivist and performative perspective as Latour (Latour, 1996) diverges significantly from "classic ANT", which would insist that ANT studies are limited to descriptive, context-specific findings (Latour, 2005).

2. The most common approach to apply ANT while making a theoretical contribution is to apply it as a method theory (Lukka, et al., 2022) and using this empirical position to engage with domain theories. Beyond accounting, this approach has been used by scholars across multiple domains, for example (Bajde, 2014; Hoffman & Novak, 2018; Passoth & Rowland, 2010).

3. Nearly all papers applied ANT principles such as generalized symmetry, 'following the actors', and to develop highly descriptive case studies "advance highly descriptive, open-ended process accounts of how accounting becomes performative" (Lukka, et al., 2022, p. 150). Again, beyond accounting, there are several other studies engaging with a similar approach, including several considering sustainability rating tools, for example (Goulden, et al., 2017; Rice, 2011) or other standards (Grangaard & Gottlieb, 2019).

4. While both deductive and inductive approaches have been used in accounting studies, a significant number of papers use an *abductive* approach; Lukka et al. (2022) note that while this abduction is not explicitly acknowledged, it is implicit as such scholars compare their findings with that of the broader literature and thus permit a type of analytical generalization

In this dissertation, I follow Callon after his divergence with Latour with respect to the outcomes of my research. Like several other scholars (Lukka, et al., 2022), I apply ANT primarily as a method theory, particularly in Chapters 5 and 6, implementing Callon's principles of generalized symmetry, generalized agnosticism, and the avoidance of *ex ante* assumptions to avoid bias (Callon, 1984) and then analyse the data collected in light of the extant literature to both make sense of the data collected and advance a theoretical (Baxter & Chua, 2019) contribution. This approach is similar

to that in other published studies (Missonier & Loufrani-Fedida, 2014) and argued for by Blaikie and Priest (2019).

This dissertation follows a primarily sequential approach, applying a multi-paradigmatic approach informed by Gioia and Pitre (1990), who advise on the recognition of "*transition zones*" between theories, was used in each instance. For example, the concept of *enrolment* (discussed at length in Section 2.1.3) is central to the work presented in Chapter 4 to enrich the understanding of process lacking in Dale and Burrell's 3E spatial control framework (Burrell & Dale, 2014), where gaps existed regarding both the tensions arising between Lefebvre's (1991) spatial triad elements and the process by which they occurred. ANT's *enrolment* and *translation* concepts offered a means to explore these specific issues. In this, the 3E framework was the initial mode of analysis for the building movements, after which ANT was used to more deeply engage with the resulting tensions.

In the empirical work, ANT formed the initial logic of enquiry, serving as both the method and contributing key theoretical concepts (summarized in Section 2.1.6) to guide the initial data analysis. In Chapter 5, technical mediation (Latour, 1994) was used to explore the role of socio-material elements in the evolution of an organization, followed by the analysis of the activities they supported from the perspective of institutional work. In this overlay, the transition zone identified was between the activities of institutional work driven by an intentional actor (Lawrence and Suddaby, 2006)) and how these were mediated and translated using socio-technical actors (Latour, 1994), contributing new insights on the mechanisms of institutional work, specifically as mediated by material elements. The paradigmatic bridging (Lewis & Grimes, 1999) used in this chapter is discussed in detail in Section 5.8. Similarly, in Chapter 6, the ANT epistemology is applied to *follow the actors* where the concepts of enrolment, translation, and the obligatory passage point are used to understand the role of socio-technical actors in the destabilisation and repositioning of the SMO. In order to enrich our understanding of the value the new positioning would bring, the broader MOS literature was consulted, and Granovetter's (1993) insights on the 'strength of weak ties' provided a means to contextualize the empirical findings more broadly within the organizational literature.

Two alternative approaches to this would have been to integrate ANT with an existent theory in order to create an *ex ante* analytical framework as has been done

by some scholars (Aubry, et al., 2007; Tsohou, et al., 2015) or to apply the metatriangulation approach developed by Lewis and Grimes (1999). Both were avoided because they violated the ANT epistemological principle of avoiding *a priori* assumptions (Callon, 1984; Latour, 1996; Law, 2004). As noted by Model et al. (2017), such an approach can eliminate the benefits of considering ANT alongside other theories while simultaneously raising the risk of paradigmatic incommensurability.

3.2.4 Potential Limitations of ANT Framing

The potential limitations of my chosen method are that the ontological underpinnings of ANT could: a) bias my investigations in ways I have sought to avoid; b) unless carefully analysed and prescribed within defined boundaries, could lead to paradigmatic incommensurability; and c) introduce new complexities in analysis beyond what is required for a purely ANT approach. To avoid these, I have been careful to allow the data to speak for itself, even when it revealed hierarchical structures with significant durability (such as the role of the Canadian Government as a regulatory authority); in this sense, I draw from Baxter and Chua's observation that:

> some associations could be more durable than others (…but) one does not begin with assuming that particular interests (…) will be durable and always possess the greatest explanatory power (Baxter & Chua, 2019, p. 663)

I have also been careful to limit my overlay of ANT concepts with existent theory within a narrow scope, for example technical mediation to understand material elements within institutional work activities (Ch. 5), or the analysis of strong and weak ties to understand the value of a revised SMO engagement strategy (Ch. 6).

3.3 Select

The selection of an appropriate case study was critical to this research. Yin (2003) defines a case study as an empirical enquiry investigating a contemporary phenomenon *in-situ* where this phenomenon isn't clearly distinguishable from its boundaries, relying on evidence from multiple sources with multiple variables, and focus on "how" and "why" types of questions.

Blaikie and Priest argue that case studies serve as a mode of data selection rather than research design *per se* (Blaikie & Priest, 2019, p. 205), and that the choice of case is critical if generalization is to occur. Scholars have identified five types of cases where a single case could permit what Yin (2003) refers to as analytic – or what Eisenhardt (2009) calls theoretical – generalization:

1. A *critical* case such that a logical deduction of the type – "If this is (not) valid for this case, then it applies to (no) cases" can be made; i.e. if the expected outcome failed to occur, it would disprove the hypothesis (Flyvbjerg, 2011; Yin, 2003);

2. A *representative* or *typical* case that characterizes the behaviour of the larger population of interest (Eisenhart, 2009);

3. An *extreme* (Yin, 2003) or *deviant* (Eisenhardt, 1991; Flyvbjerg, 2011) case, which cannot be explained by existing theory;

4. A *revelatory* (Yin, 2003) or *paradigmatic* case, which serves as an 'exemplar' or prototype that transcends existing standards and rule-based criteria (Flyvbjerg, 2011); or

5. A *deviant* or *negative* case, which if found, would prove a hypothesis wrong (Eisenhart, 2009).

In this dissertation, the CaGBC was selected as both a *representative* case, since during its formation and expansion periods it evidences the reliance on its sustainability rating tool to define itself and its market typical of other Green Building SMOs, and a *deviant* case when it transcends this dependence and redefined itself beyond LEED®. Considering the case from these two perspectives permits the analytic generalization of its results as described in Sections 7 and 8.

Beyond the case selection, the type and means of collection of the data itself must be appropriate to comprehensively answer the research questions. For the first research question, this consisted of a systematic literature review to explore building movements through a lens of ANT; the methodology for this component in described in Section 3.3.1. For the second and third research questions, it consisted of a pair of empirical studies: a diachronous study to document the CaGBC's organizational history (Phase 1) and a synchronous study to document the planned transition (Phase 2). In both studies, data collection occurred through both semi-structured interviews, discussed in more detail in Section 3.3.2, and secondary document analysis,

discussed in detail in Section 3.3.3. Finally, the potential limitations of this data collection are discussed in Section 3.3.4.

3.3.1 Literature Review

The literature review to explore RQ1 was completed in a multi-stage process following PRISMA guidelines (Moher, et al., 2010), summarized in Figure 3. To begin, a set of general and management-specific databases (Web of Science; Scholar's Portal, ProQuest, Google Scholar, Business Source Premier, ABI inform, Canadian Business, Emerald Insight) were deemed relevant and considered for the search. Next, search criteria were set. The search terms {"actor-network" OR "actor network" AND ("building movement" OR "green building" OR "smart building" OR "healthy building" OR "postmodern architecture" OR "modern architecture" OR "intelligent building")} were used. Only papers published in English were considered and both peer-reviewed journal articles and book sections were considered. 2985 papers were identified and 1856 duplicate papers were removed.
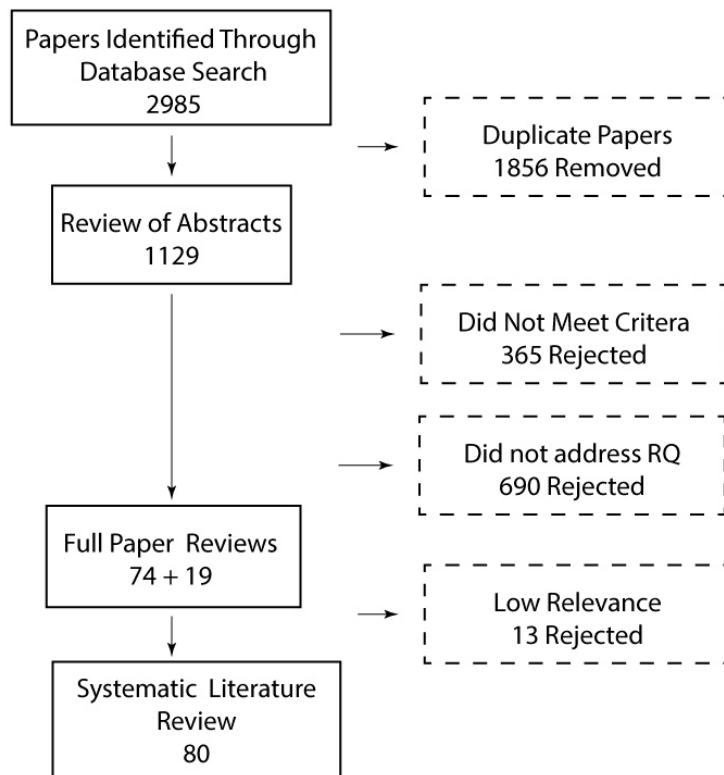
Figure 3 PRISMA Method used for Systematic Literature Review

All papers were subject to an abstract review prior to a full-paper review. At this point, three criteria were applied to ensure the relevance of papers. First, papers that considered only the engineering aspects of technology, for example the development

of a particular smart building algorithm or sustainable construction material study, were excluded. Second, the paper needed to discuss some element of a building movement. Third, there had to be an indication that socio-technical analysis (i.e. ANT) was used in the paper. Based on the abstract review, only 74 of the database-identified papers met these criteria and continued to full-paper review.

At the full-paper review stage, the following information was noted for each paper: the building movement(s) discussed, the research objective and questions, how ANT was applied to the building movement in question, the key actors discussed, the method (theoretical framing and/or empirical approach), key conclusions, outstanding questions, and my observed limitations. Papers failing to address a particular building movement or not applying ANT (or a similar socio-technical approach) were deemed irrelevant at this stage; while many papers included a discussion of actors and networks, a very small proportion actually referenced actor-network theory or its principles. During this review stage, an additional 19 ANT-specific papers were identified and included to provide an enriched background; however only six were deemed relevant. The findings from the 80 papers deemed relevant informed the discussion of building movements in Chapter 4. It should be noted that while that chapter initially started as a literature review paper, it evolved to become much more conceptual during the revision stage and much of the literature review content was omitted due to length considerations. This review was also helpful as background for the empirical studies with several of the identified papers forming the background for Chapter 5.

3.3.2 Interview Data Collection

Fortuitous timing led to the identification and recruitment of the CaGBC, an organization central to the Canadian Green Building Movement, in October 2020. At that time, the organization was about to implement its second fundamental restructuring, the previous having occurred in 2015. In both cases, a stated goal of the restructuring was to "respond to new member needs and changing market pressures" (CaGBC CEO), with the latter seeking to increase organizational agility to respond to new post-LEED® opportunities as well as opportunities and threats from new and disruptive actors such as Covid-19. During a discussion with the CEO of the CaGBC, a desire to document their organizational history was also expressed, leading to the

formal recruitment of participants.

Purposeful sampling using snowballing was used to identify key individuals from the **target population** for Phase 1. This population includes the founding members, past and present executives and key program staff, board members, technical committee members, and partner organization representatives. A **sample population** was initially identified during my pilot interview with one of the initial founders, who continues to be in a leadership role in the organization and was through subsequent interviews and given my own knowledge of the organization. To ensure that the most complete picture would emerge from these interviews, diversity – of role, employment background, race, and gender – was sought among interviewees.

3.3.2.1 Phase 1 Interviews

Phase 1 participant recruitment began in November 2020 with the CEO of the CaGBC, who introduced me to the pioneers in the establishment of the GBM in Canada and the creation and development of the CaGBC. A total of 23 individuals were identified through the initial selection and snowballing process and invited, of which 20 agreed to participate. These individuals are listed by role and period of engagement in the CaGBC in Table 2.

Table 2 Interviewees for Phase 1 (anonymized)

Interviewee	Role and background	Starting Year	Ending Year
1	CaGBC Pioneer & Executive; Government	pre-2002	ongoing
2	CaGBC Staff (former);	pre-2002	2012
3	Partner Org Executive;	2005	ongoing
4	Former Board Member; real estate executive	2010	2015
5	CaGBC Pioneer; Developer	pre-2002	2010
6	CaGBC Pioneer; Architect	pre-2002	2010
7	Former Board member, Architect	2008	2013*
8	Early TAG member; Engineer	pre-2002	2010
9	Former CaGBC Staff; GB Consultant	2006	2015*
10	CaGBC Pioneer;	pre-2002	2005
11	Board Member; Construction Material Manufacturing	2012	ongoing
12	Early TAG Member, Former Board Member (2014-2020), Architect	2002	2020*
13	CaGBC Pioneer; Architect and Academic	pre-2002	2007
14	Board member; Architect	2019	ongoing
15	Former Board member; Utility Service Company	2007	2015

16	CaGBC Staff	2008	ongoing
17	CaGBC Staff; Engineer	2010	ongoing
18	CaGBC Pioneer; Engineer	pre-2002	2013*
19	Partner, Government	pre-2002	ongoing
20	Former Board Member, Partner, Lawyer	2004	ongoing

denotes those continuing to be involved in the CaGBC as members or volunteers after their noted role

The remainder of the phase 1 interviews were conducted in December 2020 and January 2021 and were nominally one hour, though some participants such as the current and past CEO required multiple interviews to document their experiences. The interview questions for this phase were developed to document the history of the CaGBC as a national organization. To augment this analysis, a series of questions were asked to identify key actor-network relationships that have influenced its evolution and the development and marketing of its products over this period.

Table 3 presents the Phase 1 interview questions and their intended purposes. Having tested this set of questions in pilot interviews, it became apparent that some respondents would speak at length based on the first question, segueing themselves into answering later questions and requiring only minimal prompts. The first two questions were narrative in nature and provide insight on the experience of the actor being interviewed.

Overlaps and alignments between these narratives allowed the contextualization of the CaGBC history within the Canadian GBM. The remaining questions were used to dig more deeply into the history and provide context for the respondent's answers. One question that cannot be asked was "what was left out of the narrative", but it was hoped that by overlapping the histories provided by each respondent, common omissions – which may or may not be consistent between different groups – would provide additional insight. Additionally, I closed each interview with a final question: "*What didn't I ask you about that you feel should have been mentioned?*". This provided interviewees to provide additional information and seek to address this issue. The secondary document analysis was proactively used to provide additional background, identify events not highlighted in the interviews, and confirm or clarify descriptions of recalled events (Welch, 2000).

Table 3 Phase 1 Interview Question Intentions

Question	Intent
When did you first become involved in the Green Building Movement, however you would choose to define it?	Establish respondent's context within GBM. Gain insight on respondent's understanding of the nature of the GBM and its historical context. This context helps to identify interviewee bias in the selection and description of key events and interactions.
When did you first become involved in the CaGBC? How did that begin?	Establish respondent's history with CaGBC; determine whether this differs from GBM engagement
What types of roles have you played in the CaGBC? (e.g. member, committee member, board member, chapter or national staff)	Establish respondent's context within CaGBC, particularly with respect to key dates
As a member of the CaGBC, how has your *experience* of the organization changed over time? (clarify experience not as engagement level but as *sense* of the organization - atmosphere/morale/culture, etc.)	Open question to gain insight on respondent's subjective experience of CaGBC and how the zeitgeist of the organization changed over time.
Looking back over the history of the CaGBC since you were first involved, can you think of seminal buildings or trigger events (e.g. regulation, organizational changes, new members) that triggered an increase in market adoption?[16]	Identification of key events from respondent perspective that resulted in the rise to dominance of the CaGBC; this informs the historical account as well as provides insight on key artefacts and drivers of change
Are there specific changes to the membership of the CaGBC that you have noticed, whether at the chapter level, at the national conference, or in another context? (If so, what are they? When did they occur?)	Provide insight on changes in constituent actors
Have you noticed any significant changes to CaGBC programming or member engagement over the period since you joined the CaGBC? (If so, can you describe them?)	Picks up on historiographical questions but focuses on member engagement/marketing activities as perceived by respondent.
In some of the other interviews, people have mentioned different kinds of tensions – usually ideological or in terms of direction - that existed and had to be navigated as the CaGBC established itself. Can you comment on your experience of that?	Identify ideological differences, alternate strategies, inter- or intra-organizational tensions, and other actor-network dynamics of importance to organizational evolution

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[16] Originally: "Looking back over the history of the CaGBC since you were first involved, what are the most significant events that come to mind? What is the significance of each? What changes occurred within the CaGBC as a result of each event? How would you describe the period between each event?" however respondents struggled to respond. The revised version has been much more successful.

3.3.2.2 Phase 2 Interviews

Phase 2 consisted of a series of interviews conducted throughout the transition period (October 2020-January 2022), summarized in Table 4 below. Phase 2 participants were recruited with the assistance of the CaGBC, who identified relevant individuals, all of whom were invited to participate in this study[17]. The three senior staff involved in the transition process were interviewed multiple times at milestones throughout the transition period. This provided an opportunity to identify changes in the transition plans, gauge progress, and identify additional staff whose input would be valuable in documenting the transition processes.

Table 4 Interviewees for Phase 2 (anonymized)

Identifier	Role	Interview Date(s)	Notes
T1	Executive Team Member	2021-06-10; 2021-09-01; 2022-02-04; 2022-02-10	Joined organization in 2018.
T2	Director of Client Services Team	2020-12-17; 2021-06-10; 2021-09-01; 2021-12-08; 2022-02-09;	Joined organization in 2019
T3	Client Services Team Member	2021-06-21; 2021-09-16	Coordinator of new industry engagement initiative
T4	Client Services Team Member	2021-09-21	Was previously CaGBC staff working with chapters; left org 01/2022
T5	Client Services Team Member	2021-11-10	Regional member engagement (hired once transition model had been developed (03/2021))
T6	Client Services Team Member	2021-11-16	Regional member engagement (also hired (03/2021))
T7	GBCI CA Staff	2021-05-31	Moved from CaGBC to GBCI CA when it was formed (2017)
T8	Marketing Staff	2022-01-26	Responsible for translating rebranding strategic exercise outcomes into new brand
T9	CEO	2020-11-13; 2020-12-17; 2021-02-18; 2022-01-14; 2022-01-28	Involved in organization in various roles since pre-establishment; CEO since 2004.

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[17] Initially, it was desirable to interview members of pilot groups and survey the broader membership regarding their experience of transition, however due to delays in implementation, the pilot groups had only just been formed and the full model and brand transition (execution) had not yet been undertaken by the end of the data collection period (January 2022). These are planned as future research to continue with the CaGBC following the completion of my dissertation.

The interview questions for Phase 2 were developed to document the intended purpose of the restructuring and how it was being perceived by staff and members as it was implemented. I also sought to gauge how the programming, organizational communication, and membership had changed over this period to provide a more holistic understanding of the organization and its engagement with the market. Table 5 presents the Phase 2 interview starting questions used in the initial interviews and the intended purpose of each.

Table 5 Phase 2 Interview Question Intentions

Interview	Question	Intent
Initial	What was your role in the restructuring process? When/how did it start?	Establish role of actor in transition process.
	Tell me about the reasons for the planned restructuring. What was this responding to? What was it intended to achieve?	Document actor's understanding of the intent of the transition process
	How do the new regional hubs work? How are these similar to – and how do they differ from – the chapters?	Provide insight on the mechanisms of the most significant change with the new transition model.
	What is the role of the new advisory group? How will it be formed? How will it relate to the regional hubs?	Provide insight on changing member engagement.
	What are you hoping to achieve or learn from the (planned) pilot deployment?	Identify organizational goals for pilot studies.
	How is the relationship with GBCI Canada affecting – and being affected by – this transition?	Establish the importance of GBCI Canada's establishment on the transition.
Follow-up	How is the transition process coming along?	Gauge interviewee satisfaction with process, unanticipated challenges, resolution of anticipated issues, etc
	What has happened since we last spoke?	Document in real time the activities and events of the transition process.
	What are the next steps?	Provide insight on what was expected from the actor at the current time; permits the identification of unexpected developments.

As evidenced from this table, the follow-up interviews with the key staff were much less structured because of the changing nature of the transition. These began with an open-ended question of "how is the transition process going" and proceeded organically based on the answers received. The repeated interviews of these key members were particularly valuable because they allowed me to track the changes that occurred in both the transition model and – as the transition process continued – the interviewees' understanding of organizational identity.

3.3.3 Secondary Document Collection

In addition to the interviews, over 1500 organizational documents were collected to support both phases of research. Of these, over 500 were found to be useful, summarized by type in Table 6.

Table 6 Secondary Documents Used in the Empirical Study

Phase(s)	Document Type	#	Intent
1	Project database	1	Identify organizations active in design/build/operation of green buildings and identify trends in adoption rates by region, owner type, building type, certification type, project type, etc.
1 & 2	Annual Reports, AGM Reports, and associated presentations; AGM agendas & minutes	27 24	Analyse CaGBC achievements, strategies, and outcomes, as communicated by CaGBC CEO. Board & committee member names and affiliations provide insight on private sector engagement with the CaGBC. Due to issues with the member database, this was also the source for aggregate membership data.
1 & 2	Conference Programs	16	Identify topical clusters by year to analyse trends in topics, sponsor organizations, keynote themes, etc.
1 & 2	LEED® and Zero Carbon Standard documents	33	Identify topical clusters by year to analyse trends in topics, sponsor organizations, keynote themes, etc.
1 & 2	Strategic planning documents	71	Obtain insights into the strategic plans and organizational objectives over its history.
1 & 2	By-laws	4	Track changes in governance and other key organizational policies over time.
1 & 2	Advocacy and research reports and summaries	59	Identify themes in advocacy and market research activities over time
1 & 2	Pre-restructuring webpage elements	222	Capture the full website prior to restructuring to permit its comparison after restructuring to see if there are any changes beyond Chapter and Board structure definitions
2	Restructuring presentation (internal)	1	Provide insight on the internal structural changes made to enable the broader organizational transition
2	Transition model presentations	18	Provide insight into each stage of model development unbiased by the final model and allow changes in approach to be tracked over time.
2	Revised organizational policies	6	Provide insight on the new relationship between CaGBC, its new groups, and its members. These include CaGBC code of conduct, confidentiality agreements, standard operating parameters, and conflict of interest.
2	Rebranding document (external)	1	Provide insight on the initial understanding of the rebranding vision
2	Rebranding training (internal)	1	Provides a summary of the intentions of the new brand and how this was to be translated into new communications and engagement approaches by all CaGBC staff
2	Revised website pages (preview)	~50	Compare the new website layout with the old website to better understand the impact of the organizational transition on CaGBC marketing and communications

In Phase 1, these documents served four purposes. Initially, they were used to identify changing themes and key milestones in the CaGBC history; for this, the annual reports, AGM presentations, and strategic documents were most valuable. During the interview period, the full corpus was consulted for confirmation (of timing, participants, etc.) or to supplement interviewee narratives with additional details. Not only did these secondary documents add value by completing the organizational history, they provided insight on issues and events not mentioned by interviewees (Cassell, 1994; Welch, 2000). Third, they were a source of significant data regarding how the CaGBC articulated its objectives and marketed itself, both internally and externally, through textual analysis. Finally, these archival documents provided additional context to elucidate on interviewee narratives, such as analysing the governance structure over time from the annual reports, tracing changes in topics discussed at events, etc. Due to confidentiality and sensitivity issues, board minutes and the license agreements could not be shared by the CaGBC, but the CEO and COO answered specific questions regarding their content.

Immediately prior to Phase 2 and in anticipation of its potential changes as a result of the transition, I made a copy of the CaGBC website for future comparison. Throughout this phase, organizational working documents were collected to provide insight on the various intermediate models, strategies, and approaches being tested by CaGBC. The Phase 2 secondary documents consisted of working and final versions of presentations, draft transition models (including discarded slides), rebranding guidelines, staff presentations, strategic plans, policies, memoranda of understanding, etc. These were valuable as they provided insight on the progressive iteration of the transition process, including several concepts that were abandoned well before public presentations, thus permitting a rare view into the negotiations that led to the final structure of the organization post-transition. Prior to its formal launch, a preview of the new website was also shared, which permitted the new and old branding and online presence of the CaGBC to be directly compared.

3.3.4 Potential Data Collection Limitations

Several potential limitations of this research were considered in the research design, including (1) sampling bias, (2) response bias in the diachronous interviews, (3) recall accuracy in the diachronous interviews, and (4) the limited availability of historical

documents. Because of the purposeful sampling approach, sampling bias was not of particular concern, as the characteristics desired within the sample population are individuals with an intimate and first-hand knowledge of the CaGBC, particularly the circumstances and negotiations around its founding and shifts in organizational strategy. Given this, the identification of relevant actors through snowballing allows this core group to be identified, and it was their view rather than the broader membership of the CaGBC that was important in both phases.

Response bias was anticipated to colour the responses and was carefully considered. It is the nature of diachronous interviews for interviewees to have the benefit of hindsight as they answer questions, and as such, the questions regarding key events will inevitably be coloured by their (known) impacts and resultant changes. This is, in fact, desirable, as it allowed each interviewee to provide their own analysis of what led the CaGBC to evolve and the resultant account will thus be a meta-analysis of these changes, rather than simply my own narrative based on individual accounts. Despite this benefit, there was the risk that events that were considered to be significant *at the time* but wound up not having the desired or expected effect were omitted by interviewees, which would have led to success bias in the responses. There was also a risk of poor accuracy because the recall period was nearly 20 years for interviewees who had been involved in the CaGBC since its inception. These two issues reaffirm the need for review of the secondary documents to attempt to discover which unsuccessful initiatives and events have been omitted from the interviewee accounts (Welch, 2000; Cassell, 1994).

Given the importance of the secondary document analysis, it was also important to understand the limitations on the availability of these documents. There was no official archive for the organization, and many documents have historically been developed and stored at the chapter level, while others have been stored by the national office. Several document types are available only for the latter part of the organizational history, either because they were initially created by independent chapters who did not hand over full records, or because they were new document types created later in the organizational history (for example, Annual Reports). The types of documents that have existed – whether available or not – was of interest to this study. For example, it was telling that Annual Reports were not published until the

institutional investors and large corporate real estate firms driven in part by ESG requirements joined the organization.

3.4 Distil

The distilling phase is that of data analysis. In this phase, I used a multi-level thematic coding approach similar to that proposed by Gioia et al (Gioia, et al., 2013; Gioia, 2021). In Gioia's method, qualitative data is thematically coded to identify sentence- or clause-level content with "Level 1" codes. Next, these codes are aggregated and synthesized into "Level 2" codes to inform thematic clusters within the data. Informed by my background in data science, I enhanced my use of Gioia's method with natural language processing (NLP) to provide additional insight on common themes and unique vocabularies across and within my collected data. This hybrid approach to qualitative analysis provided me with a set of seed Level 1 codes that streamlined my thematic coding approach and simultaneously provided insight on potential thematic clusters to inform Level 2 codes. The use of NLP also permitted me to rapidly identify unique vocabularies and themes present only in particular document subsets, for example the responses of a particular interviewee, a particular type of archival data (e.g. Annual Report), etc.

I begin this section by describing the NLP algorithms used and the role they played in my qualitative research. Next, I describe the thematic coding and clustering process for interview transcripts (Section 3.4.2). Finally, I describe my analysis methods for the secondary documents (Section 3.4.3).

3.4.1 Natural Language Processing

NLP has been recognized as a valuable tool in management research (Kang, et al., 2020) as it provides the ability to scan through a large volume of textual data and identify high-frequency words. There are three general steps to undertake NLP: (1) string normalization, (2) valorisation, and (3) comparison (McCarthy & Boonthum-Denecke, 2011). In the string normalization stage, documents are converted into a *corpus* of text strings, removing all punctuation and capitalization to reduce artificial distinction between strings of the same word. "Stop words" – common but low-meaning works such as articles, prepositions, pronouns, and conjunctions, may also be removed at this stage if they are not considered important in the analysis, which

was the case in this research.

Once the files are pre-processed in this way, they are *valorised*, meaning that a value is assigned to each string. This may be an absolute count (the "bag of words" (BOW) model) or a frequency (decimal) calculated based on the total number of words in the document ("term frequency" (TF) model) (McCarthy & Boonthum-Denecke, 2011). BOW and TF each develop matrices listing all unique words (or stems) in the first column, and each associated count (BOW) or proportion of total words (TF) in each document in the second. These are sorted in descending order by value, and output in a result vector of the most common strings (typically 100, 500, or 1000). These algorithms are limited to providing insight on a document by document basis.

A more sophisticated algorithm, the "Term Frequency-Inverse Document Frequency" (TF-IDF) technique, is valuable to identify the most common words that are present in one document (or class of documents) but absent in the others. This provides the characteristic word set for each document (or subset of documents), which was extremely valuable in this research, as it permits characteristic vocabularies to be identified and analysed. In the comparison step, the document result vectors may be compared to visualize data (for example, word clouds), identify common themes within and across document classes, or conduct trend analysis (McCarthy & Boonthum-Denecke, 2011). For TF-IDF, if documents were labelled with a class identifier – for example a year or document type – these could be resampled and result vectors can be developed for each class or combination of classes, for example annual reports from 2010-2014, to permit intra-class comparison of language use.

In my modified Gioia approach, I used a combination of NVIVO and R (CRAN, 2020) – an open-source data analysis software. NVIVO has a diversity of functionalities, ranging from supporting manual thematic coding (highlighting and tagging of textual elements), which was used, to automated coding (labelling text based on the most common words identified using BOW), which was not. I felt it critical that automation only be used to enrich and support data analysis, not replace my active engagement with the data. Of value to my hybrid approach, however, NVIVO also has the ability to generate a *corpus* very quickly, allowing the extraction of text from multiple documents and their analysis either individually or in subsets. These subsets are described as implemented in each phase in the following section. NVIVO also includes some simple document pre-processing functions. Stemming – the

removal of suffixes – is built-in with NVIVO and was found to be beneficial in the TF process and was also used for document pre-processing. NVIVO's synonym grouping feature, however, was avoided as it was found to confound several terms – for example the "establishment" of the CaGBC with references to green "buildings" – and was used with caution. Once the most common terms had been generated, these were compiled into *data frames*, where each row was associated with one document and the columns listed the key words and tags for document attributes. These data frames were then imported into R, which unlike NVIVO supports TF-IDF. More detailed information regarding how this technique was used for each phase and type of analysis is described in the following sections.

3.4.2 Interview Analysis Techniques

To enable thematic coding, all interviews were conducted by video conference, recorded[18], auto-transcribed, labelled with a unique interviewee identifier, and the transcription edited and – unless requested otherwise - sent to interviewees to identify transcription errors and redact potentially sensitive comments[19]. Once transcribed, the interview recordings were erased to protect interviewee privacy. During all interviews I also took notes, which were valuable to inform both the coding and transcription activities, and have been retained in an anonymized form. My interview coding approach varied slightly between the two phases of research and thus each phase is discussed separately in the following sections.

3.4.2.1 Phase 1 Interviews

While intended to be semi-structured in nature, I found as early as the pilot interview that the answers to several questions (notably #1 & #2) result in significant narrative interview content. As a result, both content and narrative analysis were used in

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[18] Phase 1 interviews were recorded and transcribed using MediaHopper. Early in my Phase 2 data collection, I realized that MS Teams provided far better auto- transcription and thus it was used for the majority of Phase 2 interviews.

[19] The importance of this step was evident in the pilot interview, where my interviewee realized that they had made a potentially damaging comment and request that it be stricken from the record. When I shared that they would be permitted to review my transcription and correct and redact it, this was met with relief and significantly more frankness in the remainder of the interview. While there was a risk of lost data from redaction, this minimization of participant risk was important from an ethics perspective. That said, of the Phase 1 interviewees, only three responded to my request for comment on the transcription while the remainder noted no need for this review.

interview coding. Prior to beginning my Level 1 coding, I used NLP to conduct a TF analysis of my interview notes, both as a set (Figure 4, left) and for specific interviewee focuses (Figure 4, right). This provided some insight on interviewee priorities but was confounded by each individual's idiomatic language usage, for example interviewee #1's repeated prefacing of statements by "*I think*" (Figure 4, top right). TF-IDF was also attempted across interviewees but wound up reflecting individual speaking styles, rather than differences in content, and was not used in this analysis.
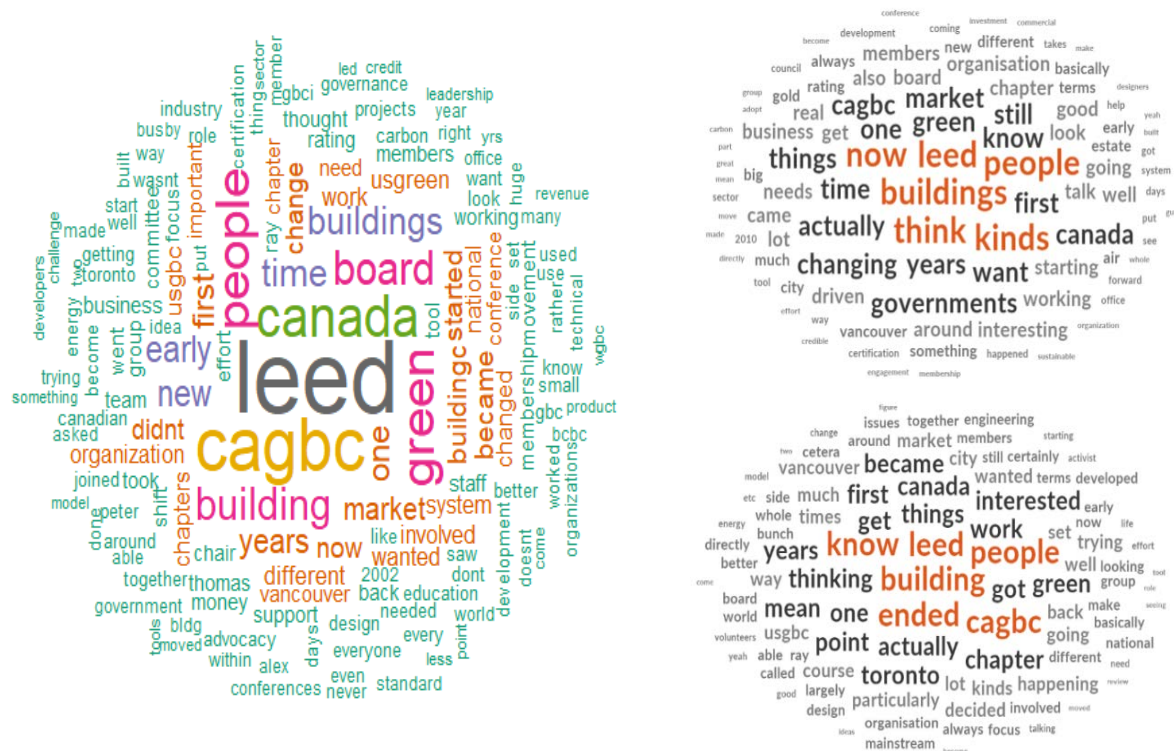
Figure 4 Word cloud of most common terms for all interviews (left) and for two sample interviews (right)

This TF analysis was complemented by an NVIVO stemming and synonym analysis, which was manually reviewed. Words functioning as *stop words* (for example "think", "know", "guess") were removed, terms that confounded concepts were removed, and similar words were grouped. These word groupings provided a seed set of Level 1 codes, which were used to manually code the interview transcripts. Once coded, the codes were clustered and aggregated into higher-order codes.

The key themes emerging from this hybrid analysis informed the periodization and empirical study framing using Lawrence & Suddaby's (2006) institutional work activities. The final code structure, which was expanded to include those institutional work activities not explicitly identified in the NLP but evident from a manual analysis of the transcript content, are listed in Appendix A.

3.4.2.2 Phase 2 Interviews

Unlike Phase 1, the Phase 2 interviews were synchronous, thus avoiding bias in the respondents due to hindsight, and the repeated nature of the interviews allowed events, perceptions, and sentiments to be documented in near-real time. To avoid my own biases in data collection, interviews were analysed only once the phase was complete. While initial interviews with each participant were notionally semi-structured to permit the comparison of answers, I found these rapidly became unique narratives. Follow-up interviews were also very loosely structured, focused instead on understanding the key developments since the preceding interview and expectations of next steps. Because of the emerging content from these interviews – and because the looser structure of repeat interviews precluded direct comparison – TF-IDF was not found to be particularly useful for interview transcripts. TF was found to provide some value in generating seed codes, but the majority of thematic coding was inductive and performed using NVIVO following the Gioia method as described above. The code structure is provided in Appendix B.

3.4.3 Secondary Document Analysis

NLP was intended for use in Phase 1, however the significant volume and diversity of documents created by the CaGBC in each time period, many of which were not machine-readable, rendered this unfeasible. Instead, the organizational documents available were read[20], screened, and sorted to assess their content. Those with significant value for documenting the organizational history (AGM presentations, Annual Reports, and Strategy documents) were reviewed in detail. Tables were also created, extracting key data from annual reports, AGM presentations, and conference programs. For the former two categories, these included the articulation of CaGBC objectives, highlighted events, membership and project numbers, board members, etc., while for the latter the session themes and key announcements were recorded. As I conducted interviews, I consulted relevant documents – particularly when referenced by the participants – to confirm, correct, and expand upon interviewee narratives. This additional analysis was helpful to refine the periodization and create

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[20] For longer, issue-specific documents (for example, policy papers, market research, or a revised rating system), only the table of contents was reviewed at this stage.

the organizational timelines presented in Chapter 5.

For Phase 2, I used NLP to analyse the key documents (planning slides, AGM presentations, *etc.*). The document attributes used for the TF-IDF data frame were the stage of transition: {"planning", "pilot", "operationalization"}, document type: {"report", "meeting", "presentation"}, audience: {"internal", "member", "public"}, and text (paste of main text). The top 100 keywords were considered in this analysis. This analysis provided insight on the changing activities and communication styles as the transition process progressed, permitting the extraction of qualitative data from the substantial volume of text generated in Phase 2.

3.5 Research Ethics

Because the proposed research involved human participants, it was critical to undertake a research ethics review prior to commencing data collection. The research ethics protocol was approved prior to Phase 1 and was provided as Appendix C to this document. Because the participant type and question types were similar in Phase 2, the initial research ethics review was deemed adequate for the full scope of research. However, because of the sharing of confidential information, for example advance notice of key organizational announcements, Phase 2 also required a non-disclosure agreement to be signed prior to data collection.

3.6 Summary

This chapter presented an overview of the research methodology used for this dissertation. In order to achieve my research objective – *to understand how social movements – specifically building movements – and their representative organizations impact and are impacted by societal and management prerogatives through socio-technical actors* – I explored three research questions through a set of studies. The first question contextualizes the research within management, exploring *the role of building movements within knowledge work*. This informed a literature review, which in turn led to a conceptual paper (Chapter 4) exploring how ANT's principle of *enrolment* complements Dale and Burrell's spatial control framework (Dale & Burrell, 2007; Burrell & Dale, 2014) to better understand the role of building movements in this context.

The remainder of the research was empirical in nature, consisting of two studies of a single organization: the Canada Green Building Council. The former was diachronous and served to investigate the role of technical artefacts over its 20-year evolution. This answered the second research question: to understand *the role of technical mediation as organizations grow and evolve to achieve their goals* and is presented in Chapter 5. The latter study was synchronous, following the organization in real time through a two-year restructuring and re-defining process. This answered the third research question: *how can a social movement organization reposition or transition to reclaim its market position after a disruption?* The findings of this study are presented in Chapter 6. For both empirical studies, I conducted semi-structured interviews, which were analysed qualitatively and inductively, leveraging Natural Language Processing algorithms for initial theme identification. Extensive archival (diachronous study) and working (synchronous study) documents were also analysed extensively to both confirm and elaborate upon interviewee responses.

In order to ensure an analysis not limited by *a priori* assumptions, I drew guidance from the work of Callon (1984), Latour (1987; 1996), and Law (2004; 1992) to apply an ANT-informed epistemological approach. In doing so, I deliberately kept my research open-ended, neither limiting my interviewees to predetermined actors but rather using snowballing to expand my interviewee list to all individuals identified by other actors, nor assuming any hierarchy or relationships between them. As previously noted, I also avoided coding and qualitative analysis until after my data collection period was complete to ensure that my analysis of early interviews did not bias my later notes or interviews. This was valuable as it permitted me to truly *follow the actors* in my empirical work, presented in Chapters 5 and 6. Before this empirical research is presented, however, the next chapter provides a broader context for understanding the CaGBC by exploring how building movements shape – and are shaped – by their enrolling organizations.

4   Paper 1

This paper was co-authored with my supervisors, with me taking the lead on the research, conceptualization, and writing the first draft of the paper in its entirety. My supervisors provided valuable insight on framing and edited this document as it was subsequently revised.

This paper was submitted to Organization in October 2020, who requested revision in May 2021, and entered its second round of review in September 2021 as a more conceptual paper than literature review. This is the version present in this current manuscript, except for a new theorization of Lefebvre's triad informed by enrolment added as Section 4.5.1. The outcome of the second round of review was the request for additional revision by June 30, 2022 and the subsequent round of review was promising, with the reviewers having accepted the resolution of most comments but requesting additional refinement by January 2023.

Managerial Prerogative and the Enrolment of Architectural Building Movements

Abstract

The 3E (emplacement-enchantment-enactment) framework developed by Dale and Burrell, following Henri Lefebvre, demonstrates how management achieves its prerogatives by using architecture to exert spatial control. This three-dimensional framework is insufficient in its current form. Drawing from actor-network theory, we propose *enrolment* as a remedying fourth dimension. This addition allows us to consider the indispensable role played by *architectural building movements* mediating societal values into organizations. We demonstrate how these movements have influenced enrolling organizations and how this influences and enhances spatial control. We further demonstrate how architectural building movements are translated as they are enrolled by organizations. Our contribution is to demonstrate how building movements mediate cultural values alongside managerial prerogatives into organizations.

Keywords: building movement; actor-network theory; built environment; spatial control; management control

4.1 Introduction

Architectural design's relevance to organizational studies is well established (Hatch, 2018; Dale, et al., 2018; Taylor & Spicer, 2007). Some have considered the impact of Fordism (Chanlat, 2006), Modernism and Postmodernism (Hatch, 2018; Guillén, 1997; Burrell, 1988), on organizational spaces. Others have represented architecture as a site of power and control (Baldry, et al., 1998; Foucault, 2008; Bisland & Cumbers, 2018), organizational change (Beyes & Steyaert, 2012), identity formation (Hancock & Spicer, 2011), strategy, (Yeung, 2005), legitimacy (de Vaujany & Vaast, 2014), and learning (Kasuganti, 2017). Previous studies also highlight the relevance of organizational theories of physical space by applying process philosophy (Hernes, 2007), organizational ecologies (Alexander & Price, 2013) and Lefebvre's spatial triad (Beyes & Holt, 2020; Beyes & Steyaert, 2012; Rodner, et al., 2020), amongst others (Clegg & Kornberger, 2006; Peltonen, 2012; Rodner, et al., 2020). As noted by Dovey (2014) - "places are necessarily programmed and designed in accord with certain interests – primarily the pursuit of amenity, profit, status and political power" (p.1). *How* this occurs is of particular interest to organizational scholars.

This paper builds on the work of Dale and Burrell who, drawing on Lefebvre (1991), developed an influential framework (Burrell & Dale, 2014) to explain how architecture reinforces managerial power. In this, they highlighted three architectural modes of control: *emplacement* (physical space), *enchantment* (perceived space) and *enactment* (symbolic space). Their framework is not without its critics. As noted by Beyes and Steyaert (2012), it separates the three modes of spatial control without re-integrating them. Consequently, it fails to address the complex, simultaneous, and diverse interrelationship of Lefebvre's triad and its inherent tensions, instead simplifying space to the dialectical interplay between mental idea and physical manifestation (Beyes & Holt, 2020). Furthermore, the tensions between the different types of spaces central to Lefebvre's trialectic are also overlooked (Sivunen & Putnam, 2020), nor does it provide an understanding of process, which Zhang and Spicer (2014) argue are critical to the re-making of organizational space. Finally, while Lefebvre engaged with a full range of scales, including an *abstract space of negotiation* at the level of society, Dale and Burrell's framework is contextualized to

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the building scale (Siebert, et al., 2017)), and does not provide a means to consider such societal space nor its implications for organizations.

This paper seeks to restore the tensions central to Lefebvre's triad within the spatial control framework by introducing a fourth dimension: *enrolment* (Callon, 1984; Latour, 1994). This addition enables us to address two related research questions unaddressed in the existent literature: *what broader societal factors affect architectural and managerial prerogatives* and *how do these impact spatial control*? These factors are well-documented in the literature for the modern (Guillén, 1997) and post-modern building movements (Harvey, 1989), however the impact of building movements on contemporary organizational spaces has been minimally discussed (Kerr, et al., 2016; Baldry, et al., 1998; Hatch, 2018). Building movements – critical masses of actors seeking to transform the built environment to reflect a particular set of values and ideals - have guided the design of organizational space at the workplace scale (Kerr, et al., 2016), shifting both architectural intent and technical execution. The dominance of different building movements at different times has been dramatic, fundamentally affecting workers through their work environment, interaction with their colleagues, and perception of their organization (Hatch, 2018). A core contribution of this paper consists of underlining the importance of building movements – as the mediators of cultural values - in the historical negotiation of prerogatives between managers and architects.

In Section 4.2, we review the literature on the impact of architecture – defined herein as the physical space with all of its constituent elements (form, structure, materiality, lighting, furnishings, etc., their layout, and planning) – on organizations, particularly through the work of Lefebvre and Burrell and Dale, and highlight the relevance of actor-network theory. Section 4.3 presents our conceptual 4E framework. We apply this to six building movements in Section 4.4. Through this theorization and analysis, we demonstrate that overlaying *enrolment* and its translation effects helps understand *how* spatial control and its resulting tensions are negotiated. We summarise and discuss these findings in Section 4.5.

4.2 Lefebvre with ANT

Henri Lefebvre's *The Production of Space* presents a triad of different yet complementary spaces. These are the abstract *mental* or *conceived space* (as

conceived by designers or – as Dale (2005) argues – managers), the physical *concrete* or *perceived space* (the physicalized space ('architecture') that forms the basis for our day-to-day life), and the *real-and-imagined* or *lived space* that mediates between the two. Lefebvre's theorization has been identified as the most significant contribution towards the study of organizational space and contemporary organizational discourse (Beyes & Steyaert, 2012; Taylor & Spicer, 2007), leading to significant research. For a summary, see (Dale, et al., 2018; Weinfurtner & Seidl, 2019)).

Of the applications of Lefebvre's triad within organizational studies, the most significant has been the spatial control framework of Dale and Burrell (Dale & Burrell, 2007; Burrell & Dale, 2014). Their work maps Lefebvre's triad to three principles of spatial control: *emplacement, enchantment,* and *enactment.* The first two principles engage with different aspects of the *abstract/perceived* and *concrete/designed* space: *emplacement* as the design of physical spaces for particular people and activities, and *enchantment* as the awe-inspiring design elements to 'win the hearts and minds' of employees through embodied or *conceived* meaning. *Enactment* is the lived experience of a constructed space "such that symbols, routes, and routines become invested with meaning" (Burrell & Dale, 2014, p. 11), and like Lefebvre's *social* element, mediates between the other two (Dale & Burrell, 2007; Burrell & Dale, 2014). This is where the "meanings and interpretations associated with organizational symbols" (Hatch, 2018, p. 252) can be understood.

This 3E framework has significantly impacted organizational studies (Sivunen & Putnam, 2020), with many exploring emplacement (e.g. (Bisland & Cumbers, 2018; Fahy, et al., 2014)), enchantment (e.g. (Siebert, et al., 2017), enactment (e.g. (McNulty & Stewart, 2015; Knox, et al., 2015)), or some combination thereof (e.g. (Hancock & Spicer, 2011; Zhang & Spicer, 2014)). For example, Hancock and Spicer (2011) highlight the importance of architecture to promote desired behaviours and modes of employee identity. Focusing on the Saltire Library, they discuss the enchantment created through the integration of visual and auditory cues, the emplacement created through the building's connectedness to the campus, and the enactment of "self-regulating, collaborative and team-focused subjects" (p.103). Architecture thereby produces the Saltire's students as 'new model workers'.

Although influential, the 3E framework fails to capture the interrelationship between elements of Lefebvre's triad. As noted by Sivunen & Putnam (2020), this

interrelationship leads to tensions in the production of space; spaces are not enacted as conceived, leading to questions of control and negotiation between managers, workers, and architects. Further, the societal scale of abstract space is missing from the spatial control framework. While applicable at the level of a physical workplace, Lefebvre rejected the notion of space as simply a container, referring instead to space as a social product (Taylor & Spicer, 2007). At a societal scale, an *abstract* space emerges, which we identify as building movements, that "depends on consensus more than any space before it" (Lefebvre, 1991, p. 293). As we will demonstrate, these are the sites at which managerial, social, and architectural prerogatives are negotiated.

In order to consider the negotiation between managerial, social, and architectural prerogatives, organizational scholars must "conceptualize the social and material as assemblages of multiple actors that contribute to the production of space" (Sivunen & Putnam, 2020, pp. 1133-1134). To this end, they turn to Actor-Network Theory (ANT) as it removes the distinction between the social/cultural and technical/material. ANT grants equivalence to both human and non-human actors ('actants'), recognising the dynamic nature of their ongoing negotiations through physical artefacts (Callon, 1984; Latour, 1994; Latour, 2005). Previous studies have recognized the value of ANT within this context. Latour and Yaneva's (2017) ANT view of architecture, argued that a negotiation of various tensions enacts it. Peltonen (2011) applied ANT to explore the progressive development of a university campus as it was influenced by tensions in the *lived* versus *conceived* space. Fallan (2011) considered the engagement with ANT across architectural practice, highlighting the value of understanding architecture as a *process*, not a phenomenon. At the meso scale, Farías and Bender (2012) and Rydin (2013) applied ANT to urban studies and planning, demonstrating how actor-networks and their dynamic negotiations effect the city scale. We expand upon these studies by considering the multi-scale interactions between actor-networks.

An ANT perspective provides compelling insights on the interaction between prerogatives for four reasons. First, its focus on the dynamic nature and multiplicity of actor relationships enabling an exploration of the "simultaneous and complex diversity of the interrelation" (Beyes & Holt, 2020, p. 9) within Lefebvre's triad. Second, ANT's *generalized symmetry* – that all entities in a network, can and should be described using the same terminology – means that organizations, climate change, building movements, and their physical manifestations or *artefacts* can be described as having

relationships, goals, and influence within the network. Given the evolution of actors and *artefacts* in the creation and operationalization of organizational space, a framework that can adapt without conceptual disruption is critical; ANT offers precisely this ability (Rohracher, 2003). Third, ANT defines the interaction of assemblages through the principles of *technical mediation* (Latour, 1994) and *enrolment* (Callon, 1984; Latour, 1994). As defined by Callon (1984), *enrolment* is the recruitment of an actor by another to help solve a problem. This enrolment shifts or *translates* (Latour, 1994) the objectives of both; this cost (compromise) is accepted by both actors because neither can implement the necessary solution alone. Physical artefacts *inscribed* with these translated objectives become *black-boxed* (Latour, 1994). This stabilization is temporary as these artefacts become actants that are enrolled, thus perpetuating this cycle (Callon, et al., 1986; Muniesa, et al., 2007) (Besel, 2011; Shiga, 2007; Kärrholm, 2013). Finally, ANT rejects the use of *a priori* assumptions regarding actor identification, hierarchy, or relationships. These are instead explored through analysis until there is nothing 'beyond the actor network' remaining for consideration.

4.3 The 4th 'E': Enrolment

To engage with the actors and their negotiations, we must first consider the actor network and its constituent relationships. At the local (workplace) scale, we present the various interrelationships and how they affect managerial control, before exploring the impact of these local negotiations to the societal scale, which then guides the conceptual study presented in the subsequent section.

4.3.1 Enrolment in the Workplace

Considering first the scale of a workplace, we observe that several actors enrol one another to further their objectives. This results in a translation of outcomes. As we present in Figure 5, managers enrol architects[21] to physicalize managerial prerogatives in the built space to *emplace* and *enchant* the workers. Architects in turn *enrol* building movement language and ideals to strengthen the emotional and symbolic power of built elements, thus strengthening this *emplacement* and

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[21] We use 'architects' to refer to registered architects and other design professionals engaged in workplace design, including interior designers, engineers, and consultants.

enactment. In this process, the prerogatives of each are *inscribed* and *black-boxed* into the space, rendering them invisible to the worker.
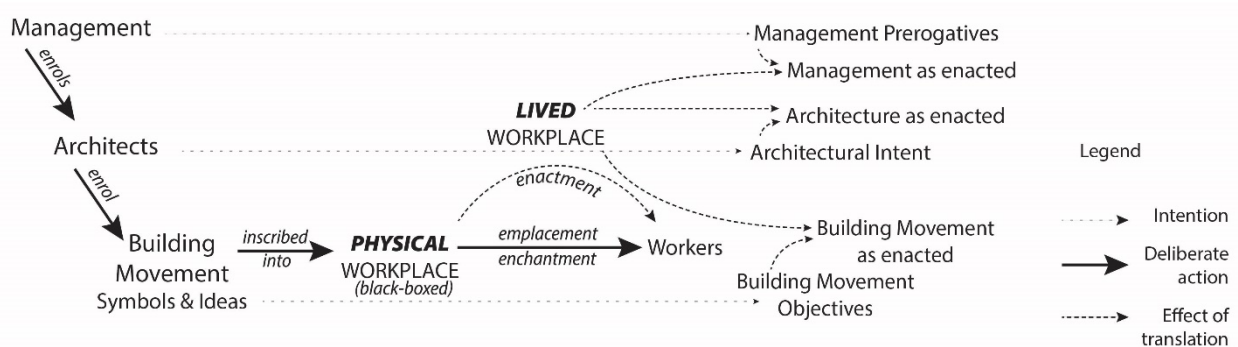
Figure 5 The Workplace Scale Actor-Network

The resultant workplace is an artefact of this process inscribed with these prerogatives, which are evidenced in both the location of the occupants (emplacement) and also its form, materiality, and layout. These dictate the space's ethereal and aesthetic qualities, affecting how it is perceived and lived by occupants, and thus enchanting them and indirectly guiding the enactment of the space. These prerogatives, having been black-boxed, are invisible to occupants in the physical space but can be enrolled to advance both management and architectural objectives. Moreover, day-to-day *enactment* of the space exerts control through both intentional and unexpected symbols and routines that arise. This once again translates both managerial and architectural prerogatives as well as the symbolic meaning of building movement symbols. The enrolment of architects by management, building movements by architects, and the physical workplace by all three *translates* management, architectural, and building movement objectives through the enactment of the occupant's lived workplace. This translation results in the spatial tensions observed by Lefebvre.

4.3.2 Enrolment Across and Beyond Organizational Spaces

Figure 6 demonstrates how building movements emerge from social movements: their ideals are physicalized architecturally and evolve to develop a unique identity ('language'). These movements are further influenced by cultural, political, and economic forces either directly, through policy, or indirectly, though changing cultural values or emerging social movements (Rochon, 2000; Sentman, 2009; Stenberg & Räisänen, 2006). As architects and organizations engage with the building movement,

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these societal forces impact management and architectural practices. Simultaneously, the enacted space inscribes new meanings onto the building movement, creating a normative architecture – or 'language' – of recognized forms, symbols, materiality, etc. This language can then be *enrolled* by architects and organizations to inscribe workplaces with the social movement's ideals, thereby imbuing them with symbolic power.
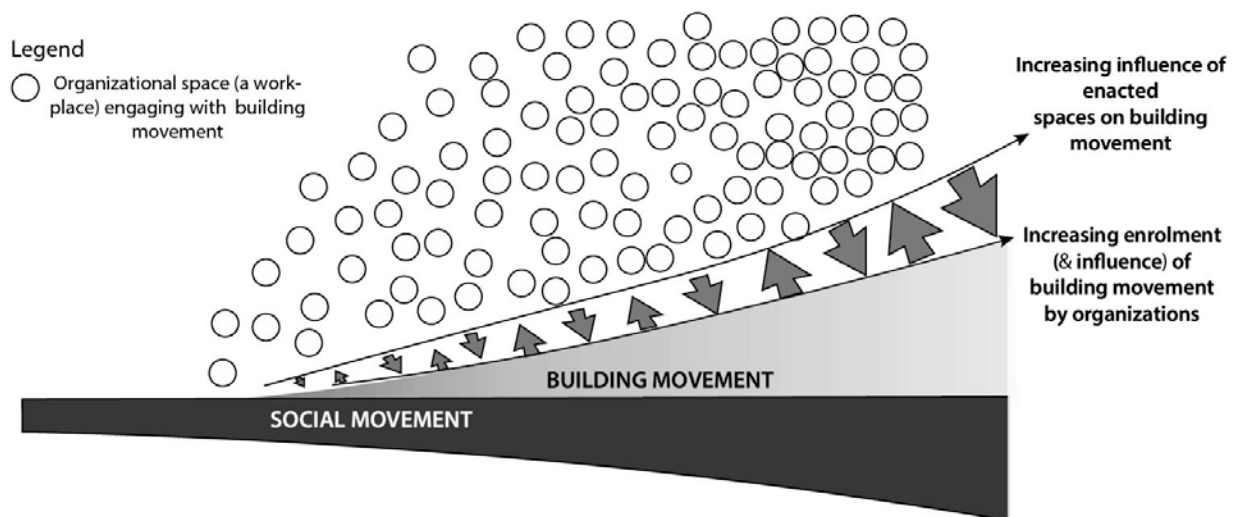
Figure 6 Actor-Network negotiations at the movement scale

The building movement then grows by enrolling the success of enacted spaces to establish its legitimacy and promote sanctioned practices commensurate with the social movement's ideals. This mutual enrolment of architects/organizations, their built spaces, and the building movement itself is critical to understand how workplace-scale emplacement, enchantment, and enactment is both *influenced by* and *intensified within* the building movement to have societal impact.

4.3.2.1 The 4E expanded spatial control framework

Synthesizing our analysis at the workplace and building movement scales, we conceptualize the process of *enrolment* alongside *emplacement, enchantment,* and *enactment* to create the 4E expanded spatial control framework in Table 7.

Table 7 4E expanded spatial control framework

	Management enrols…	Architects enrol…	The Building Movement enrols…
management to…	-	provide the resources and location for the expression of architectural intentions	serve as spokespeople for the benefit of the building movement's* values and promoted practices to other organizations
architects to…	design the workplace to achieve management objectives of corporate identity, hierarchy, and management control	-	serve as advocates for the building movement's* values and promoted practices
the physical space to…	emplace workers according to hierarchy and control interactions, access, and surveillance; enchant workers with emotional responses to the organization and clients with compelling images of the organization; and include symbolic elements to guide the enactment of organizational space at the workplace level	emplace workers according to hierarchy and control interactions, access, and surveillance; enchant workers with emotional responses to the organization and clients with compelling images of the organization; and incorporate symbolic elements to create meaning within the enacted space	serve as a case study to promote the building movement's* values and promoted practices
the lived space to…	give symbolic power and persistence to organizational routines, policies, and procedures, re-enforcing management control and desired worker behaviour	serve as a precedent for future workplace design projects and as case study demonstrating the architect's value to organizations	
the building movement to…	strengthen the symbolic and emotional appeal of workplace elements and the associated organizational branding or identity through associations with the values of the building movement*	strengthen the symbolic and emotional power of the architecture by using a recognized ideological 'language' associated with the building movement*	-

(and underlying social movement's values)

As Table 7 notes, both management and architects enrol the organizational space in both its physical (the intended enrolment) and enacted (the lived enrolment) forms, to emplace, enchant, and enact their prerogatives (management control and architectural intent, respectively). Because of the collaboration and negotiations required to achieve this, both management and architects enrol one other and have their goals translated in the process – as demonstrated in Figure 5. Extending beyond the workplace, both actors further enrol relevant building movement(s) in order to strengthen the symbolic and emotional power of the spatial control elements by

associating them with the ideals of the underlying social movement(s). In turn, the building movements enrol organizations and their management, architects, and even the built and enacted space to promote and advocate for the building movement. In doing so, the building movement grows but also finds itself translated.

We now apply this 4E framework to offices as these have seen the most significant changes in management strategy within recent history. We begin with Taylorism/Modernism, where office workers had, due to increasing numbers, lost their elite status and were treated like factory workers (Dale & Burrell, 2003). With the rise of the knowledge worker, fundamentally new management styles emerged, resulting in a significant evolution of associated workplace designs and management control strategies.

4.4 Exploring Building Movements and Organizational Space using the 4E Framework

We identify six key building movements since the turn of the 20th century, applying our revised 4E framework of spatial control to each (Figure 7): Taylorist/Fordist efficient ('Modern'); Flexible & 'fun' ('Postmodern'); comfortable ('Intelligent Building'); sustainable ('Green Building'); healthy ('Well Building'), and connected ('Smart Building'). These last four diverge from postmodernism to focus on 'occupant-centric' design, providing a variety of potential workplace types and leaving the employee to choose the 'best' work environment for a task rather than a one-size-fits-all approach. We will now explore each in turn.
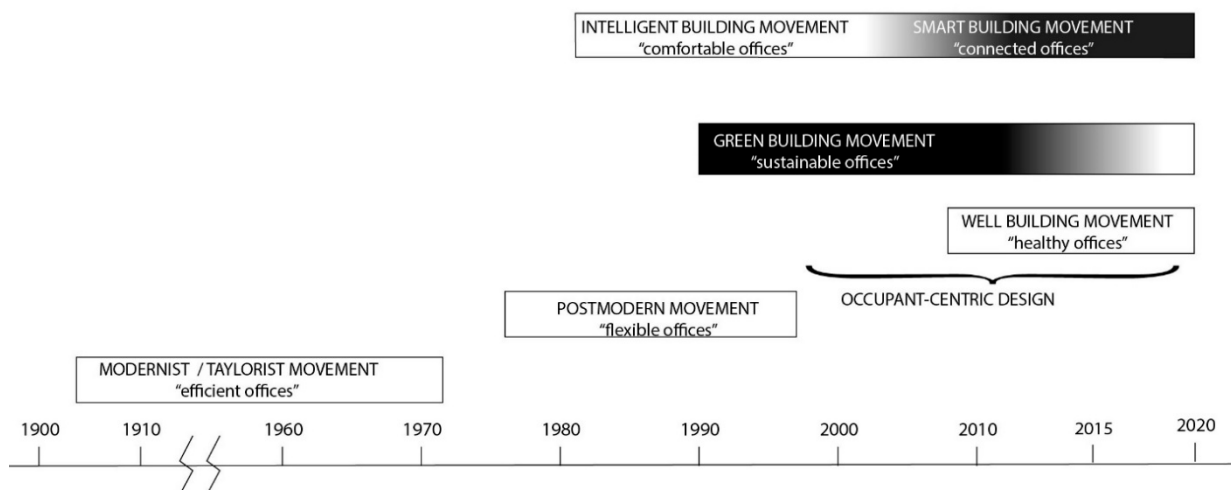
Figure 7 Timeline of building movements since 1905

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4.4.1 Efficient Offices: Modernist Architecture (1905-1970s)

Modernist Architecture emerged in the early 20th century, inspired by Scientific Management's prerogative (Guillén, 1997) to achieve "the greatest possible productivity of the men and machines of the establishment" (Taylor, 1911) and by the *European Avant-Garde Modernist* and *Italian Futurist* movements. Promising a utopia of machine-like perfection and simplicity, modernism "was more of a reaction to the new conditions of production (…), circulation (…), and consumption (…) than it was a pioneer in the production of such changes" (Harvey, 1989, p. 23). Influenced by these new conditions, architecture physicalized Taylorism into a rational and functionalist aesthetic removing ornamentation in clean lines and regular patterns created with 'new' materials such as structural steel, polished concrete, and glass (Figure 8). Le Corbusier, Gropius (of the Bauhaus School), Lloyd Wright, and van der Rohe – who coined the famous 'Less is more' axiom – were the dominant architects of this movement.

Figure 8 Modernist buildings. Top left: Crown Hall by Mies van der Rohe (photo: Joe Ravi CC BY-SA 3.0), bottom left: Villa Savoie by Le Corbusier (photo: m-louis CC BY-SA 2.0; cropped by author), right: Larkin Building (interior) by Frank Lloyd Wright (photo: David Romero CC BY-SA 3.0); images changed to black and white by author

Taylorist workplaces subdivided labour into fragmented and specialized tasks, conducted by deskilled workers under a rigid management hierarchy (Taylor, 1911; Hirst & Zeitlin, 1991). Management focused on surveillance rather than worker

engagement (Braverman, 1974), which was physicalized through an architecture of open-plan offices for workers under the surveillance of higher-floor partitioned offices for managers, exemplified in Frank Lloyd Wright's Larkin Building (Figure 8, right) and Johnson Wax offices (Figure 9, right). These elements served to *emplace* workers, reinforcing organizational hierarchy and rank through seating position (Burrell & Dale, 2014), while exerting local control by limiting worker movement (Foucault, 2008) through the placement of partitions. Rigorously pursuing a 'form-follows-function' ideal inspired by Taylorism, spaces were minimalist, avoiding distinction between departments except where this demarcated management vs non-management spaces – for example separated executive wings in corporate campuses which had markedly different furnishings and finishes to reinforce occupant status (Kerr & Robinson, 2016; Kerr, et al., 2016). Non-management workers were assumed to be homogeneous – like the deskilled male workforce staffing Ford's assembly lines (Watson, 2019; Hirst & Zeitlin, 1991), which manifested in an architecture based on an archetypal worker rather than considering individual differences. This was exemplified in Le Corbusier's (1947) *Le Modulor*, a dimension system based on the 'ideal Frenchman' used across all projects, regardless of location or type. As a result, modernist architecture differed little between industrial and office spaces (Figure 9).
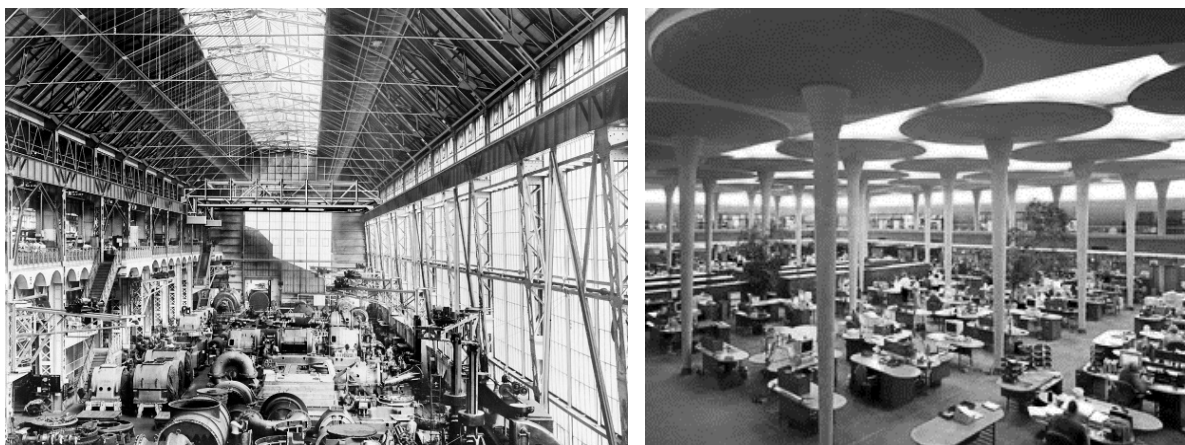
Figure 9 'Daylit Factories' of Albert Kahn defined early 20th Century industrial architecture demonstrating similar open plans and high ceilings of industrial facilities (AEG turbine Factory, Peter Behrens, left, source: https://commons.wikimedia.org/wiki/File:Peter-Behrens-Halle-innen-2005.JPG (CC-SA)) and offices (Johnson Wax Office, Frank Lloyd Wright, right, source: https://lccn.loc.gov/2011635092)

By *enrolling* the modernist movement's promise of capitalist utopias (Kerr, et al., 2016) and futurist ideals, architects sought to *enchant* occupants with 'daylit factories' large, light-filled atria, high ceilings, and open-plan spaces (Burrell & Dale, 2014). Externally, architecture was *enrolled* to project corporate identity (Kerr, et al., 2016), with illuminated buildings such as the *De Volharding Building* designed to be "a

luminescent sculpture, advertising its presence as it once advertised its products" (De Witt & De Witt, 1987, p. 261). Saarinen's IBM Yorktown campus (Figure 10) used a similar strategy, enhanced by its location on a promontory "like a fortress" in a display of corporate power, while his IBM Rochester campus inscribed the "the new image of the firm" architecturally with a trademark blue façade (Kerr, et al., 2016). Other architects enrolled the modernist dream of "family life and social interaction" (Rowe, 2011, p. 1) *enacting* an organizational identity of the 'large integrated firm' (Boltanski & Chiapello, 2005) through rural corporate campuses designed as English Manors or French Chateaux (Kerr, et al., 2016) or the Larkin building (Figure 8, right), with its 'modern, efficient, caring' corporate image (Stanger, 2000).
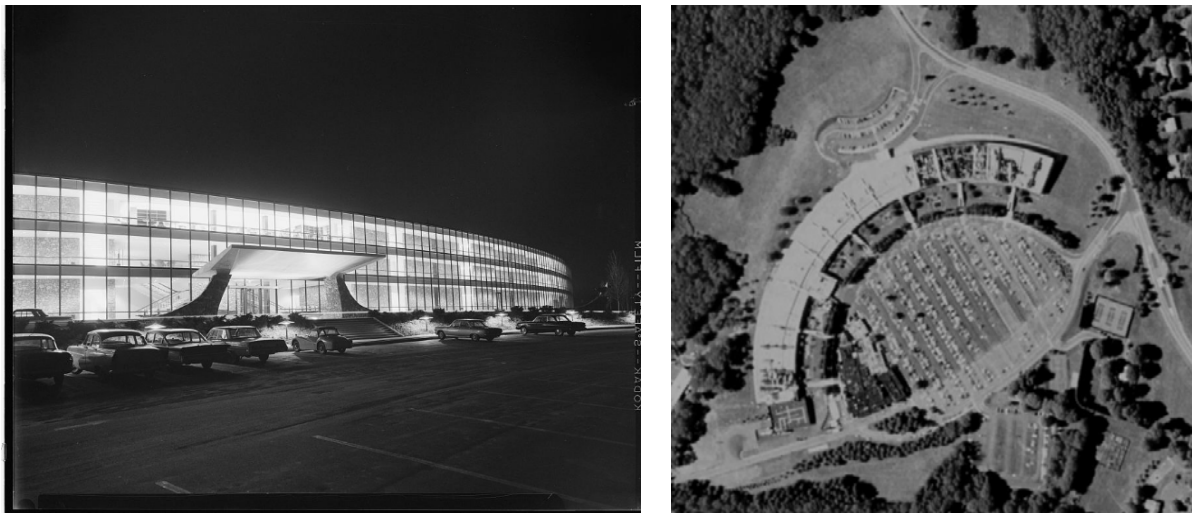
Figure 10 IBM Yorktown Heights (YR) by Eero Saarinen demonstrating Taylorist aesthetic creating a phantasmagoria from the outside view (left, (https://www.loc.gov/resource/krb.00529/) while enrolling fortress symbolism in its location and landscaping to express corporate power (right, US Geological Survey)

Exemplifying Lefebvre's tension between *conceived* and *lived* spaces, the *enacted* spaces tended to result in featureless indoor environments, anaesthetizing their occupants, rather than *enchanting* them; enchantment remained only for external visitors (Dale & Burrell, 2003; Baldry, et al., 1998). Similarly, the *enrolment* of workplaces for worker surveillance resulted in *enacted* 'performance of management' to satisfy observers, rather than the 'management of performance' (Kerr, et al., 2016) – an example of enrolment's potential translation effects.

Many modernist projects received critical acclaim, which were actively enrolled by the modernist movement to establish and reinforce its legitimacy. Through this enrolment, a characteristic architectural language was established to codify the elements used to emplace, enchant, and enact these spaces. The movement became increasingly valuable to architects and organizations who enrolled it, to associate

organizational spaces with *modern ideals* of efficiency, family, and innovation. This, in turn, constrained managers to adopt Taylorism in organizations in order to benefit from its enrolment to strengthen the emplacement, enchantment, and enactment of organizational space. However, the enactment of such projects often failed to live up to their utopic vision. This was exemplified in the failure of the modernist utopian Pruit-Igoe housing development, initially acclaimed as the solution to low-income housing, but whose *emplacement* to exert spatial control resulted in it becoming untenable to occupants (Wendl, 2013). Its demolition in 1972 was used by contemporary architects dissatisfied with modernism to hail its demise and the rise of its successor, post-modernism (Harvey, 1989; Rowe, 2011).

4.4.2 Flexible Offices: Postmodernist Architecture (1970s-1999)

As globalization and computerization transformed office space "from a data processing factory to a centre for the creative application of ideas and information" (Laing, 2006, p. 50), organizations shifted from Taylorism/Fordism due to impacts of changing products, the rise of the knowledge worker, increasing adoption of technology and ICT, globalization, and the changing social market (Ramioul, 2008). Post-Fordism and lean production transformed management from large individual to networked firms focused on innovation and creativity, and a culture of permanent change (Vidal, 2007; Boltanski & Chiapello, 2005; Hirst & Zeitlin, 1991). Modernism's emplacement, enchantment, and enactment strategies no longer worked in an organizational context of decentralized leadership structures managing teams of broadly skilled, engaged, and empowered employees (Vidal, 2007); accordingly, a new architecture was required to support post-Fordist organizations.

Within workplaces, management enrolled postmodern architecture to support new *emplacement* strategies, asserting flatter organizational hierarchies, providing organizational flexibility through (re)movable partitions, and defining spaces for creativity and innovation. This complemented the shift in architectural discourse, exemplified by Denise Scott Brown and Robert Venturi, who rebutted the modernist axiom 'less is more' with 'less is a bore' adding that decorative elements were required to "accommodate existing needs for variety and communication" (Venturi, et al., 1967).

An element of fun and parody accompanied this change, resulting in an architecture incorporating exaggerated motifs and playful references to classical forms (Figure 11).
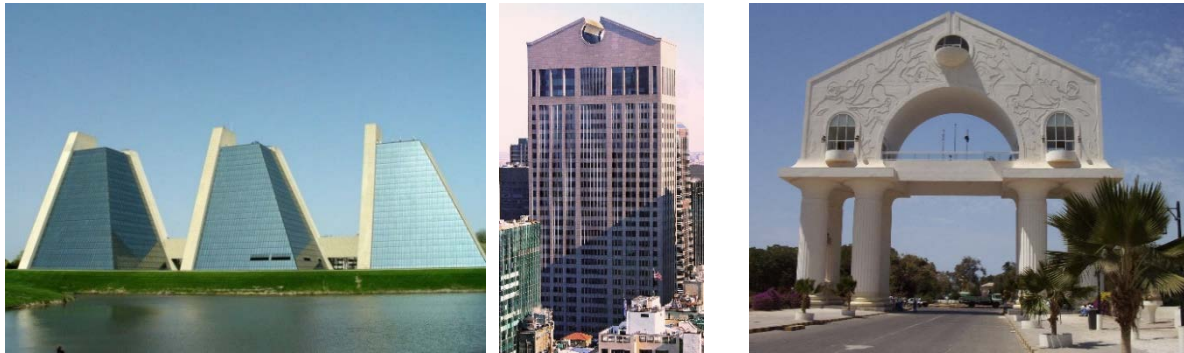
Figure 11 Postmodern architecture exemplifying: classical references Pyramids (College Life Insurance Campus, photo Serge Melki CC-BY-2.0; left), exaggerated motifs (AT&T Building, photo David Shankbone CC-BY-2.5; middle), and monumentalism (Arch 22, The Gambia, Pierre Goudiaby, photo Atamari CC-BY-SA-3.0; right)

Worker autonomy, creativity, empowerment, and voluntary *enrolment* in their own management was further supported by *enchantment* strategies to strengthen emotional connections and feelings of belonging, through the projection of strong corporate and differentiated team identities (Hatch, 2018). This is exemplified in Peltonen's (2011) analysis of Oulu University over 30 years, which noted new buildings were used to create these differentiated identities as well as transform the function and identity of the campus to suit new management strategies. The *enrolment* of symbolic elements further strengthened this *enchantment*, particularly at the campus scale. Kerr et al (2016) argue that, during the postmodern period, campuses adopted monumentalist and highly exaggerated architectural references – such as the College Life Insurance Campus (Figure 11) and Bouygues's 'Le Petit Versailles" World Headquarters, modelled after the nearby Palais de Versailles – to transform economic into symbolic capital. This architectural *enactment* of power and identity was adopted by several post-colonial governments, resulting in a monumentalist post-independence architecture exemplified in The Gambia's Arch 22 (Figure 11), to assert their place in the postmodern world.

Despite emerging from a rejection of rigid architectural rules, postmodernism came to develop a unique *architectural language* as it was increasingly e*nrolled* by architects, who inscribed postmodern ideals of creativity and flexibility into unconventional spaces defined by bold colours, organic forms, and playful elements to *enchant* occupants. Management *enrolled* this language to communicate corporate images of flexibility and a recognition and accommodation of workforce diversity in

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order to support employee self-management. However, as the information age increasingly required yet-new ways of working, the variation of individual needs based on activity (Gong, et al., 2018; Appel-Meulenbroek, et al., 2019) required further consideration, giving rise to notions of 'occupant-centric design', which has both influenced – and been influenced by – four building movements.

4.4.3 Occupant-Centric Design (2000-present)

The 'knowledge worker', whose management would be the biggest challenge faced by organizations in the 21st century (Drucker, 1999), came to dominate as a result of the fundamental economic shift from produced goods to information and services. Unlike manual workers, knowledge workers own their means of production and become organizational assets rather than costs. Such employees cease to remain engaged or motivated by extrinsic rewards (Deci & Ryan, 2000; Nakamura & Csikszentmihalyi, 2003); instead, "autonomy, integration and communication come to the forefront" (Ramioul, 2008, p. 8). Increased collaboration and flexibility in organizational work require a higher level of engagement and thus a larger degree of enchantment. The more successful an organization becomes in 'winning hearts and minds', the more workers voluntarily give their whole lives to their employer. This has required workplaces to support managerial control that is simultaneously more intense, powerful, and subtle, shifting from overt to coercive (Vidal, 2007) and neo-normative control focused on 'whole employee' to selectively enlist the private dimensions of employee life through existential empowerment (Fleming & Sturdy, 2009).

To manage these 'whole employees', organizational adoption of strategic flexibility (Brozovic, 2018), agile project management (Beck, et al., 2001), and increased focus on self-directed work teams (Kauffeld, 2006) led to two changes to workplace design: a shift towards informality and integration of leisure spaces, and a new focus on *how buildings work* to expand enchantment beyond the visual to the ephemeral and ideological. A 'design turn' (Leonard, 2013) in the configuration of office environments followed as hoteling, Activity-Based Working (ABW), and flexible workstation layouts were introduced, along with informal collaborative spaces and inclusion of domestic elements such as lounges, kitchens, and informal recreational spaces to further reinforce the flattened hierarchy (Figure 12).

Figure 12 Leisure elements 'cater to the whole employee', reinforcing a flat hierarchy, and blur the lines of work and non-work life. Left to right: Google Headquarters (Mountainview) © Heatherwick studios; colourful hot-air balloon breakout spaces at Google Switzerland @Camenzind Evolution Architects; Apple Campus (Cupertino) © Foster + Partners

Burrell & Dale (2014) identified the embrace of leisure in workplace design as a means to blur the lines between public and private life, increasing the affinity of employees to their employer and facilitating the expansion of working at home, thus exerting spatial control on occupants through a combination of *enchantment*, and – as employees begin to associate work with leisure – *enactment*. Unlike the direct surveillance, partitions, and hierarchical workstation layout used in modernism, these leisure elements blurred the line between work and non-work. As this distinction disappears, subtle managerial control is exerted over employees beyond the workplace, reflected in the increased expectation of the '24-hour employee' who is always responsive to emails and other work communication. The 'flexible' shift to home working has similar effects (Wapshott & Mallett, 2012), as do environments catering to employees every need, exemplified in Google Deutschland where "the fully engaged Google employee may never need to leave the facility" (Burrell & Dale, 2014, p. 6). This informality, fun, and playfulness is further enrolled by management through practices such as *playbour* (Ferrer-Conill, 2018; Lund, 2015) and gamification (DeWinter, et al., 2014). These subtly adapt Taylorist principles so that "work can be made to seem more like play and, so, potentially more productive through enjoyment, while leisure time can be made productive." (DeWinter, et al., 2014, p. 115).

To achieve these new modes of control, workplace design had to adapt in invisible ways. Ever-changing occupancy patterns required the maintenance of thermal, visual, and acoustic comfort and high 'indoor environmental (air) quality' (IEQ) to maximize worker productivity (Papagiannidis & Marikyan, 2020). Four building movements arose to meet this need: The Intelligent Building Movement (IBM) and subsequent Smart Building Movement (SBM) improving occupant comfort, the Green Building Movement (GBM) improving IEQ while simultaneously providing ideological

alignment and economic benefits to organizations, and the Well Building Movement (WBM) that further promotes IEQ and occupant wellbeing. Each of these movements have both influenced and been enrolled by management and organizations as the ideological and material means to exert management control of knowledge workers.

4.4.3.1 Comfortable Offices: Intelligent Buildings (1980s –2010)

The IBM aimed to provide comfortable working conditions to employees consistently and at minimum cost. Two key events triggered this movement: the 1973 Oil Crisis increased energy costs and created a market for energy-efficiency solutions and devices in real estate; and the 1982 patent of Direct Digital Controllers (Wong, et al., 2005) enabling centralized building automation systems to regulate indoor environmental conditions. The *enrolment* of these digital technologies within workplaces had dual benefits of improving employee comfort and productivity (Antoniadou & Papadopoulos, 2017) while reducing building operation costs. Further, it enabled the *emplacement* strategies of ABW and hoteling by responding to changing indoor environmental conditions influenced by employee movement between spaces. This building responsiveness supported the rapid reconfiguration and redeployment of employees, further supporting new management strategies such as flexible specialization. The improvement in thermal comfort achieved within these buildings *enchanted* employees by providing a welcoming work environment. Taking advantage of the energy efficiency made possible by the IBM – and broadening it to increase this *enchantment* though ideology – a new movement arose to promote sustainable 'green' buildings.

4.4.3.2 Sustainable Offices: Green Buildings (1990-present)

The GBM has its roots in the environmental movement and – like the IBM –the increased awareness of building energy consumption. In 1990, the first building sustainability rating tool, UK's Building Research Establishment Environmental Assessment Method (BREEAM) method, launched the movement. Several other tools followed across Europe, North America, Asia, Oceania, and eventually Africa, with most nations now having a green building rating system of some type (CoreNet Global, 2014). Managers and architects have enrolled 'sustainability' and the language of *green building* defined in these systems to appeal to society's rising environmental consciousness and thus support employee *enchantment* and *enactment* through

subtle ideological means, inscribed in the workplace design and its policies and management practices. As it has grown, the movement has enrolled organizations and architects as spokespeople; this mutual enrolment and influence has made the GBM an important site for the negotiation of management and architectural prerogatives.

Green buildings are pursued for many reasons (for a summary, see (Brooks & McArthur, 2019)), each resulting in a slightly different translation of the GBM as it has been *enrolled*. Compliance with sustainable building regulations has both been influenced by and benefited the GBM (York, et al., 2018), translating sustainability into 'what could be governed' (Rutland & Aylett, 2008) shifting the focus from broader environmental concerns to easily quantifiable metrics. The pursuit of economic benefits, particularly the 'Green Premium' and improved tenant attraction (Cajias & Piazolo, 2013), has further impacted the GBM by transforming rating systems into marketing tools for developers and organizations used to recruit employees, particularly millennials (WGBC, 2013, p. 77). This branding has led to unprecedented organizational interest in green buildings (Mueller, 2020).

Exemplary green buildings have become especially valuable to organizations seeking to enrol the GBM ideology. By occupying such buildings, organizations brand themselves as sustainable enterprises, which *enacts* their environmental commitment, reinforcing the *enchantment* effects noted previously. Explicit 'green' features enhance this effect, for example the extensive solar array at Snøhetta's Powerhouse Telemark, and the dramatic passive green roof covering and active solar elements at KRJDA's Santander Corporate Campus (Figure 13). Such buildings are simultaneously *enrolled* and black-boxed by the GBM to evidence claims of sustainability ideals (Rydin, 2013).

Figure 13 Explicit 'green' elements position tenant organizations as 'green' enterprises – solar panels at Snøhetta's Powerhouse Telemark (left; courtesy of Ivar Kvaal) and green roof at KRJDA Santander campus building (right; courtesy of Kevin Roche John Dinkeloo and Associates LLC)

In addition to being enrolled, workplaces can become conferred with their own political capacity (McGuirk, et al., 2019), acting as 'agents of change' or 'messengers' for sustainable behaviour (Homchick Crowe, 2020). The Bullitt Centre in Seattle, *emplaced* workers through subtle architectural cues that rewarded stair use, *enchanting* those users with a brightly-lit enjoyable space, and *enacting* sustainability by shaming energy-using elevator use, placing these in uninviting, disenchanting spaces (Homchick Crowe, 2020). An undesirable impact of this was the disenchantment of disabled employees arising from this enactment (Van Laer, et al., 2020). Beyond providing an ideological means to amplify the enchantment of employees and enact a green image, the GBM offered a tangible means to enchant workers though improvements to the perceived space, increasing employee productivity, satisfaction and retention (Al Horr, et al., 2016). As interest in determining the 'ideal' environment for worker productivity increased, a new movement spawned from the GBM: the pursuit of 'well' buildings.

4.4.3.3 Healthy Offices: Well Buildings (2014-present)

In the early 21st century, evidence of improved IEQ on workplace productivity grew (see reviews by (Al Horr, et al., 2016; Cedeño-Laurent, et al., 2018)), leading architects to focus on maximizing both psychological and physical health benefits. The WBM emerged in 2014 with the release of the WELL Building (IWBI, 2014) and Fitwel standards (GSA, 2019), immediately seeking enrol the GBM, which had significant members already interested in designing healthier offices. The enrolment of the GBM, exemplified in the co-branding of the WELL Building and Fitwel standards with LEED® and BREEAM® respectively, benefited the movement with substantial growth to over 150 billion ft^2 certified space globally by 2021 (IWBI, 2021). However, this has resulted in translating the objectives of this movement from radical empirically-supported interventions to standards with limited impact on energy consumption. For example, research supports increasing ventilation rates by a factor of ten (Wargocki, et al., 2000) whereas the standards encourage a more modest (30%) increase over code minimum to avoid conflicting with GBM energy-efficiency mandates.

From their inception, WBM standards were marketed to both architects and management as authoritative tools to communicate best practices, thus facilitating *enrolment* in workplace design and operations, respectively. Design interventions

include visible elements – such as incorporation of plants and natural materials, biophilic (nature-mimicking) patterns, and views of nature – and physical but invisible elements such as improved air quality and acoustics. These result in subtle *enchantment* of employees, who perceive these visible and invisible interventions through improved comfort and well-being, and occasionally *emplacement* when these are used to guide wayfinding or promote congregation in specific spaces. These are *enacted* through policy to communicate organizational support of the whole employee, thus increasing employee recruitment and retention, while simultaneously reducing sick leave and increasing productivity (Miller, et al., 2009). As with the GBM, organizational *enrolment* of the WBM increases worker *enchantment* through visible physical and ephemeral IEQ improvements to promote physical, psychological, and social wellbeing and *enacts* their commitment to the 'whole employee' through these measures. New technologies soon permitted a more dynamic and responsive IEQ, further enhancing these impacts.

4.4.3.4 Connected Offices: Smart Buildings (2010-present)

With the increased focus on sustainable and healthy workplaces came a need to respond to individual occupants and their changing needs over time. The development of new technologies such as cloud computing, the Internet of Things, machine learning, data analytics, and system integration facilitated this change, further increasing the abilities to *emplace* and *enchant* workers through individually-tailored workplace experiences.

The SBM is best understood as an evolution of the IBM. While lacking clear definition within either the academic literature (Buckman, et al., 2014) or industry, 'Smart Buildings' commonly refers to those with integration across multiple building systems – for example ventilation, lighting, room scheduling, telecommunications, and security – which communicate with one another as well as the occupant and integrate sophisticated, adaptive, 'self-aware' (Kiliccote, et al., 2011) controls. This results in offices "with adaptability, not reactivity, at the core, in order to (achieve) energy and efficiency, longevity, and comfort and satisfaction." (Buckman, et al., 2014, pp. 98-99). This adaptability to achieve occupant comfort and satisfaction in dynamic spaces distinguishes the SBM from the IBM, allowing for a new level of flexibility in workplace design, aligning with the desire to respond to individual occupant needs. This *enchants*

workers through both personally-tailored spaces while also fostering innovation and creativity through the development of collaborative space. A growing body of research (for a summary, see (Papagiannidis & Marikyan, 2020)) explores the productivity and wellbeing impact of smart offices from a management perspective.

Initially branded as providing *connectivity*, the SBM had limited adoption until 2015, with completed projects only by Smart Building vendors or real estate consultants, for example *Siemens HQ* or Deloitte's *The Edge*. This changed when Smart Building benefits were reframed to focus on improved energy efficiency, rebranding these as 'Smart and Sustainable Buildings' (for example (Ghaffarianhoseini, et al., 2016)), and leading to significant market growth (Hatcher, 2016). This *enrolment* of sustainability language resulted in Smart Building technologies being positioned as the 'new green' to play a significant role in global decarbonization and climate change mitigation efforts (McGuirk, et al., 2019). Simultaneously, 'Smart' technologies have been increasingly marketed as a means to achieve healthy offices, *enrolling* the WBM. These alignments allow management and architects to enrol the SBM and WBM through both tangible elements, such as building dashboards and workplace apps, and ephemeral references to their underlying ideologies. The tangible elements permit the *emplacement* and *enchantment* of workers – for example through ID card readers constraining employee movement and customized physical and virtual work environments respectively, while the *enrolment* of GBM and WBM ideologies further magnifies these benefits.

Just like the GBM from which it draws much of its ideological appeal, the SBM highlights how the shift to the human scale through occupant-centric design has increased the *enrolment* of ideological and invisible means to exert management control. This multi-modal approach to spatial control, incorporating visual elements, invisible-yet-physical indoor environmental conditions, and ephemeral ideological appeal reinforces the shift from visual to coercive control characterizing the move from modernism/Taylorism, through postmodernism, to occupant-centric design for knowledge worker management.

4.5 Discussion

In our analysis, we sought to re-engage and restore the tensions inherent in Lefebvre's triad within the spatial control framework. To do this, we expanded the scale of our investigation to consider not only workplace-level interventions, but their relationship to broader social and cultural trends as mediated through building movements. This revealed a complex and dynamic relationship between management, architects, building movements, and the workplaces – both as-conceived and as-enacted. We proposed the revised 4E framework for spatial control, and then demonstrated how this applied to six specific building movements which have emerged the turn of the 20th century. In this section, we begin by exploring how the addition of enrolment to Burrell and Dale's theorization restores the fullness of Lefebvre's triad through a new theorization. Next, we draw from our previous analysis to present insights on the role of building movements as intermediaries between societal values, architectural intents, and management prerogatives and as the site of this negotiation.

4.5.1 Restoring Lefebvre's Triad through Enrolment

As noted previously, Burrell and Dale's 3E spatial control framework separated the three modes of spatial control without re-integrating them, thus failing to capture the relationship between the elements of Lefebvre's (1991) spatial triad, which is "neither simple nor stable" (p.46), but rather imbued with tension. To understand the *production of space* as a process, we have considered ANT's concept of *enrolment* (Callon, 1984; Latour, 1994), broadly defined as the recruitment of one (socio-technical) actor by another. To extend beyond our study of building movements, we expand upon this application of enrolment to the production of space.

By considering enrolment as the *process* that weaves together the three elements of the spatial triad, we theorize the *production of space* as braiding (Figure 14), expanding the *emplacement-enchantment-enactment* spatial control framework (Burrell & Dale, 2014DUP; Dale & Burrell, 2007) to add *enrolment* as an active dimension – a process that introduces tension, and in doing so restores the three elements into an interconnected triad.

Lefebvre's (1991) triad *unravelled*
to understand spatial control
(Dale & Burrell, 2007)

The braided (interconnected)
spatial triad
(Lefebvre, 1991)

Perceived space *(emplacement)*

Conceived space *(enchantment)*

Lived space *(enactment)*

Enrolment as the **process** of braiding
(introducing new tensions)
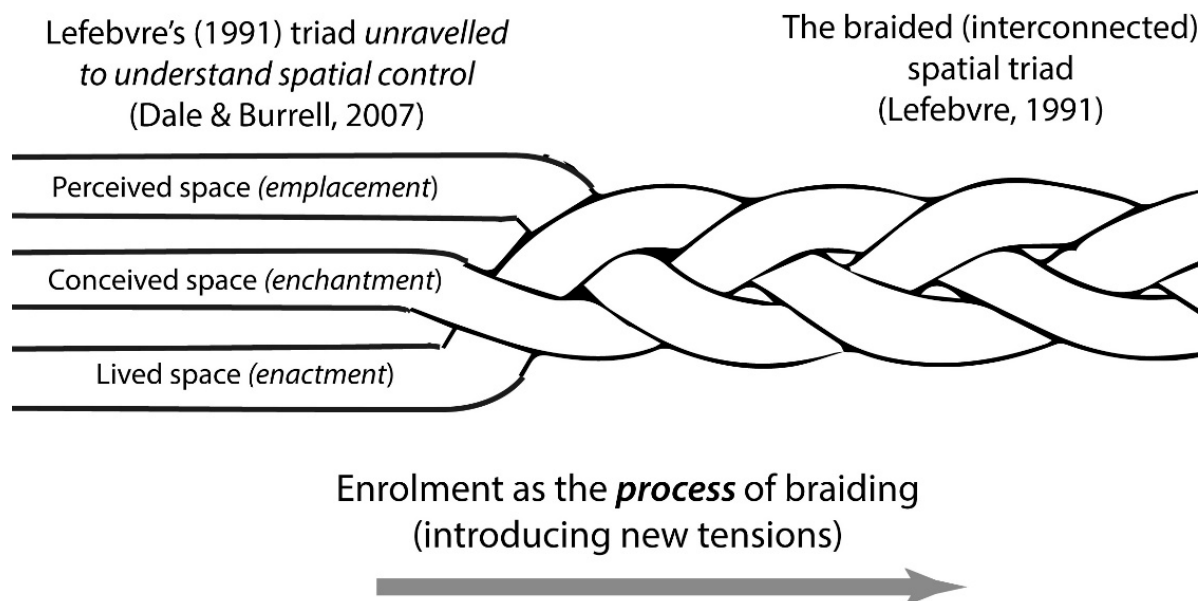
Figure 14 Theorization: Enrolment as the process weaving Lefebvre's three moments into a coherent whole

Enrolment – and the tensions it creates through *translation* – bind these elements into an interconnected, yet not necessarily coherent, whole (Lefebvre, 1991). Just as the tensions introduced through braiding hold its cords together, we argue that enrolment is necessary to restore a holistic understanding of Lefebvre's triad within organizational space. This refocuses our attention on the *production of space* as a process, rather than its analysis as container (Lefebvre, 1991), responding to previous critiques of Dale and Burrell's framework (Zhang & Spicer, 2014).

Actors enrol one another to further their objectives (Latour, 1994). Organizations enrol Architects to physicalize managerial prerogatives in the built space, in doing so, they shape conceived space through their commands (Lefebvre, 1991, 95) in order to emplace and enchant the workers. Architects enrol building movement ideologies and *inscribe* associated symbolic language into the physicalized space to strengthen the emotional and symbolic power of the perceived space. Lefebvre observed the legitimizing and motivating power of such movements (Lefebvre 1991, 308).

The resultant workplace is an artefact of this process inscribed with these prerogatives, which are evidenced in both the location of the occupants (emplacement) and also its form, materiality, and layout. These dictate the space's ethereal and aesthetic qualities, affecting how it is perceived and lived by occupants, and thus enchanting them and indirectly guiding the enactment of the space. Through this inscription, the negotiations creating the conceived space become obscured

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(*black-boxed)* and taken for granted by workers but can continue to be enrolled through *delegation* to continue to advance both organizational and architectural prerogatives. As the physicalized space is lived*,* the day-to-day enactment of the space exerts control through both intentional and unexpected symbols and routines that arise. These unexpected outcomes *translate* managerial and architectural prerogatives, introducing tensions between the lived and conceived meanings of the space, bending architect's conceived space to "their *demands* (from below)" (Lefebvre, 1991, 95). Through this *enrolment*, the societal values and forces driving the building movement thus impact both management and architectural practice.

The cumulative impact of the enactment of lived space within individual workplaces translates the meaning of building movement symbols at a societal scale or Lefebvre's *abstract space*. With each new successful enrolment of building movement ideology by organizations, the enacted or lived space inscribes new meanings onto the building movement, creating a normative architecture – or 'language' – of recognized forms, symbols, materiality, etc. This language can then be *enrolled* by architects and organizations to inscribe workplaces with the social movement's ideals, thereby imbuing them with symbolic power. Lefebvre (1991, 36) observes this reciprocal relationship, noting that "if space is a product, our knowledge of it must be expected to reproduce and expound the process of production." The building movement then grows by enrolling the success of enacted spaces to establish its legitimacy and promote sanctioned practices commensurate with the social movement's ideals.

This mutual enrolment of architects/organizations, their built spaces, and the building movement itself is critical to understand how workplace-scale emplacement, enchantment, and enactment is both *influenced by* and *intensified within* the building movement to have societal impact.

4.5.2 Insights on Building Movements

This research identified two key trends in building movement behaviour. First, the movements were translated through their mutual enrolment with management and architects; a key example is the shift in the GBM to focus on absolute building performance better suited to rapid market adoption and desired 'green' branding. This translation became more noticeable with increasing enrolment. Second, the

movements themselves demonstrated a high degree of mutual enrolment, particularly in the occupant-centric period when many existed concurrently; as illustrated in Figure 15.
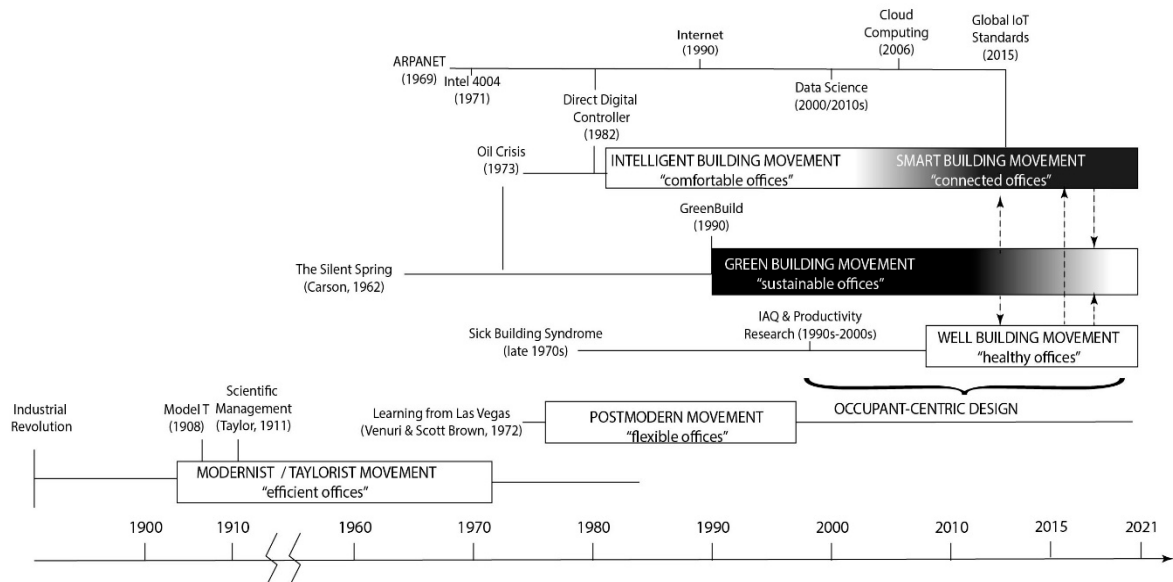
Figure 15 Relationship between building movements since 1905. Solid horizontal lines indicate the build-up or fading away of a movement from peak influence (boxed region) while arrows indicate enrolment of one building movement by another

This enrolment of one building movement by another served two purposes: (1) for new movements to quickly reach a large number of potential members; (2) for existing movements to align themselves with another – often stronger – movement as a means of repositioning. The WBM is the clearest example of the former. It was launched at 'green building' events, immediately sought to recruit members from within the green building community through its co-promotion and corresponding alignment with sustainability rating systems, and leveraged the IEQ knowledge base and architectural language developed within the GBM.

This knowledge was *black-boxed* into well building rating systems, mimicking the approach used by the GBM to propagate its ideals and practices into workplaces. Because of this enrolment, the WBM grew more quickly than the GBM after a comparable period. However, this extracted a significant cost. Radical, empirically-supported interventions were discarded by the movement in favour of those more compatible with the GBM rating systems it had enrolled, reducing the ambition of the movement within any particular workplace in order to achieve a broader impact across workplaces generally.

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The enrolment by existing movements for repositioning is clear in the "Smart and Sustainable buildings" moniker adopted by the SBM to enrol sustainability ideals and thus respond to larger societal trends. This fundamentally shifted both the messaging and the technological focus of the SBM: while system integration remains central to this movement, it is increasingly applied to reduce energy consumption rather than simply to 'connect' buildings. Contrastingly, the GBM found that 'Healthy' and 'Smart' Building events were enabling it to reach a new market it had previously found inaccessible and thus enrolled those movements, diluting its focus in the process.

Returning to the workplace scale, *Table 8* maps our analysis of our revised 4E framework. The enormous breadth of actors is evident, ranging from architectural design elements to sector-wide building movements, who have either enrolled or been enrolled by others. The enrolling actors have been the architects and other designers, managers, organizations, governments and policy-makers, and – particularly during the occupant-centric design period – building movements themselves. Management and architects have enrolled building movements to enhance spatial control, both physically and ideologically. Physical interventions *emplaced* and *enchanted* employees, shifting from primarily visible for the modern and postmodern movements to also including invisible aspects of environmental quality and comfort. Organizations *enacted* an ideological alignment with movements, *enrolling* them to communicate an expanded corporate identity, reinforcing worker *enchantment* by appealing emotionally to movement's ideals. Technologies and research findings are enrolled to achieve higher performance standards, while ideological positions such as environmentalism or cultural expectations for sustainable or healthy offices are enrolled to transform enchantment from a visual experience to one using ephemeral design elements (IEQ) or appealing to employee morals. Even the artefacts of the building movements – the best practices, rating systems, and constructed buildings – are enrolled to further the goals of the movements that created them. Together, these have shifted management control from overt to coercive.

Table 8 4E framework applied to the three periods

	Modernist (1905-1980s)	Post-modern (1980s-early 2000s)	Occupant-Centric Design (early 2000s-present)
Emplacement	Management imposed rigid hierarchy and separated manual and mental work, facilitating surveillance of employees – who occupy identical workstations designed for the 'typical employee'. Architects achieve spatial efficiency by designing open-plan offices for employees facilitating surveillance and segregated upper-level offices for managerial staff.	Management is decentralized and leadership flattened leading to flexible and collaborative offices to suit self-directed work teams where employees perform flexible roles. Workforce diversity begins to be recognized. Architects break away from strict regularity of form and integrate symbolic elements to communicate corporate identity.	Management now primarily self-management by employees and teams. Hoteling and ABW become the norm, maximizing flexibility at minimum cost. Cater to employees as diverse individuals with changing needs, requiring a variety of spaces for different types of work. Architects[*] integrate digital technologies (IBM & SBM) to improve responsiveness and optimize space utilization with diverse space types to support different work styles.
Enchantment	Management displayed efficiency and progress in 'Daylit factories. Employee motivation is extrinsic (financial bonuses). Architects communicate modernity and progress through strong lines, minimal ornamentation, and use of 'new' materials such as steel, glass panels, and concrete.	Management objectives are to increase employee engagement and self-management. Workplaces are designed to permit flexibility. Employees are encouraged towards 'responsible autonomy' and rewarded with increased freedom and flexibility in modes of working. Architects develop flexible and adaptable spaces and integrate symbolic elements to communicate corporate identity.	Managers adopt neo-normative control strategies to engage the 'knowledge worker' such that they 'never need to leave work'. Employee motivation is recognized as intrinsic, demanding increased enchantment to maximize engagement. Workplaces become places of leisure and enjoyment as well as traditional 'work'. Architects[*] integrate biophilic design elements, art, and leisure elements to provide psychological and social benefits to employees and inspire awe, drawing from underlying movement ideologies; integrate advanced controls and digital systems to anticipate and respond to individual employee needs.
Enactment	Organizations/management use buildings and campuses as symbolic capital to communicate 'firm as family' and pastoral values to employees and corporate power to visitors. Employees constantly on display, resulting in the 'performance of work' for their superiors. Architects use strong formal language in building design to communicate power and modernity.	Organizations/management continue to use buildings/ campuses as symbolic capital, integrating more explicit symbolism of corporate power and enrol new workplace designs and policies to promote self-directing work teams, engaging employees in self-management. Architects design for flexibility while simultaneously introducing symbols of power and/or playfulness to the exterior.	Organizations/management brand themselves as 'sustainable' and 'green' to communicate value and meaning to employees and external stakeholders. Integration of leisure elements blurs the boundary between work time and personal time. Employees are once again constantly on display due to ubiquitous digital surveillance. Architects[*] integrate digital elements, futuristic forms, and new materials to communicate ultramodernity and/or explicit 'green' features to communicate environmental consciousness and higher purpose.

Enrolment	Management enrols the tools of mass production and architecture to exert spatial control over their employees. Architects draw from Taylorist/Fordist approaches and artefacts of industrialization to translate architectural practice from focus on ornament and detail to focus on clarity and efficiency.	Management enrols employees to serve as their own managers, fundamentally changing the organizational structure and role expectations. Architects enrol symbols and imagery from previous architectural movements and popular culture to reinforce ideas of play/fun as well as corporate power/strength. Exaggeration of enrolled features becomes key element of the movement.	Management enrols the language of the GBM, WBM, and SBM to communicate that they are 'smart and sustainable', providing offices to maximize employee 'health and well-being' to recruit and retain employees. Architects* similarly enrol 'Green', 'Smart' and 'Healthy' building branding to market themselves to prospective organizational clients. Building movements enrol key technologies, exemplar buildings, standards and regulations, and one another to communicate values to – and recruit - external stakeholders.

*Due to the increased role of building systems to achieve occupant-centric design, all design professionals (architects, engineers, interior designers, etc.) are included in this category

Evident within this table is the bi-directional nature of negotiation within each network, along with goal translation, and the emergence and recruitment of artefacts. Our analysis has demonstrated that the enrolment of one actor by another results in the translation of goals in the resultant (enacted) space, thus generating the tensions Lefebvre noted in his triad. This table is valuable to organizational scholars as it provides insight on these bi-directional negotiations, and demonstrates how broader societal forces impact workplaces and can enhance management control through the mediation of building movements.

Translation can by risky, however: significant ideals of the social movement may be lost in enactment. This was the case for the environmental movement, which – as translated into the GBM – became focused on what was measurable at the expense of less-quantifiable environmental stewardship (Rice, 2011). As such, societal shifts in understanding reflected *enacted* rather than *conceived* practices, thus popularly redefining the terms driving the social movements themselves. By engaging with the discrepancy between enacted and conceived space, our proposed theorisation re-establishes the *dynamic, complex, and simultaneous* relationship between Lefebvre's triad previously missing from the spatial control framework and explores their resultant negotiations and tensions.

4.6 Conclusions

This paper has underlined the importance of buildings movements as a site of negotiation of management and architectural prerogatives. Through emplacement,

enchantment, and enactment, buildings – such as the 'daylit factories' spatializing Taylorist ideals, postmodern monumentalist corporate campuses, Google Munich where employees 'never need to leave', or the Bullitt Centre imposing sustainable behaviour – exert management control on employees. These artefacts are one means by which building movements become invisible actors influencing organizational work; the other is the enrolment of their supporting ideology to enact a corporate identity that enchants workers.

The 4E framework provides a means to understand both workplace and societal-scale interaction between management and architectural prerogatives, enrolled building movements, and their physical artefacts (workplaces). By expanding Dale and Burrell's spatial control framework with *enrolment,* we have uncovered a significant source of Lefebvre's tensions within organizational space, restoring the 'complex and diverse' relationship between elements of his spatial triad. Through this, we have explored how broader societal factors affect architectural and managerial prerogatives and how these interactions – and their resultant tensions – impact spatial control through organizational physical space.

Further study would be valuable to examine areas beyond the scope of this paper. First, only offices were considered, rather than other organizational spaces; there is value in future research to determine how enrolment is present in other contexts such as service, manufacturing, or even educational environments. Second, this research emphasised a Western context, not because the movements discussed have been confined to the West, but rather because cultural contexts are sufficiently different that they warrant their own analysis and further research is recommended to explore how these are manifest differently. Finally, the breadth of this analysis required us to limit ourselves to consider only the agency of architects, management, and building movements; there was not sufficient space to adequately address the worker perspective, and in particular worker resistance. More granular studies to explore labour enrolment of social movements within workplaces would be a valuable line of future inquiry.

5   Paper 2

This paper was co-authored with my supervisors, with me taking the lead on the research, conceptualization, and writing the first draft of the paper in its entirety. My supervisors provided valuable insight on framing and edited this document as it was subsequently revised.

This paper was submitted to Organization & Environment in the form included herein and is currently under review. It is interesting to note that this version reflects a significant revision from the paper as initially conceived. Initially, this paper was sought to *demonstrate how technical mediation can provide additional insight on the mechanisms of institutional work. Based on valuable feedback obtained at the 2021 University of Edinburgh Manuscript Development Workshop, I recognized the need to demonstrate the paradigmatic commensurability of ANT with actor-centric Institutional Theory*, which underpins *institutional work. While the final version of the paper revised the framing to focus on the empirical work as a more straightforward path to publication, I continue to hold that that institutional work benefits from the overlay of technical mediation and have included my argument to this point – as well as a framework I developed to support this integrated analysis. I have included* a *postscript* for this Chapter as Section 5.8 in order *to include this argument in my dissertation.*

From Rating System to Thought Leadership:

The Evolution of the Canada Green Building Council

Abstract

Although Green Building Movement Organizations (GMOs) play a crucial role in improving the sustainability of the built environment, we know little about how and why they evolve over time. This paper presents a case study of one such organization, demonstrating how the selection and enrolment of particular tools and technologies profoundly influenced its evolution. The Canada Green Building Council grew from a small group of environmentally committed professionals, expanded to become a nationwide rating system provider, and became the *de facto* Canadian authority for green buildings. When their rating system lost traction, they repositioned themselves as a thought leader and policy advocate, expanding their authority to carbon-reduction strategies across the built environment. Using 21 in-depth interviews and over 500 archival documents, we frame this evolution through actor-network theory. Our findings show that technical mediation plays a significant role in the organization's evolution, particularly in its creating and maintaining activities.

5.1 Introduction

Buildings have an enormous impact on the environment, contributing 38% of annual global CO_2 emissions through their construction and operations (UNEP, 2020). Recognizing this, several Green Building organizations (GBOs) have been established to improve the sustainability of the built environment, adopting Sustainable Rating Tool (SRT) development and promotion to drive market transformation as a widespread strategy (Zuo & Zhao, 2014; Liang, et al., 2021; Stenberg & Räisänen, 2006). Such a strategy requires organizations to become established, gain market legitimacy for both themselves and their SRT, and scale beyond their regional or grassroots origins. To the degree that they are successful in transforming the market, they must then themselves transform in order to keep pace and continue to drive their agenda forward. The question of *how* this is achieved is an important one for organization and environment scholars. For this, we must first understand the nature of GBOs.

GBOs are 'hybrid organizations', often referred to as 'social enterprises' which share common elements with both social movements and non-profit social enterprises (Doherty, et al., 2014). A vast number of hybrid organizations exist, such as the Fair Trade movement (Wilkinson, 2007), commercial microfinance (Battilana & Dorado, 2010), and renewable energy co-operatives (Bauwens, et al., 2020). There exists a substantial body of literature on social movements and social movement organizations (SMOs), for summaries, see (Krinsky & Crossley, 2014; Hart, 1996; Benford & Snow, 2000; Amenta & Polletta, 2019). There is also a growing body of research on hybrid organizations; for summaries see (Doherty, et al., 2014; Haigh, et al., 2015; Secinaro & Iannaci, 2019).

However, there remains a paucity of studies considering the GBOs *as organizations*. Instead, GBO-specific literature has tended to focus on the SRT development and adoption (Buser & Koch, 2012; Goodchild & Walshaw, 2011; Stenberg & Räisänen, 2006) or the market impact of such SRTs, for example (Eichholtz, et al., 2016; Goulden, et al., 2017; Jones, et al., 2019), with little regard to organizational structure or non-SRT strategies. Further, very few in-depth studies of any SMO type have discussed how and why they have evolved the way they have, nor how they continually adapt themselves to respond to their changing context and continue to protect and regenerate the environment beyond their initial models.

This paper explores the processes of GBO evolution necessary to establish market legitimacy and effect widespread change to the built environment, through an empirical case study. We present and analyse the 20-year organizational history of the Canada Green Building Council (CaGBC) from a handful of environmentally-minded practitioners to a market-transforming organization. The CaGBC is a non-profit GBO founded in 2002 to promote green buildings. It developed and promoted the US-based LEED® rating system in Canada to a position of market dominance, then reframed itself as a policy advocate and thought leader when this approach was limited in its ability to advance the mission of sustainability. Its initial growth and rise underlines the importance of rating systems to the process of legitimation. Its diversification of strategies – in response to the market transformation that *it* drove – provides an example for all hybrid organizations seeking to adapt to a changing context.

To consider the mechanisms of CaGBC's evolution, particularly given the central role of SRTs in such organizations (Duckles, 2018), we require an epistemology that considers the full range of socio-technical actors. For this, we turn to Actor-Network Theory (Latour, 2005). Applying Latour's (1994) modes of *technical mediation*, we analyse the activities undertaken over the CaGBC's first twenty years. This framing provides new insights on the role played by non-human actors such as SRTs to establish GBO legitimacy, create communities of practice, and transform the market, while simultaneously exploring how this enrolment drives organizational evolution. This is valuable for organization and environment scholars to understand both *how environmental (and other) certifications impact the organizations developing and promoting them* and *how such organizations change – both with respect to structure and strategy – to continue to drive market transformation forward as the market itself evolves*.

This paper is structured as-follows. Section 5.2 argues the need to consider SMOs from a socio-technical systems approach and summarizes the pertinent literature. Section 5.3 presents the research methodology and the conceptual framing informed by the data collected. Section 5.4 then presents the organizational case study of the CaGBC, discussing its evolution through five distinct periods. Finally, we conclude in Sections 5.5 and 5.6 with a return to our research questions and a broader discussion of how this case study provides insight on the role of non-human actants in organizational evolution and change.

5.2 Background: Non-Human Actants as Change Agents for Sustainability

Bruno Latour referred to climate change as a 'hybrid monster' – the product of both society and technology and thus only able to be addressed through socio-technical means (Latour, 1993/2012). The environmental movement has recognized this to various extents, seeking both cultural change and technological interventions to address environmental challenges, albeit usually with a significant focus at one or the other. Within this movement, GBOs have historically focused on technological solutions; however, their deployment has had significant social effects in the market as well as within such organizations. To understand the evolution of GBOs, we must thus consider them from a socio-technical perspective.

A valuable tool for hybrid SMOs within the environmental domain to pursue their goals is the promotion of an enabling technology. This leads us to consider such non-human actors –measurement and monitoring devices, discourses and shared vocabularies, texts (including funding, policies, standards, certifications, contracts, etc.), and technological artefacts – and how they have been used as mediators within the green building context. From the literature, we know these to play significant roles as shown in Table 9.

While the significance and multiplicity of roles played by SRTs and the buildings they are used to certify are evident in this table, the impact of this enrolment *on the GBOs themselves* is absent. Further, while many studies that discuss the reasons for adoption of a particular technology or SRT are tabulated, few consider how GBOs adapt *themselves* when their SRTs cease to be market-transforming.

Table 9 Studies exploring the enrolment of non-human actors

Actor Type	Actor	Findings	Study
Physical devices	Electricity Meter	Role of electricity meter as intermediaries influencing homeowners and utilities to achieve energy reductions in the residential sector by playing the role of a monitor, gatekeeper, and energy conservation actor	(Marvin, et al., 2011)
	Micro-solar power installations	These installations oriented and reconfigured the interests of the user to align their behaviour with the goal of optimizing power generation	(Rohracher & Ornetzeder, 2012)
	SRT-certified buildings	Completed buildings embody the objectives of the standard and policies that created them, serving as valuable 'durable actors' that influence practitioners, communicate the success of the approach, and thus reduce risk for future adoption by stakeholders and policy support.	(Buser & Koch, 2012; Berker, et al., 2013; Lovell, 2009; Rydin, 2013; McGuirk, et al., 2019; Goodchild & Walshaw, 2011)
Virtual Devices	Building Energy Simulations	Inclusion of requirements for whole-building energy simulations transforms these models from design tools to obligatory passage points, while simultaneously rendering invisible and unquestioned the technical decisions made to achieve a particular level of energy performance	(Rydin, 2013; Fischer & Guy, 2009)
	Building Information Modelling	Efforts to improve communication between construction project stakeholders have positioned Building Information Modelling as an obligatory passage point inscribed in procurement processes	(Lindblad, 2019)
Standards	SRTs	Standard played a constraining role on professional actors	(Berker, et al., 2013)
		Policy makers transform building standards into policy instruments, black-boxing environmental and accessibility objectives, thus obscuring the negotiations behind them except for a few practitioners able to "open" the black-box.	(Goulden, et al., 2017; Grangaard & Gottlieb, 2019; Stenberg & Räisänen, 2006)
		Green building standards are mobilizing actors for the GBM	(Spinks, 2011; Schweber & Harty, 2010)
Policies and Regulations	Planning policy documents	Planning policy documents serve as intermediaries early in the building lifecycle and the planning consent process serves as an obligatory passage point. Once this has been obtained, these documents are black-boxed and unquestioned.	(Rydin, 2013)
	Low-carbon targets	Inscribed with the prerogative to create a 'landscape change' in the sector, these serve as a quasi-object and actor, tangible artefacts of the regulating organization	(Goodchild & Walshaw, 2011)
	Building energy ratings	These serve as both the *de facto* proxy and the device by which CO_2 and the low-carbon movement is given a voice in the buildings sector.	(Rice, 2011)

5.3 Methodology and Conceptual Framing

This paper seeks to explore how GBOs become established, gain market legitimacy, scale up to achieve impact, and evolve themselves to continue to drive market transformation. Moreover, it focuses on how all of these stages are influenced by SRTs and other adopted technologies. Given the significant literature demonstrating this as a socio-technical problem, we have followed a traditional ANT approach for its empirical data collection, in order to document all actors and their evolving relationships. Having collected this data, we subsequently analysed it using a multi-stage process, using both inductive and deductive methods, as described in this section.

5.3.1 Actor-Network Theory as Epistemology

Despite its name, ANT is an atheoretical approach, providing an epistemological approach to research rather than its explicit theorization (Law, 2004). Its epistemology was developed in recognition of the complex relationships within actor networks and their constituent actants. In order to ensure that all possibilities are considered, ANT avoids the use of *a priori* assumptions about actor significance, relationships, or even identities, instead allowing these to emerge through empirical analysis. Actor-network relationships are understood to be dynamic, stabilized only temporarily through physical artefacts. Controversially, these artefacts are considered actants in their own right, and both human and non-human actants are treated equivalently within ANT (Latour, 2005). This equivalence is known as the principle of *generalized symmetry* (Callon, 1984).

To understand the interactions between actors (including non-human actants) and the translation that results, we consider the four modes of *technical mediation* defined by Latour (1994). One actor may *enrol*[22] another, resulting in the *translation* of both actors' initial objectives to a common goal. A set of human and non-human actors may also be *composed* of into a new network or system to achieve their mutual goals. *Reversible black-boxing* also occurs, whereby the complex set of objectives and

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[22] We use *enrolment* to distinguish this from the institutional and product impact (*translation*) of technical mediation

the result of actor-network negotiations are packaged into an *artefact* (a "black box") to be shared beyond the network with external users. This process simplifies the artefacts, allowing them be taken for granted as ambassadors of the actor-network, instilling them with authority and frequently preventing the questioning of *how* such products came to their final form. Finally, actors' objectives may be *inscribed* and become embodied within black-boxed artefacts that continue to achieve their objectives long after the actors cease to be present in a process.

ANT is particularly well-suited to case study investigations as it allows both social and technical – or, more appropriately socio-technical – actors to be considered in their dynamic interrelationships. ANT is also valuable to study organizational change, particularly when driven by a diversity of actor types. Studies have applied it to many such contexts, including Project Management Information System programs (Pollack, et al., 2013), process changes in military institutions (Páscoa & Tribolet, 2016), the impact of information technology on organizational change processes (Holmström & Robey, 2005), and institutional change across Italian newspapers due to changing technology (Raviola & Norbäck, 2013). Of these, the latter is of particular interest, as Raviola & Norbäck (2013) applied ANT using an *appendage* approach to account for the influence of material elements (non-human actants) without denying the prerogative of human actors. They overlaid this with institutional work, developed by Lawrence and Suddaby (2006) in partial response to DiMaggio's (1988) warning that classical institutional scholarship had neglected individual agency. Institutional Work is defined as "the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions" (Lawrence & Suddaby, 2006, p. 215) and considers both the obvious and dramatic as well as the 'nearly invisible and often mundane' (Lawrence, et al., 2009, p. 1) activities of the day-to-day. Our paper takes a similar approach, recognizing the need to explore heterogeneous actor-networks and the role of material elements in institutional work (Hampel, et al., 2017).

Our overlay of ANT (technical mediation) and Institutional Theory (institutional work) was carefully considered, as these have different ontological and epistemological foundations that make their synthesis challenging (Modell, et al., 2017). To overcome these challenges, we draw from Modell et al.'s (2017) observations that studies adopting ANT concepts of translation and non-human actors whilst *not* holding to embedded agency (Alvesson, et al., 2008; Ezzamel, et al., 2007;

Hyndman, et al., 2014) were more successful in this overlay, providing a "richer understanding" (Modell, et al., 2017, p. 72) of practice evolution within institutions. Further, we take our cue from Lawrence and Suddaby (2006) who noted the value of ANT epistemology for institutional work studies:

> ANT offers a useful research strategy or methodology that is well suited to extending our understanding of institutional work by problematizing the common view of institutions as concrete and enduring social structures. (p.243)

Given the specific focus on the evolution of our case study organization and its practices and our use of ANT as primarily an epistemological tool, this overlay is not only valid but "can offer richer explanations of complex (…) change and an improved understanding of outcomes which may at first seem surprising to the researcher" (Rautiainen & Scapens, 2013, p. 104). ANT has also lent itself extremely well to studies of environmental organization, for example (Heikkurinen, et al., 2021; Bansal & Knox-Hayes, 2013; Upward & Jones, 2016; Bansal & Gao, 2006), demonstrating its particular value for this current research.

5.3.2 Data Collection

Our research methodology was qualitative, consisting of semi-structured in-depth narrative interviews. 21 interviews were conducted between November 2020 and February 2021, averaging one hour, with individuals holding significant roles in the CaGBC at various periods in its history. The interviewee pool was identified by the lead author, the current CEO, and suggestions by other interviewees. The majority of significant figures and decision-makers in each period were interviewed. Because of the retrospective nature – and thus potential limitations – of these interviews, we also consulted over 500 archival documents to both validate interviewee narratives and to provide contemporaneous insight on historical events. These documents included President/CEO reports, AGM presentations and minutes, strategic and business planning documents, press releases, media coverage, market research and advocacy reports, and educational programmes. Finally, a comprehensive interview with the CEO was undertaken at the end of the study to confirm or correct its findings based on records in documents that could not be shared for sensitivity reasons, for example Board Meeting Minutes where individual opinions were recorded.

5.3.3 Data Analysis

The first stage of data analysis comprised broad thematic analysis of interviews which revealed: a) the five key periods; b) that a number of activities of institutional work were present; and c) that there was evidence of technical mediation in the activities. In the second stage, we made the decision to then explicitly code each interview looking for the various modes of technical mediation {enrolment; black-boxing; inscription; composition}, its resultant translation {of the CaGBC; of LEED®; of other actants}, and for all of the institutional work activities. These activities are classified by Lawrence and Suddaby (2006) as either *creating* {advocacy; defining; vesting; constructing identities; changing normative associations; constructing normative network; mimicry; theorizing; educating}, *maintaining* {enabling work; policing; deterring; valorising and demonizing; mythologizing; embedding and routinizing}, or *disrupting* {disconnecting sanctions; disassociating moral foundations; undermining assumptions and beliefs} work. In doing so, we updated the original code names to match this list of activities. The third stage involved each period – pre-establishment (1990-2002), formation (2002-2005), expansion (2006-2010), organization-building (2011-2015), and maturity and diversification (2016-2020) – being analysed on a stand-alone basis and when each mode of technical medication was considered, the associated institutional work activities were identified.

At this point, the fourth and final stage of data analysis saw draft tables comprising indicative quotes coded by activity noting the evidenced technical mediation (see for example those in Section 5.4of this paper). These were presented to both the second and third authors for confirmation. Rigorous discussion and probing of codes and primary data followed, in particular in areas of divergence, until all three authors were in agreement. This four-stage approach permitted both this rigorous theorization as well as the open-ended analysis typically missing from studies of material elements in institutional work (Hampel, et al., 2017).

5.4 Case Study

The Canada Green Building Council (CaGBC) is a Canadian non-profit organization established in 2002 to promote green buildings. Its history has been marked by a series of negotiations, discussions, and decision-points. This started with the decision

to adopt the US-based LEED® rating system as its primary product, its licensing and adaptation for the Canadian context, the subsequent marketing and promotion, and eventually the transition resulting from an existence beyond LEED®. This journey through five distinct periods has seen an organization founded by a small, relatively homogenous group of building designers become the market authority to institutionalise sustainable building practices in Canada. We now describe the activities in each period, focusing on those involving significant technical mediation.

5.4.1 Pre-establishment (1990- 2002)

In the early 1990s, prior to the establishment of the CaGBC, interest in sustainable building design was growing, as summarized in Figure 16. Historically "green niches" for the development of green building approaches had existed in architectural schools (Smith, 2007; Buser & Koch, 2012) and government institutions (Berry, et al., 2013). This was no different in Canada, where two key groups emerged: the Environmental Research Group at the University of British Columbia (UBC), led by Dr. Ray Cole, and Energy and Tools group at Natural Resources Canada (NRCan), led by Nils Larsson. Following a forum comprising Canadian green building thought leaders, Dr. Cole was asked to develop a Canadian metric for environmental assessment, leading to the creation of the Building Environmental Performance Assessment Criteria (BEPAC) tool. BEPAC was used in 17 buildings but lacked a supporting organization.
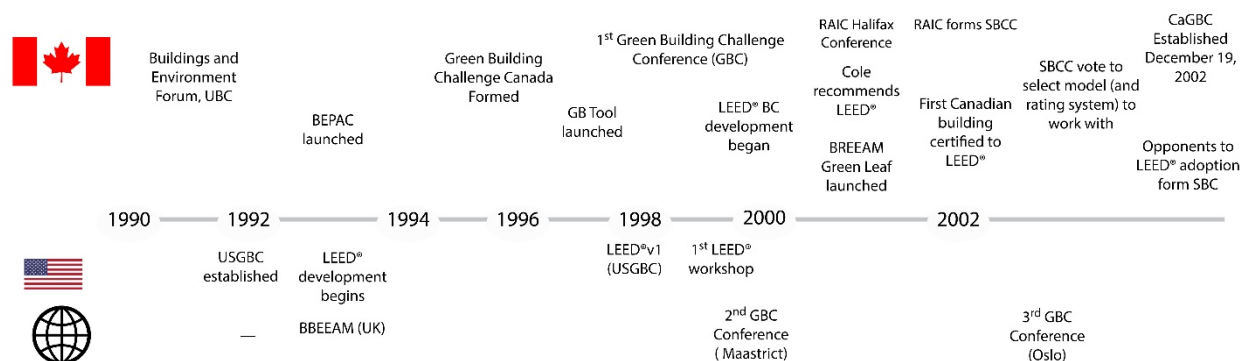
Figure 16 Timeline of key events leading to the establishment of the CaGBC

The "Green Building Challenge" was later formed to address this by providing a venue for knowledge-sharing, resulting in the BEPAC-inspired GBTool. Later, regional and provincial government and utility attendees asked Cole to "Go out and find a Green Building guideline that we as governments and utilities can push this forward". After considering both Canadian (BEPAC and GBTool) and international (UK's

BREEAM Green Leaf and USA's LEED®) options, Cole recommended LEED® over his own tool (BEPAC) because of its market orientation. This advocacy for LEED® also emerged from members of the building and design community of practice. Kevin Hydes, a mechanical engineer, Peter Busby, an architect, and Joe van Belleghem, a developer, were impressed by the United States Green Building Council (USGBC) and LEED®. Simultaneously, the LEED BC Steering Committee (Province, Metro Vancouver, City of Vancouver, BC Hydro, BC Gas) took on the task of bringing LEED to BC in 1999.

However, Larsson (NRCan) preferred to promote GBTool for its rigor. This created a tension between two groups – the LEED® camp, who were primarily based in Western Canada and favoured a market-transformation approach, and camp based in Ontario (Eastern Canada), who were split between GBTool and BREEAM Green Leaf. In an attempt to resolve this conflict, the Sustainable Building Canada Committee (SBCC) was formed in 2000. The SBCC included proponents of both camps from government, academia, and the private sector. This culminated in a conference call in 2002 to decide on the organizational model and – by extension - the SBCC's rating system. The Green Building Council model was chosen by a margin of a single vote. This led the SBCC to formally establish the CaGBC. All of the competing tools had been created by niche actor-networks (assemblages) who both inscribed them with their objectives and subsequently enrolled them to promote their vision for how the Canadian green building movement should develop. Evidence of this is provided in Table 10 including indicative quotes from the data.

Table 10 Technical mediation mechanisms observed in the pre-establishment period

Activity*	Role of Technical Mediation	Indicative quotation
Defining	Inscribed values of market transformation in LEED® became embodied in CaGBC founders' vision for the organization and was enrolled as a tool for market transformation	"(the competing group) looked at it very much from an academic perspective (…) the model that we proposed (…) was saying it (…) has to be driven by the market (…) by architects, engineers and developers and building owners and investors, to be successful. (…) So, it was a clash of the models"
Vesting	Report recommending use of LEED® in Canada was enrolled by CaGBC Founders claim authority for their market transformation approach	"(Cole) ended up recommending LEED® because we – he and we – had come to the realisation that yes, you need measurement rigour. But, really to move the market, you need to be able to communicate in terms that they give a shit about – that's primarily money. So, whatever we did had to be tied to (…) actually making a market transformation, (…) communicating market benefits."
Advocacy	LEED® enrolled as the vehicle for market transformation	"I talked to our board in February 2001 to adopt LEED® for their own buildings" "we talked to the City of Vancouver for the Olympics to adopt LEED® – the Olympics were coming"
	Each competing group inscribed their objectives in their choice of tool and the language used to promote it	"(A USGBC founder) had the insight that (…) any kind of green building rating system was really about selling the idea (…) and marketing the buildings that in some way embodied the idea. Whereas the majority of the people involved with (BEPAC), (…) thought this was a betrayal of the whole idea of actually measuring f*ing impacts, right? And communicating them. So, we were pretty dubious."
Mimicry	CaGBC Founders enrolled the successes of USGBC/LEED® to promote their vision	"I came back and told my staff 'This LEED® thing is the greatest thing the world's ever seen' (…) and we said, 'Why don't we create an equivalent organization in Canada?'"
Theorizing	LEED® provided a means of communication and was black-boxed and enrolled as the spokesperson for "what Green Buildings are"	"it was the first time, people said 'Oh my god, this is what a green building is.' (…) it was just this kind of collective epiphany that - people say it was a common language (for) what a Green Building should look like."
	Early LEED® projects enrolled to demonstrate feasibility and value	"the Vancouver Island Technology Park (…) was literally the first LEED® certified building in Canada (…) as a demonstration project, that was pretty important (…)"

as defined and classified by Lawrence & Suddaby (2006)

This analysis demonstrates the enrolment of the black-boxed tools, reports, and completed projects – particularly the Vancouver Island Technology Park, the first LEED®-certified building in Canada – by the competing factions seeking to establish the CaGBC. The legacy of this enrolment manifested in several key organizational decisions in the following years.

5.4.2 Formation (2002-2005)

On December 5th, 2002, the CaGBC received its Letters Patent as a not-for-profit corporation under the Canada Corporations Act and registered as a non-profit organization on December 19, 2002, founded by Joe Van Belleghem, Peter Busby, and Kevin Hydes (Wardle & Busby, 2007). As described by the founders, the organization effectively replicated the USGBC both in its governance model and primary focus on LEED® as a tool for market transformation. The early years of CaGBC were characterized by a focus on building LEED® as a Canadian product through the formalization of a license agreement with the USGBC; adaptation of LEED® for the Canadian market; and the development of the accreditation exam to qualify LEED® professionals, as shown in Figure 17.

Figure 17 Formation Period of the CaGBC

The identification of the first CaGBC President was influenced by the tensions around tool development. LEED® was seen as a 'Western Canada' approach, impacting the perception of CaGBC as a national organization. Alex Zimmerman's affiliation with the Green Building Challenge and his links to GBTool gave him a credibility with those who were suspicious of LEED®. Moreover, his position with the BC Buildings Corporation granted him legitimacy with the institutional sector, who would become CaGBC's earliest supporters and LEED® adopters. The establishment of the first official CaGBC Chapter – "the focal point for education, networking and information dissemination at the local level" (interview source) – in Toronto and the support from NRCan and the RAIC, both prescribed and legitimized its national mandate.

As illustrated in Table 11, all *creating* activities noted by Lawrence and Suddaby were evident in this period, with significant evidence of the assemblage leveraging LEED® for Canada, the CaGBC-USGBC license agreement, the LEED® AP

accreditation exam, and Cole's LEED® recommendation through technical mediation to define, establish and legitimize the CaGBC. Further evident is the constant enrolment, inscription, and black-boxing of LEED® Canada in institutional *creating* work alongside *maintaining* work activities. Politically, the CaGBC's legitimacy was established by enrolling the Cole LEED® recommendation, the existing institutional structures from the USGBC; LEED® Canada's legitimacy was grounded in its mimicked form and content of USGBC's LEED® v1, though this was inscribed with CaGBC objectives in its adaptation and black-boxed to permit its enrolment. Culturally, a normative network of green building practitioners was established, both internally to the CaGBC (TAG and other committees) and externally, with the legitimacy of each individual defined by the LEED® Accredited Professional (LEED® AP) designation. Such establishment and adoption of industry standards can change normative associations, particularly where these mimic regulatory processes (Lawrence & Suddaby, 2006), or where propagated by professional associations (Greenwood, et al., 2002). This is notable with the formation of the TAG, which acted as the legislative and judiciary body for LEED® interpretation and defined "sustainability" and green buildings in Canada. These structures played a key role in maintaining the institution of green building in Canada, as also illustrated in Table 11.

Table 11 Technical mediation in the foundation period

Activity	Role of Technical Mediation	Indicative quotation
Creating Activities		
Advocacy	CaGBC legitimacy established by *enrolling* Cole's LEED® recommendation report	"We had as an underpinning a report done by Ray Cole for UBC and others (…) recommending that we adopt the LEED® standard in Canada."
	Municipality interests in LEED® successes in USA enrolled in early CaGBC advocacy activities	"(I) did a tour of Canadian cities in early 2000s – went to see every city council (top 25 cities) (…) as a result they started to implement performance requirement by-laws at municipal level."
	CaGBC *enrolled* LEED® to build its membership	"I began to travel and make presentations to anyone who asked (…) explaining and pitching CaGBC and membership."
Defining	Initial articles of formation *inscribed* with CaGBC objectives of market transformation through LEED® and the "green building council" model	"The Canada Green Building Council received its Letters Patent as a not-for-profit corporation under the Canada Corporations Act (…) The intention of the Council is to represent the building industry broadly, and thirteen membership groups are named in the bylaws."
	License agreement defined the scope of CaGBC's use of LEED®, i*nscribing* USGBC's objectives and operating parameters on the nascent organization	License agreement granted "an exclusive right (…) within Canada (….) to adapt for Canada (…), make, have made, distribute, use, offer for sale, market, promote and sell (LEED®)" (archival source)

Vesting	The license agreement provided CaGBC with ownership and the right to accredit professionals and certify buildings, providing a means for CaGBC to *inscribe* its vision for green buildings in Canada, and thus positioning CaGBC as the *obligatory passage point* for LEED® use in Canada.	"We had ownership of LEED. People don't understand that we are still the only country that does its *own* LEED certification. We built our own certification team; we built our own expertise over the years. (…) And that allowed us to really support the Canadian market (…) having this kind of ownership of LEED, and helping the market get it adopted, that's what made it so successful in Canada."
Constructing Identities	The identity of the CaGBC was *inscribed* by LEED® partially to the *enrolment* of the latter to legitimize the organization, and partly due to the market advantage this provided.	"…initially CaGBC was synonymous with LEED®. Our entire business was LEED® because it was a new standard, everyone wanted a piece of it, and our membership, our conference, our education – everything was driven by LEED®. That's all we did for the first few years…"
	The LEED® AP accreditation exam was *enrolled* to define who was – and wasn't – qualified to determine whether a building was "green"	"…everybody took the LEED® exam to become (…) a member of the movement (…) it was almost like a rite of passage, right?"
Changing Normative Associations	The vision and mission of the CaGBC focused on market transformation, were *inscribed* into LEED® Canada, particularly to ensure its ease of use	"I was just more interested in getting people in the game and then massaging the tool over time to get it better and better, but not getting hung up on trying to get the tool too complex and too academic early on so that people wouldn't want to use it"
Constructing Normative Networks	Formation of Technical Advisory Groups (TAGs) who regulated LEED® practice through credit interpretation and thus served as the *obligatory passage point* for LEED® certification	"(the) LEED® Steering committee and TAG (…) became places where people got together to share scar tissue, to decide on directions for the CaGBC and LEED® Canada. And it really became (….) bonding exercises for the leadership of the CaGBC."
Mimicry	CaGBC *enrolled* the USGBC's governance model to both establish legitimacy and simplify LEED® use for companies co-located in Canada and the USA	"(…) We met with a couple of people from the USGBC and we agreed that we could licence LEED® in Canada and that we would set up a parallel organization." "The structure and bylaws were adopted from the USGBC, modified to conform to Canadian requirements for national non-profit organizations."
	LEED® Canada mimicked and *black-boxed* the structure and format of LEED® v2, which had been successful in the USA	"When you use the term LEED®, you're constrained by the USGBC. (...) You're stuck with their structure; you're stuck with largely their criteria. We did some interesting things, tried to challenge them (but) you'd always have to (…) get approval"
	USGBC forecasts were mimicked and *enrolled* to serve as planning tool for staffing and organizational growth	"USGBC's population dynamics model to forecast growth in LEED® Canada registrations and certifications for the next few years (…) implied significant staffing up in order to meet the predicted demand. In reality, the actual growth after a year or so was even faster than the most optimistic forecast and we did indeed have trouble keeping up with demand"
Mythologizing	CaGBC events *enrolled* seminal LEED® buildings and pioneering projects in storytelling to establish an organizational narrative	"It was all very LEED®-centric conference and programming, talking about those early projects and those of us who had done them were telling the story"

Theorizing	Demonstration projects served as artefacts of LEED® and were subsequently *enrolled* to promote the CaGBC	"in the early days I was highly criticized by the development community for (…) the green building stuff that I was doing my projects. But I think once people saw that it was working, then a lot of the other developers got into the game. So, a lot of those early critics are now under some of the strongest supporters of the green building movement."
	The goal of market transformation was *inscribed* into LEED® Canada, translating the objectives of measurable sustainability into large-scale sustainable market transformation	"in the very initial days when we first started contemplating (…) how to actually review and assess design points (…) If you want rigour, then you're going to demand it. (…) And do people have a capacity to put that together? Do we actually have the capacity to actually review it? Does the review actually mean anything? So, it's been a very careful dance in terms of the review process to set that up."
	LEED® Canada *black-boxed* and served as a common language for Green Buildings in Canada	"the first year was all about trying to set the (…) technical foundation, the product foundation in LEED® Canada, for continued growth and we were aspiring to put it out everywhere" "LEED® is an incredibly powerful way to put common language to sustainability"
Educating	LEED® was *enrolled* to engage practitioners into the CaGBC even before LEED® Canada and accreditation were introduced	"(the) chair of the Education Committee (…) not only recognized that there was a huge need and appetite for education in the professional community about green buildings generally, and LEED® in particular, she also knew that would be a significant source of revenue for the Council."
	LEED® accreditation requirements were *enrolled* to create demand for programming *inscribed* with values of market transformation	"…we were very much an organisation was all organised around the rating system. LEED® education, Accreditation, events. It was all like top to down it was LEED®."
Maintaining Activities		
Enabling Work	LEED® APs positioned themselves as *obligatory passage points* for submission	"as the (USGBC) tried to become more credible, they introduced the accreditation programme (…) because if you have somebody who wants to do a LEED® project, you want somebody on your team that actually knows what they're talking about."
	The LEED® certification process was simplified, *inscribing* it with CaGBC's market transformation objectives	"we did a (...) white paper on how to simplify LEED®. Because what was happening in the US is LEED® was again, very complex in a lot of respects and expensive to actually do, and that was causing some market penetration issues."
Policing	TAGs opened the *black-box* of LEED® to determine whether or not a project has achieved the required outcomes, protecting the CaGBC and LEED® brands, and (re)*black-boxed* this judgement in the decision to certify	"The TAGs perform a crucial role in ensuring that the development and administration of CaGBC products meet the objective of being grounded in technical and scientific considerations of the highest quality. The work of the TAGs is primarily centred on the LEED® Canada program. The TAGs are charged with protecting the technical integrity of the LEED® brand in Canada." (archival source)
Valorising	LEED® certification plaques and supporting award rituals were *enrolled* to reward early adopters and attract new ones	"Awards shows are great reinforcement for the people that are already on board (…) for the early adopters."

This period of establishment concluded in 2005, after the by-laws had undergone a significant revision to bring in an elected governance board. Recognizing the need for a change in leadership to guide the CaGBC from the formation stage through the period of expansion that lay ahead, Zimmerman stepped down. He was replaced by Thomas Mueller, who had been a key advocate of LEED® at a public utility and Chair of the only USGBC Chapter with Canadian members.

5.4.3 Expansion (2006-2009)

Thomas Mueller's tenure as President began during a period of significant growth. Over the next three years, the CaGBC joined the World GBC and also the Green Building Certification Institute (GBCI; USGBC's for-profit sister organization) and had representatives on both organizations' boards. It also established regional chapters across Canada and continued to develop the LEED® Canada system. Both the US (v2) and LEED® for Canada systems co-existed and grew significantly, driven by institutional support through LEED® certification mandates for civic facilities. This project growth required a new set of practitioners and by 2009 over 5,000 Canadians had been accredited as a LEED® AP. Figure 18 highlights milestones of this period.

Organizational Structure		Product Development	Achievements
CaGBC joins World GBC Board	2006	LEED® Canada CI v1.0	First Municipal and Provincial LEED® mandates 50+ LEED® certified projects; 1,000+ LEED® APs in Cana'da
Chapters Established Across Canada (2004-2007)	2007		Second provincial mandates for LEED® certification for all civic facilities
CaGBC joins GBCI board as only international representative	2008	LEED® Canada CS v1.0	First provincial mandates for LEED® Gold ceritification for owned and leased buildings; 1000+ LEED® certified projects and 5,000+ LEED® APs in Canada
	2009	LEED® Canada NC and Homes v1.0	GREENUP Benchmarking Program launched; 100th LEED® Canada certified project; 2,0000 corporate members

Figure 18 Expansion Period of the CaGBC

The activities of the CaGBC imply a two-pronged strategy: to lead the transformation of the built environment, and to engage industry and government to accelerate market transformation. Evidence provided in Table 12 demonstrates the execution of this strategy required significant *creating* activities, both political and cultural, while the substantive increase in LEED® adoption dramatically increased the need for *maintaining* work. As before, these activities were supported by enrolment, inscription, and black-boxing.

This was a dynamic period for the CaGBC, which was still primarily volunteer-driven. The rapid uptake of LEED® resulted in a significant increase in workload for the TAG, and several consultants had to be engaged to support CaGBC staff, with the

development of LEED® Canada. With the imminent release of USGBC's LEED® 2009, a further workload increase was expected and it became clear that the organization would have to change to keep up with demand, leading to fundamental structural and governance changes.

Table 12 Technical mediation in the expansion period

Activity	Technical Mediation	Indicative quotations
Creating Work		
Advocacy	Government entities were *enrolled* through advocacy activities; their resultant LEED® mandates were significant growth drivers for the CaGBC and LEED®	"One of the things that the council did (…) was to work with cities to, or provinces to adopt LEED® as a standard. (…) **That** to me is what drove the change." "the Federal government (…) started to use LEED on their projects (…) it's a bit of a domino effect (…) no one wanted to be left behind."
Defining	LEED® Canada specialized systems *inscribed* with sector-specific market transformation objectives and became black-boxed as *rules*	"we ended up adapting the various (…) spin off types of LEED®, CI, LEED for Neighbourhood Development (…) and all the different flavours of LEED®"
	CaGBC members and volunteers engaged with USGBC to *inscribe* CaGBC ideas and objectives into upcoming versions of LEED® (v2009 and later), which became *black-boxed* as USGBC promoted the new system	"So many of our ideas (…) of what LEED® and how it should work materialized and they got embedded in LEED® 2009, in LEED® v4 and so on, on an ongoing basis. But nobody knows that. (…) to this day, a lot of the bigger changes that happened – that was our idea."
Vesting	LEED® Canada specialized systems *enrolled* to establish CaGBC's authority in priority market sectors	"I really wanted the (residential) developers to engage quickly because (...) the more we got the developers in, the faster that the organisation would grow."
Changing Normative Associations	LEED® marketed to tenants to use it to engage younger workforce; this *enrolment* translated into increased developer interest in LEED® and a subsequent focus on reputational and commercial benefits of the standard	"…employees became even more valuable to them and so they listened (…) things that are part of LEED® certification were very important in engagement for millennials (…) so I would share this with members of our leasing community (…) with major employers and (…) that created (…) a receptive audience for a green message and played into CaGBC's increasing leadership role"
	LEED® became a symbol of Corporate Sustainability and was thus *enrolled* by CaGBC to engage institutional investors	"We are really fortunate to have developers who are pension funds that have (…) a commitment or almost pledge to their members to do good."

Constructing Normative Networks	LEED® mandates sanctioned it as the normative green building standard in Canada; CaGBC *enrolled* these sanctions to re-affirm legitimacy and attract new actors into the CaGBC	"The contractors, started to come on board as they saw it as, 'Man, you've got Governments mandating that the building needs to be built to LEED Gold (…) There's a whole bunch of responsibilities now in the contract that I don't know anything about. Yes, there's courses, but how can I influence this? (…)'"
Theorizing	LEED® became symbolic of environmentally responsible real estate; developers *enrolled* this in building marketing, increasing private sector LEED® adoption and developer engagement with the CaGBC.	"There was a famous article (Hume, 2007) (about the) RBC Tower, Bay Adelaide Centre, and Menkes building (…) That was a seminal moment in that LEED® had arrived. (…) if you weren't a LEED® building you were conspicuous by your absence (…) it became sort of a mandatory thing."
Educating	New LEED® Canada products generated significant interest and were *enrolled* to engage new industry members	"In 2005 workshops on LEED®-CI and LEED®-EB were offered in Canada responding to demand from the CaGBC membership and industry at large."
Maintaining Work		
Enabling Work	Increasingly, LEED® APs positioned themselves as the *obligatory passage point* for clients to obtain LEED® certification, developing a new ecosystem of sustainability professionals	"If you have somebody who wants to do a LEED® project, you want somebody on your team that actually knows what they're talking about. They are up to date in their credentials, they are up to date on the new developments of LEED, (…) a truly accredited professional"
Policing	TAGs continued to regulate LEED® to ensure compliance and their rulings *inscribed CaGBC's* vision and goals; this in turn influenced USGBC's development of LEED® 2009, *inscribing* it too with CaGBC objectives	"So many ideas of what LEED® *should be* got materialized and embedded in LEED® 2009 (by the) CaGBC"
Valorising	Conference technical sessions were awarded to showcase the "best" green buildings while awards were *enrolled* to reinforce and reward compliance with CaGBC objectives. Participation in both was subsequently *black-boxed* and *enrolled* as a marketing tool by the presenters and award recipients.	"There's this kind of dance (…) you do the project and then you go out and you go to conferences and you, and you talk about it (…) they get this special place (…) that profile then helps with that capacity building, which that helps to build the momentum". "Award shows are a great reinforcement for the people (…) the commercial & institutional market is big on having marketing things to talk about to keep their brand fresh"

5.4.4 Organization Building (2010-2015)

As CaGBC introduced LEED® for the existing building market (LEED® EB), the CaGBC's clientele expanded substantially. Sustainability values-driven early adopters were soon overtaken by the early majority who saw the business case for LEED® as a reputable green building brand, shifting CaGBC membership from passionate volunteers to economic value-driven corporate clientele. This put new pressure on the CaGBC, prompting a formal *organization-building* period and restructuring of its staffing and governance. Figure 19 summarises the key events of this period.

Organizational Structure		Product Development	Achievements
Board Governance Review Initiated	2010	LEED® Canada NC EB:O&M	First office building achieves LEED Gold; Vancouver Olympic facilities all LEED® certified; 2500+ LEED® certified & registered projects; 500th LEED® Canada for homes certified project; 2,300+ corporate members
Significant staff hiring to in-house LEED reviews	2011	Streamlining of LEED® Canada review & certification process	Canada hosts GreenBuild (first time outside US)
First Board Elected with New Structure; First Real Estate Executive is Chair	2012	Renegotiation of LEED®license with USGBC; GBCI takes over LEED®AP Accreditation Role	
	2013		Publication of Reduced Environmental Impact from LEED®-certified buildings
	2014	LEED® v4 released	First market research report released; Canada recognized by USGBC as top-ranking country for LEED® outside the US
Review of Chapter Structure and Consultation with Chapter Boards to proote integration resulting in Chapter Nationalization	2015	CaGBC and GBCI join together to advance WELL Building Standard® and GRESB	Pan Am /Parapan Am Games in Toronto certiifies all facilities to LEED®

Figure 19 Organization-Building Period of the CaGBC

In 2010, the CaGBC was still a founder-led organization with a large (24-member) operational Board, consisting of multiple committees that played an active role in day-to-day management activities. These included an Executive Committee that "felt empowered to tell (the CEO) how to run the organization" (interview source). Meanwhile, a skeleton staff ran the National office – resulting in an upside-down, top-heavy structure – and chapters were autonomous. Global Governance Advisors (GGA) were engaged in 2010 to undertake a governance review and provided their recommendations to transition the CaGBC into a governance organization with a smaller, strategic board. This "freed up Thomas to be a CEO, gave him the ability to leverage staff, to build staff, and not have the Board come in looking to 'do' things" (interview source). This review was approved in February 2011, and the recommendations were implemented, resulting in a board of 16 (eventually 12) members and a significantly enlarged staff by 2012. The selection of a Real Estate Executive as the new Chair reinforced this change in tone.

Concurrent with the governance restructuring, the uptake in LEED® adoption by private industry significantly increased the volume of certification work, resulting in delays and dissatisfaction by building owners. To address this and prevent disengagement of the real estate sector, the business model for certification was streamlined – recognizing LEED® as a business product and shifting from rigorous to 'volume' certification – with a significant increase in CaGBC staff bringing this task in-house to increase control. In earlier periods, the staff had been a tightly-knit group driven by passion for green building. With the staff expansion came new HR policies, a focus on work-life balance, and a shift from a start-up to a mature organization culture.

The third key issue arising in this period was the 2012 expiration of the USGBC license agreement. By this time, the growth of LEED® had led the USGBC to recognize its global commercial potential and wanted to repatriate the LEED® brand. To do so, the USGBC centralized its business model to a single global standard administered by a new sister organization (GBCI – who took over the certification of LEED® APs) and processed on a new global platform: LEED® Online. This impacted the rest of the world in 2010 following the release of LEED® 2009. However, the CaGBC gained an exception and this transition was extended until the introduction of LEED® v4, which would include an *alternate compliance path* thus eliminating the need for future adaptation. Several in CaGBC saw this loss of control over LEED® as a setback as it resulted in the loss of CaGBC's ownership of LEED® in Canada. The expected loss of revenue from both accreditation (immediate) and certification (as LEED® 2009 wrapped up by 2023/24) forced CaGBC to develop a strategy beyond LEED®. This translated its mission towards thought leadership and policy influence, centralizing advocacy and market research activities. In order to "speak with one voice" (interview source), CaGBC needed to overcome the challenge presented by the autonomy of its regional chapters. A task force was established to define a new National-Chapter relationship, resulting in Chapter integration (nationalization) in 2015. This changing context both resulted from – and required a response through – significant (re-) *creating* activities.

As illustrated in Table 13, the LEED® product family as well as the licensing agreement governing its ongoing use in Canada were black-boxed and enrolled by a variety of actors to grant themselves legitimacy as sustainable companies.

Table 13 Technical mediation in the organization-building period

Activity	Technical Mediation	Indicative quotation
Vesting	The new license agreement reduced CaGBC's ability to *inscribe* its objectives into LEED®, prompting a shift in strategy.	"around 2010 (…) I really wanted to change our business model, because certification alone is not market transformation."
	Corporate Sustainability Reports *enrolled* LEED®, particularly within the existing building context, sanctioning its use by institutional investors	"LEED® O&M is almost exclusively - about 90% of that – is commercial office buildings. So, it was driven by competition… tenants. But it was also (…) driven by CSR, what is now called ESG."
	The Green Real Estate Sustainability Benchmark (GRESB) sanctioned LEED® for ESG reporting to investors, *black-boxing* it to define sustainability; this was enrolled to promote LEED® to the private sector	"GRESB (…) participation in Canada increases year over year. (…) As part of the benchmark, LEED® building certification counts towards your performance (…) So, it's not a competition (…) For us, it's an enabling framework…"
Defining	The revised license agreement redefined (and significantly reduced) CaGBC's role with LEED®, *translating* CaGBC's strategy beyond LEED®	"(The) 2012 renewal made CaGBC recognize they didn't want to be only reliant on LEED® (…) this changed the product mix (and…) culminated in the formation of GBCI Canada but it took years of negotiation (…) this started in 2013/14"
	LEED® was *enrolled* to define a new Canadian environmentalism that appealed to the private sector	"In Canada, it was a new way of environmentalism (…) And I think the power about LEED® is, is that it created huge markets, products and services and technologies globally. It created a whole new industry"
Changing Normative Associations	Institutional investors became a dominant voice in the CaGBC as they adopted LEED® across their portfolios, *black-boxing* the relationship between LEED® and CSR	"2010 was around the time of the bigger shift into commercial real estate in what we now call the institutional investor. Those that are driven by pension plans, by institutional money. (…) LEED® (EB) is almost exclusively – (…) commercial office buildings. So, it was driven by competition… tenants (…) driven by CSR."
	The corporate sector *enrolled* LEED® as their symbol for sustainability marketing, fundamentally transforming the commercial market	"that building that had the LEED® designation (…) emptied the other buildings around it (…) and that's why we saw each successive office building being built to LEED® and then also the existing buildings were retrofitted to LEED® (…) so LEED® is now table stakes (…) for office buildings. It was very much a market dynamic rather than an environmental dynamic."
Creating Normative Networks	New organizations and their standards were *enrolled* and co-branded with LEED® in Canada to promote a performance benchmark (GRESB) and healthy building standard (WELL)	"we are very supportive of (GRESB), even though (…) it's a separate business. We know them well, we support them where we can, they support us. We're one of their partner organizations." WELL was formally introduced in Canada at CaGBC's 2015 conference (archival source)

CaGBC enrolled the resulting assemblages to continue to drive their vision for market transformation. The eventual loss of control over LEED®, and ability to inscribe

and enrol future versions of LEED®, translated the strategy of the CaGBC to re-create itself as a new type of organization. This organizational evolution was most clearly manifest in the five years that followed as the CaGBC emerged as a mature and diversified organization with the authority to set Canada's new green building agenda.

5.4.5 Maturity and Diversification (2015-2020)

By 2015, every new or retrofit building was *expected* to achieve LEED® Gold or Platinum. LEED® had ceased to be seen as transformative. This led the CaGBC to seek out a new means to further its objectives of market transformation. The increased public awareness of the climate crisis at this time led to increased environmental policy advocacy across all sectors, which found a receptive audience in the new federal government elected in October 2015. This government reversed its predecessor's position on environmental issues, making climate change a significant national priority and re-engaging with multilateral climate talks (Canada, 2015) and creating an unprecedented opportunity for the CaGBC. As a powerful lobbyist for environmental policy, the CaGBC found itself focused on advocacy and market research activities, and sought to remove the perceived conflict of interest from its LEED® ownership in Canada. GBCI Canada was created in 2017 as a for-profit joint venture of CaGBC and GBCI (US) to take over LEED® and other standards, freeing the CaGBC to focus on advocacy and thought leadership. Figure 20 highlights key milestones and achievements of this period, of which the most significant is the CaGBC's development of the Zero Carbon Building (ZCB) standard. ZCB is a "unique, made-in-Canada solution (…) providing a path for both new and existing buildings to reach zero carbon" (CaGBC, 2017).
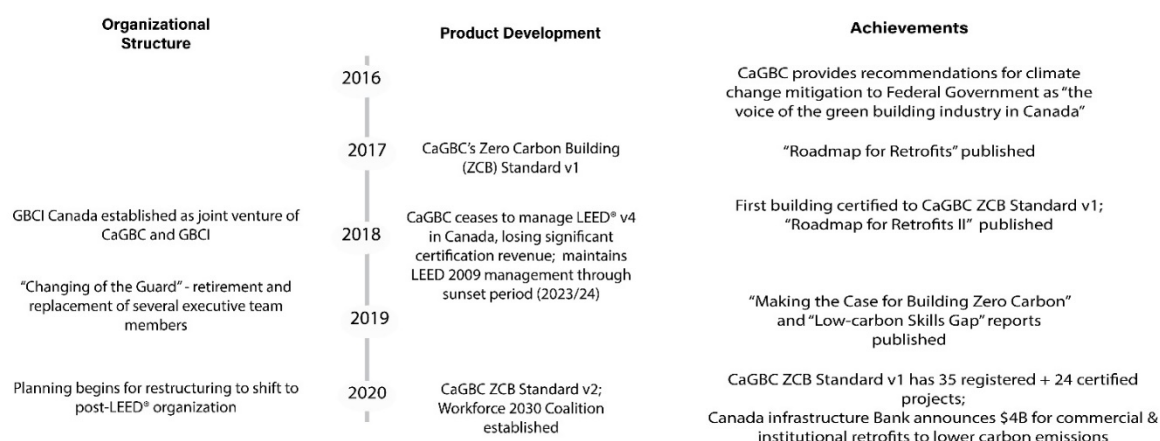
Figure 20 Maturity & Diversification Period of the CaGBC

The latter part of this period focused on the repositioning and strengthening of the CaGBC as a post-LEED® institution, translating the focus of market transformation from individual building projects to a societal scale. The importance of the ZCB in this context cannot be understated: in a market context where LEED® was considered commonplace, a new tool was needed for CaGBC to meet its objective to move the market forward. ZCB served as this standard and to a great degree has replaced LEED® as the most important product of the CaGBC. Once again, significant creating work was required to drive this organizational evolution (Table 14).

It is clear from the evidence provided in Table 14 that beyond maintaining the CaGBC organization, the ZCB has translated CaGBC's culture. In a context where LEED® had ceased to push the market forward, "everything around Zero Carbon has re-invigorated people. It's new, fresh, and important. It's something no one's done" (interview source). Internationally, this has enhanced the CaGBC's reputation, placing it "five years ahead of where the US is and much closer to where the Australians are as global leaders" (interview source). At the end of this period, the CaGBC had begun preparations to refine its structure and become even more agile and thus better able to adapt to new challenges in its role as Canada's green building thought leader.

Activity	Technical Mediation	Indicative quotation
Advocacy	The CaGBC *enrolled* the ZCB standard to engage the Federal Government who then *enrolled* ZCB for their carbon-reduction objectives	"New 'Carbon' focus brought attention to McKenna and Trudeau (who) realized they could be seen to be promoting and delivering Zero Carbon with CaGBC as a partner (…)"
	Chapters were integrated and *enrolled* to support the advocacy goal, *translating* them from autonomous to aligned entities	"…if you look ahead, what (…) will really transform the building sector at a larger scale? And what we came up with was very clearly, that we need a very strong advocacy program."
Vesting	CaGBC *enrolled* the ZCB standard to establish themselves as the authority for Green Buildings in Canada in a post-LEED® context	"The Canadian Government now sees CaGBC as trusted partner, a sounding board for the market. The CaGBC became the Green Building Movement authority around when CaGBC created the ZCB standard and stopped having the hangover of USGBC"
Defining	LEED® ceasing to be a market transformation tool and CaGBC's loss of control over it forced the *translation* of CaGBC to a post-LEED® institution	"(…) we made this decision that at the CaGBC we needed to become a more complete organisation."
	ZCB standard *black-boxed* carbon emissions as the new metric for sustainable buildings, effectively replacing LEED® for the CaGBC	"the Zero Carbon Launch was huge, causing far more traction, conversations, and excitement with clients than LEED® (…) the discussion about carbon has been a game-changer"
Constructing New Identities	GBCI Canada redefined CaGBC's identity from LEED® certification to advocacy and education; CaGBC thus *enrolled* its ZCB standard to redefine its goals as thought leadership and pushing the market beyond LEED®	"The point of (GBCI) is that (…) CaGBC will become the advocacy and education body for the importance of Green Buildings in Canada" "I really saw the change from the CaGBC being a 'LEED® Certification Association' to 'Green Building Thought Leaders'"
Changing Normative Associations	CaGBC *inscribed* the priority of carbon emissions reduction into the ZCB standard and *enrolled* it as a market transformation tool	"Recognizing (CO_2 emissions) as the next big frontier and developing a made-in-Canada standard and getting it into the mainstream quickly was valuable"
Creating Normative Networks	New CaGBC programming beyond LEED® developed new network assemblages around workplace transition and retrofit, which *enrolled* pilot projects and market	"we have very deep relationships now across the country, when it comes to policy around new buildings, carbon, retrofit, the workforce transition. The Workforce 2030 coalition, this comes all out of our advocacy strategy because we need a multi-pronged approach to move the market forward."

	research to establish their legitimacy	
Theorizing	ZCB standard *inscribed* with CaGBC's vision to push market beyond LEED®	"The ZCB Standard was designed to help Canada meet its international emissions targets by 2030 by guiding the industry to focus on carbon as its key performance metric."
	ZCB Standard and pilot projects *enrolled* to achieve new CaGBC strategic goals	"Explore our Zero Carbon projects, which include new and existing offices, schools, and warehouses—each demonstrating that buildings of all types and age can achieve zero." (archival source)
Education	Post-LEED®, CaGBC education activities became *inscribed* with a more holistic understanding of sustainability	"Workforce 2030 is a broad cross-sectoral coalition of employers, educators, practitioners across the construction ecosystem working to collectively impact government policy, business practice and education." (archival source)
Maintaining Work		
Enabling work	Government agencies *enrolled* to promote and facilitate CaGBC's retrofit and zero-carbon objectives	"Our relationship with the Federal Government, the Provinces, the Cities, we have very deep relationships now across the country, when it comes to policy around new buildings, carbon, retrofit, the workforce transition (…)"
Valorising	ZCB pilot projects *enrolled* as artefacts to promote the program	"this elite group of 16 projects have been chosen to participate in a two-year pilot of CaGBC's ZCB Standard to accelerate Canada's zero-carbon transformation (…)." (archival source)

5.5 Discussion

Throughout its history, actors within the CaGBC have inscribed, black-boxed, and enrolled various physical and regulatory elements, and this has led to a recursive relationship between the CaGBC and its products. The transition between each period in the CaGBC's history – along with the corresponding governance and structural changes was driven primarily by its relationship to LEED®. The decision to adopt LEED as the SRT to define green buildings in Canada and its corresponding 'market transformation' approach was the defining moment in the *formation* of the CaGBC. As the nascent CaGBC established itself, it focused entirely on the development of the LEED® Canada standard to define and promote green buildings.

The completion of this SRT set the stage for CaGBC's *expansion* across Canada and widespread LEED® adoption, which required a new CEO. During this expansion phase, a community of practice for green building was established across Canada, consisting of the TAGs, National (corporate) Members, and Chapters. Simultaneously, the impact of adoption by large CRE owners led to a rapid increase in registrations by several orders of magnitude.

To overcome this, the CEO led the CaGBC through a period of *organization building*, reversing the 'upside-down' structure of the organization – a large, highly active board greatly outnumbering the staff contingent – into a smaller strategic board providing industry insight to guide the greatly increased CaGBC staff. This was guided by the Governance Review, which also redistributed the categories of representation across the board to better speak to the early majority of LEED® adopters who were coming on board. The streamlining of the certification processes was also a key activity in this period, coordinating multiple TAGs to better serve the increased demand as LEED® became 'table stakes' for all new and existing urban office buildings.

This saturation of LEED® Canada within the early majority represented the *maturity* of the CaGBC in the market. This, combined with CaGBC's loss of control over future versions, resulted in a recognition of the need for a *diversification* of activities to achieve higher impacts, resulting in a shift to advocacy, market research, and the development of the Zero Carbon standard. This was achieved by establishing GBCI Canada to separate certification from CaGBC's advocacy work, thus avoiding perceived conflicts of interest and enabling CaGBC to take on a new role as the

Federal Government's trusted advisor for a sustainable built environment, resulting in several billion dollars of investment in green buildings.

It is interesting to note that the CaGBC was not alone in its translation. LEED® itself was significantly adapted for Canadian use, and to this end was inscribed with the vision and objectives of the CaGBC and black-boxed to permit its use by market actors. By enrolling LEED® as its 'spokesperson' for green buildings, the CaGBC developed a community of practice that translated the discourse across the architecture, engineering, and construction industry to centre sustainability in building projects. The corporate real estate sector was also translated as they enrolled LEED® certifications for their buildings as legitimizing and marketing tools to validate their ESG messaging, both internally and externally. This, in turn, translated the market perception of sustainability and further impacted the CaGBC as it adjusted to this widespread adoption as noted above.

Throughout the case study, it was noteworthy that several of Lawrence and Suddaby's (2006) institutional work activities were absent. The CaGBC displayed repeated *re-creating* activities, choosing to redefine and adapt itself in new forms, rather than focusing on *maintaining* itself in a stable form. As noted by one board member, "not being a legacy institution, not burdened by tradition" was invaluable in CaGBC's positioning as thought leader. This was no accident; as noted by the CEO, the "founder culture" that had prompted the governance review in 2010/11 demonstrated the need for the CaGBC to be values-driven, rather than culture-driven, so organizational culture-building activities or protecting activities (such as *embedding and routinizing, deterring,* and *demonizing*) had been deliberately avoided. Forcing the exit of the founders from the board (due to lifetime term limits) further enabled this shift and stopped the use of *mythologizing*, which could have constrained its ongoing evolution. Whereas institutionalism has emphasized stability and inertia as the keys to longevity (Weyland, 2008), the CaGBC leadership recognized that if they sought to transform the market, their successes would consequently require them to evolve to meet this new context. No *disruptive* activities were evident in the CaGBC history, which we hypothesize to be due to this agility and "willingness to embrace the new and to keep innovating and to keep adapting", evolving the CaGBC faster than it could be disrupted by others.

The case study itself is valuable in two ways. First, it presents a valuable case to explore how an organization, faced with the dual crises of decreased control over and obsolescence of its core product, re-invented itself. Second, while some other studies have looked at particular aspects of GBOs, such as its hybrid nature (Duckles, 2018), it is the first known organizational history of a Green Building organization, and through it, a history of the GBM in Canada. Given the current context of climate change and its significant impact on the business sector, the insight on *how* the CaGBC was able to become and remain a successful leader in this domain provides valuable insight for other sustainability-focused hybrid organizations.

Conceptually, this paper considered the deliberate actors undertaking institutional work to be part of a network and explored the evidence of technical mediation across the activities of creating and maintaining the institution. This allowed us to consider how artefacts play multiple roles and have multiple meanings, responding to critique of previous ANT studies (Whittle & Spicer, 2008). Our analysis showed the significant role played by non-human actor elements when they were leveraged by individual and collective actors as part of the creating and maintaining activities of an organization. In some cases, such as LEED® Canada and ZCB, non-human actors become *inscribed* with organizational values, *black-boxed,* and are *enrolled* as a spokesperson. In other cases, such as the LEED® AP exam, they become part of the *composition* of a community of practice of (*enrolled*) human actors. Because these activities take place within a broader actor-network, other human or organizational actors also *enrol* these artefacts for their own purposes, whether marketing (e.g. certification), regulatory (e.g. the standards themselves), or legitimizing (certification and/or credentialing). Through this technical mediation of these artefacts, *translation* always occurs to some degree. In the early history of the CaGBC, the adoption of LEED® Canada translated the goal of sustainable building promotion slightly, aligning the CaGBC to the USGBC, resulting in several constraints as well as opportunities. As LEED® Canada was developed, the inscription process and feedback from industry stakeholders forced the TAGs to adjust the requirements from what was technically ideal to what was commercially achievable. As LEED® Canada's market adoption grew, its meaning shifted from a transformative tool driving sustainable design to becoming table stakes for the industry and serving primarily to legitimize corporate sustainability of both landlords and their tenants. Most remarkably,

the changing relationship with the LEED® Canada tool in 2012 drove fundamental restructuring of the organization in 2015 with the creation of GBCI Canada to take over LEED® administration and CaGBC redefining itself as an advocate and thought leader for the GBM.

A clear conclusion from our results is that human (or organizational) actors consistently develop or adopt non-human actors (rules, standards, systems, products, and recognitions), inscribe them with organizational norms and objectives, black-box, and then enrol them to establish or further their own objectives. This process is depicted in Figure 21. This was true for both the CaGBC, LEED® adopters (both building stakeholders and design practitioners), and government entities.
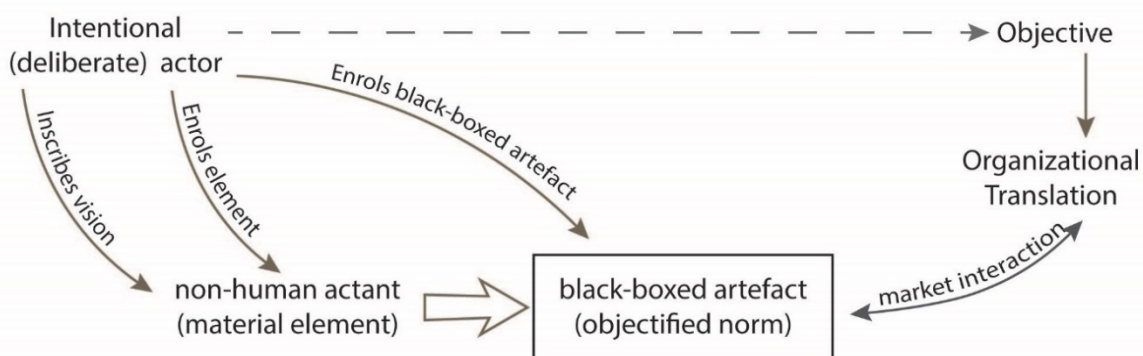
Figure 21 Technical Mediation as a significant driver of organizational change

Beyond understanding SMO success, our study has implications for understanding the broader field of organizational change, particularly for organization and environment scholars seeking to consider both social and technical drivers. ANT's concepts of translation and technical mediation provide a valuable means to explore the recursive relationship between an organization and its products. Our case study demonstrated how organizational norms, values, and objectives can be *inscribed* on its products, how these products are then *black-boxed* to facilitate their market adoption, and how they are subsequently *enrolled* by both the creating organization and its customers to propagate this cycle. Because of the influence of the larger actor-network (the market), there is a recursive impact on the organization, forcing it to constantly undertake (re)-creating activities in response. For social and environmental movement organizations seeking to impact the market, whether through wholesale transformation as in the case of the CaGBC or more generally through the introduction and sale of disruptive new products, understanding socio-technical recursive

interactions is critical for understanding organizational creation, maintenance, and change.

5.6 Conclusions

Our research was framed by a pair of related questions: *How do environmental (and other) certifications impact the organizations developing and promoting them?* and "*How are the organizations changed– both with respect to structure and strategy – to continue to drive market transformation forward as the market itself evolves?* Applying ANT, we 'followed the actors' over the 20-year history of the CaGBC and noted how the enrolment and technical mediation of SRTs and other socio-technical actors impacted the evolution of this GBO. By exploring its history through its five periods, we addressed the first question by mapping the evidence for technical mediation through the creating, re-creating, and maintaining activities needed for the CaGBC to become established, gain market legitimacy, scale up to achieve impact, and drive market transformation. In doing so, we considered the actor-network dynamics around its flagship product: the LEED® Canada rating system, and how these were leveraged by CaGBC in its evolution.

Addressing the second question, we explored how the CaGBC – as they lost control over LEED® in Canada, which had already become 'business-as-usual'– sought to transform itself in order to remain the Canadian authority on Green Buildings. Driven by these fundamental changes in its relationship with LEED®, coupled with the need for further transformation of the building sector to reduce CO_2 emissions, our study demonstrated how the CaGBC has transcended the limitations of its original mission to maintain its relevance and legitimacy. Through this study, we identified *technical mediation* and *translation* (as understood from an ANT lens) as key explanatory mechanisms to understand the strategies, activities, and impacts of GBO enrolment of other actors – whether human or non-human – to achieve their goals.

This is a fertile area of further research, providing several opportunities to expand our collective understanding of organizational evolution, particularly in the context of hybrid environmental organizations. It would be valuable to apply the technical mediation lens presented herein to glean further insights from other environmental organization case studies not considering ANT, for example (Konefal, 2013; Stubbs & Cocklin, 2008; Benn, et al., 2013). Similarly, studies of environmental organizations

that considered ANT (Heikkurinen, et al., 2021; Bansal & Knox-Hayes, 2013; Upward & Jones, 2016; Bansal & Gao, 2006) may expand their understanding by considering how technical mediation was evidenced in organization creating and maintaining activities. This paper forms part of a larger project, which will continue with a synchronous study using ANT of CaGBC's next stages in transition to a fully post-LEED institution.

5.7 Postscript: New Applications of ANT: Understanding the Micro-Mechanisms of Institutional Work

In this postscript, I argue that the overlay of technical mediation on institutional work provides significant value and present a multiparadigmatic framework permitting such an analysis. The structure of this section is as-follows. First, the origins and overview of Institutional Work are discussed. Second, the ontological and epistemological foundations of technical mediation (from ANT) and institutional work (an actor-centric strand of institutional theory (IT)) are presented and compared. Third, a reconciled position is presented. Fourth, the conceptual overlay of technical mediation as a micro-mechanism of institutional work is presented; this showcases the potential contribution of technical mediation as an explanatory mechanism for how material elements are engaged and leveraged in institutional work. Finally, this chapter concludes with insights on the potential and limitations of this approach and its potential contributions to organizational scholarship.

5.7.1 Institutional Work

Institutional Work (IW) was developed by Lawrence and Suddaby (2006) in partial response to DiMaggio's (1988) warning that classical institutional scholarship has neglected individual agency; this *work* considers both the obvious and dramatic as well as the 'nearly invisible and often mundane' (Lawrence, et al., 2009, p. 1) activities of the day-to-day. In order to define IW, Lawrence and Suddaby (2006, p. 219) first define institutional[23] workers as "culturally competent actors with strong practical skills and sensibility who creatively navigate within their institutional fields". These actors undertake "purposive action (…) aimed at creating, maintaining, and disrupting institutions" (Lawrence & Suddaby, 2006, p. 215). As noted by Raviola & Norbäck (2013), "institutional work scholars are primarily interested in action and ***its intentional direction*** toward institutions" (p.1174, *emphasis mine*). Since its introduction in 2006, institutional work has had significant influence within IT, for example (Modell, 2020; Gidley & Palmer, 2020; Lehmann, et al., 2019; Hampel, et al., 2017) and is part of the

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[23] Note that in Chapter 5, we used "organizations" to refer to companies or groups, for example our case study organization, while "institution" is used primarily in reference to institutional change and institutional theory.

increasing attention on the role played by actors in the establishment, maintenance, and disruption of institutions (Mena & Suddaby, 2016; Lizardo, 2019; Rodner, et al., 2020).

Despite its widespread adoption, significant gaps remain within the study of IW (Hampel, et al., 2017), particularly the limited consideration of material elements (Monteiro & Nicolini, 2015). The question of *how actors work to shape institutions: the micro-mechanisms by which this work is undertaken,* specifically, remains unresolved. This theoretical gap, along with the potential contribution for ANT to provide such exploration, while also permitting the exploration of the potential for *unintended* consequences of this work, is bound by a transition zone between theories and supports a multiparadigmatic approach to theory-building (Gioia & Pitre, 1990).

5.7.2 Reconciling Technical Mediation and Institutional Work

Several papers have represented Institutional Theory (IT) and ANT as complementary approaches for understanding organizational change (Rautiainen & Scapens, 2013; Hyndman, et al., 2014; Volkoff, et al., 2007) and institutional work (Raviola & Norbäck, 2013; Gautier & Bonneveux, 2020; Wallenburg, et al., 2019). Such representation requires conceptual juxtaposition. Following a multi-paradigmatic perspective (Gioia & Pitre, 1990), I consider these forms of agency through the translation effects of technical mediation within the actor-network. To do so, I start with a critical analysis of both paradigms to identify the transition zones where the overlap of theories can be beneficial. This approach has been successfully used to paradigmatically bridge elements of institutional theory and ANT in other studies, most notably that of Buser and Koch (2012).

The critical analysis of each paradigm used in this research was informed by Modell et al.'s (2017) meta-review of existing studies bridging between ANT and IW, summarized in Table 15. Importantly, Modell et al (2017) noted that studies adopting ANT concepts of translation and non-human actors whilst *not* holding to embedded agency (Alvesson, et al., 2008; Ezzamel, et al., 2007; Hyndman, et al., 2014) suffered less than those holding to embedded agency. Indeed, these studies provided a "richer understanding" (Modell, et al., 2017, p. 72) of practice evolution within institutions, mirroring observations already made by Rautiainen & Scapens (2013).

Table 15 Comparison of Actor-centric IT with ANT (adapted from (Modell, et al., 2017))

Category	Actor-Centric IT (institutional work)	ANT Perspective	Critique of reviewed studies
Ontological Considerations on the nature of…			
Reality	Moderate social constructivist view with realist perspective and depth ontology; hierarchical	Anti-essentialist, mixed realist, relational, constructivist; postmodern; flat.	Ignored in most studies with limited detrimental effect
Social structures	Stable (but not immutable) and objectified; placed at centre of analysis. Has both permanent/ essential and accidental/superficial features.	Temporary or dynamic effects of constantly-transforming and heterogeneous actor-network. Dualities temporarily stabilized as a result of actor-network negotiations.	Significant difference regarding role of theory in classical IT; mitigated in the actor-centric approach
Actors	Humans embedded in institutions; only those exerting influence or effecting change are considered significant.	Anything can be an actor; actors emerge and have their power from relationships with other actants; no significant actors or relationships can be assumed *a priori*.	Not addressed explicitly by Modell et al, but noted that the consideration of non-human actors provided a richer understanding of practice evolution
Agency	Human agency is intentional, interest-driven and institutionally-embedded; increasing focus on relationship between individual and collective agency.	Both human and non-human actants exhibit agency through technical mediation in their actor-networks and are impacted by these interactions. Agency is not embedded.	Intractable when study holds to institutional embeddedness; open question of whether institutionally-constrained translation and embedded agency can be reconciled
Change and stability	Stems from active agency; structures are understood to be stable	Ubiquitous, dynamic, and influencing and influenced by transformation of actor-network	Researchers justify use of ANT to overcome IT's inability to address indeterminate change
Epistemological Considerations			
Over-riding position	Empirical; inductive with significant deductive element	Empirical, open-ended investigation. No induction or deduction.	Lack of open-ended analysis shortfall of existing IT+ANT studies and reduces benefit of ANT
Role of Theory	*Normal science* view of progressive elaboration	Atheoretical resulting in indeterminate analysis	Deductive role of theory detracted from analysis
***A Priori* Assumptions**	Set of significant actors identified at outset; empirical study required to understand institutional nature	Avoids *a priori* assumptions about actor or relationship importance.	Organizational change studies most effective when *a priori* assumptions avoided

The issues surrounding embedded agency were most controversial, however Battilana and D'aunno (2009) argued that institutional work extends well beyond traditional IT conceptions of agency, considering not only the projective agency to transform but also the iterative and evaluative forms of agency that support the maintenance of institutions. While institutions shape the actors within them, these

institutions are "ongoing human accomplishments, constructed and maintained by people's behaviour, thoughts and feelings, often in ways that are unreflexive and unintended" (Hampel, et al., 2017, p. 562). We will consider these forms of agency through the translation effects of technical mediation within the actor-network.

ANT's epistemological stance is decidedly a-theoretical, rejecting *a priori assumptions*, while IT is theory-centric, following a *normal science* focus on deductive methods to theorization and theory elaboration. Because of this fundamental mismatch, researchers seeking to integrate aspects of IT and ANT must select a method aligned with one or the other. In their critique, Modell et al found that the deductive epistemological position taken by IT-dominant studies detracted from "deeper and more open-ended analyses of how a broader range of human and non-human actors are implicated in indeterminate change processes" (Modell, et al., 2017, p. 72). This critique echoes Zilber's observation that the IT domain suffers from a paucity of "deeper, real-time analyses of the messy, everyday practices involved in reproducing and transforming institutions" (Modell, et al., 2017, p. 65). In order to explore the micro-mechanisms of institutional work, it is critical to understand the dynamics and full range of inter-relationships within the institutional actor-network. This requires an epistemology suitable for open-ended, exploratory analysis of this complex and constantly evolving context (Lewis & Grimes, 1999), and it is here that we see the primary benefit of ANT to enrich the understanding of the role of material elements in institutional work.

5.7.3 Reconciled Position

This study's ontological assumptions extend the understanding of material elements within actor-centric institutional work with Latour's concepts of technical mediation as a means of exploration, resulting in a set of assumptions for reconciling technical mediation as an applicable mechanism to explain the micro-mechanisms of institutional work. This position treats *reality* as something constructed by constantly changing assemblages of human and non-human entities. These assemblages are constantly in flux with the constituent actor-network changes, as acknowledged in both institutional work (Hampel, et al., 2017) and ANT (Latour, 1994; Callon & Law, 1982). These may be stabilized, at least temporarily, through physicalized (including policy and regulatory) artefacts. These artefacts are taken-for-granted and inscribed with the

rules and values of the organization (actor-network) that created them, serving as the representative or spokesperson for this actor-network (Latour, 1994; Callon, 1984). This strongly parallels the taken-for-granted rules and values of the institution itself from an IT perspective. Similarly, path-dependence (IT) also parallels the *obligatory passage point* (ANT) (Rautiainen & Scapens, 2013). Such an approach to reconciliation builds upon Raviola & Norbäck's (2013) analysis of *appendages (agencements[24])* in institutional work.

Our definition of *actors* is consistent with their definition within *institutional work,* namely, as individuals acting deliberately and intentionally to affect change. As such, they are the instigators – or *primum movens* (Callon, 1984, p. 203) – of institutional work. Like the active agents across ANT studies, these individuals engage with socio-technological elements relevant to achieve their goals of forming an assemblage – or *agencement* (Çalışkan & Callon, 2010). This notion of "*agencement* can recast the structure/agency division pointing to the process of linking heterogeneous elements in an open-ended process" (Gherardi, 2016, p. 687). To address the specific question of embedded agency, I do not hold strictly to this position. Instead, I argue that actors are capable of intentional action to transform their institutional context and as such transcend embedded agency; however, the enrolment of artefacts from their institutional actor-network, translates their goals and thus unavoidably constrains them. Our position to consider agency, therefore, is adopted from that developed by Raviola and Norbäck (2013), which places:

> human agency – purposiveness, intentionality and will, all these things denoting agency – in a necessary relation to non-human agency within a network of entities that acts collectively (p.1175).

For studies such as that in the preceding paper, it is critical that ANT's epistemological approach be followed for empirical data collection, rejecting *a priori* assumptions regarding significant actor-network relationships and instead allowing these to emerge through empirical analysis. As noted by Lawrence and Suddaby (2006):

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[24] A French term referring to assemblies or groupings, the use of this term implies the interaction between the intentional human actor (*primum movens*) and the non-human artefacts.

ANT offers a useful research strategy or methodology that is well suited to extending our understanding of institutional work by problematizing the common view of institutions as concrete and enduring social structures and reminding researchers that institutions and organizations are fictions actively created and re-created by actants. (p.243)

Only after an actor-network had been mapped and all interviews had been documented, should the theoretical research be undertaken. Recognizing the value of pattern matching as a theory-testing strategy (Trochim, 1989), a flexible pattern matching approach based on narrative analysis of the empirical data can be used for theory testing. In the case study presented in the preceding paper, the primary hypothesis is that *modes of technical mediation are identifiable as mechanisms of institutional work*. This two-stage approach permitted both this rigorous theorization as well as the open-ended analysis typically missing from studies of institutional work, allowing the full set of key actors to be considered, including several who were initially overlooked. This mixed approach is promising for future studies of institutional work as it overcomes the epistemological challenges that have previously limited the scope of analysis, supporting open-ended analysis of heterogeneous institutions while not detracting from the ability to use such studies to elaborate upon existing theory.

5.7.4 Locating Technical Mediation in Institutional Work

Institutional work is characterized as deliberate and intentional action undertaken within the context of *assemblages*. Here, a human *primum movens* leverages institutional artefacts using principles of technical mediation. This, in turn, has a translation effect (Serres, 1980/1982; Latour, 1994). Lawrence and Suddaby recognized the value of this translation in one of their seminal accounts of institutional work:

…a key construct within ANT, translation refers to the process by which actants within a network mobilize support by making a unified whole from different interpretations, meanings and motivations (…) translation offers both a conceptual and methodological way forward for researchers interested in moving beyond the totalizing view of institutions and institutional outcomes (Lawrence & Suddaby, 2006, pp. 243-244)

To map these translation effects within institutional work, I propose a recursive and periodized framework (Figure 22).

TECHNICAL MEDIATION
the how of translation

	PERIOD	ENROLMENT	COMPOSITION	BLACK-BOXING	INSCRIPTION
PERIODIZATION *the when of translation*	*1*				
	2		*Institutional Work Activity(ies) identified by Lawrence & Suddaby (2006)*		
	3 (etc.)				
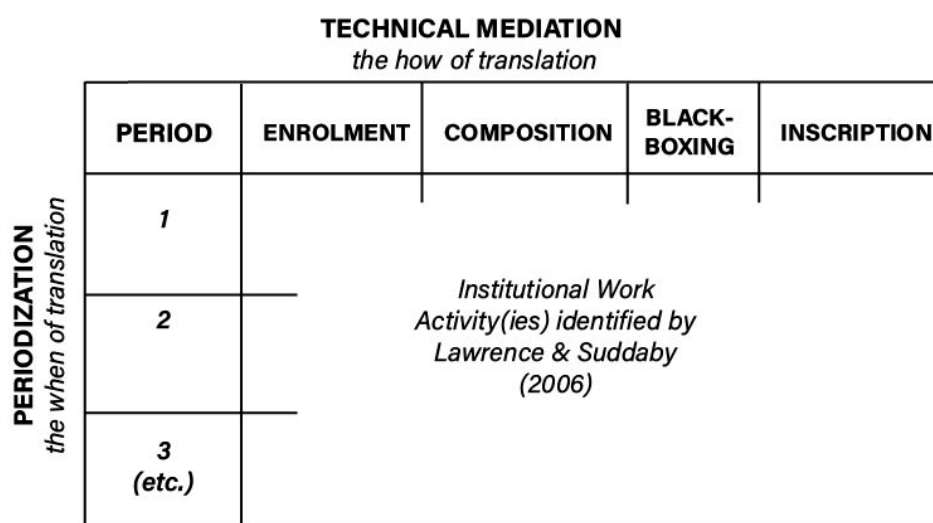
Figure 22 Conceptual Framework of Recursive and Periodized Institutional Change

Lawrence & Suddaby (2006) identified several activities from their review of the literature on the creation, maintenance, and/or disruption of institutions. These activities are political, cultural (reconfiguring actors' belief systems, norms, and associations), semantic (defining the boundaries of meaning systems), and compliant (ensuring compliance with rule systems) in nature. Extending upon this set of activities, which was developed with explicitly purposeful human actors, Table 16 presents the means by which non-humans are engaged within these activities through technical mediation. As such, these activities are in themselves mechanisms of technical mediation – enrolment, composition, black-boxing and inscription (Latour, 1994) – within the institutional actor-network. these actors and their practices in the establishment, maintenance, and disruption of institutions.

Table 16 Technical Mediation Mechanisms in Institutional Work

Activity Type	Activity	Technical Mediation	Justification
Creating Activities			
Political	Advocacy	Enrolment	New actors are enrolled by institutional actors to further the cause or mission of the organization
	Defining	Inscription, Black-boxing	New rule systems are inscribed with the negotiated institutional boundaries and hierarchy; the negotiations themselves become obscured as these are black-boxed into policy.
	Vesting	Inscription, Black-boxing	New rule systems are inscribed with the negotiated rights, which are black-boxed as contractual documents.

Cultural (Identity)	Constructing Identities	Composition, black-boxing, enrolment	New identities are constructed to define actor roles and abilities, enrolling authoritative agents, and black-boxing the result.
Cultural (Normative)	Changing normative associations	Black-boxing	Identities are black-boxed and the negotiations used to construct them are simply taken for granted by actors
	Constructing normative networks	Composition, Enrolment, Black-boxing	Practices are normative sanctioned through partnerships with other organizations, supported by policy, and black-boxed products (e.g. standards or tools) to promote and apply them.
Semantic	Mimicry	Enrolment	Institutions leverage the credibility of established (black-boxed) products or practices, enrolling them as symbols or examples to support adoption.
	Theorizing	Black-boxing, Enrolment	The organization's common language is developed, black-boxing its objectives and mission. Case studies demonstrate the value/benefit of the organization's outputs and are enrolled to support its mission.
	Educating	Enrolment, Inscription, Composition, Black-boxing	Creation and delivery of educational programs may enrol established actors and products, while the instructional material is inscribed with institutional objectives and black-boxed so that these objectives can be taken for granted (and unquestioned) by users.

Maintaining Activities

Compliance	Enabling work	Enrolment, Composition	Actors are enrolled as *authorizing agents* who apply institutional rules to support the goals of the institution.
	Policing	Black-boxing	Sanctions and inducements are used to influence actor behaviour both within (members) and outside (stakeholders and partners) the organization
	Deterring	Inscription, Black-boxing	Institutions are maintained in their current form by establishing barriers to change; these barriers are black-boxes of the inscribed desire to maintain the institutional *status quo*.
Cultural (Discursive)	Valorising, and demonizing	Black-boxing	Institutional norms are promoted through case studies or artefacts to reinforce the value (positive examples) or need (negative examples) for the institution. Value judgments are made by participants based on their compliance with normative rules.
	Mythologizing	Enrolment	Elements of institutional history ('myths' and legendary figures) are enrolled as tools to promote the institution.
Cultural (Normative)	Embedding Routinizing	Inscription	Embedding and routinizing activities embed institutional objectives and norms into daily routines and institutional practices, stabilizing the institution.

Disrupting Activities

Cultural (Normative)	Disconnecting Sanctions	*Reversed* Black-boxing	Underlying rules, technologies, or practices are disassembled and redefined in order to strip an institution of its status or advantages.
	Disassociating moral foundations	*Reversed* Black-boxing	Underlying rules, technologies, or practices are disassembled, and new ones are introduced to circumvent and gradually undermine – rather than directly attack - the normative foundations of an institution.
	Undermining assumptions and beliefs	*Reversed* Black-boxing	Tools reinforcing core beliefs are disassembled and core beliefs questioned, particularly with respect to assumed costs of diverging from the *status quo*.

From this mapping, it is evident that the activities of creating and maintaining institutions make strong use of non-human actants (rules, standards, systems, products, and recognitions), which are inscribed with institutional norms and objectives, composed into black-boxes, and/or enrolled to establish or further the cause of the institution. Conversely, disrupting activities tend to disassemble these black-boxed actors, question their normative foundations, and seek to disrupt or gradually undermine them.

In *enrolment*[25], the goals of both actors are translated into a common objective, permitting the enrolment of one actor by another. Second, human and non-human actors may be *composed* into a new network or system to achieve their mutual goals. Next comes, *reversible black-boxing* where a complex set of objectives and the result of actor-network negotiations are packaged into an *artefact* (a "black box") to be shared beyond the network with external users. Finally, there is *inscription*, where objectives are embodied within black-boxes and left behind as artefacts to continue to achieve their objectives long after the actors cease to be present in a process. The opaque nature of these black boxes allows them to be taken for granted as ambassadors of the actor-network; instilling them with authority and frequently preventing the questioning of *how* such products came to their final form.

5.7.5 Conclusions

This section has presented the multiparadigmatic perspective used to overlap Technical Mediation (Latour, 1994) with institutional work (Lawrence and Suddaby, 2006). Beginning with a critique of both their underlying paradigms and reflecting critically on questions of paradigmatic commensurability, I identified a valuable transition zone between the two, providing a framework to overlay them in order to more fully understand the micro-mechanisms of institution (re)creating and maintenance activities. The value of this approach for organizational studies has been demonstrated in the CaGBC case study presented in Chapter 5, however there are both limitations and contributions arising from such an approach, as discussed below.

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[25] Latour refers to this as "translation", but we are using *enrolment* to distinguish this mechanism from the institutional and product impact (*translation*) of technical mediation

Technical mediation contributes to our understanding of the role played by material elements in institutional work in two ways. First, it enriches our understanding of the processes by which such elements (whether virtual, physical, regulatory, etc.) are used by intentional actors throughout *creating*, *maintaining,* and *disrupting* activities. Four such processes were observed: enrolment (direct use of the element), inscription (the shaping or adaptation of the element to better fit with the actor's objectives), composition (the integration of elements into an actor-network to create an *assemblage*), and black-boxing (the packaging of an assemblage one or more elements into a simplified form to permit it to be propagated and taken for granted by others). In the case study, these mechanisms were observed to occur either individually or in combination with others as part of both creating and maintaining activities (Table 16).

Second, the unintended consequences of this use of material elements – their *translation* of these activities – is explicitly recognized using this approach. This significance of translation within institutional work, which is already well-established within Scandinavian Institutionalist (SI) and neo-institutionalism, for example (Czarniawska & Sevón, 1996; Boxenbaum & Pedersen, 2009; Morris & Lancaster, 2006; Sajtos, et al., 2018). SI offers a conceptualization of agency that engages both with the sociology of translation underpinning technical mediation and institutional work through "actors' responses to institutional pressures" (Lawrence, et al., 2009, p. 21). That approach has been recognized as having the potential to make a strong contribution to institutional work because of its "empirical methods to conduct intensive, rich, process-oriented, and qualitative approaches" (ibid). The use of technical mediation as a sensitizing heuristic to support a rich, process-oriented qualitative approach thus offers such contributions. The application of technical mediation as a sensitizing heuristic to more fully understand the role of material elements in IW builds upon this contribution.

There are, however, limitations to the overlay of technical mediation and institutional work. As has been noted previously, there are significant ontological and epistemological commitments within both ANT and Institutional Theory and thus any theoretical overlay must be within the identified transition zone. ANT and IT, taken as a whole, are not paradigmatically commensurate, particularly with regard to the conceptualization of agency and whether it is embedded (Modell, et al., 2017).

Theorizations attempting to hold to embedded agency while minimizing such distinctions must therefore be avoided. Applying a multiparadigmatic approach (Gioia & Pitre, 1990) using ANT as a pluralistic epistemological method (Lewis & Grimes, 1999), I demonstrated the value of technical mediation as a sensitizing heuristic, providing organizational scholars with an enriched perspective on the diversity of roles that can be played by material elements to support intentional actors as they undertake institutional work.

6   Paper 3

While I was the lead author on this paper, this paper was co-authored by my supervisors – Dr. Stephen Dunne and Dr. Sarah Ivory. I undertook the empirical research myself and developed the initial conceptualization with their guidance. My supervisors provided valuable insight on framing and edited this document as it was subsequently revised.

This paper is anticipating submission to Academy of Management Discovery.

From Compliance to Convening:

The Canada Green Building Council as Obligatory Passage Point

Abstract

Green Building Movement Organizations have a social change agenda, which they seek to achieve through market transformation. Over the past 25 years, many have used Sustainability Rating Tools (SRT) to position themselves at what Michel Callon calls the *obligatory passage point* (OPP) for such market transformation. However, industry adoption of these tools has become saturated within market niches and ignored in others, leaving these organizations struggling for a remit. This paper presents a case study of the Canada Green Building Council – an organization best known for LEED® certification – who faced precisely this dilemma and was forced to re-invent itself after its initial positioning was destabilised. Using 21 interviews with nine key staff and executives over the period of two years, along with both working and archival documents, we demonstrate how organizations can change from a compliance organization to a market convenor with greater reach. We find that in order to re-assert itself as the *obligatory passage point* in the market, CaGBC had to (re)discover its identity as a social movement and embrace a new brand.

Keywords: social movement organizations, actor-network theory; obligatory passage point; green building movement; strong and weak ties

6.1 Introduction

"We will no longer lead with LEED®" – Thomas Mueller, CEO, CaGBC, 2022

How does a social enterprise seeking to transform the market adapt when its traditional approach stagnates? Consider certification organizations promoting sustainable forestry, sustainable fishing, organic food, or other sustainable alternatives who seek to continually transform their markets through leadership: what happens when the certifications they promote become saturated and cease to move the market forward? Or worse, what happens when they evolve beyond the organization's control? What then is the value of both the certifications and the organizations driving them? Green Building Social Movement Organizations (SMOs) are facing precisely this challenge. These organizations seek to transform the buildings market through the creation and promotion of Sustainable Rating Tools and certifications (SRTs) to promote 'green buildings'. Over the past 25 years, these certifications have fundamentally transformed the built environment, bringing 'green buildings' to the mainstream even while the certifications cease to increase in adoption.

However, despite their apparent success, having certified hundreds of thousands of buildings – over 100,000 to the LEED® (Leadership in Energy Efficient Design) system alone (USGBC, 2021) – carbon emissions for the building sector is at an all-time high (UNEP, 2020) and the majority of the market remains untransformed. Instead, buildings continue to be a significant CO_2 emitter and one of the priority sectors for carbon-reduction (IPCC, 2014). Green Building SMOs are left trying to figure out how to advance their mission for a sustainable built environment, confronted with the reality that their traditional tools have ceased to be market-transforming.

There exists a broad body of literature on the Green Building Movement itself, for example (Jones, et al., 2019; Stenberg & Räisänen, 2006), but it has largely focused on technical aspects, such as the roles played by SRTs (Spinks, 2011; Qiu, et al., 2015; Buser & Koch, 2012) or drivers and barriers to green buildings adoption (Wilson & Tagaza, 2006; Windapo, 2014). Further, there is very little study of the SMOs themselves – Duckles' (2018) study of the USGBC a notable exception. Further, no study has investigated how these organizations have sought to reposition themselves. Given the continued urgency of the climate crisis, this is a significant

question for both environmental and social movement scholars. For the Canada Green Building Council (CaGBC), the answer to this question was that it must re-invent itself, pivoting from the compliance-focused strategy that defined them for their first 20 years, to creating a new operating model and establishing a new identity as a market convenor. This paper follows this process using actor-network theory (ANT) (Latour, 1996; Latour, 1987) to understand how CaGBC reposition themselves as the *obligatory passage point* (Callon, 1984) – the means by which the focal actor is rendered indispensable – and continue to advance their *market transformation* agenda in the face of the above crisis. By considering problemization and enrolment (Callon & Law, 1982), the technical mediation of socio-technical actants (Latour, 1994), and the translation that results (Callon, 1984; Latour, 1994), this paper answers the question: *How can an SMO regain its position as the obligatory passage point for a social movement after its initial position has been destabilized?*

This paper is structured as follows. In Section 6.2 we postulate that SMOs negotiate their position as an *obligatory passage point* to speak on behalf of the social movement itself in order to advance its goals. To support this, we begin with an overview of the SMO literature, key ANT conceptualizations framing our analysis, and how these have been addressed in other studies. Section 6.3 presents our methodology, noting how the epistemology necessitated by our ANT lens was integrated with our qualitative data collection and analysis methods. In Section 6.4, we provide a brief background on the case study organization. The synchronous research begins in Section 6.5 where we *follow the actors* through the transition (January 2020-February 2022), analysing the impact of disruptive actors and the new crises they triggered. By tracing this transition process through its various planned iterations, we reveal the shifting dynamics and negotiations as these evolved into their implemented form. Through this analysis, we are able to deepen our understanding of the complexity and significance of these transition processes. In Section 6.6, we step back from this case study to discuss how our findings contribute to the broader discourse on SMOs and how they evolve to continue to maintain relevance through identity (re)creation and repositioning. Through this, we discover the 'strength of weak ties' (Granovetter, 1973) for SMOs seeking market transformation and how this facilitated by a 'market convenor' positioning to become the new *obligatory passage point* for

their social movement in a changing context. Finally, we conclude our study in Section 6.7.

6.2 Background

Because this is a case study of an SMO, we begin with an overview of the SMO literature. Next, we summarize relevant ANT concepts such as generalized symmetry, enrolment and translation, and the obligatory passage point, before combining the two to discuss how ANT has been used to understand SMOs in the existent literature, thus providing the context for our case study.

6.2.1 Social Movement Organizations

In the mid-20th century, "social movements and movement participants were viewed as nonrational, given the unpredictability and heavy emotional content of movement" (Morris, 2000, p. 445). In the 1970s, this shifted significantly as resource mobilization theory (McCarthy & Zald, 1977), premised on "rational actors engaged in instrumental action through formal organization to secure resources and foster mobilization" (Buechler, 1995, p. 441), took hold and removed the consideration of ideology from social movement theory (Snow, 2004). In the following 50 years, this perspective has been the most significant theoretically and is widely applied to study SMOs (Walker & Martin, 2018; Zhang & Zhao, 2018). However, there has been a return to consider culture and ideology in social movement studies (Zald, 1996), which has led some SMO scholars to borrow extensively from Organization Theory (McAdam & Scott, 2005). These have resulted in studies focused on competition for resources and membership growth (Walker & Martin, 2018).

The 'cultural turn' in sociology has also affected social movement studies (Nash, 2001), leading to the 'framing perspective' (Snow, 2004), which has become important in the new social movement (NSM) theory (Pichardo, 1997; Seidman & Alexander, 2020). NSM theory explores how various logics – whether political, cultural, or ideological – lie at the root of collective action and how this leads to new definers of identity (Buechler, 1995). Rather than being unified and homogenous, NSM theory is heterogenous. Within NSM, concepts of the networked society (Castells, 2015) and action systems (Melucci, 1984), the observation that social movements are primarily cultural rather than economic (Habermas, 1981), and the observed need to account

for a multiplicity of voices and conflicts affecting the context of "an 'even newer' era" (Crossley, 2003, p. 303) have led to new insights on SMOs. This includes the existence of hybrid SMOs - those organizations using business activities to advance their cause. For an example, see (Heaney & Rojas, 2014; Lee, et al., 2018). Hybrid SMOs take on a less-oppositional framing and recognize the need for compromise and collaboration with the institutions they are trying to change. The framing of the CaGBC as a market-transforming industry association rather than an 'environmental group' (Mueller, 2021) demonstrates it to be one such hybrid organization.

The network perspective introduced by NSM theory added complexity but the two competing conceptualizations of SMOs – as pragmatic organizations seeking to mobilize resources or as ideological movements – remain in tension with one another. Conceptualizing SMO positioning as the *obligatory passage point* to enrol stakeholders by translating their goals through the ideology of the social movement provides a means to embrace both extremes of this literature.

6.2.2 Generalized Symmetry, Enrolment and Translation, and the Obligatory Passage Point

Actor-Network Theory (ANT) was developed in the late 20th century by several philosophers including Michel Callon, Bruno Latour, and John Law (see (Callon & Law, 1982; Callon, 1984; Latour, 1987; Latour, 1996; Latour, 2005; Law, 1992)). At its core, it conceptualizes social structures and events as temporary stabilizations of a dynamic and heterogenous actor-network. By using a common language for both technological and social elements, ANT grants equal consideration to both human and non-human actors (Latour, 1993/2012; Callon, 1984); this is what Callon (1984) refers to as *generalized symmetry*. By removing artificial barriers between the natural and the social, we can engage with the hybrid 'quasi-objects' (Latour, 1993/2012) created by the "recursive intertwining of humans and technology in practice" (Orlikowski, 2007, p. 1437).

The second ANT concept playing a key role in our theorization and analysis is that of *translation*. Developed my Michel Serres, translation is the shift or transformation of meaning introduced by the intermediary necessary for communication (Serres, 1974; Brown, 2002). Latour (1994) observed that this

translation also occurs when an actor cannot achieve their objective alone and *enrols* a second actor to assist; to do this, the objective must shift (be *translated*) into one that also interests the second actor. This concept of interest and enrolment is rooted in the work of Callon.

Michel Callon developed the notion of the *obligatory passage point* in his seminal paper on the scallops of St. Brieuc Bay (Callon, 1984). In this study, he applies *generalized symmetry*, describing the influence and role of nonhumans with the same terminology as that of human actors, took a non-judgemental stance (*generalized agnosticism*), and deliberately avoided making any *a priori* assumptions regarding actors, their relationships, or their natures. Using this epistemological approach, he explores how a group of researchers recruited three actors – the fishermen, the scallops, and the larger research community – and defined them in such a way that the researchers rendered themselves "indispensable in the network" (Callon, 1984, p. 204). Callon names this process *problemization.* Through problemization, the researchers posited a problem that addresses those faced by the others; to resolve their own problem, each actor must pass through the researchers' *obligatory passage point.* Next, Callon introduces the concepts of *interessement* as the process by which other actors' interests are aligned with those of the lead actor. This is achieved by "build(ing) devices which can be placed between them and all other entities who want to define their identities otherwise" (Callon, 1984, p. 208).

Callon's third concept is that of *enrolment*: the participation of the other actors in the solution of the shared problem through "multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed" (Callon, 1984, p. 210). Callon's final process is *mobilisation*: the process of forming alliances and acting as a network to exert force to solve the problem. Synthesizing Callon's own figures, we clearly see how the spokesperson (researchers) have positioned themselves at the obligatory passage point, permitting them to speak on behalf of all of the actors passing through that point. displacement or translation of actors ensuring that the network continues to serve their objectives (Figure 23).

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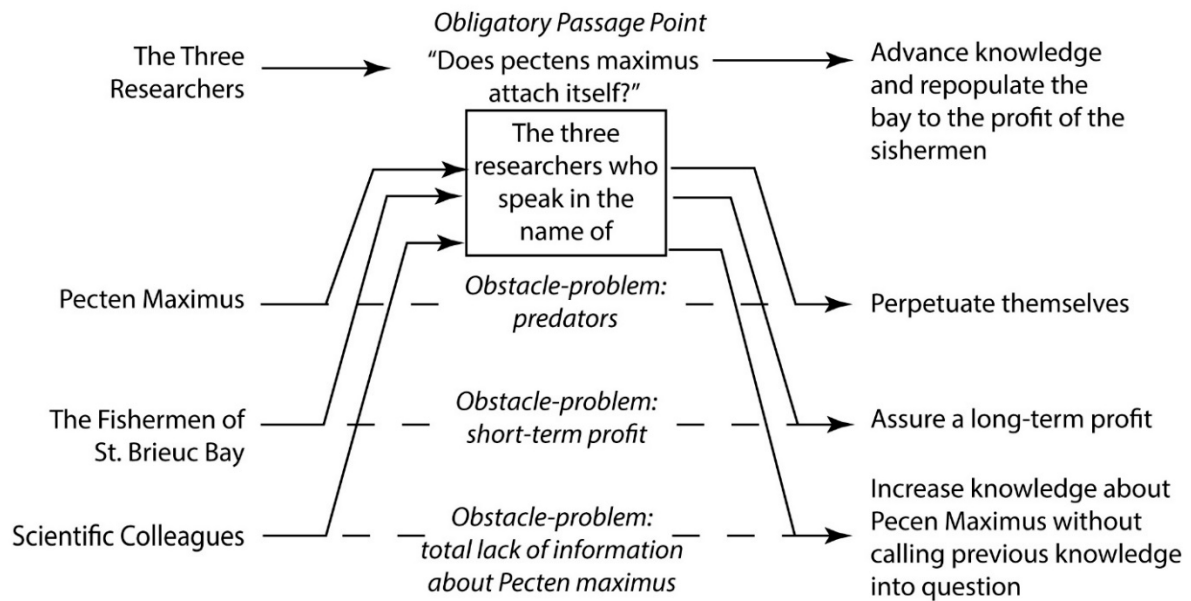
Figure 23 The role of the obligatory passage point (synthesized from (Callon, 1984))

The second important contribution of Callon's paper is insight into the principle of *translation*. Displacements and transformations occur repeatedly in the *scallops* study: displacements of goals and interests through problemization, physical displacements through interessement, displacement through mutual concession in enrolment, and displacement in mobilisation as actors are mobilized to pursue their goals. As noted by Callon "to translate is to displace" (Callon, 1984, p. 223), or as previously defined by Latour:

> Translating interests means at once offering new interpretations of interests and channelling people in different directions…The results of such renderings are a slow movement from one place to another (Latour, 1987, p. 117)

All actors in the network are affected by this translation. This allows the *enrolment* or participation of the other actors in the solution of the shared problem, but can also impose a penalty on the lead actor, who must themselves adapt their goals to navigate to their position as spokesperson.

Since Callon's coining of the phrase, the *obligatory passage point* has been widely used across a multiplicity of domains as diverse as cybernetics (Bowker, 1993), psychology and medicine (Viner, 1999; Bains, 1998; Gauld & Micoulaud-Franchi, 2021), accounting (Jupe, 2000; Ezzamel & Xiao, 2015), information systems (Lee & Wang, 2016), pedagogy (Rafea, 1999; Malcolm & Zukas, 2009), city planning and

architecture (Selman, 2000; Silberberger & Strebel, 2017), and elite sports (Svensson, 2019). Across this literature, the *obligatory passage point* is understood as defined by Callon as the means by which the focal actor is rendered indispensable. This indispensability is of great value to SMOs, as we discuss below.

6.2.3 Obligatory Passage Points in Social Movements

A large number of studies have explored the concept of the obligatory passage point within the social movement context, identifying this position as being occupied by social media technologies (Soares, et al., 2021), individual activists (Ernstson & Sörlin, 2009; Epstein, 1996), or organizations – whether social enterprises (McInerney, 2009), community groups (Guldåker, et al., 2015; Pozzebon & Mailhot, 2012), or other non-profits (Horowitz, 2012; Hietschold, et al., 2020; Seo-Zindy, 2012). This latter set of studies clearly demonstrated the importance of the position as *obligatory passage point* for SMOs. Such positioning allowed a small and poorly-resourced NGO to insert themselves into debates around nanotechnology (Hietschold, et al., 2020) and an environmental movement organization to be both the gateway to funding for the local indigenous groups resisting a project and to approval for the company seeking to fund it (Horowitz, 2012). In a context similar to the new position sought by the CaGBC, McInerney (2009) describes the attempt of a social enterprise to achieve the obligatory passage point position by playing a convening role for social movement and business stakeholders.

Another important finding from the literature is the impact of this SMO positioning on the social movement itself. As noted by McInerney, "obligatory passage points are active translators, not passive transmitters" (McInerney, 2009, p. 222). Thus, to speak on behalf of the social movement is to reframe it through the objectives of the SMO. This can have mixed effects. In instances where an SMO is attempting to be the obligatory passage point in different way for various stakeholders and issues, this can lead to the dilution of the social movement objectives (Horowitz, 2012). In other cases, the successful promotion of a tool - for example an SRT - has been shown to translate public perception of a social movement into that of a compliance movement. Core aspects of the ideology and driving issues are dropped if they can't be packaged ('blackboxed' (Latour, 1994)) into this tool (Rice, 2011). On the other hand, these tools

can also serve as powerful symbols for the social movement ideals and drive the social movement forward (Goulden, et al., 2017).

While several studies observed SMOs over period of several years and analysed the means by which they navigated to the position of the *obligatory passage point*, none explored what happened when this point was destabilized and a new position had to be established. This remains a gap in the literature and one of significant interest as SMOs are being faced with new and diverse crises brought about by changing socio-politics, economic circumstances, and – recently – the Covid-19 pandemic. This paper addresses this gap by exploring this process of destabilization and subsequent repositioning, revealing the key roles played by brand and identity in this process.

6.3 Methodology

The theoretical framing using ANT guided a 'looser' and 'more generous' approach to method, engaging with multiple methodologies to respond to the unique context of the research and remaining open to multiple interpretations of the data (Law, 2004). Applying the principles outlined by Callon, Law, and Latour (Law, 2004; Callon & Law, 1982; Latour, 2005; Law, 1992; Latour, 1987; Law, 1987), we have followed an ANT epistemology in the data collection, avoiding theorization until it was required to make sense of the trends evident in the data and develop a conceptual frame for their presentation and theoretical analysis. Once data collection was complete, we then turned to broader MOS theory to make sense of the data, using the sequential approach advocated by Blaikie and Priest (2019) and considering the question of *why* the new positioning is strategically valuable as a transition zone where the overlap of theories using a multiparadigm approach is beneficial (Gioia & Pitre, 1990).

In order for a single case to support theorization, it must be a *critical* case (Yin, 2003). CaGBC is critical in two ways. First, it serves as a *representative* case (Eisenhart, 2009) of an organization facing a common set of crises for green building SMOs: the entanglement of their identities with the SRTs they promote, the loss of control over LEED® - as well as its lost ability to drive market transformation – faced by those who had adopted it, and the impact of the pandemic. Second, it serves as an extreme (Yin, 2003) or *deviant* (Eisenhardt, 1991; Flyvbjerg, 2011) *case* in its release of its SRT-focused compliance role and the resultant reframing and repositioning as a

social movement and convenor. Because of its *representative* nature with respect to its origins and current challenge and subsequent *deviance* from tradition Green Building SMO strategy, CaGBC forms a valuable case to both illustrate the challenge facing its peers and to demonstrate a potential solution.

6.3.1 Data Collection - Interviews

The transition process was documented in real time from October 2020 through February 2022 through a series of 21 interviews with the executive team and key staff (Table 17). In addition, because of the lead author's participation in the organization, several meetings and events were observed live, including two of the presentations/consultations during the development of the emerging model (October 2020 and March 2021), the 2021 national conference, and the launch meeting for one of the Regional Advisory Groups. Her resultant observations were necessarily influenced by this role but this is mitigated in two ways. First, she was not involved in any aspects of the transition planning or implementation. Second, all observations were discussed with the rest of the co-author team who also were able to review these alongside the source material to check against bias.

Table 17 Transition Team Interviewees

Identifier	Role	# interviews	Notes
T1	Executive Team Member	4	Joined organization in 2018
T2	Director of Client Services Team	5	Joined organization in 2019
T3	Client Services Team Member	2	Coordinator of new industry engagement initiative
T4	Client Services Team Member	1	Was previously CaGBC staff working with chapters; left org 01/2022
T5 & T6	Client Services Team Member	1 each	Regional member engagement (new once transition model had been developed (03/2021))
T7	GBCI CA Staff	1	Moved from CaGBC to GBCI CA when it was formed (2017)
T8	Marketing Staff	1	Responsible for translating rebranding strategic exercise outcomes into new brand
T9	CEO	5	Involved in organization in various roles since pre-establishment; CEO since 2004.

Qualitative data analysis was conducted using inductive coding. Beginning with the first interviews, transcripts were coded with emerging themes. These were grouped and refined as subsequent interview transcripts were coded until a standard

set of codes was developed. This finalized set of codes was then used to update initial interview coding. To permit the comparison of staff vs management ideas, attitudes, and perceptions and track their evolution, each transcript was assigned an attribute to indicate the stage when the comment was made {preliminary; formal planning; pilot implementation; operationalization} and the type of respondent {Executive; leadership; staff}.

6.3.2 Document Collection and Analysis

The first discussion of organizational transition involving non-CaGBC staff occurred in October 2020, when the transition plan was first presented to the Organization's Chapter Advisory Board. At this time, permission was obtained by the CEO to document the transition process and gain access to documents supporting this process – both working and presented versions, dating as far back as 2018.

These documents were valuable for cross-referencing these documents with the insights gathered from interviews to allow for a holistic view of the repositioning process as it evolved over time. They also provided a rich source of supplemental data, which were analysed as follows. First, all formal presentations of the transition plan, along with the available intermediate versions, were compared to identify changes in content, phrasing, or presentation. This permitted us to note the points at which new concepts or vocabularies entered the planning process as well as adjustments to the deployment strategy. Other key internal documents included strategic frameworks and other planning documents, the initial 'brand refresh' (LG2, 2018) and working 'brand guideline' documents, staff training and orientation presentations, and administrative documents (newly established group terms of reference, codes of conduct, *etc*). Relevant member-facing communications were also analysed, including the CEO keynote at the Annual Conference, CEO Presentation at the Annual General Meeting, 2021 Annual Report, and new website[26]. Conference programming from 2021 was also compared to the previous three years to determine whether the themes had begun to reflect the new organizational model. These documents were analysed using the methodology proposed by Gioia et al. (2013)

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[26] Note that this was still a work-in-progress at the time of dissertation submission but the structure and several of the key messaging elements were complete and could be systematically compared with the old website.

using an abductive method to develop first-order codes and then abstract them to higher-order codes to guide theory-building. This is further described in the following section.

6.4 The Pre-History of the CaGBC

Founded in 2002 by a group of environmentally-conscious building designers and members of government agencies, the CaGBC is a not-for-profit organization focused on market transformation to achieve "a sustainable built environment". To establish its identity, CaGBC enrolled the LEED® rating system (McArthur, et al., 2021), initially created by the US Green Building Council (USGBC), adapting it to the Canadian context under license, to create LEED® Canada, and promoted it through independent local chapters.

In order to position themselves in the market, CaGBC problematized the 'what' and 'how' of green buildings to address a series of challenges faced by actors across the building industry. Building designers had become increasingly interested in sustainability but needed to raise awareness in the market regarding green buildings – both their definition and their value – and also needed to establish their legitimacy as "green building" experts. With LEED®, CaGBC could address these issues as the definer and promoter of green buildings in Canada and the provider of the LEED® Accredited Professional credential, respectively. For their government stakeholders seeking a policy instrument or reference standard, CaGBC offered a solution in LEED®, alongside third-party review of projects. These actors were readily enrolled by the CaGBC and were the early adopters of the LEED® Canada system. After several years of market promotion, corporate real estate owners seeking to differentiate their property in a competitive market found the LEED® plaque to be a valuable marketing tool and were thus also enrolled by CaGBC, who had by this time positioned themselves with LEED® as the *obligatory passage point* (Callon, 1984) to a sustainable built environment (Figure 24).

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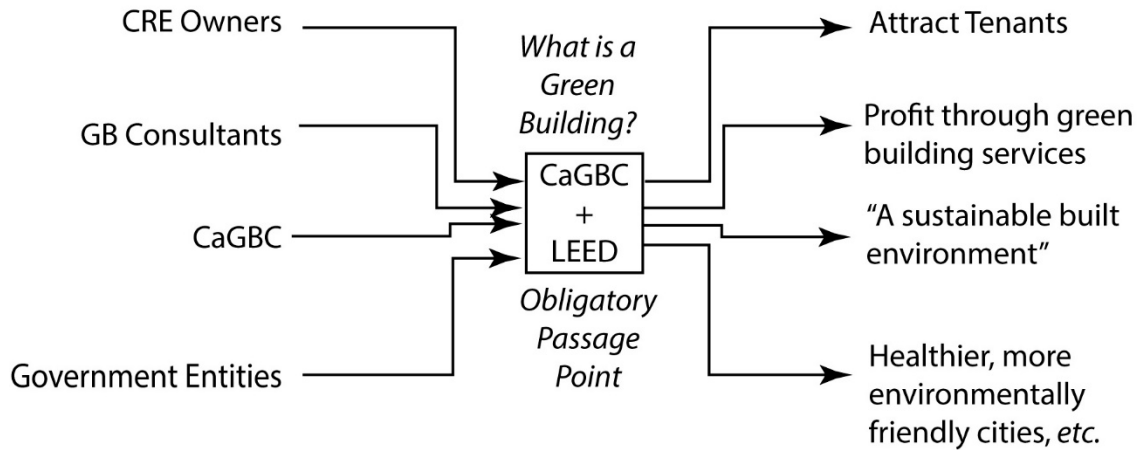
Figure 24 Problemization to position the CaGBC + LEED as the mediator of green buildings in Canada, presented using Callon's (1984) notion of the obligatory passage point; this is typical for all such figures.

This figure presents CaGBC having positioned themselves at the *obligatory passage point* by problematizing the question "What is a Green Building" and presenting LEED® as the answer in order to enrol their stakeholders. This allowed CaGBC to enrol key actors, translating their goals through LEED® Canada's definition of Green Buildings. By 2011, this positioning had been successful, and CaGBC found itself as the spokesperson for the Green Building Movement in Canada, with over 2500 LEED®-certified and registered projects and 2300 corporate members. To achieve this, however, CaGBC effectively conjoined its identity with LEED®, allowing it to serve as the spokesman for the organization (McArthur, et al., 2021); in doing so, CaGBC effectively deferred its identity to a rating system (T9).

In 2008, USGBC established GBCI, its for-profit sister organization and began to take back ownership of LEED® to permit its internationalization, fundamentally changing the role of Green Building Council partners (T9). In 2012, this resulted in a renegotiated license for LEED® in Canada to wind down the LEED® Canada product that CaGBC had used to define itself, to be replaced by USGBC's internationalized LEED® v4. While it would continue to support LEED® education and provide LEED® Canada support as it phased out, the CaGBC found its position at the *obligatory passage point* destabilized. Compounding this, LEED® appeared to be on the decline. The current version of LEED® had become "table stakes" among urban Class A offices, defined as "the most prestigious buildings with the most amenities in the best locations" (BOMA Canada, 2016), and with early adopters. However, it was largely

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ignored by the majority of the market. Worse, the, USGBC's product – LEED® v4 – was poorly received by the Canadian market (T9).

In this context, CaGBC recognized that a continued reliance on LEED® was risky and began to diversify, establishing an advocacy program and beginning to transition from local projects to industry-transforming initiatives. Market research also became a significant activity, in part to support the advocacy effort. Thwarting this effort, initially, was the independence of the chapters, each of which had a separate identity, spoke with a unique voice, and frequently advocated for different things in different markets. In order to "speak with one voice" and thus be a more effective advocate for market transformation, a significant organizational restructuring occurred to nationalize chapters, shown in Figure 25.
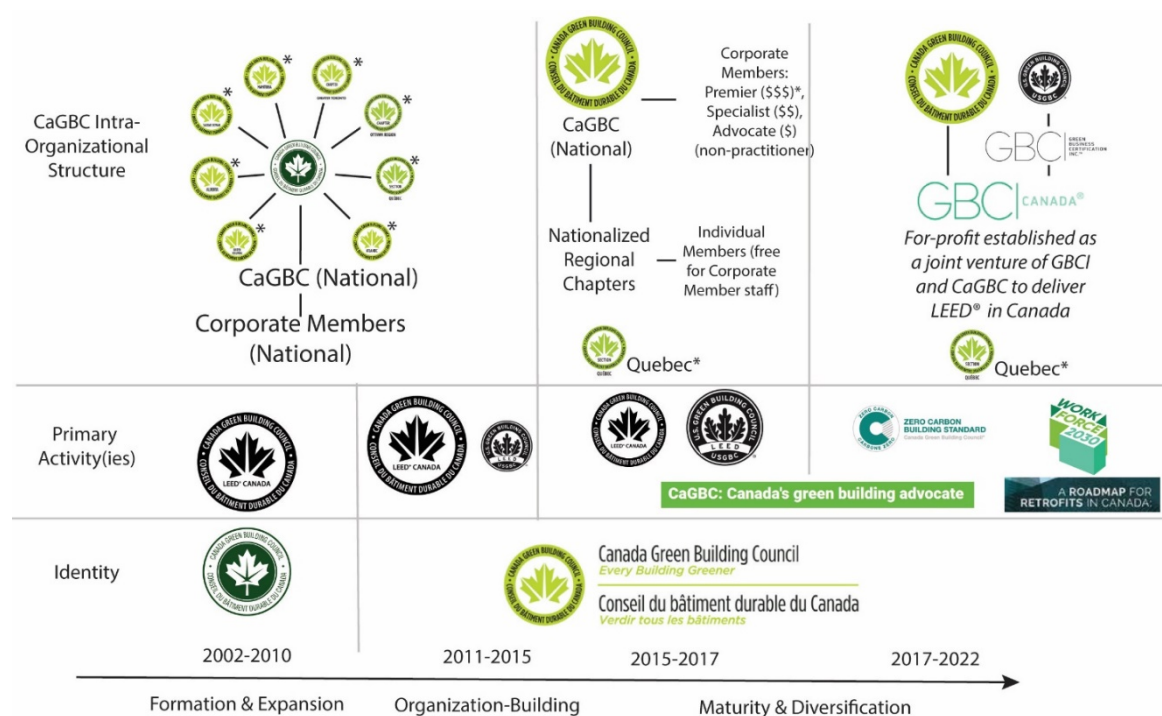
denotes Independent Regional Chapter with own governance & (individual) membership structure

Figure 25 Evolution of the CaGBC structure from inception to just before transition

The independent chapters were dissolved (except Quebec, who remained independent and would disassociate entirely from the CaGBC in 2022), their boards transitioned from governance to advisory roles, and chapters were re-staffed with CaGBC staff to bring them under the direct control of the national organization. By 2017, the GBCI's reclaiming of LEED® in Canada had been fully implemented through the creation of a joint venture with the CaGBC: a separate, for-profit organization

called GBCI Canada ("GBCI CA") that would administer LEED® - and the full range of GBCI-owned and affiliated rating systems – in Canada. Technical staff associated with LEED® were incrementally transitioned to GBCI CA, fundamentally changing both the internal make-up of the CaGBC and the role it was to play in the market.

Faced with the loss of its spokesperson – and with it, its position as the *obligatory passage point* for the market – CaGBC was faced with a crisis of identity, branding and narrative. This paper explores response to this destabilization by *following the actors* (Latour, 1987) to trace the development, refinement, and implementation of the new organizational structure and operating model CaGBC used to reposition themselves and continue to advance their *market transformation* agenda.

6.5 The CaGBC in Transition

After the creation of GBCI CA, the CaGBC was facing a crisis. The series of evolutions over the previous five years, particularly the shift from licensee of LEED® in Canada to a non-LEED® organization, was confusing to the market. Some members and stakeholders still equated CaGBC with LEED® (T8) while others could not understand what remained of CaGBC if LEED® was gone. This loss of LEED® also undid the [CaGBC+LEED®] composition that had served as the *obligatory passage point* to green buildings (Figure 24), destabilizing the actor-network and dislodging CaGBC from their position as *obligatory passage point* – the spokesperson for defining green buildings – in the market. CaGBC realized it needed to change tactics to continue to transform the market. To do this, it developed a new problemization – "How can we change the whole industry" and identified the 'market convenor' role "*to get people together to talk about issues (…) on a national scale*" (T3) as a potential new *obligatory passage point* to re-enrol its stakeholders (Figure 27).
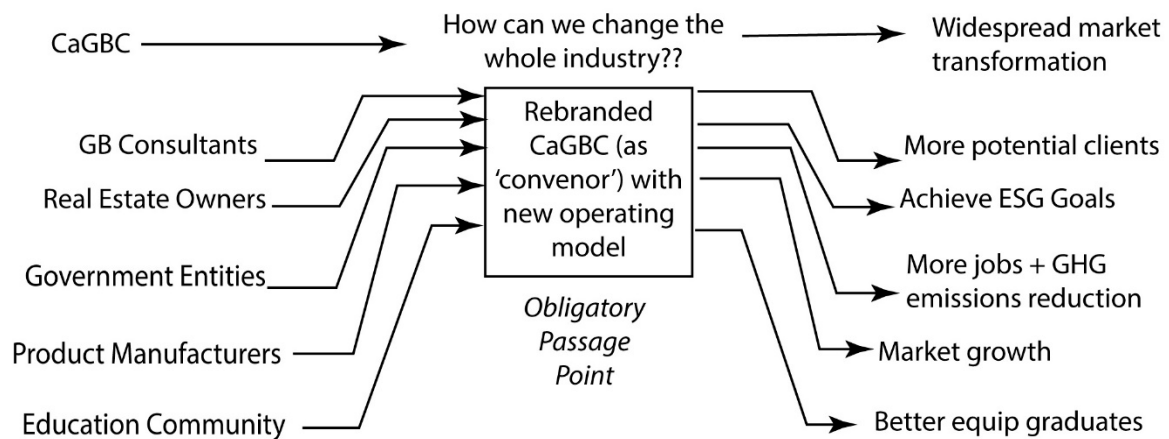
Figure 26 New Problemization to re-enrol stakeholders

We see from this diagram how CaGBC re-enrolled its stakeholders through this new problematisation. By defining the problem of more widespread market transformation, CaGBC would be able to engage the whole industry. To do this would require a new operating model to serve as an *interessement* device, appealing to each stakeholder (left side of Figure 26), forcing them through CaGBC as the obligatory passage point in order to accomplish their individual objectives (right side of Figure 26). To achieve *this*, however, CaGBC would need to disentangle its identity from LEED®. Despite having caused the crisis by robbing CaGBC of their spokesperson position and thus interrupting their objective of "A sustainable built environment" (market transformation), GBCI CA provided a means to its resolution. As illustrated in Figure 27, GBCI CA had already been enrolled by the USGBC to reclaim LEED® in Canada, requiring CaGBC to be enrolled in this process. In this process, CaGBC enrolled GBCI CA to serve as a counter-example to the market, freeing CaGBC from its compliance role so that it could inscribe a new 'market convenor' role into its new operating model.

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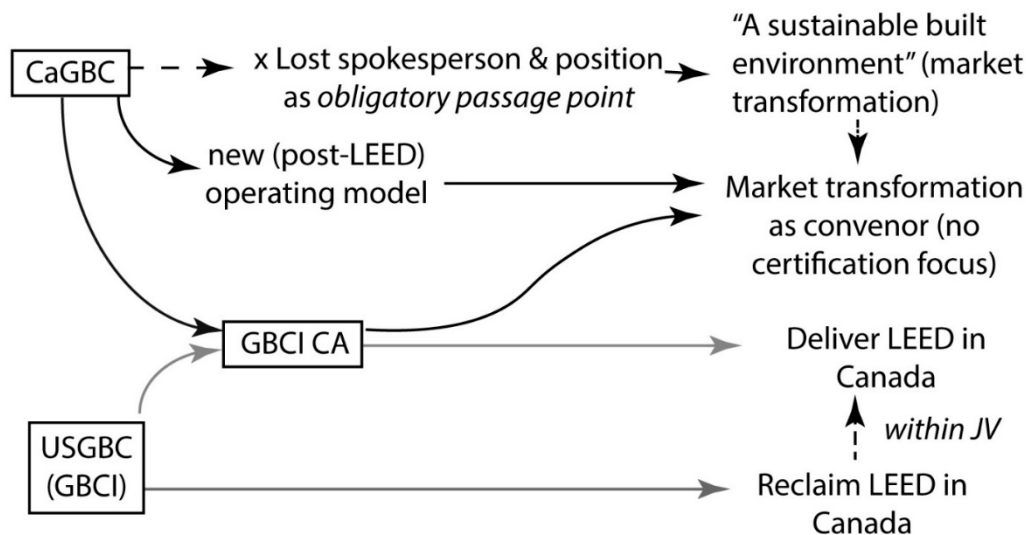
Figure 27 CaGBC and USGBC's enrolment of GBCI CA, presented using in the style developed by Callon (1984)

To this end, in 2018, CaGBC engaged an advertising agency to refresh its branding to distinguish it from GBCI CA and take on the role of market convenor, an aspirational voice "*sort of like the North Star for where we should be going as an industry*'" (T8). Shortly thereafter, CaGBC began its 2020-2022 strategic plan development that focused on this new operating model creation, prompting the 'transition' whose planning and implementation would dominate the next three years.

6.5.1 Transition Planning

The transition process began with the creation of a new strategy (CaGBC, 2020a) and streamlined organizational structure. This was driven by three factors: (1) the disruption to the established LEED®-centric business model (stagnating revenues and the transfer of LEED® to GBCI CA); (2) the need to respond to a changing and increasingly competitive green building market; and (3) the need to be future-oriented and value-focused for their membership. To achieve this, chapters would be fully dissolved and a new unit *"that was going to start to embrace that ideology, a personality, a brand called 'the client experience"* (T1) would be developed, as illustrated in Figure 28.
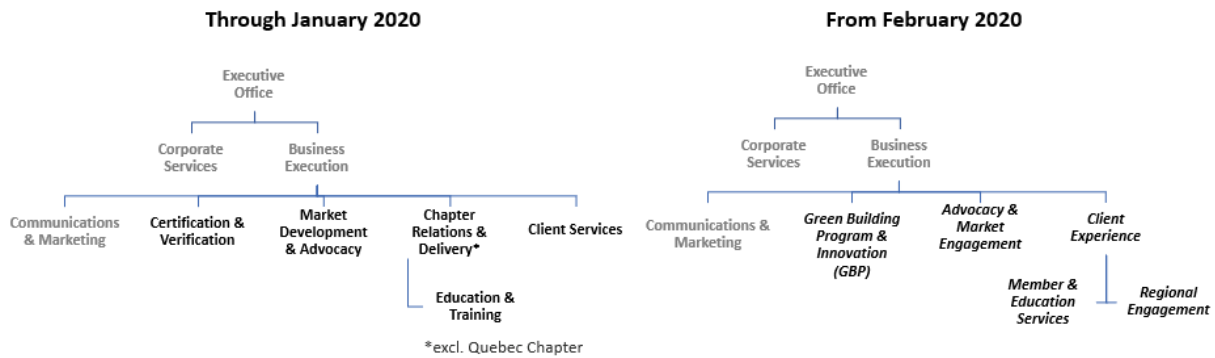
Figure 28 Old (left) and new (right) operational model for the CaGBC; bold text indicates changes (adapted from (CaGBC, 2020a))

The internal restructuring began immediately but the remainder of 2020 would be used for "*structured and considered planning*" to refine CaGBC's member engagement strategy, planned for implementation in 2021. Within the next two months, however, Covid-19 forced <u>everything</u> to be reconsidered. Despite – or perhaps because of – its challenges, the pandemic was an enabling influence on the transition:

> (the pandemic) contributed to us realising that whatever we understood had to be rethought and that there was no choice, if you wished to maintain what you were doing and be able to recover at the end of the pandemic in a meaningful way (…) that really, I think, deepened understanding of what we could do (and) also what we also might have to do." (T1)

The financial reality of the pandemic forced CaGBC to pivot rapidly, jump-starting the transition process, while its short-staffing extended its schedule, providing CaGBC time to realize the full impact his restructure the new brand and structure should have for the organization (T1). This pause was critical to the CaGBC, whose growth and evolution had been so rapid up to this point that it had never had time for introspection (T1). The staff turnover that resulted from the pandemic also enabled the transition as it facilitated the culture shift necessary to support the transition and embrace CaGBC's new identity (T2). While never intentionally enrolled, the pandemic translated the transition process significantly, bringing CaGBC on a very different journey than had been envisioned to achieve their desired outcome (T1).

The member engagement strategy to support the new "client experience" brand was initially developed in summer 2020 and refined based on internal discussions and feedback received Chapter Board consultations in October 2020 and March 2021. It

was finally presented to the membership, alongside the transition plan in June 2021 at a town hall just before the Annual General Meeting. Figure 29 summarizes the various iterations through the development of this model and shows the high degree of complexity in the initial concept and its gradual simplification, which was crystallized into the vision for the new CaGBC presented to the members at the AGM (Figure 30).
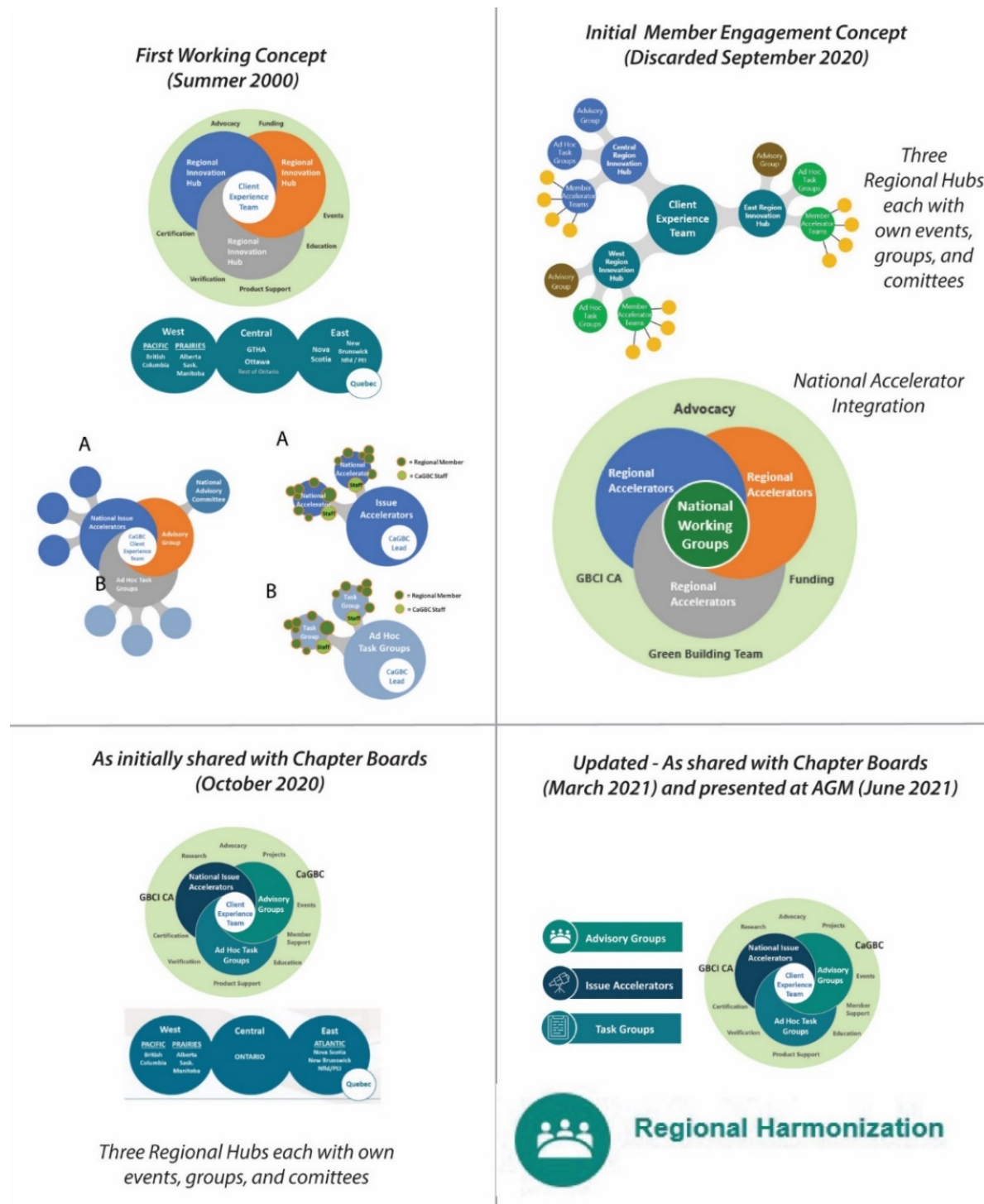
Figure 29 Evolution of the Member Engagement Model, synthesized from (CaGBC, 2020a; CaGBC, 2020b; CaGBC, 2020c; CaGBC, 2021b)
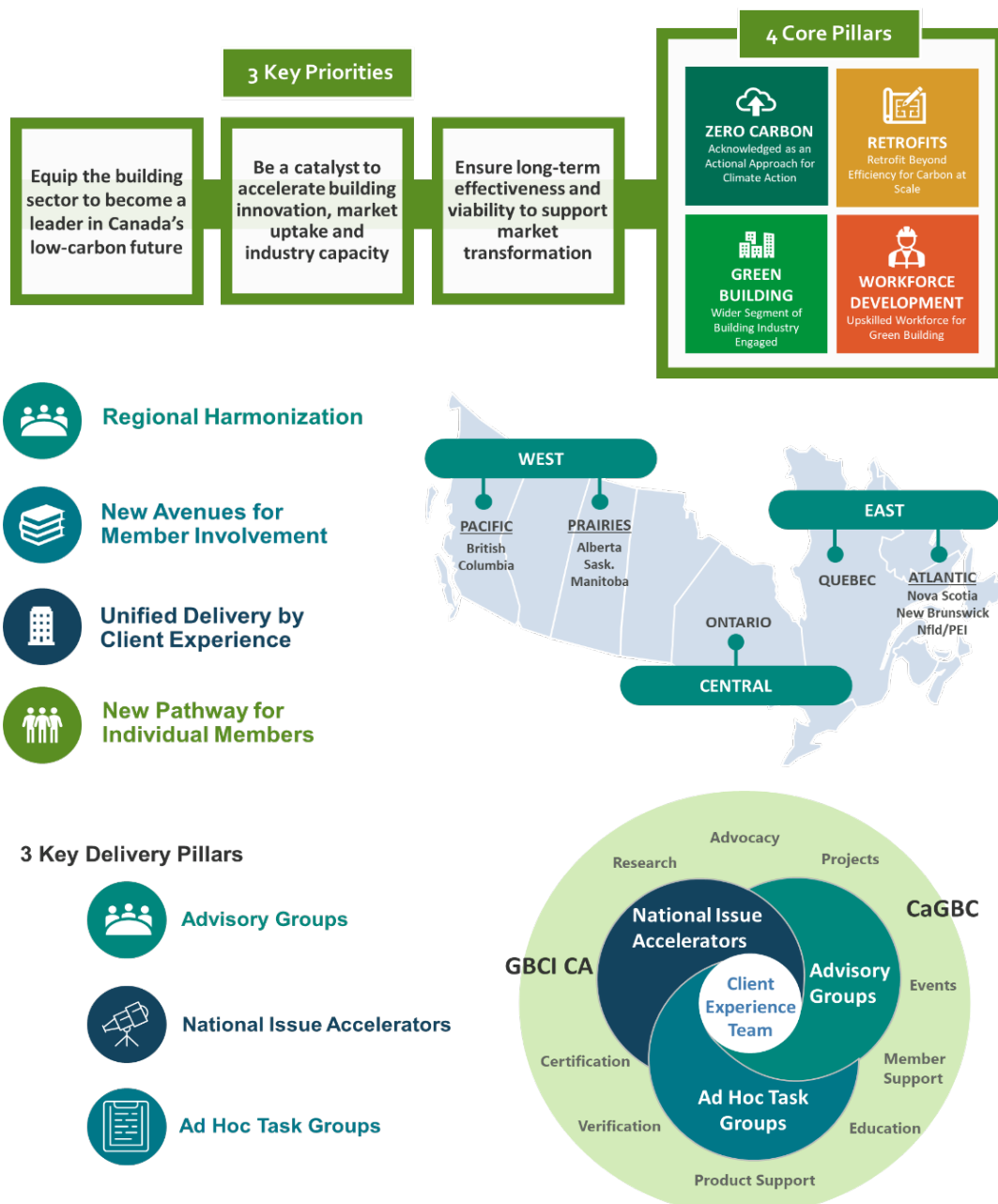
Figure 30 New Vision of CaGBC as presented to the Membership at the 2021 AGM Town Hall, compiled from (CaGBC, 2021b)

This restructuring of the CaGBC promised to expand the adoption of 'green buildings', generating a larger market for them and their services, creating green jobs, and leading to "better buildings for people and the planet" (T8). To implement it, however they faced a key obstacle: their identity remained unclear to the market. To achieve it required not only this new operating model but the implementation of their new brand – under development for two years by this point – that would be communicated to the membership through CaGBC's website. Both the new brand and

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the website would prove to be significant actors impacting CaGBC's transition as we will now discuss.

6.5.2 The Impact of Rebranding on Transition

CaGBC's new model development was driven in large part to disentangle their identity from LEED® Having reviewed their existing webpage and brand – even as refreshed by the advertising agency – CaGBC found it to be very inward-looking and inaccessible to the broader public (T8). A new and simplified branding – an *aspirational* voice "*moving that gaze up from the navel onto the horizon*" (T8) was required. This was further critical because CaGBC's members, who were overwhelmed by the pandemic's impact needed simplicity in communications. Further, CaGBC's identity was confusing even for staff and needed to be clearly articulated if they were going to be successful moving forward. Recognizing that a new brand and website could replace LEED® as the spokesperson for the organization (T9), the rebranding process and associated question of identity became an obligatory passage point the CaGBC would need to transverse to successfully implement its new operating model, as illustrated in Figure 31.
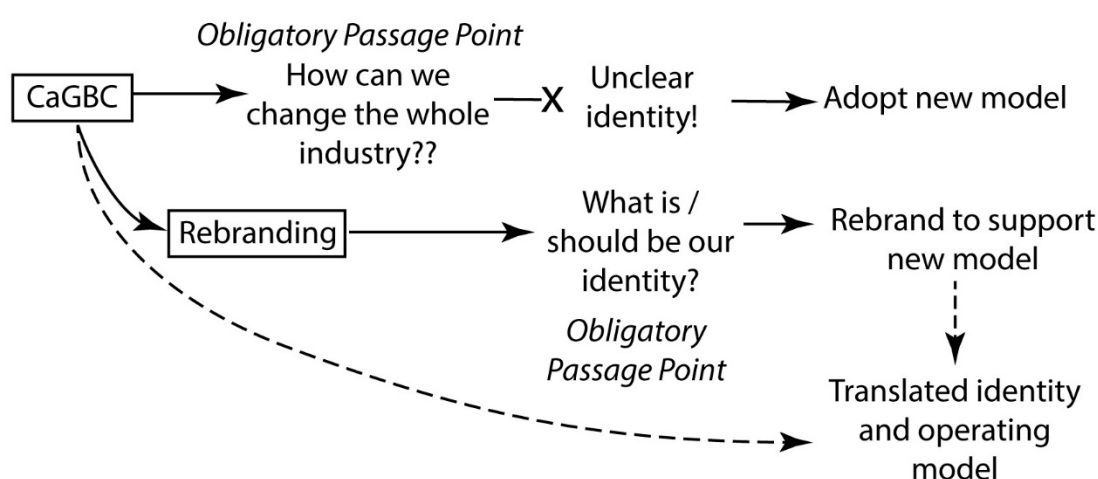
Figure 31 Enrolment of rebranding process to redefine and reposition the CaGBC

It is evident from this figure that in order to adopt their 'convenor' model, CaGBC had to overcome its identity crisis, both in terms of determining who they were without LEED® and communicating this to the market. To do the former, CaGBC began to question what it needed to offer, who and what it needed to be, and how to get there. The missing link for the market, they realized, was a simple argument for *why* green buildings were needed? Up until this time, CaGBC had used LEED® to answer the

questions of *what* they were and *how* to achieve them. This approach only engaged a small portion of the market, however. To change the whole industry, CaGBC would need to work for broader social change – and to do that, they needed to (re)embrace their identity as a social movement (T9). Once realized, this identity needed to be communicated and for that, they enrolled the rebranding process. The rebrand, however, had its own translation impact beyond identity. As noted by one Executive Team member, "*A rebrand requires you to embrace the brand and then ask yourself, 'Is what we are doing today the way we want it to be to reflect who are going to become?"* (T1). Recognizing its identity as a social movement impacted CaGBC's transition in two ways. First, a societal scale perspective was overlaid in their convenor role and informed their new pillars. This perspective was made more explicit in the social sustainability focus of their 2021 "Building Lasting Change" conference and aspirational framing of CaGBC's new vision in Figure 30. Second, the shift to simpler messaging to better reach those not yet engaged by the organization translated into the increasing simplification of the member engagement strategy and structure shown in Figure 29. Embracing its new identity as the aspirational voice and convenor of the market further shifted (translated) the strategic focus of the organization, forcing the leadership team to ask "*What is our aspiration going forward? Where we going to put our time and energy and what's needed to actually make that happen?*" (T1).

6.5.3 The CaGBC Website as Disruptive Actor

In order to develop their new brand, CaGBC had to *open the black box* (Latour, 1994) of their external communications. This included auditing their website, which had been created in 2013 and was littered with obsolete text, irrelevant policies, and other artefacts of CaGBC's legacy structure (T2). Further, LEED® was still prominent on the website banner and in key text, reinforcing the market perception that CaGBC was a primarily a compliance-focused, technical organization (T3) and "*was absolutely holding back on (…) what we could actually extend for the Members*" (T2). The audit revealed messaging that was complicated, backward-focused, and overly focused on technical issues. In short, CaGBC's messaging had been constrained and translated by the existing website text from the desired 'diverse, post-LEED® organization' messaging back into the legacy "CaGBC=LEED®" market perception. In effect, the website was a disruptive actor hindering CaGBC's evolution and interrupting its

repositioning by translating even post-LEED® communications with the LEED®+CaGBC legacy, as illustrated in Figure 32.
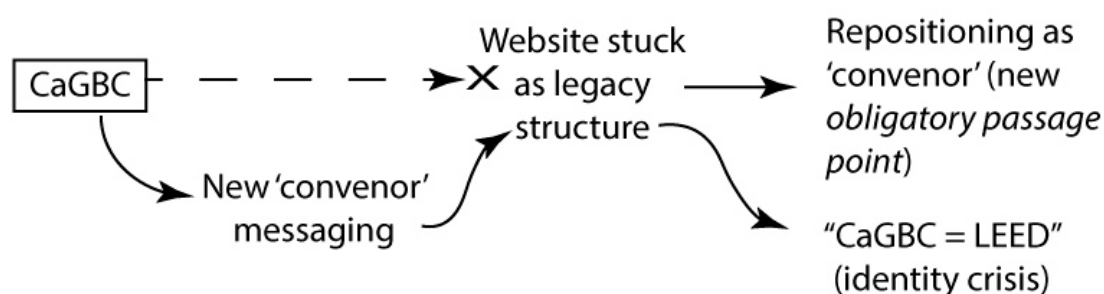
Figure 32 Website as disruptive actor interrupting CaGBC's repositioning as a convenor and instead re-translating its post-LEED® messaging into its legacy identity

This figure highlights how, between its complexity and difficult platform, the website had constrained the CaGBC. Worse, with the departure of LEED® from the CaGBC, it had become the *de facto* spokesperson for the organization, and yet its tone and positioning were stuck in the past, translating CaGBC's identity to its stakeholders back into the legacy mindset and preventing the market from recognizing its post-LEED® vision. The development of a wholly new website on a more flexible platform would be required to reflect CaGBC's new structure and communicate with the aspirational, simplified messaging CaGBC required (T2, T8). As noted by one interviewee, "*…that exercise of the website (…) is the decoupling of the entity and the historical understanding of what it became after layer after layer of growth*" (T1).

A new website reflecting the new brand would permit CaGBC to speak to a broader message of green buildings, leading to a sustainable future with both social and environmental benefits. No longer would CaGBC "lead with LEED®"; instead it would reclaim its position as the *obligatory passage point* for market transformation, this time as the convenor of the green building industry in Canada. With the transition model and new brand thus established, CaGBC entered Q4 2021 ready to put them in place.

6.5.4 Operationalizing the Transition

Operationalization of the new model began in October 2021 with pilot Regional Advisory Groups meeting for the first time. The new brand had also been developed and had its 'soft launch' at the 2021 CaGBC national conference. The full launch, including the new website planned for January 2022 to start CaGBC's 20th year.

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Weeks before the new brand was scheduled to be launched, however, it was put on hold by an unexpected development. In December 2021, the CEO of the USGBC, who had been the driver of GBCI, resigned, leaving USGBC to reconsider its internationalization approach and re-open the door for CaGBC to re-take ownership of LEED® certification in Canada (T1), renegotiating a more favourable license agreement in the process. In response, the decision was made that despite the previous efforts to distinguish CaGBC from GBCI CA, "(*CaGBC) would be dissolving GBCI Canada and integrating the LEED® business back in the CaGBC*" (T9). This would not change the brand or messaging (T8), but did force an adjustment to the transition model (Figure 33). In this new model, certification activities be one of many offerings and revenue streams for CaGBC and would be delivered with the business acumen acquired through the GBCI CA experience (T1, T9). By February 2022, CaGBC was "*done for organizational change (for now)*" (T9). Instead, they focused on their market convenor strategy, with the vision to change the whole buildings industry.

Figure 33 Revised CaGBC Structure re-integrating LEED® as of February 2022

Starting from their initial crisis with the loss of LEED®, this case study shows how CaGBC repositioned itself at the *obligatory passage point* to re-engage its stakeholders, redefining its role and rediscovering it identity as a social movement in the process. In order to achieve this, CaGBC had to pass through its own *obligatory passage point* of rebranding, which translated both its identity and operating model. In this process, the disruptive impact of the old website, which had been re-translating new messaging back into its compliance legacy, had to be let go, permitting CaGBC to reshape its communications to present itself to as a market convenor and aspirational voice. Through this transition process, CaGBC has succeeded in redefining itself in the market, gaining broader engagement with the market through its new engagement model, for example the $35B funding for building retrofits (Canadian Infrastructure Bank, 2022) funded in line with CaGBC recommendations (T9) and the shared commitment to embodied carbon disclosure from the new Sustainable Materials Accelerator (T3). In our next section, we discuss how the case of the CaGBC provide significant insights to help green building SMOs on the whole.

6.6 Discussion

While significant literature has discussed the initial negotiation of an SMO to the position of *obligatory passage point* for the social movement, the existent studies have been time-limited, typically for a unique project or event. The regaining of the *obligatory passage point* position after a disruption is a subject that remains untouched by the literature. By following the actors through our case study, we explored this question of how this position can be regained, using the CaGBC as a *critical case* (Yin, 2003). This section discusses what can be learned from CaGBC as a *deviant case* (Eisenhart, 2009). Grounding our observations in SMO theory, we theorize the significance of the adoption of a 'market convenor' identity as the new obligatory passage point (Callon, 1984) for Green Building SMOs seeking to avoid obsolescence.

Like any actor seeking its place as the obligatory passage point, CaGBC had to develop a new problematization and interessement to engage the market. CaGBC's new problemization to engage stakeholders – "*How can we change the whole industry*" (Figure 26) – was a question that the CaGBC had already been wrestling with internally and had led to their understanding of a need for organizational transition. By using their new operating model and 'convenor' role as a device of interessement, they were

able to expand their influence. CaGBC's convening approach presented a solution to the problems the initial problemization – "*What is a green building*" could not, such as societal-scale issues such as job creation and social sustainability.

This revised strategy was highly successful to both re-enrol their initial stakeholders and enrol new ones. CaGBC's argued This shift from technical to social is a dramatic break from the approach that has traditionally defined green building SMOs and provides a new path for similar organizations facing obsolescence. The new operational model developed by the CaGBC to 'convene the market' is that of a social movement, focused outward to recruit and engage a broader diversity of stakeholders than has been typical for green building SMOs. By changing their focus from compliance to market research to inform the necessary change and advocacy to forge new partnerships to deliver it, CaGBC has successfully repositioned itself as a market convenor. In doing so, it has overcome its threatened obsolescence, breaking outside its historical niche and significantly expanding its market penetration, engaging with the market majority. Such re-problemization presents a potential solution for Green Building SMOs struggling with obsolescence as their SRTs are increasingly perceived as supporting typical, rather than transformative, construction.

In order to begin the process of stakeholder (re)enrolment, CaGBC had to overcome several challenges, which led it to *enrol* other organizations and processes. GBCI CA was enrolled as a counter-example to disentangle CaGBC's identity from LEED® and free it from its original positioning. Without this separation, CaGBC's identity would be continually tied with the SRT, preventing the market from recognizing it as their convenor and thus preventing its repositioning; the enrolment of GBCI CA was thus critical to CaGBC's transition. CaGBC had deliberately entangled its identity with LEED®, which had initially offered it legitimacy early in its history, but now resulted an unclear identity, both internally and externally. This highlights the long-term unexpected – and undesirable outcomes – of enrolling a standard as spokesperson.

As noted by Latour (1994), any enrolment of an actor to overcome a barrier to an initial objective necessarily leads to translation away from the original goal. The initial enrolment of LEED® had this effect in the CaGBC=LEED® identity that limited CaGBC's influence, even before its crisis point. The website and its platform, used to communicate CaGBC's identity throughout its history, had a similarly undesired impact, re-translating the new brand back into this CaGBC=LEED® identity and

constraining the transition. It was only when – like LEED® – the old website was discarded entirely, CaGBC could finally disentangle this composite identity and move forward. Therefore, before being able to implement its new problemization, CaGBC had to transverse its own obligatory passage point: "*what **should** be our identity?*". To this end, they enrolled a rebranding process, which prompted the realization that they were essentially an SMO – or moreover, they needed to embrace an SMO identity. This recognition drove CaGBC to focus on their values and forced a shift from an inward-looking or LEED®-focused technical (compliance) orientation to a broader external focus engaging with societal issues and objectives and presenting green buildings as a means to achieve them. This shift *translated* not only CaGBC's identity and communication strategy but also impacted the transition model, simplifying it to serve CaGBC better as an SMO (Figure 31).

Through this case, CaGBC deviated significantly from business-as-usual for green building SMOs, reframing itself beyond the SRT that had defined it. The value of this case for green building SMOs is clear: such organizations – whether having control over their own SRT, for example Australia or Germany, or providing LEED® education and other services to complement GBCI certification, as is the case in Brazil and Mexico – can mitigate the threat of obsolescence due to niche stagnation. CaGBC's repositioning by re-problematizing the challenges faced by industry stakeholders and using the convenor role as an interessement device for their enrolment themselves to significantly expanded their influence.

To understand *why* CaGBC's convening strategy has been effective, we turn to the broader SMO literature, specifically social network theory (Granovetter, 1973) and the question of niche stagnation (Knoke & Wisely, 1990; Edwards & McCarthy, 2004). Strong ties (Granovetter, 1973) are those forged through repeated contact between individuals (and by extension, organizations), typically similar to one another, and their relationship strength permits risk-taking. Weak ties (Granovetter, 1973), in contrast, are those arising from less frequent contact between dissimilar individuals/organizations and have less resilience.

CaGBC's initial problemization – "W*hat is a green building?*" – resulted in the enrolment of the innovators and early adopters of the green building movement whose adoption of LEED® resulted in a network of 'strong ties'. As observed by Granovetter (1973), such ties cannot exist without a closing of the loop, leading to the development

of tightly-knit, relatively closed groups. While valuable in its early history, this problemization and the resultant closed membership resulted in the '*navel-gazing*' perspective that developed in the organization's messaging and inability to reach the rest of the market, as illustrated in Figure 34 (left).
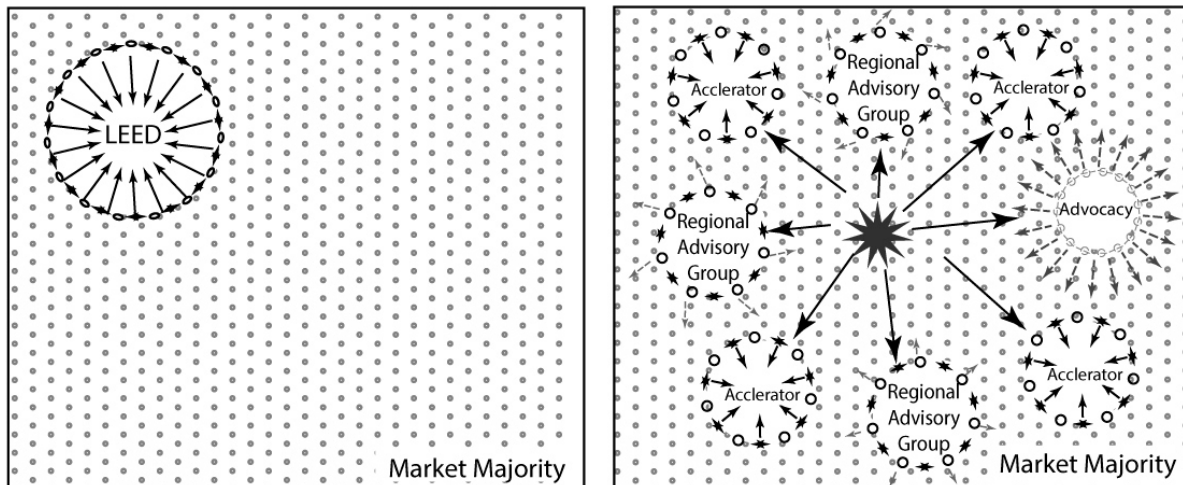
Figure 34 Compliance strategy creating a strong-tied network with limited market penetration (left) vs a convening strategy creating dual-tied network (right) showing broader market engagement

This figure illustrates why the LEED®-centric focus that dominated CaGBC's strategy for its first 15 years, which created a strong and self-supporting network (illustrated by black arrows), resulted in poor transmission of its vision to the broader market. As noted by Knoke and Wisely (1990), SMOs tend towards homogeneous memberships, which results in their confinement in niches. Or, as stated by Edwards and McCarthy:

> SMOs with more homogeneous memberships will have less networked access to mobilizable resources embedded in social infrastructures than will SMOs with more socially diverse memberships. SMOs that start with homogeneous memberships will over time attract newcomers who are 'their kind of people,' and while they may experience rapid short-term growth, their outreach potential will later be limited. (Edwards & McCarthy, 2004, p. 625)

While never entirely homogeneous, the concentration of CaGBC members within the "green building" community – particularly the early adopters – limited its impact. Compounded by a single-solution focus and its implementation within this strong-tied, low-diversity network, CaGBC's impact was confined to market niches, notably 'Class A' offices in urban areas; this is a globally consistent trend (USGBC, 2022). The translation to a hybrid strategy based on the 'convener' identity overcame this issue

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(Figure 34, right). CaGBC could now *simultaneously* maintain strong ties within its convened groups while being able to leverage weak ties to reach other networks and significantly expand its reach. The strong ties were necessary for convened groups as they require trust (see (Passy, 2003; Edwards & McCarthy, 2004; Kitts, 2000; Sherchan, et al., 2013)); Sommerfeldt and Yang (2017) highlighted this need, suggesting that SMOs should adopt a strong-tie strategy with relatively low relationship diversity as it seeks to advance critical issues and propose a solution. Such a context precisely describes CaGBC's accelerator groups and would not have been served by a weak-tie strategy. By implementing their new model, the CaGBC was thus able to leverage both 'the strength of weak ties' (Granovetter, 1973) to overcome homophily (Knoke & Wisely, 1990) and engage with the market majority while *simultaneously* leveraging the strength of strong ties for high-risk activities to drive innovation and market change (Sommerfeldt & Yang, 2017).

As this case has shown, the disruption that destabilized CaGBC's strongly-tied position was, in the long term, a welcome one. In order to transform the broader market, CaGBC *had* to expand its network. As noted by Granovetter, "*whatever is to be diffused can reach a larger number of people, and traverse greater social distance (i.e., path length), when passed through weak ties rather than strong.*" (1973, p.1366). In the years between the release LEED® v4 and the transition, CaGBC engaged with members of industry from previously unengaged sectors through new advocacy and market research activities, developing 'weak ties' that granted CaGBC a far greater reach as an SMO. This was illustrated in Figure 34 (right) by the light grey arrows pointing out, towards to market majority. To further develop and exploit such weak ties, CaGBC had to engage in new activities to engage a diversity of actors previously outside their sphere of influence. This was accomplished through the role of 'market convener', providing places for members of the market majority to engage on individual issues they considered important. Even with the return of LEED® late in the transition implementation, CaGBC had been sufficiently *translated* by its rebranding that it would no longer return to its previous 'strong-tie' dominant compliance strategy. Instead, it would pursue a new strategy enabling it to develop a diversity of weak ties – often with members of other strongly-tied networks – to permit full engagement with the market, while building strong ties through its new Regional Advisory Groups and Accelerators. The comparison between these two strategies is illustrated in Figure 34.

This exploration of weak and strong ties explains why CaGBC's deviation from the compliance focus typical for green building SMO to a 'market convener' position offered such value. Applying this to other SMOs, it highlights the value of a hybrid strong- and weak-tied strategy and provides a strategy to (re-)engage the market through Callon's (1984) processes of (re-)problemization and (re-)positioning at the obligatory passage point. The deliberate cultivation of weak ties allows SMOs to overcome the risk of a strong-tie strategy that can become confined within niches and limit broad market transformation. However, by creating issue-specific strong-tie networks, SMOs can target specific sectors for higher-risk activities, building social networks with high trust who can advance critical issues. A convening strategy – where the SMO turns its gaze outwards and focuses on enabling other organizations and groups – thus allows it to multiply its impact by diffusing across multiple strong-tie and weak-tie networks. This is of particular value when market transformation is the primary mission of the SMO, for example in Green Building Movement organizations.

6.7 Conclusion

This paper began by asking the following question: *How can an SMO regain its position as the obligatory passage point for a social movement after its initial position has been destabilized?* Starting with the multi-dimensional crisis faced by CaGBC (the loss of control over their SRT, niche stagnation, and the Covid-19 pandemic), we *followed the actors* to understand how they re-invented themselves. In doing so, we observed the significance of *enrolment* and *translation* as CaGBC attempted to position themselves at the *obligatory passage point* for the market with their new engagement model after their loss of LEED® destabilized them from this position. From this case, we can make a series of observations: (1) that CaGBC had to develop a new *problematization* to permit it to reclaim its position at the *obligatory passage point* and retain its status as the *de facto* authority for green buildings in Canada; (2) that *enrolment* was crucial to this repositioning strategy but incurred costs through the *translation* that resulted; moreover, to overcome the legacy of its previous enrolment of LEED®, CaGBC had to pass through its own obligatory passage point; and (3) that its convening strategy was a hybrid strong- and weak-tied strategy that simultaneously overcame its niche stagnation challenge while providing safe spaces for the innovation and risk-taking to truly achieve its vision.

This study is valuable to the broader understanding of SMOs for three reasons. First, it contributes to the existent literature on the positioning of SMOs as the *obligatory passage point* for their social movements, building upon previous literature by analysing *how* this was achieved in not one but two instances – both as a representative case (LEED® as the interessement device) and the deviant case (CaGBC's convenor role to drive whole-sector transformation). Second, it highlights the importance of identity and brand and how they can translate both an organizational restructuring and the means they use to reposition themselves. Third, drawing from the broader management literature, this case illustrates the "strength of weak ties" (Granovetter, 1973) as part of a new hybrid tie strategy. The shift away from a single, strong-tie focused strategy to a diverse weak-tie one was valuable to break out of saturated niches and expand the reach of a social movement, while the retention of smaller, strongly-tied groups provided a safe means for higher-risk activities (Figure 34). This hybrid is valuable for all SMOs facing niche stagnation that could drive them to obsolescence. The embrace of a 'convening', rather than 'compliance', role can permit SMOs to engage a far broader segment of society in order to advance their mission.

7 Discussion

This dissertation explores how social movements – specifically building movements – and their representative organizations impact and are impacted by societal and management prerogatives through socio-technical actors. This dissertation discusses and presents the recursive relationship between organizations and social and management prerogatives through their socio-technical actors at three different scales: the physical workplace, the organization, and society. At the workplace scale (Chapter 4), societal and management prerogatives are negotiated by architects who inscribe them into spatial elements to *emplace* and *enchant* workers. As these elements are subsequently *enrolled* by management, they are *enacted* and translated through this use, forcing the adjustment of management practices. At the organizational scale (Chapters 5 & 6), the *technical mediation* of socio-technical actors is demonstrated in the (re)creating and maintaining activities of institutional work and enrolled to position the organization at the *obligatory passage point* and thus enrol a broader stakeholder base. This reliance on socio-technical actors leads to them serving as mediators for the organization in the market, permitting the propagation of the organization's prerogatives to the societal scale. At the same time, this mediation exposes the organization – and the building movement it represents – to the influence of new societal and management prerogatives that translate it, forcing it to adapt to maintain relevance.

While Chapters 4, 5 and 6 each addressed a specific research question, in this chapter, I consider my body of research as a whole, re-engaging with my research objective to make sense of my findings and identify the overall contribution of my work. As noted initially, my research objective is ***to understand how building movements and their representative organizations impact – and are impacted by – societal and management prerogatives through socio-technical actors***. In order to develop this understanding, I now consider each of my three research questions in turn, discussing what I have found through this dissertation research. In each of the next three sections, I summarize my findings for each research question, beginning with the paper framed by the question, enhancing and broadening my discussion with insights from my other studies, and summarizing my contributions. This discussion includes a substantial body of research that was excluded from my final versions of

the papers for length reasons,. Finally, I synthesize these findings to respond directly to my research objective and offer insights on the recursive relationships between building movements, society, and management, and how they are mediated through socio-technical actors.

7.1   Building Movements, Organizations, and their Interrelationship

The first research question was: "*How do Building Movements impact – and how are they impacted by – organizations?*"   Exploring this question led to two contributions: the expansion of Burrell and Dale's (2004) spatial control framework with *enrolment*; and the insight that this enrolment of building movement by organizations translates both entities. These contributions and their implications across my three papers are discussed in detail in this section. As noted in Chapter 4, Building Movements are influenced both by their underlying social movements and by the organizations *enrolling* them. As such, they form an important site of negotiation between management and social prerogatives. This negotiation is achieved through the enrolment of both human and non-human actors in five stages[27]. First, Management *enrols* architects to create the type of organizational space that best articulates their prerogatives. Second, architects *enrol* both *physical space* - elements of form, structure, and materiality –and *perceived space* through symbolism to achieve this mandate. These elements are often borrowed from an existing architectural language associated with a building movement and thus come with a set of pre-existing ideological connotations. Third, the resultant space is *enrolled* by Management to exert spatial control on workers, leveraging the architectural design to *emplace* and *enchant* workers. This results in an *enacted* or lived workspace, which – through its everyday use – is adapted slightly by both the workers and their managers, thus translating the architectural intent and imbuing the elements with slightly different meanings. This *enactment* of space forms the fourth stage of enrolment and negotiation. The scaling of these enacted spaces across organizations, as a building movement is increasingly enrolled, magnifies these local *translations*, echoing them back to the building movement and thus transforming it. This magnification can be

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[27] It is important to state here that these stages are not linear – in fact, there may be a significant number of iterations for even a single workplace design at each stage of the process. These stages should thus be considered as sensitizing heuristics rather than a template to be applied unreflexively.

considered metaphorically as the accumulation of snowflakes: each is small and unique, but given a critical mass all shifting the same direction, they form an avalanche capable of fundamentally transforming a landscape. In the same way, the translations resulting from workplace-scale *enactment* are accumulated at the societal scale, gradually shifting the meaning of architectural symbols and, with them, the building movement itself.

The shift in a building movement was also evident at the organizational scale in my empirical research. As discussed in Chapter 5, LEED® adoption rose dramatically as the 'big 5' developers recognized its value as marketing tool for organizations struggling to recruit millennial employees. The appeal to environmentalism was found to be an effective means of enchanting this demographic; developers realized this and began to use LEED® not to achieve sustainability for its own sake, but rather *to* achieve sustainability so that the resultant building would be an effective tool for enchanting tenants' employees and thus serve to attract tenants. Out of this new use grew an association of LEED® with corporate sustainability and ESG. Organizations were interested in LEED®-certified spaces because they granted them a credibility as an environmentally-conscious organization, which – as evidenced in the discussion of the Green Building Movement (GBM) in Section 4.4.3 – was an effective means to enchant workers. The more organizations that realized this value of LEED®, the more its normative associations were changed.

From this point onwards, LEED® was seen primarily as a marketing tool, rather than as a guide to promote *Leadership in Energy and Environmental Design*[28]. While the CaGBC continued to promote sustainability, LEED® became increasingly viewed by the market as an income-generating certification and its internal processes were adapted to maximize efficiency in processing LEED® certifications and – from the perspective of many practitioners – reducing the value of LEED® as a tool to drive meaningful sustainability goals[29]. Given that from a Canadian market perspective, the CaGBC as represented by LEED® has been indistinguishable from the GBM, this

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[28] This is the full name of the tool for which "LEED®" is an acronym, and yet, this phrase is conspicuously absent from CaGBC communications and marketing materials

[29] By 2014, CaGBC conference presentations on innovative buildings rarely discussed LEED®'s role in driving project ambitions. Instead, other tools were discussed, which were perceived by practitioners as more ambitious and legitimate as true drivers of sustainability. From a practitioner perspective, LEED® was a checklist desired by clients to obtain a plaque so that they could market their building and no longer the definer of green buildings.

study shows how dramatically this organizational enrolment and subsequent enactment of a building movement can impact the movement itself.

This impact was not limited to Canada. The USGBC, observing LEED®'s new association as an income-generating tool for developers, began to adapt its strategy for LEED® promotion to reflect this. In doing so, it transformed the US Green Building movement – for which it was the *de facto* authority, with global impacts. In Canada, these were felt as USGBC reclaimed control of its products, first with the LEED® AP accreditation process in 2012 and, starting in 2014 with LEED® v4, certification and future standards development. LEED® became increasingly "market-friendly", with the USGBC more concerned about enabling widespread adoption in order to sell more certifications than pushing for more aggressive certification requirements. This was most clearly illustrated in the *decreasingly stringent* requirements from LEED® v4 to LEED® v4.1 as organizations complained that LEED® v4 was too difficult to achieve, resulting in plummeting project registrations.

CaGBC's response to the USGBC was its transformation from a standard-promoting organization to a more diverse portfolio of projects, prioritizing advocacy and market research (see section 5.4.5). This shifted its role substantially, resulting in its destabilization from its initial market position as the definer of green buildings in Canada (the context of Chapter 6) and forcing the new CaGBC to adopt a *social movement*[30] role to reposition itself. In doing so, CaGBC has expanded its mandate, reflecting new societal values[31] in its promotion of green buildings in order to re-enrol its stakeholders. Through this process, it has continued to experience translation pressures, continually adjusting through the transition process[32] to continue to advance its agenda of widespread market transformation. In doing so, CaGBC has repositioned itself as the *de facto* authority for a now substantially transformed Canadian Green Building Movement, which is likely to continue to transform as this pattern of *enrolment* and *translation* repeats itself.–.

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[30] The realization that CaGBC was a social movement organization was a new one to many staff and led to a fundamental shift in priorities as it sought broader social transformation of all aspects of the built environment

[31] For example, social sustainability, affordable housing, and engaging Canada's indigenous community, who face the most significant climate risks

[32] This evolution is anticipated by CaGBC leadership to continue as the market continues to enroll the GBM and translate its meaning

Across all of these examples it is clear that the impact of building movements upon organizations is neither simple nor unidirectional. Instead, translation impacts both the *enrolling* and the *enrolled* actor. This is further evident in the discussion of RQ2.

7.2 The Role of Technical Mediation in Organizational Evolution

The second research question was: "*What is the role of technical mediation as organizations grow and evolve?*", which led to my contribution of the identification of technical mediation to enrich the understanding of how material elements are enrolled in the activities of institutional work. The role of technical mediation in organizational evolution is most evident in Chapter 5 through the discussion of inscription, black-boxing, and enrolment of various actors in the activities of institutional work. These continued to be observed through the CaGBC transition process (Chapter 6). This section begins with insights on the role of each of these mechanisms as evidenced across these studies, discusses how they interacted and the resulting – often unintended – consequences for the CaGBC. The section concludes by looking beyond the empirical study and organizational scale to identify this pattern across the building movements discussed in Chapter 4, providing additional insight on the implications of this findings for MOS.

When the institutional work activities over the five periods of CaGBC's organizational growth discussed in Chapter 5 are examined, the role of socio-technical actors is evident. Throughout its evolution, CaGBC inscribed and re-inscribed its objectives into a variety of actors, most notably its rating systems (LEED®, ZCB)[33]. LEED® was inscribed with CaGBC's objectives of measurable sustainability, market transformation, and a desire for it to be easy to use to support market transformation. These sustainability and market transformation objectives were refined and re-inscribed in each of the specialized versions of LEED® and, eventually, the ZCB. CaGBC's desire for ease of use was inscribed both into its SRTs and its management processes. This was augmented further as USGBC reclaimed control over the

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[33] Others inscribed elements were CaGBC's articles of formation, the license agreement for LEED® Canada, LEED® accreditation processes, programming (education, outreach, and events), and TAG rulings regarding the validity of LEED® implementation.

standard starting with LEED® v4 and commercial interests became an evident priority in LEED® v4.1.

Beyond the CaGBC, the USGBC and the organizations enrolling LEED® also inscribed their values into the tool, translating it in unexpected and – sometimes from the perspective of CaGBC – undesirable ways, resulting in the translation discussed in the previous section. Throughout Chapter 6, the language of *technical mediation* was not used, but was present. For example, CaGBC *inscribed its* new identity into its new brand and website to ensure they accurately promoted CaGBC's new vision for holistic market transformation. Inherent in this inscription is the *blackboxing* of the underlying negotiations. Blackboxing is of particular interest for management and organization scholars and has been frequently oversimplified and misunderstood. In their critique of ANT, Whittle and Spicer expressed concern that ANT imposes a "problematic essentialism" because understanding "*how or why the same technology can be interpreted and used in different ways (…) requires an understanding of how certain meanings become attributed to objects and artefacts*" (Whittle & Spicer, 2008, p. 614). What is overlooked in this concern is that blackboxing is reversible. For example, as evidenced in Table 11, the TAGs re-opened the black-box of LEED® to consider whether a proposed solution satisfied the underlying objectives and negotiations inherent in its creation of a particular requirement. Having re-inspected and re-interpreted LEED®, it was once again *black-boxed* so that it was ready to be *enrolled* by both the CaGBC and its stakeholders in order to promote their own objectives and thus repeat this cycle. This was not limited to LEED®, but was observed across the CaGBC study for a number of elements[34].

While the mechanisms noted above were deliberate, several modes of technical mediation were active upon the CaGBC, *translating* it with often-unanticipated results. For example, as CaGBC repeatedly *enrolled* LEED®, the LEED® branding became *inscribed* upon its identity. This was initially accepted as it granted CaGBC a ready-made legitimacy due to LEED®'s positive outcomes from the USA. It also provided market advantages to ensure that CaGBC owned the dominant market position as the

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[34] These took a variety of forms: rules and regulations, policies, contracts, organizational structure and identity, programming, LEED® (with its processes, requirements, and implementation strategies), certified buildings, professional identities (for example, as LEED® APs or *green building practitioners*) and barriers to control their use.

spokesperson for the standard. This spokesperson role, however, resulted in the "CaGBC = LEED®" market perspective observed in the synchronous study that caused an identity crisis once LEED® ceased to be the purview of CaGBC. This notion of unexpected effects is of broader interest to management and organization scholars and address a second concern articulated by Whittle and Spicer (2008), namely that (historically) ANT studies do not engage with the unexpected or undesired results of translation. This dissertation provides a valuable contribution in providing precisely this exploration of such undesired and unexpected results.

The technical mediation visible in my organizational analysis of Chapters 5 and 6 is also clear at the macro scale. Revisiting the analysis of Chapter 4, technical meditation is most clearly evidenced in the creation and subsequent *enrolment* of organizational spaces. Within each of the building movements discussed, architects sought to *inscribe* a set of values informed by both their clients (who expressed management prerogatives) and the societal values of the time. For example, in the modernist period, the societal drive towards progress, efficiency, and fascination with futurism was *inscribed* into simple and efficient forms, a strict avoidance of "wasteful" ornamentation, and showcasing the new materials of steel, glass, and concrete in organic forms perceived as futuristic in nature. As these elements were repeatedly used, they became *black-boxed* into the architectural language that spoke for the modernist movement. As a result, modernist workspaces were perceived as imbued with the very values of the underlying movement, permitting their *enrolment* to exert spatial control, not only directly through the emplacement of workers, but indirectly through their enchantment.

A similar pattern is displayed in the post-modern movement, this time in the use of exaggerated motifs and the playful use of symbolically-rich architectural elements (such as Greek columns, classical arches, pyramids, and castles) to express values of creativity and uniqueness to support the voluntary *enrolment* of employees into their own management. This inscription continued through the period of occupant-centric design, with the inclusion of leisure and domestic elements catering to the whole employee to blur the boundary between work and home life, open-plan workspaces to reinforce notions of equality and a flat hierarchy, and the use of colour and even more playful elements such as slides to reinforce the creativity expressed in the postmodern period. These *inscriptions* were adapted to reflect the combination of related

movements whose ideologies the organizations sought to enchant. For example, despite the near-invisibility of the technologies enabling Intelligent and Smart Building movements, the messaging of comfort was brought in the more explicit integration of occupant controls such as thermostats into intelligent buildings, often incorporating flashing lights or advanced displays to showcase their abilities.

Similarly, connectedness became evident through the ubiquitous placement of screens and dashboards throughout smart buildings, *blackboxing* these elements to speak for the "Smartness" of a building. In both movements, there was also a revival of the futurist architectural style, for example Apple's Cupertino headquarters that resembles a flying saucer, to reinforce ideas of innovation and advancement. The challenges in articulating that a building was healthy were overcome through the use of biophilic design – the explicit reference to nature through material selection, the use of organic forms, and integration of plants and animals (as such in aquariums, or more frequently through imagery and animal-inspired patterns), and came to be associated with the healthy building movement, effectively *black-boxing* them into a "healthy building" architectural language. Finally, sustainability became important to display, not only through plaques indicating that a space was certified by LEED® or a competing standard, but also through distinctive architectural elements such as green walls and roofs, windows clearly designed to increase daylighting, and the distinctive design of high-efficiency lighting.

The enrolment of these elements had translated both management and social prerogatives, introducing tensions between elements of Lefebvre's (1991) spatial triad in the process. Elements associated with different movements eventually took on the negative connotations of the movements as they fell out of favour. Modernist buildings came to be seen as hostile and impersonal due to the underlying Taylorist principles of (ruthless) efficiency and the homogenous workforce, which left little place for individual identity. Postmodern buildings fell prey to their extreme focus on flexibility, becoming "cubicle farms", or became objects of ridicule as architects engaged with more and more extreme exaggerations of form. Other *translation* effects impacted the organizations themselves, sometimes impacted by these new architectural associations, and other times due to the significant process changes demanded by an increased adoption of new technology or by new expectations arising as the building movements they have enrolled have evolved. An example of the latter is demonstrated

in the substantial body of work considering the digital workplace and its impact on organizations, for summaries see (Mićić, et al., 2022; Idemudia, 2019).

This section clearly demonstrates that socio-technical actors play a significant role in the creating, re-creating, and maintenance activities of organizations through their technical mediation, whether or not this is deliberate. This is a valuable contribution to being able to better understand how and why organizations evolve over time. The insight that we must consider the impact and changing roles and associations of socio-technical actors in organizations is important for management and organization scholars in order to consider the full range of factors influencing organizational evolution. This identification of the importance of these changing roles and associations is also of value for social movement scholars as it permits an understanding how these changes echo back to the underlying social movements, as I discuss in the next section.

7.3 Repositioning After Disruption: Understanding the Translation of Social Movements

The third research question – "*How can a social movement organization reposition or transition to reclaim its market position after a disruption?*" – led to my contribution identifying the need for reproblematization after a disruption for a social movement to reclaim its position as an obligatory passage point. This contribution is discussed with examples from each of my three papers in this section.

My empirical study of the CaGBC clearly illustrates the challenges faced by a social movement organization when its position has been disrupted by external actors. Through the investigations in Chapters 5 and 6, we see how CaGBC had initially positioned itself as the definer of green buildings in Canada, *enrolling* LEED® in order to do so. Twenty years later, it faced a pair of challenges that forced its redefinition. First, CaGBC and the broader Canadian Green Building Movement (GBM) had been wrestling with the limited resonance of LEED® in the market. A key part of this was that the question it answered – *"what is a green building"* – was no longer relevant. Green buildings had become mainstream and needed more than a rating system to move it forward. It was in this context that CaGBC began to ask itself what the new questions driving the GBM would be. This became critical during the transition process

described in Chapter 6 when it had to wrestle to define a new identity for itself in a market that had historically equated it with the LEED® product that it no longer controlled. During this identity-seeking process, the new CaGBC rephrased the question at the centre of the GBM as *"how can we change the whole industry?"*. To position themselves at the *obligatory passage point* and thus reclaim their market position, CaGBC embraced a new identity, casting themselves in the role of market convenor to enable this transformation.

Several other movements have found their initial questions rendered obsolete by changing circumstances, forcing either a transformation or their replacement with something new. Consider the *modernist* movement, which was effective in answering the question *"how can we make work more efficient?"* in a context of repetitive tasks and factory work, but failed to meet the needs of a more creative workforce. While that movement was unable to adapt, its practitioners – the architects whose language had defined it – asked the new question: *"how can we support creative and flexible work?"*. This shifted – or *translated* – their practices away from modernist approaches to embrace postmodernism. The Smart Building Movement (SBM) also faced a similar challenge of asking the wrong question, which dramatically limited its adoption in its early years. Initially, the SBM asked *"how can we enable connectivity to make workplaces more efficient?"*. However, this question failed to resonate in a market that had embraced the GBM; the only *smart buildings* constructed during this period were offices of the Smart Building technology companies themselves. Recognizing the appeal of *sustainability*, however, the SBM shifted its messaging, presenting itself as a solution to the question *"how can we make our buildings more sustainable?"*. This translated the movement from one focused on *technology integration for efficiency* to one focused on *technology integration for sustainability*, resulting in the "Smart and Sustainable Buildings" branding ubiquitous in the movement today.

As this discussion has shown, the success of social movements – and the building movements arising from them – requires them to maintain relevance for potential adherents. As shown in the case of the CaGBC's evolution and echoed in that of the SBM, the recognition of the correct new question enables a movement or organization to place itself at the *obligatory passage point*. Failure to do so, as was the case for the modernist movement, leads to its abandonment by practitioners who, in turn, seek out a new movement capable of answering this new question. This

contribution – the identification of re-problemization after a disruption in order to restore the social movement to the *obligatory passage point* – is of value to social movement scholars as it provides a means to explore and explain the evolution of social movements over time, particularly in response to their destabilization. Practically, this observation also offers hope to social movement organizations facing obsolescence who are seeking a way to re-engage their stakeholders.

7.4 CaGBC as a Representative and Deviant Case

As noted in Chapters 3 and 6, the CaGBC served as both a representative (Eisenhardt, 1991) and extreme/deviant (Eisenhardt, 1991; Flyvbjerg, 2011; Yin, 2003) case for green building SMOs. Because of this, the case of CaGBC can support analytic (Yin, 2003) or theoretical (Eisenhardt, 2009) generalization.

As a *representative* case, the case of CaGBC in its early history (2002-2014) contributes to the existing discourse regarding the role of SRTs in green building SMO establishment and growth. The insights gained regarding the significance of technical mediation of LEED® in the *creating* and *maintaining* activities of institutional work – discussed in Section 7.2 – during this period of CaGBC's history enriches our understanding of how institutional work is conducted within green building SMOs. In particular, the use of SRTs by green building SMOs to support defining, vesting, advocacy, theorization, and identity construction is often implicit in existing studies discussing the significance of SRTs within their market sector, for example (Berker, et al., 2013; Buser & Koch, 2012; Goodchild & Walshaw, 2011; Goulden, et al., 2017; Spinks, 2011), but has not yet been considered from an organizational studies perspective. As such, this case as an illustration of *how* the technical mediation of an SRT, among other elements, can shape the green building SMO *itself* is a novel contribution and valuable for SMO scholars.

In its response to the change in relationship with its SRT, CaGBC serves as a *deviant* case. By defining itself as a convening, rather than a compliance organization, this case study provides insight on how similar SMOs can reposition themselves to maintain – and even increase – their relevance. Two novel contributions arise from the investigation of this repositioning. First, it illustrates that not only are enrolment and the obligatory passage point important concepts for understanding how SMOs initially position themselves, they are valuable for repositioning after a disruption and shows

the necessary steps for an SMO to do so successfully. Second, it showcases the value of a 'convenor' identity to (re-)engage sector stakeholders, illustrating how this can take advantage of the "strength of weak ties" (Granovetter, 1973) and providing an example resolution to the niche constraint and obsolescence challenges faced by green building SMOs globally.

7.5 Summary

As the discussion of my three research questions and their associated contributions has shown, socio-technical actors play a variety of roles within building movements and their representative organizations. Such actors may be human or non-human, individual elements or their compositions, used in their existing form, adapted and inscribed with building movement objectives, or newly created by the actor-network. By packaging these into black-boxed artefacts, these actors are simplified and their underlying negotiations taken for granted so that they can serve as spokespeople for the movement. Each time an actor is enrolled, it is translated. Where multiple actors enrol the same element, new societal and/or management prerogatives become inscribed onto it, magnifying this translation. The enrolling actors are also translated through this process and remain vulnerable to be further translated as this effect is compounded.

The epistemological approach rooted in ANT was critical to permit the development of the rich case studies in this dissertation. By *following the actors*, rather than seeking to prove *a priori* assumptions, the case of CaGBC remained open-ended and flexible, uncovering surprising insights unexpected and unanticipated prior to the research. In this way, ANT served as a valuable method theory, supporting open-ended analysis to generate a rich case whose data can be used for theory-building. Through the CaGBC case study, the processes and impacts of this translation are thus illuminated, enriching our understanding of SMO evolution as well as the role of material elements in institutional work, thus making a valuable contribution to MOS scholarship.

8   Conclusions

In this Chapter, I conclude my dissertation and summarize its key contributions. I begin with a summary of the key findings and contributions of each of my three papers. Next, I discuss the significance of these findings to Management and Organization Studies. Third, I consider the limitations of this research, their implications, and how each of these can be addressed in future research. Finally, I conclude with my reflections on this dissertation and the value I see in the ANT framing it uses for management and organization studies.

8.1 Summary of Findings

The first paper addressed the research question: *"How do Building Movements impact – or are impacted by – organizations?"*. By exploring the influence of building movements on knowledge workspaces, it underlined the importance of buildings movements as a significant site of negotiation between management and architectural prerogatives. As noted by Dale and Burrell (Burrell & Dale, 2014; Dale, 2005; Dale & Burrell, 2007), buildings exert management control on employees. Starting with their *emplacement-enchantment-enactment* spatial control framework, I looked beyond the scale of individual buildings and considered the impact of broader building movements on organizations. This revealed that building movements are invisible actors influencing organizational work across all three dimensions of organizational space noted by Lefebvre (1991). When this is considered at the organizational, rather than individual workplace scale, I noted that this occurs primarily through the organization's *enrolment* of underlying ideology, frequently through the translation of conceived space into perceived using physical and symbolic elements, to enact a corporate identity that enchants workers. Analysing this *enrolment* further, I found that this physicalisation *translated* management control, creating the tensions between the conceived, perceived, and lived aspects of space initially observed by Lefebvre (1991) and their 'complex and diverse' relationships. Such tensions and translations   are additive: a related finding of this research was that the cumulative effects of this *enrolment* resulted in the *translation* of the building movements themselves.

Having explored the impact of building movements on organizations – and begun to explore the inverse relationship – in Paper #1 (Chapter 4), the *enrolment* and

translation of building movements is addressed more fully in Papers #2 (Chapter 5) and #3 (Chapter 6), which are focused on the organizational case study. Chapter 5 presents the retrospective analysis of the CaGBC over the 1996-2020 period, from before it was established, through its expansion and growth, to its rise to become the *de facto* spokesperson for the Green Building Movement in Canada. In doing so, it answers the second research question: "*What is the role of technical mediation as organizations grow and evolve*?". I addressed this in more detail through a pair of related questions: "*How do environmental (and other) certifications impact the organizations developing and promoting them?*" and "*How are the organizations changed– both with respect to structure and strategy – to continue to drive market transformation forward as the market itself evolves?".* This study clearly how SRTs and other socio-technical actors – particularly the LEED® Canada rating system – translated the organization over its history. These were inscribed, enrolled, and black-boxed in the creating, re-creating, and maintaining activities needed for the CaGBC to achieve this growth, become established, gain market legitimacy, scale up to achieve impact, and drive market transformation. The observed modes of technical mediation illuminated the nuance of *how* material elements play a significant role in the activities of institutional work. Moreover, these modes of technical mediation each *translated* the organization differently with respect to strategy, structure, and identity.

Extending the organizational case into a synchronous study, the third paper followed the actors both inside and outside the CaGBC to answer the research question: "*How can a social movement organization reposition transition to reclaim its market position after a crisis*?" As suggested in Chapter 5, CaGBC's loss of control of LEED® Canada had a significant impact on the organization. GBCI Canada was created to take over certification activities, forcing CaGBC to diversify its approach to market engagement. This set the stage for a strategic exercise to undergo an organizational transition from 2020-2022, which I documented in real-time. Through this study, I found that having lost their position as the definer of Green Buildings through LEED® Canada, CaGBC repositioned themselves by adopting a convening strategy through an identity-seeking and organizational transformation exercise that fundamentally *translated* the organization. Realizing their identity as a social movement, CaGBC revised their problematisation as that of broader societal and industry change; this allowed the organization to restore its position as the *obligatory*

passage point, intentionally rendering themselves indispensable to a broader segment of the building sector than had been previously possible with its strong-tie compliance strategy. By redirecting its focus outwards as a convenor, CaGBC was able to expand its reach through weak ties, overcoming its previous niche constraints, while benefiting from task-specific strongly-tied groups to support their higher-risk activities and drive market change on critical issues.

8.2 Significance of Findings to Organization Studies

While the first paper presented building movements as invisible actors affecting organizations, the empirical research contributed to the understanding of building movements and their associated social movement organizations. Together, this dissertation is of value to organizational scholars through six contributions, which provide new insights into the reciprocal relationship between social movements, organizations, and the social and managerial prerogatives driving them.

My first contribution is an expansion to Burrell & Dale's spatial control framework by overlaying *enrolment* and translation to show their interrelationships. Chapter 4 demonstrates how management *enrols* architects to implement their prerogatives, how architects in turn *enrol* the architectural language of building movements to inscribe those prerogatives along with societal values into spatial elements, translating conceived into perceived spaces, and how management *enrols* the resultant physicalized space to enchant and emplace workers. As this space is occupied ("lived"), its enactment *translates* the meaning of these elements even further. By explicitly considering the *enrolment* and *translation* of organizational space, this dissertation expands Burrell and Dale's spatial control framework, restoring the tensions and "complex and diverse relationships" observed by Lefebvre's (1991) in his spatial triad. This is valuable to management and organization scholars, providing a means explore both the planned and unexpected consequences of the production of space.

My second contribution relates to my insights regarding the reciprocal influence between organizations and building movements. The compounding impact of organizational *enrolment* of building movement ideals is conceptualized in Chapter 4, where Figure 6 illustrates the additive effects of this enrolment and its resultant *translatory* effect on the movement. This is validated empirically in Chapter 5, where I

present the translation CaGBC experienced as a result of widespread LEED® adoption and *enrolment* by the corporate real estate industry as both a marketing tool (by developers) and a means of spatial control (by occupiers). By understanding this reciprocal relationship, organizational scholars are better able to consider the impact of both building and social movements on organizations and to understand the consequences of organizational alignment with them. This insight is valuable to contextualize future studies exploring the impact of societal pressures on organizations.

My third contribution is the identification of the significant role of technical mediation in the (re)creating and maintaining activities of institutional work. As demonstrated empirically in Chapter 5 – and to a lesser extent Chapter 6 – the *inscription* of socio-technical actors with organizational objectives, their *composition* (with the organization or other elements) and *black-boxing* to render them easily used and taken for granted by outside parties, and their subsequent *enrolment* are valuable to organizations throughout their lifecycle but also risk translating them in undesired or unexpected ways. The overlay of technical mediation with institutional work – as I argued in Section 5.8 – is valuable to organizational scholars seeking a richer analysis of the role of material elements in organizations, providing an explanatory, rather than simply described, mechanism for *how* they are used and *why* this use may have particular consequences.

My fourth contribution expands the existing literature on the positioning of SMOs as the *obligatory passage point* for their social movements by showing that this is a repeatable, rather than one-time event; previous studies have been limited to showing this in an initial implementation. In Chapter 6, I show how by changing the problemization to better engage with contemporary stakeholder concerns the CaGBC was able to reposition itself as the *obligatory passage point* after being destabilised.

My fifth contribution is related, highlighting the importance of rebranding to decouple the entangled SRT+SMO identify in order to enable this repositioning. The empirical study in Chapter 6 demonstrated this process as important means of organizational identity development, its *enrolment* to implement the new identity, the challenge posted by legacy artefacts, and the resulting *translation* effects on the organization. Together, these contributions are valuable in that they identify redefining

of identity and repositioning as a strategy that can be used by organizations experiencing disruption or loss of market position.

My sixth contribution is the illumination of why the shift away from a single, strong-tie focused strategy to a diverse weak-tie one can be valuable for SMOs as it permits them to break out of saturated niches and expand their reach. This expands upon existing SMO research as discussed in Section 6.6, reinforcing the findings that strong-tie strategies alone can result in niche constraints, while demonstrating how the strong-tie strategy can be valuable within subgroups to support high-risk activities.

These theoretical generalizations are possible because the CaGBC, at various points in its history, serves as both a *representative* case and a *deviant* case. As such, the empirical contributions of this dissertation are significant to provide rich insight, not only to analyse the challenges faced by green building SMOs globally, but also to indicating a potential resolution for how they may be overcome: embracing a 'convening', rather than 'compliance', identity.

Overall, this dissertation provides a significant analysis of a specific organization over a 25-year period from its inception, through its formation, expansion, rise to market dominance, maturity, and – when disrupted by external actors – its re-creation and repositioning to respond to new management and societal prerogatives. It also contextualizes these findings within the context of an analysis of building movements since the early 1900s. Through this study, complemented by my conceptual work that shows how building movements are the site of negotiation of these prerogatives, I have shown how this evolution was both the driver – and the result – of the market transformation at the heart of its mission. This recursive relationship is critical to understand social movement organizations, since at their heart they seek to transform the very context that shapes them.

Practically, the case study central to this dissertation offers hope in the face of the climate crisis. While significant progress has been made to reduce the environmental impact of the building sector, it has been insufficient (UNEP, 2020). The continued decarbonization of this sector remains a significant global decarbonization priority, however traditional SRT-focused approaches have been niche-constrained, unable to drive the necessary change, and their relevance is being increasingly questioned. In this context, CaGBC's transition offers a possible solution for green building SMOs globally. Their new model provides a means to break outside traditional

niches, engage the market majority, and drive the wholesale industry transformation necessary to decarbonize the built environment.

Theoretically and empirically, this dissertation makes substantial contributions to three research agendas: sustainability, social movement organizations, and, more broadly, to management and organizational scholarship. The diachronous study of CaGBC (Chapter 5) is a significant empirical contribution to existing sustainability discourse, highlighting how SRTs have shaped – and been shaped by – the Green Building Movement. The synchronous study of CaGBC's transition (Chapter 6) offers insights on the value of shifting from a strategy of compliance to that of convening the market to support sustainable transitions beyond traditional market niches. These insights on overcoming niche constraints contributes to the SMO literature, who have long recognized this as a significant challenge. Similarly, the empirical case demonstrating not only the initial positioning of CaGBC at the *obligatory passage point*, but also its renewed problemization and interessement through identity re-conceptualization and restructuring, enrich our understanding of how SMOs can expand their sphere of influence. Through both the theorization of *why* the convening strategy is valuable as well as the empirical analysis using ANT of *how* it was achieved, the case of CaGBC enriches the SMO literature.

Finally, the insights on the value of technical mediation to illuminate the various mechanisms by which material elements can support and influence the activities of institutional work is a valuable contribution to management and organizational studies, enhancing our understanding of how purposeful actors can create and maintain organizations by enrolling socio-technical actors. These insights allow scholars to analyse both *how* these elements are used and *why* such use may result in particular undesirable or unintended outcomes.

8.3 Research Limitations, Scope-Limiting Decisions, and Future Research

Because several scope-limiting decisions were necessary for this dissertation research, further study would be valuable to examine areas beyond its scope of as-follows. First, this body of research is focused primarily on the knowledge workspace (office) context. This is due both to the knowledge workspace focus of the first paper, and CaGBC's primary impact within the commercial and institutional sector. There is

value in future research to determine the role of enrolment and its impact on management control in other contexts such as service, manufacturing, or educational spaces. Second, this research emphasised a Western and necessarily – in the case of my empirical work – Canadian context. Future research to explore the extent to which these conclusions are relevant – or how they differ – in other contexts would be of significant value. Third, the breadth of analysis in my first paper, required to consider only the agency of architects, management, and building movement actors. A parallel study to the first paper from the worker perspective would provide valuable insights as would other granular studies to explore labour enrolment of social movements within workplaces.

In addition to the scope-limiting decisions noted above, the potential limitations of a single case study warrant discussion. Some scholars believe that a single case cannot be generalized, however Blaikie and Priest (2019) advise that this is indeed possible with the selection of an appropriate case. As argued by Yin (2003), Eisenhardt (2009), and Flyvbjerg (2011), when a case is *representative, critical, extreme/deviant*, *negative,* or *revelatory*, it supports theoretical or conceptual generalization. As described in Section 7.4, CaGBC serves as a both *representative* and an *extreme/deviant* case at different periods in its history and consequently *can* support such generalization[35]. There is significant value in conducting additional studies of other green building SMOs to test the theorizations developed in the case of the CaGBC and thereby further enrich the empirical literature related to sustainability and SMOs.

Finally, the necessity to select a theoretical framework for my approach required significant thought and care in evaluating the appropriateness of alternatives to ANT. While I have engaged more significantly in the body of this dissertation with regards to institutional theory and its paradigmatic commensurability with ANT (Section 5.7), a second potential lens that warranted consideration was that of organizational change. Certainly, while developing my research questions – and again while conducting my

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[35] Despite arguments from Latour (2005) and Law (2004) to avoid generalization from ANT studies, since they necessarily consider only a specific temporary stabilization (or multiple such stabilizations) of the actor-network under consideration, Callon's (2007) work on performativity and its rich legacy within management scholarship clearly demonstrates the value of ANT studies to support such theoretical generalization.

empirical research – the evolution of an organization over a 20+ year history seemed to beg for framing using an organizational change theory lens.

However, the complexity of CaGBC's evolution was quickly evident and the use of each of the four schools of thought on change management (Van de Ven & Poole, 2005) presented theoretical challenges. As a new organization, CaGBC was exploring uncharted waters, making a preconfigured sequence of change impossible and thus discarding the potential of a Life Cycle (Kimberly & Miles, 1980) approach. Similarly, while prior to its establishment, the CaGBC founders were in conflict with another group about the best approach to use, there has not been a particularly competitive or conflict-ridden environment in which it has had to evolve, and thus Evolutionary (Aldrich, 1979; Hannan & Freeman, 1977) and Dialectical (McTaggart, 1896; Marcuse, 1993|1960) approaches are limited.

Even the Teleological (Merton, 1968; Weick, 1979) approach, which as a constructivist perspective provides some flexibility, requires an envisioned end state (Van de Ven & Poole, 2005) that was not present at founding, through initial growth, before the most recent transition, or even – potentially – afterwards. The CaGBC has been uniquely focused on being an agile organization throughout its history and thus even while being ideologically-driven, the Teleological approach is an imperfect fit. More significantly, as noted by Law (2008), "for a *material* semiotics, teleology may not reside in human intentions" (p. 149; emphasis mine). Given the recognition that a socio-technical perspective was essential for my research objective, the Teleological approach also had to be rejected.

Instead I follow Czarniawska and Jorges (2011) who noted that ANT's concept of translation *"comprises what exists and what is created; the relationship between humans and ideas, ideas and objects, and humans and objects - all needed in order to understand what in shorthand we call 'organizational change"* (p.24). By permitting such holistic view and simultaneously providing an epistemological approach to minimize bias in my empirical exploration, ANT provided the best approach for tracing CaGBC's evolution over the long term. Because of this value, additional studies of organizational change using ANT have significant potential to enrich management and organization scholarship. Further studies to consider the technical mediation of material elements as a mechanism driving organizational evolution is also a fertile area of further research, providing several opportunities to expand our collective

understanding of the mechanisms of how organizations adapt and evolve themselves, particularly in the context of hybrid social movement organizations.

8.4 Concluding Remarks

Throughout this research, I have engaged with the overarching question of the relationship between social movement organizations and societal and management prerogatives. By *following the actors*, I uncovered the relationship between building movements, organizations, management prerogatives, and societal prerogatives, first through a conceptual study, and later through my empirical research. Through my conceptual work, I developed a framework for understanding how *enrolment* knits together management and societal prerogatives at the workplace, organization, and social scales.

Through my empirical research, I have demonstrated the significance of *enrolment* of socio-technical actors through both technical mediation and its *translation* effects and by actor positioning at the *obligatory passage point* through problemization and interessement. Through this process, I have learned the value of ANT as an epistemological approach, being surprised by some of the findings and new insights gained through the open-ended analysis it required. For example, having completed my diachronous study, I had expected the synchronous study to show similar trends with respect to the significant role of technical mediation. While this was evident, it became quickly apparent that the organization repositioning activities to reclaim the *obligatory passage point* were far more significant, particularly with respect to their impact on organizational identity. Had I been limited by an *a priori* theorization, I may have missed this in the data. The ontological value of ANT further enabled me to consider *all* socio-technical actors, whether human or non-human, individual elements or their compositions, equally and with common language, providing me with a fresh perspective on organizational processes, products, and the built environment. This enriched my understanding and permitting new types of analysis to what I had previously encountered. Overall, this dissertation has demonstrated the value of actor-network theory to understand how societal values and management prerogatives are negotiated – both through building movements at the societal scale and within social movement organizations. Its value as an epistemological approach and the insights enabled by its ontological underpinnings have been showcased

through both my conceptual and empirical research, highlighting its potential to support more comprehensive understanding of organizational evolution as well as the unexpected results of disruptive actors at the workplace, organization, and societal scales.

9 References

Al Horr, Y. et al., 2016. Occupant productivity and office indoor environment quality: A review of the literature. *Building and Environment,* Volume 105, pp. 369-389.

Aldrich, H. 1., 1979. *Organizations and environments.* Englewood Cliffs, NJ: Prentice Hall.

Alexander, J. & Smith, P., 1998. Cultural Sociology or Sociology of Culture? Towards a Strong Program for Sociology's Second Wind. *Sociologie et sociétés,* Volume 30, pp. 107-116.

Alexander, K. & Price, I., 2013. *Managing organizational ecologies: Space, management, and organizations..* Routledge.

Alvesson, M., Hardy, C. & Harley, B., 2008. Reflecting on reflexivity: Reflexive textual practices in organization and management theory. *Journal of management studies,* 45(3), pp. 480-501.

Alvesson, M. & Sköldberg, K., 2000. *Reflexive methodology: New vistas for qualitative research.* London: Sage.

Amenta, E. & Polletta, F., 2019. The cultural impacts of social movements. *Annual Review of Sociolog,* Volume 45, pp. 279-299.

Antoniadou, P. & Papadopoulos, A., 2017. Occupants' thermal comfort: State of the art and the prospects of personalized assessment in office buildings. *Energy and Buildings,* Volume 105, pp. 369-389.

Appel-Meulenbroek, R., Vosters, S., Kemperman, A. & Arentze, T., 2019. *Workplace needs and their support; are millennials different from other generations.* Melbourne, , pp. 1-14.

Bains, J., 1998. From reviving the living to raising the dead; the making of cardiac resuscitation. *Social Science & Medicine,* 47(9), pp. 1341-1349.

Baldry, C., Bain, P. & Taylor, P., 1998. Bright satanic offices': intensification, control and team Taylorism. In: *Workplaces of the Future.* London: Palgrave, pp. 163-183.

Bansal, P. & Gao, J., 2006. Building the future by looking to the past: Examining research published on organizations and environment. *Organization & environment,* 19(4), pp. 458-478.

Bansal, P. & Knox-Hayes, J., 2013. The time and space of materiality in organizations and the natural environment. *Organization & Environment,* 26(1), pp. 61-81.

Barnes, B., 1974/2013. *Scientific knowledge and sociological theory.* London: Routledge.

Barnes, B., Bloor, D. & Henry, J., 1996. *Scientific knowledge: A sociological analysis.* A & C Black.

Battilana, J. & D'aunno, T., 2009. Institutional work and the paradox of embedded agency. In: T. Lawrence, R. Suddaby & B. Leca, eds. *Institutional work: Actors and agency in institutional studies of organizations.* Oxford University Press, pp. 31-58.

Battilana, J. & Dorado, S., 2010. Building sustainable hybrid organizations: The case of commercial microfinance organizations. *Academy of management Journal,* 53(6), pp. 1419-1440.

Bauwens, T., Huybrechts, B. & Dufays, F., 2020. Understanding the diverse scaling strategies of social enterprises as hybrid organizations: The case of renewable energy cooperatives. *Organization & Environment,* 33(2), pp. 195-219.

Beck, K. et al., 2001. *Manifesto for agile software development.* [Online] Available at: http://agilemanifesto.org [Accessed 15 06 2015].

Benford, R. & Snow, D., 2000. Framing processes and social movements: An overview and assessment. *Annual review of sociology,* 26(1), pp. 611-639.

Benn, S., Edwards, M. & Angus-Leppan, T., 2013. Organizational learning and the sustainability community of practice: The role of boundary objects. *Organization & Environment,* 26(2), pp. 184-202.

Bergström, O., 2007. Translating socially responsible workforce reduction—A longitudinal study of workforce reduction in a Swedish company. *Scandinavian Journal*

of Management, 23(4), pp. 384-405.

Berker, T., Müller, L. & Anfinsen, M., 2013. *Between standardisation and flexibility.* Munich,

Berry, S., Davidson, K. & Saman, W., 2013. The impact of niche green developments in transforming the building sector: The case study of Lochiel Park. *Energy policy,* Volume 62, pp. 646-655.

Besel, R., 2011. Opening the "black box" of climate change science: Actor-network theory and rhetorical practice in scientific controversies. *Southern Communication Journal,* 76(2), pp. 120-136.

Beyes, T. & Holt, R., 2020. The Topographical Imagination: Space and organization theory. *Organization Theory,* 1(2), pp. 1-26.

Beyes, T. & Steyaert, C., 2012. Spacing organization: Non-representational theory and performing organizational space. *Organization,* 19(1), pp. 45-61.

Bisland, K. & Cumbers, A., 2018. Managerial control and the limits to employee participation in retail work spaces: evidence from a UK IKEA store. *New Technology, Work and Employment,* 33(2), pp. 130-148.

Blaikie, N. & Priest, J., 2019. *Designing social research: The logic of anticipation.* 3rd ed. Cambridge: Polity Press.

Bloor, D., 1996. Idealism and the Sociology of Knowledge. *Social studies of science,* 26(4), pp. 839-856.

Boltanski, L. & Chiapello, E., 2005. The new spirit of capitalism. *International journal of politics, culture, and society,* 18(3-4), pp. 161-188.

Bowker, G., 1993. How to be universal: Some cybernetic strategies, 1943-70. *Social Studies of Science,* 23(1), pp. 107-127.

Boxenbaum, E. & Pedersen, J., 2009. Scandinavian institutionalism: A case of institutional work. In: *Institutional work: Actors and agency in institutional studies of organizations.* Cambridge: Cambridge University Press, pp. 178-204.

Braverman, H., 1974. *Labor and monopoly capital.* New York: Monthly Review.

Brooks, M. & McArthur, J., 2019. Drivers of Investment in Commercial Real Estate Sustainability: 2006-2018. *Journal of Sustainable Real Estate,* Volume 11, p. In Press.

Brown, S., 2002. Michel Serres: Science, translation and the logic of the parasite. *Theory, culture & society,* 19(3), pp. 1-27.

Brown, S., 2013. In praise of the parasite: The dark organizational theory of Michel Serres. *Informática na educação: teoria & prática,* 16(1), pp. 83-100.

Brozovic, D., 2018. Strategic flexibility: A review of the literature. *International Journal of Management Reviews,* 20(1), pp. 3-31.

Buckman, A., Mayfield, M. & Beck, S., 2014. What is a smart building?. *Smart and Sustainable Built Environment,* 3(2), pp. 92-109.

Buechler, S., 1995. New social movement theories. *Sociological Quarterly,* 36(3), pp. 441-464.

Burrell, G., 1988. Modernism, post modernism and organizational analysis 2: The contribution of Michel Foucault. *Organization studies,* 9(2), pp. 221-235.

Burrell, G. & Dale, K., 2014. Space and organization studies. In: *The Oxford Handbook of Sociology, Social Theory, and Organization Studies: Contemporary Currents.*

Buser, M. & Koch, C., 2012. Multiple institutional dynamics of sustainable housing concepts in Denmark–on the role of passive houses. *Sociology Study,* 2(10), pp. 725-741.

Butcher, T. et al., 2011. *Participation and Engagement in Inter-organizational Groups: Synthesizing Social Network Analysis with Ethnography to Evaluate Social Capital.* Sydney, IEEE, pp. 966-973.

CaGBC, 2017. *Zero Carbon Building Standard,* Ottawa: Canada Green Building Council.

CaGBC, 2020a. *Structuring for Success 2020-2022: Building Our Way Forward,* Ottawa: Canada Green Building Council.

CaGBC, 2020b. *Proposed Regional Engagement Model (for discussion purposes).* Toronto: CaGBC.

CaGBC, 2020c. *Engagement Strategy Update,* Ottawa: Canada Green Building Council.

CaGBC, 2021a. *Canada Green Building Council.* [Online] Available at: cagbc.org [Accessed 17 02 2022].

CaGBC, 2021b. *The Evolution of Member Engagement.* Ottawa: Canada Green Building Council.

Cajias, M. & Piazolo, D., 2013. Green performs better: energy efficiency and financial return on buildings. *Journal of Corporate Real Estate,* 15(1), pp. 53-72.

Çalışkan, K. & Callon, M., 2010. Economization, part 2: a research programme for the study of markets. *Economy and Society,* 39(1), pp. 1-32.

Callon, M., 1980. The state and technical innovation: a case study of the electrical vehicle in France. *Research policy,* 9(4), pp. 358-376.

Callon, M., 1984. Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. *The sociological review,* 32(1_suppl), pp. 196-233.

Callon, M., 1986. The sociology of an actor-network: The case of the electric vehicle. In: *Mapping the dynamics of science and technology.* London: Palgrave Macmillan, pp. 19-34.

Callon, M., Courtial, J., Turner, W. & Bauin, S., 1983. From translations to problematic networks: An introduction to co-word analysis. *Social science information,* 22(2), pp. 191-235.

Callon, M. & Law, J., 1982. On interests and their transformation: enrolment and counter-enrolment. *Social studies of science,* 12(4), pp. 615-625.

Callon, M., Rip, A. & Law, J. e., 1986. *Mapping the dynamics of science and technology: Sociology of science in the real world.* London: Springer.

Canada, 2015. *Prime Minister of Canada - Canada's National Statement at COP21.* [Online]
Available at: https://pm.gc.ca/en/news/speeches/2015/11/30/canadas-national-statement-cop21
[Accessed 25 November 2021].

Carr, A. & Downs, A., 2004. Transitional and quasi-objects in organization studies: Viewing Enron from the object relations world of Winnicott and Serres.. *Journal of Organizational Change Management,* 17(4), pp. 352-364.

Carson, R., 1962/2002. *Silent spring.* Houghton Mifflin Harcourt.

Cassell, C., 1994. *Qualitative methods in organizational research: A practical guide.* London: SAGE Publications Limited.

Castells, M., 2015. *Networks of outrage and hope: Social movements in the Internet age.* John Wiley & Sons.

Cavalcanti, M. & Alcadipani, R., 2013. Organizations as processes and Actor-Network Theory: John Law's contribution to Organizational Studies. *EBAPE notebooks,* 11(4), pp. 556-568.

Cedeño-Laurent, J. et al., 2018. Building Evidence for Health: Green Buildings, Current Science, and Future Challenges. *Annual review of public health,* Volume 39, p. 291–308.

Chanlat, J.-F., 2006. Space, Organization and Management Thinking: a Socio-Historical Perspective. In: S. Clegg & M. Kornberger, eds. *Space, Organisations and Management Theory.* Frederiksberg: CBS Press, pp. 17-43.

Chua, W., 1995. Experts, networks and inscriptions in the fabrication of accounting images: a story of the representation of three public hospitals. *Accounting, organizations and Society,* 20(2-3), pp. 111-145.

Clegg, S. & Kornberger, M., 2006. *Space, Organisations and Management Theory.* Copenhagen: CBS Press.

Clegg, S., Kornberger, M. & Rhodes, C., 2005. Learning/becoming/organizing..

Organization, 12(2), pp. 147-167.

Cohen, M., March, J. & Olsen, J., 1972. A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly,* 17(1), pp. 1-25.

Collins, H., 1981. Stages in the empirical programme of relativism. *Social Studies in Science,* 11(1), pp. 3-10.

Collins, H. & Evans, R., 2002. The third wave of science studies: Studies of expertise and experience. *Social studies of science,* 32(2), pp. 235-296.

Collins, H. & Yearley, S., 1992. Epistemological Chicken. In: A. Pickering, ed. *Science as Practice and Culture.* Chicago, IL: The University of Chicago Press, p. 301–326.

Corbusier, L., 1947. The Modulor. *Design,* 49(2), p. 20.

CoreNet Global, 2014. *International Sustainability Systems Comparison,* Atlanta: CoreNet Global.

CRAN, 2020. *The Comprehensive R Archive Network.* [Online] Available at: *https://cran.r-project.org/* [Accessed 15 12 2020].

Crossley, N., 2003. Even newer social movements? Anti-corporate protests, capitalist crises and the remoralization of society. *Organization,* 10(2), pp. 287-305.

Czarniawska, B., 2004. On time, space, and action nets. *Organization,* 11(6), pp. 773-791.

Czarniawska, B., 2009. Emerging institutions: pyramids or anthills?. *Organization Studies,* 30(4), pp. 423-441.

Czarniawska, B. & Jorges, B., 2011. Travels of Ideas. In: B. Czarniawska & G. Sevón, eds. *Translating organizational change (Vol. 56).* Berlin: Walter de Gruyter, pp. 13-48.

Czarniawska, B. & Sevón, G. e., 1996. *Translating organizational change.* Berlin: de Gruyter.

Dale, K., 2005. Building a social materiality: Spatial and embodied politics in organizational control. *Organization,* 12(5), pp. 649-678.

Dale, K. & Burrell, G., 2003. An-aesthetics and architecture. In: *Art and aesthetics at work.* London: Palgrave Macmillan, pp. 155-173.

Dale, K. & Burrell, G., 2007. *The spaces of organisation and the organisation of space: Power, identity and materiality at work.* London: Macmillan International Higher Education.

Dale, K., Kingma, S. & Wasserman, V. 2018. *Organisational space and beyond: The significance of Henri Lefebvre for organisation studies.* London: Routledge.

de La Bellacasa, M., 2011. Matters of care in technoscience: Assembling neglected things. *Social studies of science,* 41(1), pp. 85-106.

de Vaujany, F. & Vaast, E., 2014. If These Walls Could Talk: The Mutual Construction of Organizational Space and Legitimacy. *Organization Science,* 25(3), pp. 653-667.

de Vaus, D., 2001. *The context of design.* London: Sage.

De Witt, D. & De Witt, E., 1987. *Modern architecture in Europe: a guide to buildings since the Industrial Revolution.* Plume Books.

Deci, E. L. & Ryan, R. M., 2000. The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry,* 11(4), pp. 227-268.

Deleuze, G., 1968. *Différence et répétition.* Paris: Presse Universitaires de France.

Deleuze, G. & Guattari, F., 1994. *What is philosophy?* New York: Columbia University Press.

DeWinter, J., Kocurek, C. A. & Nichols, R., 2014. Taylorism 2.0: Gamification, scientific management and the capitalist appropriation of play. *Journal of Gaming & Virtual Worlds,* 6(2), pp. 109-127.

Diani, M., 1995. *Green Networks: A Structural Analysis of the Italian Environmental Movement.* Edinburgh: Edinburgh University Press.

DiMaggio, P., 1988. Interest and agency in institutional theory. In: *Institutional patterns and organizations.* Cambridge, MA: Ballinger, pp. 3-22.

Doherty, B., Haugh, H. & Lyon, F., 2014. Social enterprises as hybrid organizations: A review and research agenda. *International journal of management reviews,* 16(4), pp. 417-436.

Dovey, K., 2014. *Framing places: Mediating power in built form.* London: Routledge.

Drucker, P. F., 1999. Knowledge-worker productivity: The biggest challenge. *California management review,* 41(2), pp. 79-94.

Duckles, B., 2018. *Organizational Hybridity, Dissonance and the Emergence of the US Green Building Council.*

Edwards, B. & McCarthy, J., 2004. Strategy matters: The contingent value of social capital in the survival of local social movement organizations. *Social Forces,* 83(2), pp. 621-651.

Eichholtz, P., Kok, N. & Quigley, J., 2016. Ecological responsiveness and corporate real estate. *Business & Society,* 55(3), pp. 330-360.

Ekbia, H., 2009. Digital artifacts as quasi-objects: Qualification, mediation, and materiality. *Journal of the American Society for Information Science and Technology,* 60(12), pp. 2554-2566.

Ekman, P., Raggio, R. & Thompson, S., 2016. Service network value co-creation: Defining the roles of the generic actor. *Industrial Marketing Management,* Volume 56, pp. 51-62.

Elkjaer, B. & Simpson, B., 2011. Pragmatism: A lived and living philosophy. What can it offer to contemporary organization theory?. In: H. a. C. R. Tsoukas, ed. *Philosophy and organization theory.* Emerald Group Publishing Limited, pp. 55-84.

Epstein, S., 1996. *Impure Science: AIDS, Activism, and the Politics of Knowledge.* San Diego: University of California Press.

Ernstson, H. & Sörlin, S., 2009. Weaving protective stories: connective practices to articulate holistic values in the Stockholm National Urban Park. *Environment and planning A,* 41(6), pp. 1460-1479.

Ezzamel, M. et al., 2007. Experiencing institutionalization: the development of new budgets in the UK devolved bodies. *Accounting, Auditing & Accountability Journal,* 20(1), pp. 11-40.

Ezzamel, M. & Xiao, J., 2015. The development of accounting regulations for foreign invested firms in China: The role of Chinese characteristics. *Accounting, Organizations and Society,* 44( ), pp. 60-84.

Fahy, K., Easterby-Smith, M. & Lervik, J., 2014. The power of spatial and temporal orderings in organizational learning. *Management Learning,* 45(2), pp. 123-144.

Fallan, K., 2011. Architecture in action: Traveling with actor-network theory in the land of architectural research. *Architectural theory review,* 16(2), pp. 184-200.

Farías, I. & Bender, T., 2012. *Urban assemblages: How actor-network theory changes urban studies.* Routledge.

Farjoun, M., Ansell, C. & Boin, A., 2015. PERSPECTIVE—Pragmatism in organization studies: Meeting the challenges of a dynamic and complex world.. *Organization Science,* 26(6), pp. 1787-1804.

Feldman, M., 2000. Organizational routines as a source of continuous change. *Organization Science,* 11(6), pp. 611-629.

Ferrer-Conill, R., 2018. Playbour and the gamification of work: Empowerment, exploitation and fun as labour dynamics. In: *Technologies of Labour and the Politics of Contradiction.* Cham: Palgrave Macmillan, pp. 193-210.

Fischer, J. & Guy, S., 2009. Re-interpreting regulations: architects as intermediaries for low-carbon buildings. *Urban Studies,* 46(12), pp. 2577-2594.

Fleming, P. & Sturdy, A., 2009. Just be yourself!": Towards neo-normative control in organisations. *Employee Relations,* 31(6), pp. 569-583.

Foucault, M., 2008. Panopticism" from" Discipline & Punish: The Birth of the Prison. *Race/Ethnicity: Multidisciplinary Global Contexts,* 2(1), pp. 1-12.

Frenkel, M., 2005. The politics of translation: How state-level political relations affect

the cross-national travel of management ideas. *Organization,* 12(2), pp. 275-301.

Gauld, C. & Micoulaud-Franchi, J., 2021. Why could sleep medicine never do without polysomnography?. *Journal of sleep research,* p. e13541.

Gautier, A. & Bonneveux, E., 2020. The diffusion of corporate social responsibility within an organizational field: An analysis through the complementary lenses of neo-institutional theory and actor-network theory. *M@n@gement,* p. (in press).

Ghaffarianhoseini, A. et al., 2016. What is an intelligent building? Analysis of recent interpretations from an international perspective. *Architectural Science Review,* 59(5), pp. 338-357.

Gherardi, S., 2016. To start practice theorizing anew: The contribution of the concepts of agencement and formativeness.. *Organization,* 23(5), pp. 680-698.

Gidley, D. & Palmer, M., 2020. Institutional Work: A Review and Framework based on Semantic and Thematic Analysis. *M@n@gement.*

Gond, J. & Boxenbaum, E., 2013. The glocalization of responsible investment: Contextualization work in France and Quebec. *Journal of business ethics,* 115(4), pp. 707-721.

Gong, B., Ramkissoon, A., Greenwood, R. A. & Hoyte, D. S., 2018. The Generation for Change: Millennials, Their Career Orientation, and Role Innovation 1. *Journal of Managerial Issues,* 30(1), pp. 82-6.

Goodchild, B. & Walshaw, A., 2011. Towards zero carbon homes in England? From inception to partial implementation. *Housing Studies,* Volume 266, pp. 933-949.

Goulden, S., Erell, E., Garb, Y. & Pearlmutter, D., 2017. Green building standards as socio-technical actors in municipal environmental policy. *Building Research & Information,* 45(4), pp. 414-425.

Grangaard, S. & Gottlieb, S., 2019. *Opening the Black Box of Accessibility Regulation'.* Tallinn, Emerald Publishing Limited, pp. 365-370.

Granovetter, M., 1973. The strength of weak ties. *American journal of sociology,* 78(6),

pp. 1360-1380.

Greenwood, R., Suddaby, R. & Hinings, C. R., 2002. Theorizing change: The role of professional associations in the transformation of institutionalized fields. *Academy of management journal,* 45(1), pp. 58-80.

GSA, 2019. *General Services Administration - Facility Management - Fitwel.* [Online] Available at: https://www.gsa.gov/real-estate/facilities-management/tenant-services/cafeterias-and-vending-facilities/health-and-wellness/fitwel
[Accessed 16 01 2019].

Guillén, M., 1997. Scientific management's lost aesthetic: Architecture, organization, and the Taylorized beauty of the mechanical. *Administrative Science Quarterly,* Volume 28, pp. 682-715.

Guldåker, N., Eriksson, K. & Nieminen Kristofersson, T., 2015. Preventing and preparing for disasters: The role of a Swedish local emergent citizen group. *International Journal of Mass Emergencies and Disasters,* 33(3), pp. 360-387.

Habermas, J., 1981. New Social Movements. *Telos,* Volume 49, pp. 33-37.

Haigh, N., Walker, J., Bacq, S. & Kickul, J., 2015. Hybrid organizations: origins, strategies, impacts, and implications. *California Management Review,* 57(3), pp. 5-12.

Hale, R., 2016. *An actor-network analysis of the Healthcare Worker Influenza Immunisation Programme on Wales 2009-11.* Nottingham: Doctoral dissertation, University of Nottingham.

Hampel, C., Lawrence, T. & P., T., 2017. Institutional Work: Taking Stock and Making it Matter. In: R. Greenwood, C. Oliver, T. Lawrence & R. Meyer, eds. *The Sage handbook of organizational institutionalism.* London: Sage, pp. 558-590.

Hancock, P. & Spicer, A., 2011. Academic architecture and the constitution of the new model worker. *Culture and Organization,* 17(2), pp. 91-105.

Hannan, M. T. & Freeman, F., 1977. The population ecology of organizations. *American Journal of Sociology,* Volume 82, pp. 929-964.

Hart, S., 1996. The cultural dimension of social movements: A theoretical reassessment and literature review. *Sociology of Religion,* 57(1), pp. 87-100.

Harvey, D., 1989. *The condition of postmodernity (Vol. 14).* Oxford: Blackwell.

Hatcher, J., 2016. Massive growth expected in smart building market. *Smart Buildings Magazine*, 21 October.

Hatch, M., 2018. *Organization theory: Modern, symbolic, and postmodern perspectives.* Oxford: Oxford university press.

Heaney, M. & Rojas, F., 2014. Hybrid activism: Social movement mobilization in a multimovement environment. *American Journal of Sociology,* 119(4), pp. 1047-1103.

Heikkurinen, P. et al., 2021. Managing the Anthropocene: Relational agency and power to respect planetary boundaries. *Organization & Environment,* 34(2), pp. 267-286.

Hernes, T., 2007. *Understanding organization as process: Theory for a tangled world.* London: Routledge.

Hietschold, N., Reinhardt, R. & Gurtner, S., 2020. Who put the "NO" in Innovation? Innovation resistance leaders' behaviors and self-identities. *Technological Forecasting and Social Change,* Volume 158, p. 120177.

Hirst, P. & Zeitlin, J., 1991. Flexible specialization versus post-Fordism: theory, evidence and policy implications. *Economy and Society,* 20(1), pp. 5-9.

Hoeyer, K., 2009. Informed consent: the making of a ubiquitous rule in medical practice. *Organization,* 16(2), pp. 267-288.

Holmqvist, M., 2003. A dynamic model of intra-and interorganizational learning. *Organization studies,* 24(1), pp. 95-123.

Holmström, J. & Robey, D., 2005. Inscribing organizational change with information technology: An actor network theory approach. In: *Actor-Network Theory and Organizing.* Malmö: Liber, pp. pp.165-187.

Homchick Crowe, J., 2020. Architectural Advocacy: The Bullitt Center and

Environmental Design. *Environmental Communication,* Volume 142, pp. 236-254.

Horowitz, L., 2012. Translation alignment: actor-network theory, resistance, and the power dynamics of alliance in New Caledonia. *Antipode,* 44(3), pp. 806-827.

Hume, C., 2007. New towers paint the town green. *Toronto Star*, 18 February.

Hyndman, N. et al., 2014. The translation and sedimentation of accounting reforms. A comparison of the UK, Austrian and Italian experiences. *Critical Perspectives on Accounting,* 25(4-5), pp. 388-408.

Idemudia, E., 2019. *Handbook of research on social and organizational dynamics in the digital era.* : IGI Global.

IPCC, 2014. *Climate Change 2014 - Mitigation of Climate Change,* New York: Cambridge University Press - Intergovernmental Panel on Climate Change.

IWBI, 2014. *WELL Building Standard v1.0,* New York: IWBI.

IWBI, 2021. *International Well Building Institute.* [Online] Available at: *https://www.wellcertified.com/about-iwbi/* [Accessed 09 08 2021].

James, W., 1907. *Pragmatism: A New Name for Some Old Ways of Thinking.* as published by project Gutenberg - https://www.gutenberg.org/files/5116/5116-h/5116-h.htm#link2H_4_0004 ed. Boston: Harvard University Press.

Jensen, T., Sandström, J. & Helin, S., 2009. Corporate codes of ethics and the bending of moral space. *Organization,* 16(4), pp. 529-545.

Jones, J. et al., 2019. The collective construction of green building: Industry transition toward environmentally beneficial practices. *Academy of Management Perspectives,* 33(4), pp. 425-449.

Jupe, R., 2000. Self-referential lobbying of the accounting standards board: the case of financial reporting standard no. 1. *Critical Perspectives on Accounting,* 11(3), pp. 337-359.

Kang, Y. et al., 2020. Natural language processing (NLP) in management research: A literature review. *Journal of Management Analytics,* 7(2), pp. 139-172.

Kärrholm, M., 2013. Building type production and everyday life: rethinking building types through actor-network theory and object-oriented philosophy. *Environment and Planning D: Society and Space,* 31(6), pp. 1109-1124.

Kasuganti, A., 2017. Organizational Learning: The Role of the Physical Environment. *Psychological Studies,* 62(4), pp. 357-369.

Kauffeld, S., 2006. Self-directed work groups and team competence. *Journal of Occupational and Organizational Psychology,* 79(1), pp. 1-21.

Kerr, R. & Robinson, S., 2016. Architecture, symbolic capital and elite mobilisations: The case of the Royal Bank of Scotland corporate campus. *Organization,,* 23(5), pp. 699-721.

Kerr, R., Robinson, S. K. & Elliott, C., 2016. Modernism, Postmodernism, and corporate power: historicizing the architectural typology of the corporate campus. *Management & Organizational History,* 11(2), pp. 123-146.

Kiliccote, S., Piette, M. & Ghatikar, G., 2011. *Smart buildings and demand response.* s.l., American Institute of Physics, pp. 328-338.

Kimberly, J. & Miles, R., 1980. *The organizational life cycle.* San Francisco: Jossey-Bass.

Kitts, J., 2000. Mobilizing in black boxes: Social networks and participation in social movement organizations. *Mobilization: An international quarterly,* 5(2), pp. 241-257.

Knoke, D. & Wisely, N., 1990. Social movements. In: D. Knoke, ed. *Political Networks.* New York: Cambridge University Press, pp. 57-84.

Knorr Cetina, K., 1995. Laboratory studies: The cultural approach to the study of science. In: *Handbook of science and technology studies.* Thousand Oaks, California: Sage, pp. 140-167.

Knox, H., O'Doherty, D., Vurdubakis, T. & Westrup, C., 2015. Something happened: Spectres of organization/disorganization at the airport. *Human Relations,* 68(6), pp. 1001-1020.

Konefal, J., 2013. Environmental movements, market-based approaches, and neoliberalization: a case study of the sustainable seafood movement. *Organization & Environment,* 26(3), pp. 336-352.

Krinsky, J. & Crossley, N., 2014. Social movements and social networks: Introduction. *Social Movement Studies,* 13(1), pp. 1-21.

Kuhn, T., 1962/2012. *The structure of scientific revolutions.* 4th ed. Chicago: University of Chicago press.

Lafley, A. & Martin, R., 2013. *Playing to win: How strategy really works.* Cambridge: Harvard Business Press.

Laing, A., 2006. New Patterns ofWork: The Design of the Office. In: J. Worthington, ed. *Reinventing the workplace.* Routledge, pp. 50-70.

Lange, A., Lenglet, M. & Seyfert, R., 2019. On studying algorithms ethnographically: Making sense of objects of ignorance. *Organization,* 26(4), pp. 598-617.

Latour, B., 1987. *Science in action: How to follow scientists and engineers through society.* Cambridge: Harvard university press.

Latour, B., 1988a. A relativistic account of Einstein's relativity. *Social Studies of Science,* 18(1), pp. 3-44.

Latour, B., 1988. *The pasteurization of France, translated by Alan Sheridan and John Law.* Cambridge, Massachusetts and London:: Harvard University Press.

Latour, B., 1988. The politics of explanation: An alternative. *Knowledge and reflexivity: New frontiers in the sociology of knowledge,* Volume 10, pp. 155-176.

Latour, B., 1993/2012. *We have never been modern.* Boston: Harvard University Press.

Latour, B., 1994. On technical mediation. *Common Knowledge,* 3(2), pp. 29-64.

Latour, B., 1996a. On interobjectivity. *Mind, culture, and activity,* 3(4), pp. 228-245.

Latour, B., 1996. On actor-network theory: A few clarifications. *Soziale welt,* pp. 369-

381.

Latour, B., 1999. For David Bloor... and beyond: A reply to David Bloor's' anti-Latour'. *Studies in history and philosophy of science,* Volume 30, pp. 113-130.

Latour, B., 1999. *Pandora's hope: essays on the reality of science studies.* Cambridge: Harvard university press.

Latour, B., 2004. Why has critique run out of steam? From matters of fact to matters of concern. *Critical inquiry ,* 30(2), pp. 225-248.

Latour, B., 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory.* Oxford and New York: Oxford University Press.

Latour, B. & Woolgar, S., 1979/2013. *Laboratory life: The construction of scientific facts.* 3rd ed. Princeton: Princeton University Press.

Latour, B. & Yaneva, A., 2017. «Give Me a Gun and I Will Make All Buildings Move»: An ANT's View of Architecture. *Ardeth. A magazine on the power of the project,* Volume 1, pp. 103-111.

Law, J., 1987. Technology and heterogeneous engineering: The case of Portuguese expansion. In: W. Bijker, T. Hughes & T. Pinch, eds. *The social construction of technological systems: New directions in the sociology and history of technology.* MIT press, pp. 1-134.

Law, J., 1987. The structure of sociotechnical engineering—a review of the new sociology of technology. *The Sociological Review,* 35(2), pp. 404-425.

Law, J., 1992. Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity. *Systems practice,* 5(4), pp. 379-393.

Law, J., 2004. *After method: Mess in social science research.* London & New York: Routledge.

Law, J., 2006. Traduction/trahison: Notes on ANT. *Convergencia,* 13(42), pp. 47-72.

Law, J., 2008. Actor Network Theory and Material Semiotics. In: G. Ritzer, ed. *The New Blackwell Companion to Social Theory,.* Oxford: John Wiley & Sons, pp. 141-

158.

Lawrence, T. & Suddaby, R., 2006. Institutions and institutional Work. In: *Handbook of organization studies, 2nd Edition.* London: Sage, pp. 215-254.

Lawrence, T., Suddaby, R. & Leca, B., 2009. Introduction: Theorizing and studying institutional work. Institutional Work: Actors and Agency. In: T. Lawrence, R. Suddaby & B. Leca, eds. *Institutional Studies of Organizations.* Cambridge University Press, pp. 1-27.

Lee, M., Ramus, T. & Vaccaro, A., 2018. From protest to product: Strategic frame brokerage in a commercial social movement organization. *Academy of Management Journal,* 61(6), pp. 2130-2158.

Lee, N. & Hassard, J., 1999. Organization unbound: Actor-network theory, research strategy and institutional flexibility. *Organization,* 6(3), p. 391–404.

Lee, N. & Wang, E., 2016. Translation to Inter-organizational Systems Integration: The Effect of Power and the Mediating Role of the Obligatory Passage Point. *Pacific Asia Journal of the Association for Information Systems,* 8(3), p. 4.

Lefebvre, H., 1991. *The Production of Space.* Oxford: Blackwell.

Lehmann, J., Graf-Vlachy, L. & König, A., 2019. *Forms of Institutional Work: A Systematic Review.* Bled, Slovenia, Academy of Management.

Leonard, P., 2013. Changing organizational space: Green? Or lean and mean?. *Sociology,* 47(2), pp. 333-349.

lg2, 2019. *CaGBC: Positioning our brand for growth,* Toronto: lg2.

Liang, L. et al., 2021. Rectify the performance of Green Building Rating Tool (GBRT) in sustainability: Evidence from ISO 21929-1. *Journal of Cleaner Production,* Volume 278, p. 123378.

Lindberg, K. & Czarniawska, B., 2006. Knotting the action net, or organizing between organizations. *Scandinavian journal of Management,* 22(4), pp. 292-306.

Lindblad, H., 2019. Black boxing BIM: the public client's strategy in BIM

implementation. *Construction Management and Economics,,* 37(7), pp. 1-12.

Linstead, S. & Thanem, T., 2007. Multiplicity, virtuality and organization: The contribution of Gilles Deleuze. *Organization Studies,* 28(10), pp. 1483-1501.

Lizardo, O., 2019. Specifying the "What" and Separating the "How": Doings, Sayings, Codes, and Artifacts as the Building Blocks of Institutions. In: *Microfoundations of Institutions (Research in the Sociology ofInstitutions (Research in the Sociology of Organizations, Vol. 65A),.* Emerald Publishing Limited, pp. 217-234..

Lovell, H., 2009. The Role of Individuals in Policy Change: The Case of UK Low-Energy Housing. *Environment and Planning C: Government and Policy,* 27(3), p. 491–511.

Lund, A., 2015. A Contribution to a Critique of the Concept Playbour. In: *Reconsidering value and labour in the digital age.* Palgrave Macmillan: London, pp. 63-79.

Maguire, S. & Hardy, C., 2009. Discourse and deinstitutionalization: The decline of DDT. *Academy of management journal,* 52(1), pp. 148-178.

Malcolm, J. & Zukas, M., 2009. Making a mess of academic work: Experience, purpose and identity. *Teaching in Higher Education,* 14(5), pp. 495-506.

Marcuse, H., 1993|1960. A note on dialectic. In: A. a. G. E. Arato, ed. *The Essential Frankfurt School Reader.* New York, NY: Continuum, p. 444-451.

Martin, B., Nightingale, P. & Yegros-Yegros, A., 2012. cience and technology studies: Exploring the knowledge base. *Research Policy,* 41(7), pp. 1182-1204.

Marvin, S., Chappells, H. & Guy, S., 2011. Smart meters as obligatory intermediaries. In: *Shaping urban infrastructures. Intermediaries and the governance of socio-technical networks.* Routledge, pp. 175-191.

Mazza, C., Sahlin-Andersson, K. & Pedersen, J., 2005. European constructions of an American model: Developments of four MBA programmes. *Management Learning,* 36(4), pp. 471-491.

McAdam, D. & Scott, W., 2005. Organizations and movements. In: G. Davis, D.

McAdam, W. Richard Scott & M. Zald, eds. *Social movements and organization theory.* Cambridge: Cambridge University Press, pp. 4-40.

McArthur, J., Dunne, S. & Ivory, S., 2021. From Rating System to Thought Leadership: The Evolution of the Canada Green Building Council. *[working paper].*

McCarthy, J. & Zald, M., 1977. Resource Mobilization and SocialMovements: A Partial Theory. *American Journal of Sociology,* 82(6), p. 1212–1241.

McCarthy, P. & Boonthum-Denecke, C. e., 2011. *Identification, Investigation and Resolution: Identification, Investigation and Resolution.* Information Science Reference.

McGuirk, P. M., Dowling, R. & Carr, C., 2019. The material politics of smart building energy management: A view from Sydney's commercial office space.. *Political Geography,* Volume 74, p. 102034.

McInerney, P., 2009. Technology movements and the politics of free/open source software. *Science, Technology, & Human Values,* 34(2), pp. 206-233.

McNulty, T. & Stewart, A., 2015. Developing the governance space: A study of the role and potential of the company secretary in and around the board of directors. *Organization Studies,* 36(4), p. 513–535.

McTaggart, J., 1896. *Studies in the Hegelian Dialectic.* Cambridge: Cambridge University.

Melucci, A., 1984. An end to social movements? Introductory paper to the sessions on "new movements and change in organizational forms". *Social Science Information,* 23(4-5), pp. 819-835.

Mena, S. & Suddaby, R., 2016. Theorization as institutional work: The dynamics of roles and practices. *Human Relations,* 69(8), pp. 1669-1708.

Mennicken, A., 2008. Connecting worlds: The translation of international auditing standards into post-Soviet audit practice. *Accounting, organizations and society,* 33(4-5), pp. 384-414.

Merton, R., 1938. Science and the social order. *Philosophy of science,* 5(3), pp. 321-337.

Merton, R., 1942. A note on science and democracy. *Journal of Legal and Political Sociology,* Volume 1, p. 115.

Merton, R., 1968. *Social theory and social structure.* New York: Free Press.

Mićić, L., Khamooshi, H., Raković, L. & Matković, P., 2022. Defining the digital workplace: A systematic literature review. *Strategic Management,* (online)(20xx), pp. 1-15.

Miller, N., Pogue, D., Gough, Q. & Davis, S., 2009. Green Buildings and Productivity. *Journal of Sustainable Real Estate:,* 1(1), pp. 65-89.

Modell, S., 2020. Accounting for institutional work: a critical review. *European Accounting Review,* pp. 1-26.

Modell, S., Vinnari, E. & Lukka, K., 2017. On the virtues and vices of combining theories: The case of institutional and actor-network theories in accounting research. *Accounting, Organizations and Society,* Volume 60, pp. 62-78.

Moher, D. et al., 2010. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *International journal of surgery,* 8(5), pp. 336-341.

Mol, A., 2013. Mind your plate! The ontonorms of Dutch dieting. *Social studies of science,* 43(3), pp. 379-396.

Monteiro, P. & Nicolini, D., 2015. Recovering materiality in institutional work: Prizes as an assemblage of human and material entities. *Journal of Management Inquiry,* 24(1), pp. 61-81.

Mueller, T., 2020. *Organizational History of the Canada Green Building Council* [Interview] (15 December 2020).

Mueller, T., 2021. *Closing Keynote - CaGBC Building Lasting Change Conference.* (online): Canada Green Building Council.

Muniesa, F., Millo, Y. & Callon, M., 2007. An introduction to market devices. *The*

sociological review, 55(2_suppl), pp. 1-12.

Murdoch, J., 1997. Inhuman/nonhuman/human: actor-network theory and the prospects for a nondualistic and symmetrical perspective on nature and society. *Environment and planning D: Society and Space,* 15(6), pp. 731-756.

Nakamura, J. & Csikszentmihalyi, M., 2003. The motivational sources of creativity as viewed from the paradigm of positive psychology. In: *A psychology of human strengths: Fundamental questions and future directions for a positive psychology.* Washington, DC: American Psychological Association, pp. 257-269.

Nash, K., 2001. The 'cultural turn'in social theory: Towards a theory of cultural politics. *Sociology,* 35(1), pp. 77-92.

Nielsen, J., Mathiassen, L. & Newell, S., 2014. Theorization and translation in information technology institutionalization: Evidence from Danish home care. *Mis Quarterly,* 38(1), pp. 165-186.

Orlikowski, W., 2007. Sociomaterial practices: Exploring technology at work. *Organization Studies,* 28(9), p. 1435–1448.

Oudshoorn, N., 2012. How places matter: Telecare technologies and the changing spatial dimensions of healthcare. *Social studies of science,* 42(1), pp. 121-142.

Papagiannidis, S. & Marikyan, D., 2020. Smart offices: A productivity and well-being perspective.. *International Journal of Information Management,,* Volume 51, p. 102027.

Páscoa, C. & Tribolet, J., 2016. Actor network theory applied to organizational change: A case study. In: *Web Design and Development: Concepts, Methodologies, Tools, and Applications.* IGI Global, pp. 1314-1330.

Passy, F., 2003. Social networks matter. But how?. *Social movements and networks: Relational approaches to collective action,* Volume 21, pp. 24-34.

Peltonen, T., 2011. Multiple architectures and the production of organizational space in a Finnish university. *Journal of Organizational Change,* 24(6), pp. 806-821.

Peltonen, T., 2012. Exploring organizational architecture and space: a case for heterodox research. *International Journal of Organizational Analysis,* 20(1), pp. 68-81.

Pentland, B., 1999. Building process theory with narrative: From description to explanation. *Academy of management Review,,* 24(4), pp. 711-724.

Pichardo, N., 1997. New social movements: A critical review. *Annual review of sociology,* 23(1), pp. 411-430.

Pollack, J., Costello, K. & Sankaran, S., 2013. Applying Actor–Network Theory as a sensemaking framework for complex organisational change programs. *International Journal of Project Management,* 31(8), pp. 1118-1128.

Pozzebon, M. & Mailhot, C., 2012. Citizens engaged to improve the sustainability and quality of life of their cities: the case of Nossa Sao Paulo. *Journal of Change Management,* 12(3), pp. 301-321.

Qiu, Y., Tiwari, A. & Wang, Y., 2015. The diffusion of voluntary green building certification: a spatial approach.. *Energy Efficiency,* 8(3), pp. 449-471.

Rafea, A., 1999. *Power, curriculum making and actor-network theory: The case of physics, technology and society curriculum in Bahrain.* Vancouver: University of British Columbia (Doctoral dissertation).

Ramioul, M., 2008. *Work organisation and restructuring in the knowledge society,* WORKS project.

Rautiainen, A. & Scapens, R., 2013. Path-dependencies, constrained transformations and dynamic agency. *Qualitative Research in Accounting & Management,* 10(2), pp. 100-126.

Raviola, E. & Norbäck, M., 2013. Bringing technology and meaning into institutional work: Making news at an Italian business newspaper. *Organization Studies,* 34(8), pp. 1171-1194.

Rice, L., 2011. Black-boxing sustainability. *Journal of Sustainable Development,* 4(4), p. 32.

Rochon, T., 2000. *Culture moves: Ideas, activism, and changing values.* Princeton: Princeton University Press.

Rodner, V., R. T., K. F. & Vom Lehn, D., 2020. Making space for art: A spatial perspective of disruptive and defensive institutional work in Venezuela's art world. *Academy of management journal,* 63(4), pp. 1054-1081.

Rohracher, H., 2003. The Role of Users in the Social Shaping of Environmental Technologies. *Innovation: The European Journal of Social Science Research,* 16(2), pp. 177-192.

Rohracher, H. & Ornetzeder, M., 2012. *Socio-technical configurations for green growth.* Bregentz, SCORAI, pp. 89-101.

Rothgang, M. & Lageman, B., 2018. Structural characteristics of knowledge exchange in innovation networks. *International Journal of Computational Economics and Econometrics,* 8(3-4), pp. 280-300.

Rowe, H., 2011. The rise and fall of modernist architecture. *Inquiries Journal,* 3(04), p. 1.

Russell, E. et al., 2011. The nature of power: Synthesizing the history of technology and environmental history. *Technology and Culture,* 52(2), pp. 246-259.

Rutland, T. & Aylett, A., 2008. The work of policy: actor networks, governmentality, and local action on climate change in Portland, Oregon. *Environment and Planning D: society and space,* Volume 264, pp. 627-646.

Rydin, Y., 2013. Using Actor–Network Theory to understand planning practice: Exploring relationships between actants in regulating low-carbon commercial development. . *Planning Theory,* Volume 121, pp. 23-45.

Sayes, E., 2014. Actor–Network Theory and methodology: Just what does it mean to say that nonhumans have agency?. *Social studies of science,* 44(1), pp. 134-149.

Schweber, L. & Harty, C., 2010. Actors and objects: a socio-technical networks approach to technology uptake in the construction sector. *Construction management and economics,* Volume 286, pp. 657-674.

Secinaro, S. C. L. B. V. & Iannaci, D., 2019. Hybrid organizations: A systematic review of the current literature. *International Business Research,* 12(11), pp. 1-21.

Seidman, S. & Alexander, J., 2020. *The new social theory reader.* Routledge.

Seijo, G., 2005. Rhizomes for understanding the production of social science. *Organization Management Journal,* 2(3), pp. 183-200..

Selman, P., 2000. Networks of knowledge and influence: Connecting 'the planners' and 'the planned'. *The Town Planning Review,* 71(1), pp. 109-121.

Selznick, P., 1994. *The moral commonwealth: Social theory and the promise of community.* Berkley: University of California Press.

Sentman, S., 2009. Healthy buildings: Green building standards, benefits, and incentives. *The Journal of Biolaw and Business,* 12(1), pp. 1-4.

Seo-Zindy, R., 2012. *ICTs and Social Movements in Authoritarian Regimes: An Actor-Network Perspective.* Manchester: Doctoral dissertation, The University of Manchester.

Serres, M., 1969. *Hermès I, la communication.* Paris: Editions de Minuit.

Serres, M., 1972. *Hermès II, l'interférence.* Paris: Editions de Minuit.

Serres, M., 1974. *Hermès III, la traduction.* Paris: Editions de MInuit.

Serres, M., 1977/1981. *Hermès IV, La distribution.* Paris: Éditions de Minuit.

Serres, M., 1980/1982. *The parasite trans. Lawrence R. Schehr.* Baltimore, MD: Johns Hopkins University Press.

Serres, M., 1980. *Hermès V, Le passage du Nord-ouest.* Paris: Editions de Minuit.

Shapin, S., 1982. History of science and its sociological reconstructions. *History of science,* 20(3), pp. 157-211.

Shapin, S., 1995. Here and everywhere: Sociology of scientific knowledge. *Annual review of sociology,,* 21(1), pp. 289-321.

Sherchan, W., Nepal, S. & Paris, C., 2013. A survey of trust in social networks. *ACM Computing Surveys (CSUR),* 45(4), pp. 1-33.

Shiga, J., 2007. Translations: Artifacts from an actor-network perspective. *Artifact: Journal of Design Practice,* 1(1), pp. 40-55.

Siebert, S., Wilson, F. & Hamilton, J., 2017. "Devils may sit here": The role of enchantment in institutional maintenance.. *Academy of Management Journal,* 60(4), pp. 1607-1632.

Silberberger, J. & Strebel, I., 2017. The obligatory passage point. *Architecture Competition: Project Design and the Building Process,* p. 139.

Sivunen, A. & Putnam, L., 2020. The dialectics of spatial performances: The interplay of tensions in activity-based organizing. *Human Relations,* 73(8), pp. 1129-1156.

Smith, A., 2007. Translating Sustainabilities between Green Niches and Socio-Technical Regimes. *Technology Analysis & Strategic Management,* 19(4), pp. 427-450.

Snow, D., 2004. Framing processes, ideology, and discursive fields. In: *The Blackwell companion to social movements.* Blackwell, pp. 381-412.

Soares, C., Joia, L., Altieri, D. & Regasso, J., 2021. What's up? Mobile instant messaging apps and the truckers' uprising in Brazil. *Technology in Society,* Volume 64, p. 101477.

Sommerfeldt, E. & Yang, A., 2017. Relationship networks as strategic issues management: An issue-stage framework of social movement organization network strategies. *Public Relations Review,* 43(4), pp. 829-839.

Sovacool, B. & Hess, D., 2017. Ordering theories: Typologies and conceptual frameworks for sociotechnical change. *Social studies of science,* 47(5), pp. 703-750.

Spinks, M., 2011. Adoption of a network approach to sustainable building standard process, not product: a response column to "A political-ecology of the built environment: LEED certification for green buildings", Cidell, 2009 2009, Local Environment, 14(7), pp. 621–633. *Local Environment,* 16(1), pp. 87-92.

Stanger, H., 2000. From factory to family: the creation of a corporate culture in the Larkin Company of Buffalo, New York. *Business History Review,,* 74(2), pp. 407-433.

Stenberg, A. & Räisänen, C., 2006. The social construction of 'green building' in the Swedish context. *Journal of Environmental Policy and Planning,* Volume 801, pp. 67-85.

Stengers, I., 2005. Ecology of practices and technology of belonging. *Cultural Studies Review,* p. 11.

Stengers, I., 2008. A constructivist reading of process and reality. *Theory, Culture & Society,* 25(4), pp. 91-110.

Stengers, I., 2011. Comparison as a matter of concern. *Common knowledge,* 17(1), pp. 48-63.

Stengers, I., 2015. Accepting the reality of Gaia: a fundamental shift?. In: *In The anthropocene and the global environmental crisis.* London: Routledge, pp. 134-144.

Stengers, I., 2015. L'insistance du possible. *Gestes spéculatifs,* pp. 5-22.

Stubbs, W. & Cocklin, C., 2008. Conceptualizing a "sustainability business model". *Organization & environment,* 21(2), pp. 103-127.

Svensson, D. a. S. S., 2019. The 'physiologization'of skiing: the lab as an obligatory passage point for elite athletes?. *Sport in Society,* 22(9), pp. 1574-1588.

Taylor, F. W., 1911. *The principles of scientific management.* New York: Harper & Brothers.

Taylor, S. & Spicer, A., 2007. Time for space: A narrative review of research on organizational spaces. *International Journal of Management Reviews,* 9(4), pp. 325-346.

Trochim, W., 1989. Outcome pattern matching and program theory. *Evaluation and program planning,* 12(4), pp. 355-366.

Troshani, I., Locke, J. & Rowbottom, N., 2018. Transformation of accounting through digital standardisation: Tracing the construction of the IFRS taxonomy. *Accounting,*

Auditing & Accountability Journal, 32(1), pp. 133-162.

Tsoukas, H., 2005. *Complex knowledge: Studies in organizational epistemology.* Oxford: Oxford University Press.

Tsoukas, H. & Chia, R., 2002. On organizational becoming: Rethinking organizational change. *Organization Science,* 13(5), pp. 567-582.

UNEP, 2020. *UN Environment Program.* [Online] Available at: https://www.unep.org/news-and-stories/press-release/building-sector-emissions-hit-record-high-low-carbon-pandemic [Accessed 10 11 2021].

Upward, A. & Jones, P., 2016. An ontology for strongly sustainable business models: Defining an enterprise framework compatible with natural and social science. *Organization & Environment,* 29(1), pp. 97-123.

USGBC, 2021. *Project Directory.* [Online] Available at: https://www.usgbc.org/projects [Accessed 30 November 2021].

USGBC, 2022. *LEED Project Directory.* [Online] Available at: https://www.usgbc.org/projects [Accessed 1 March 2022].

Van de Ven, A. & Poole, M., 2005. Alternative approaches for studying organizational change. *Organization studies,* 26(9), pp. 1377-1404.

Van Laer, K., Jammaers, E. & Hoeven, W., 2020. Disabling organizational spaces: Exploring the processes through which spatial environments disable employees with impairments. *Organization,,* p. 1350508419894698.

Vellodi, K., 2014. Diagrammatic thought: Two forms of constructivism in CS Peirce and Gilles Deleuze. *Parrhesia,* Volume 19, pp. 79-95.

Venturi, R., Scott Brown, D. & Izenour, S., 1967. *Learning from Las Vegas.* Cambridge, Mass.: MIT Press.

Vidal, M., 2007. Manufacturing empowerment? Employee involvement'in the labour process after Fordism. *Socio-economic review,* 5(2), pp. 197-232.

Viner, R., 1999. Putting stress in life: Hans Selye and the making of stress theory.

Social studies of science,, 29(3), pp. 391-410.

Volkoff, O., Strong, D. & Elmes, M., 2007. Technological embeddedness and organizational change. *Organization science,* 18(5), pp. 832-848.

Wæraas, A. & Nielsen, J., 2016. Translation theory 'translated': Three perspectives on translation in organizational research. *International journal of management reviews,* 18(3), pp. 236-270.

Wallenburg, I., Quartz, J. & Bal, R., 2019. Making hospitals governable: performativity and institutional work in ranking practices. *Administration & Society,,* 51(4), pp. 637-663.

Wapshott, R. & Mallett, O., 2012. The spatial implications of homeworking: A Lefebvrian approach to the rewards and challenges of home-based work. *Organization,* 19(1), pp. 63-79.

Wardle, K. & Busby, P., 2007. Green Building in Canada: A Brief History. In: J. Taggart & P. Busby, eds. *Busby: Learning Sustainable Design.* Gatineau: Janam Publications Inc. with Busby/Perkins+Will, pp. 124-129.

Wargocki, P. et al., 2000. The effects of outdoor air supply rate in an office on perceived air quality, sick building syndrome (SBS) symptoms and productivity. *Indoor Air,* 10(4), pp. 222-236.

Watson, D., 2019. Fordism: a review essay. *Labor History,* 60(2), pp. 144-159.

Weick, K., 1995. *Sensemaking in organizations.* Vol 3 ed. Sage.

Weick, K. E., 1979. *The social psychology of organizing.* 2nd ed. Reading, MA: Addison- Wesley.

Weinfurtner, T. & Seidl, D., 2019. Towards a spatial perspective: An integrative review of research on organisational space. *Scandinavian Journal of Management,* 35(2), p. 101009.

Welch, C., 2000. The archaeology of business networks: the use of archival records in case study research. *Journal of Strategic Marketing,* 8(2), pp. 197-208.

Wendl, N., 2013. Pruitt-Igoe, Now. *Journal of Architectural Education,* 67(1), pp. 106-117.

Weyland, K., 2008. Toward a new theory of institutional change. *World politics,* 60(2), pp. 281-314.

WGBC, 2013. *Business Case for Green Building,* Toronto: World Green Building Council .

Whitehead, A., 1919/2013. *The concept of nature: The Tarner Lectures Delivered in Trinity College, November 1919,* London: Project Gutenburg.

Whitehead, A., 1926. *Science and the modern world.* Cambridge: Cambridge University Press.

Whitehead, A., 1927/1978. *Process and reality.* New York: The Free Press/MacMillan/Simon & Schuster.

Whittle, A. & Spicer, A., 2008. Is actor network theory critique?. *Organization studies,* 29(4), pp. 611-629.

Wicks, A. & Freeman, R., 1998. Organization studies and the new pragmatism: Positivism, anti-positivism, and the search for ethics. *Organization science,* 9(2), pp. 123-140.

Wilkinson, J., 2007. Fair trade: Dynamic and dilemmas of a market oriented global social movement. *Journal of consumer policy,* 30(3), pp. 219-239.

Wilson, J. & Tagaza, E., 2006. Green buildings in Australia: drivers and barriers. *Australian Journal of Structural Engineering,* 7(1), pp. 57-63.

Windapo, A., 2014. Examination of green building drivers in the South African construction industry: Economics versus ecology. *Sustainability,* 6(9), pp. 6088-6106.

Wong, J., Li, H. & Wang, S., 2005. Intelligent building research: a review. *Automation in construction,* 14(1), pp. 143-159.

Yeung, H., 2005. Organizational space: a new frontier in international business strategy?. *Critical perspectives on international business.,* 1(4), pp. 219-240.

York, J., Vedula, S. & Lenox, M., 2018. It's not easy building green: The impact of public policy, private actors, and regional logics on voluntary standards adoption. *Academy of Management Journal,* 61(4), pp. 1492-1523.

Zald, M., 1996. Culture, ideology and strategic framing. In: D. McAdam, J. McCarthy & M. (. Zald, eds. *Comparative Perspectives on Social Movements.* Cambridge: Cambridge University Press, pp. 261-274.

Zhang, Z. & Spicer, A., 2014. 'Leader, you first': The everyday production of hierarchical space in a Chinese bureaucracy. *Human relations,* 67(6), pp. 739-762.

Zuo, J. & Zhao, Z., 2014. Green building research–current status and future agenda: A review. *Renewable and sustainable energy reviews,* Volume 30, pp. 271-281.

Appendix A.   Phase 1 Codes

The following code structure indicates both the level 1 codes (last element) and their aggregation and thematic clustering using level 2 codes (preceding element(s)). For example, in "Activities(IW)\creating\changing normative associations", "changing normative associations" is the Level 1 code and "creating" is the Level 2 code, which is further aggregated with other Institutional Work activities in the "Activities(IW)" coding.

Name
Activities (IW)
Activities(IW)\creating
Activities (IW)\creating\advocacy
Activities(IW)\creating\changing normative associations
Activities(IW)\creating\constructing normative networks
Activities(IW)\creating\constructing identities
Activities(IW)\creating\defining
Activities(IW)\creating\educating
Activities(IW)\creating\mimicry
Activities(IW)\creating\theorizing
Activities(IW)\creating\vesting
Activities(IW)\maintaining
Activities(IW)\maintaining\deterring
Activities(IW)\maintaining\enabling work
Activities(IW)\maintaining\embedding and routinizing
Activities(IW)\maintaining\mythologizing
Activities(IW)\maintaining\policing
Activities(IW)\maintaining\valorising and demonizing

Activities(IW)\disrupting
Activities(IW)\disrupting\disassociating moral foundations
Activities(IW)\disrupting\disconnecting sanctions
Activities(IW)\disrupting\undermining assumptions and beliefs
Activities(IW)\disrupting\
Artefacts
Artefacts\LEED®
Artefacts\LEED®Canada
Artefacts\ZCB
Artefacts\Regulations
Period\P1_pre-establishment (1990-2002)
Period\P2_formation (2002-2005)
Period\P3_ expansion (2006-2010)
Period\P4_organization-building (2011-2015)
Period\P5_maturity and diversification (2016-2020)
technical mediation
technical mediation\black-boxing
technical mediation\composition
technical mediation\enrolment
technical mediation\inscription
Translation
Translation\of the CaGBC
Translation\of LEED®
Translation\of other actants

Appendix B. Phase 2 Codes

This table presents the level 1 codes with the level 2 codes supporting thematic clustering.

Name
Activities (IW)
Activities (IW)\advocacy
Activities (IW)\defining
Activities (IW)\Education
Challenges
Challenges\CaGBC short-staffed
Challenges\overlap of old and new
CoreCompetencies
evolving market
evolving market\role of proxies
Members
Members\benefits of transition to
Members\Communicating transition to
Members\Communication
Members\Diversity of interests
Members\Engagement
Members\Engagement\New ways of engaging
Members\MembershipStructure
Members\TAG
Organizational Change drivers
Organizational Change drivers\business development

Organizational Change drivers\Freeze_Solidify
Organizational Change drivers\identity evolving
Organizational Change drivers\LEED changes
Organizational Change drivers\No need to define GreenBuilding
Organizational Change drivers\Pandemic impact
Organizational Change drivers\Reducing inefficiency
Organizational Change drivers\Unclear Identity of CaGBC
Organizational Change drivers\USGBC
Organizational Change drivers\USGBC\not hindered by
Organizational Change drivers\Viability
Organizational Change drivers\WGBC
Organizational Change drivers\WGBC\carbon
OrganizationalChangeImpacts
OrganizationalChangeImpacts\'bigger tent'
OrganizationalChangeImpacts\Members don't recognize organization
OrganizationalChangeImpacts\More collaborative working
OrganizationalChangeImpacts\reduced local connections
OrganizationalChangeImpacts\reduced local connections\Challenges
organizationalHistory
OrganizationalStructure
OrganizationalStructure\Client Experience
OrganizationalStructure\Client Experience\Accelerators
OrganizationalStructure\Client Experience\Accelerators\origin of mfg
OrganizationalStructure\Client Experience\Accelerators\origin of sus mat
OrganizationalStructure\Client Experience\Accelerators\Pilot Experience

OrganizationalStructure\Client Experience\ClientEngagementRole
OrganizationalStructure\Client Experience\RAGs
OrganizationalStructure\Client Experience\regional_activities
OrganizationalStructure\Client Experience\regional_activities\Atlantic
OrganizationalStructure\Client Experience\regional_activities\BC
OrganizationalStructure\Client Experience\regional_activities\Prairies
OrganizationalStructure\Client Experience\RegionalCoordinator
OrganizationalStructure\COO_Role
OrganizationalStructure\Green Building Program
OrganizationalStructure\Green Building Program\GBCI
OrganizationalStructure\Green Building Program\TAG Evolution
OrganizationalStructure\LegacyStructure
OrganizationalStructure\LegacyStructure\Chapters
OrganizationalStructure\LegacyStructure\Chapters\Chapter Board
OrganizationalStructure\LegacyStructure\Quebec
OrganizationalStructure\Market Advocacy_MarketDevelopment
OrganizationalStructure\restructuring
OrganizationalStructure\restructuring\NewStaff
OrgType
OrgType\EMO
OrgType\SMO
OrgType\SMO\changing peoples minds
OrgType\SMO\Social Enterprise
Programming
Projects to programs

Projects to programs\Workforce2030
rebranding
rebranding\brand as strategic narrative
rebranding\ChangingLanguage
rebranding\Leslie
Role-of_CaGBC
Role-of_CaGBC\identity
Role-of_CaGBC\identity\SMO
Role-of_CaGBC\Participant
Role-of_CaGBC\social change
strategy
strategy\NationalFocus
strategy\New role of CaGBC
strategy\New role of CaGBC\Convenor
strategy\New role of CaGBC\Impact rather than networking
strategy\New role of CaGBC\Inter-institutional_Coordination
strategy\Principles not product
strategy\Principles not product\conversations
strategy\scale
strategy\StrategicPriorities
TM
TM\artefacts
TM\artefacts\LEED
TM\artefacts\LEED\Challenges with
TM\artefacts\PresentationDecks

TM\artefacts\strategic frameworks
TM\artefacts\Terms of reference
TM\artefacts\Website
TM\artefacts\ZC
TM\Blackbox
TM\enrolment
TM\inscription
TM\Spokesperson
transition model
transition model\changing language
transition model\frustrations with
transition model\Objectives
transition model\operationalization
transition model\origins_development
transition model\PlanningStage
Type of Change
Type of Change\Abrupt
Type of Change\Ongoing
Type of Change\Ongoing\unplanned
Type of Change\Organic
Type of Change\Planned_Deliberate
Type of Change\Planned_Deliberate\grooming_nextgeneration

Appendix C. **Research Ethics Protocol**

Response Created By: MCARTHUR Jenn

Response Created   : Tue Nov 10 2020

Response Last Edit : Wed Nov 11 2020

Status   : Completed

Introduction

Please confirm you have completed mandatory Data Protection Training
Yes, I confirm I have completed mandatory Data Protection Training

Please select your School (note that the "CAHSS" option is for Professional Services staff only)
Business School

Your project details

Project title
Case Study of the Evolution of the CaGBC

Proposed Project Start Date (This must be a future date)
Fri Nov 13 2020

Proposed Project End Date (This must be a future date)
Fri Dec 01 2023

Are you a member of staff or a student?
Student

What type of student are you?
Postgraduate Research Student

Course title / Programme name
PhD in Management

What's your supervisor's email address?
IVORY Sarah

Please indicate any external ethical GUIDANCE your project has to adhere to. For example, the British Psychological Society (BPS), the British Academy, the British Association of Sport and Exercise Sciences (BASES)
N/A

Will any animals or animal tissue be used as part of the research project?
No

Will any human participants be studied?
Yes

Are you collecting and/or using personal data? Personal data is any information about a living individual, from which they can be directly or indirectly identified. It includes e.g. dates of birth, phone numbers and email addresses. It also includes information that could identify someone when combined with data from another source e.g. if a participant name has been replaced with a unique identifier on study documentation, but both name and identified are listed on a separate spreadsheet. This is classed as pseudonymised personal data. Please answer "Yes", I will be collecting / using personal data or "No", I will not be collecting / using personal data
Yes

Your research project is commissioned by the military.
No

Your research project is commissioned under an EU security cell.
No

Your research project involves the acquisition of security clearances.
No

Your research project concerns groups which may be construed as terrorist or extremist.
No

Will your research project involve collaborative work?
No

Does your research project require the APPROVAL of any other institution and/or ethics committee, nationally or internationally? (for example, NHS REC)
No

Description of the research

Please give a brief description of your research project The description should be no more than 500 words. This should include, as appropriate: the aims and objectives of the research project the research question(s) and/or hypothesis to be investigated a summary of the proposed research methods and techniques an indication of type, number, selection criteria, and recruitment of participants and/or sites details of the data collection methods. If you plan to conduct Face to Face research you must complete a COVID Face to Face research risk assessment (Off or On Campus). They can be found here: Off-campus Checklist On-campus Checklist Once completed, please upload here for review. Please use the box below to describe your research, or upload a Word or PDF document as indicated below.

The aim of the research is to undertake an organizational case study of the Canada Green Building Council (CaGBC) from its establishment in 2002 through its re-organization planned in 2021/22. The research questions that this study will investigate are: 1. What is the impact on the building movement as its constituent actors change? 2. What is the impact of new and disruptive actor on a building movement? Semi-structured interviews of CaGBC staff, former staff, and general members will be conducted. Approximately 25-30 interviews are anticipated. Interviews will be conducted online (Team) and recorded with participant consent to permit automatic transcription of the interviews. Videos will be deleted once interviews have been transcribed. Transcripts will be anonymized and identified by interviewee number. A participant tracking key will be stored separately from the interviews and not accessible to third parties.

File Attachments
RecruitmentScript_ConsentForms.docx

Potential risks to participants and researchers

Is your research project likely to induce any psychological stress or discomfort in the participants?
No

Does your research project require any physically-invasive or potentially physically harmful procedures?
No

Does your research project require the use of privacy-invasive technology, such as CCTV, biometrics, facial recognition, vehicle tracking software?
No

Does your research project involve the investigation of any illegal behaviours or activities?
No

Is it possible that your research project will lead to awareness or the disclosure of information about child abuse or neglect?

No

Is it likely that dissemination of research findings or data could adversely affect participants?
No

Could participation in this research adversely affect participants and others associated with the research in any other way?

No

Is this research expected to benefit the participants, directly or indirectly?
Yes

Give details of how this research is expected to benefit the participants.
All participants will be recruited from the organization staff and membership and thus the improved understanding of organizational performance that this study is anticipate to provide to organization staff will benefit them directly and indirectly, respectively, as it informs the future development of the organization.

Will the true purpose of the research be concealed from the participants/data subjects?
No

Will participants/data subjects be debriefed at the conclusion of the study?
Yes

At any stage in this research could researchers' safety be compromised, or could the research induce emotional distress in the researchers?
No

I will adhere to School guidance on risk assessment and health and safety and will seek advice on project and travel insurance prior to project commencement.
Not applicable

Participants and data subjects

How many participants or data subjects are expected to be included in your research project?
25

What criteria will be used in deciding on the inclusion and exclusion of participants/data subjects in your research project?

- membership in the CaGBC - past or present role as CaGBC staff, board member, or active member at the chapter or national level

Are any of the participants or data subjects likely to be under 16 years of age?
No

Are any of the participants or data subjects likely to be children in the care of a Local Authority?
No

Are any of the participants or data subjects likely to be known to have additional support needs?
No

Are any of the participants or data subjects likely to be physically or mentally ill?
No

Are any of the participants or data subjects likely to be vulnerable in other ways?
No

Are any of the participants or data subjects likely to be unable to communicate in the language in which the research is conducted
No

Are any of the participants or data subjects likely to be in a client or professional relationship with the researchers?
Yes

Explain and describe the measures that will be used to protect and/or inform participants/data subjects.
The student researcher is a member of the organization and serves on a chapter leadership advisory board (volunteer, non-governance role) and thus has a peer relationship with members of the organization. There is no anticipated power imbalance between the student researcher and any of the potential interviewees.

Are any of the participants or data subjects likely to be in a student-teacher relationship with the researchers?
No

Are any of the participants or data subjects likely to be in any other dependent relationship with the researchers?
No

Are any of the participants or data subjects likely to have difficulty in reading and/or comprehending any printed material distributed as part of the study?
No

Describe how the sample will be recruited. (Response limited to 500 characters)
The CEO of the CaGBC indicated a desire to document the organizational history and its current restructuring, and the student researcher volunteered to undertake this work as it related directly to her PhD topic. The CEO will be the first individual interviewed and will be recommending others to participate in interviews, and those individuals will be contacted directly with a request to participate. The information that this request originated from the CEO of the organization will be omitted in the request as it could be seen as coercive.

Will participants receive any financial or other material benefits as a result of participation?
No

Participant or data subject information and consent

Will written consent to participate be obtained from all participants or data subjects?
Yes

Have you made arrangements to tell participants what information you hold about them?
Yes

What arrangements have been made?
Interviewees will be provided with a transcript of the interview so that they can advise on any errors or potentially sensitive material that they wish to be omitted from the research data.

In the case of children participating in the research, will the consent or assent of parents / guardians be obtained?
Not Applicable

Will the consent or assent of children participating in the research be obtained?
Not applicable

In the case of participants who are not proficient in the language in which the research is conducted, will arrangements be made to ensure informed consent?
Not Applicable

In the case of participants with additional support needs, will arrangements be made to ensure informed consent
Not Applicable

Does the activity involve using cookies or tracking a participant's activity on a website or the Internet in general?
No

Confidentiality and handling of data

Identifiable due to data linkage - Likelihood of risk manifesting
Remote likelihood of risk manifesting

What information about participants/data subjects will you collect and/or use?
Their comments regarding their experience of the CaGBC (e.g. significant events in the history of the organization, their membership experience, how long they've been a member, and their role in the organization). Their organization type(s) will also be recorded.

Will you collect or use NHS data?
No

What training will staff who have access to the data receive on their responsibilities for its safe handling? Have all staff who have access completed the mandatory data protection training on the self-enrolment page of Learn?
All staff have completed the data protection training. In addition, all are full-time faculty with previous experience on other research involving human subjects and are thus experience in this field (the student researcher is a tenured faculty at a Canadian University)

Will the information include special categories of personal data (health data, data relating to race or ethnicity, to political opinions or religious beliefs, trade union membership, criminal convictions, sexual orientations, genetic data and biometric data)
No

Identifiable due to data linkage - Severity of harm
Minimal severity of harm

Identifiable due to low participant numbers - Likelihood of risk manifesting
Possible likelihood of risk manifesting

Identifiable due to low participant numbers - Severity of harm
Minimal severity of harm

Identifiable due to geographic location - Likelihood of risk manifesting
Remote likelihood of risk manifesting

Identifiable due to geographic location - Severity of harm
Minimal severity of harm

Identifiable due to transfer of data - Likelihood of risk manifesting
Remote likelihood of risk manifesting

Identifiable due to transfer of data - Severity of harm
Minimal severity of harm

Identifiable due to access to data - Likelihood of risk manifesting
Remote likelihood of risk manifesting

Identifiable due to access to data - Severity of harm
Minimal severity of harm

Please use this text box to record any other risks and the likelihood of them occurring, along with the severity of harm
There is a certain risk that the CaGBC will be identifiable to participants as the research topic. The CEO of the CaGBC was the driver for the selection of this case study - they are looking for someone to document the organization's history - therefore there is no risk of harm from this risk.

Please identify measures you could take to reduce or eliminate risks identified as possible/significant or probable/severe.

As noted above, the CEO of the case study organization desires that the organization be named in the case history. Participants will be anonymized in both the transcriptions of the data (referred to by number) and in any publications (referred to only by organization type and role)

Will information containing personal, identifiable data be transferred to, shared with, supported by, or otherwise available to third parties outside the University?
No

Other than the use by third parties, will the data be used, accessed or stored away from University premises?
Yes

Describe the arrangements you have put in place to safeguard the data from accidental or deliberate access, amendment or deletion when it is not on University premises, including when it is in transit, and (where applicable) it is transferred outside the EEA.
Due to the Covid-19 restrictions, I will be working primarily from home (Edinburgh). The anonymized data that is redacted to not contain any personal information may need to be accessed from Canada should VIVA corrections require this, but will by that point not contain any information that could identify participants.

Will feedback of findings be given to your research project participants or data subjects?
Yes

How and when will this feedback be provided?
A lay version of the organizational history will be provided to the CaGBC, who intend to use this information for marketing purposes.

Describe the physical and IT security arrangements you will put in place for the data.
All data will be recorded on an encrypted laptop and back-ups stored on a secure server.

How do you intend the results of your research project to be used?
Two academic journal articles will be written based on the research results, one looking back over the history of the CaGBC, and one looking at the current organizational restructuring, its drivers, and its motivations.

Copyright

Require use of copyrighted material?
No

Good conduct in publication practice

By ticking yes, you confirm that full consideration of the items described in this section will be addressed as applicable

Yes