Unmasking Corporate Sustainability at the Project Level:

Exploring the Influence of Institutional Logics and Individual Agency

Jacqueline Corbett
Department of Management Information Systems, FSA ULaval
Laval University
Québec, QC Canada
Jacqueline.corbett@fsa.ulaval.ca

Jane Webster
Smith School of Business
Queen's University
Kingston, ON Canada
jwebster@queensu.ca

Tracy Jenkin
Smith School of Business
Queen's University
Kingston, ON Canada
tjenkin@queensu.ca

November 2015

Published: ***Journal of Business Ethics***

Corbett, J., Webster, J., & Jenkin, T. (2018). Unmasking Corporate Sustainability at the Project Level: Exploring the Influence of Institutional Logics and Individual Agency. **Journal of Business Ethics**, 147(2), 261-286.

Acknowledgements: We would like to acknowledge the following people who provided feedback on earlier versions of this paper: Henri Barki, Laurie Kirsch, Raymond Paquin, Julie Ricard, Sandy Staples, Howard Swartz, Wren Montgomery, Ann Majchrzak, Ana Ortiz de Guinea Lopez de Arana, Markus Wagner, and the *Journal of Business Ethics* review team. We also thank Jim McKeen for suggesting possible case study sites and Johny Tay for his research assistance. This study was supported by a grant to Jane Webster from the *Social Sciences and Humanities Research Council of Canada*.

Running Head: Unmasking Corporate Sustainability at the Project Level

Applicable section: Corporate Responsibility: Theoretical/Qualitative Issues

Unmasking Corporate Sustainability at the Project Level: Exploring the Influence of Institutional Logics and Individual Agency

Abstract

Due to their consolidated nature, corporate sustainability reports often mask the evolution of organizations' sustainability initiatives. Thus, to more fully understand the environmental performance of an organization, it is essential to examine the experiences of specific projects and how they relate to corporate sustainability. Based on case studies of green projects in four different organizations, we find that it is difficult to determine the environmental impact of a project *a priori*, even in cases when environmental considerations are included as part of the initial project scope. Instead, the decision to integrate environmentally favorable elements into projects is a dynamically occurring interaction between competing institutional logics and organizational identities, which create windows of opportunity for individual agency. During these windows, individuals may engage in reinforcing microprocesses that support traditional practices, or invoke enabling microprocesses to facilitate green decision-making, consistent with ecosystem logics. The process model developed in this paper provides a new perspective on the temporal and contextual dimensions of environmental championship behaviors, and sheds light on otherwise puzzling results such as why organizations with strong environmental orientations continue to struggle with delivering projects with strong positive environmental impacts.

Keywords: case studies, corporate sustainability, ecosystem logics, environmental logics, green information systems, green projects, institutional logics, microprocesses, environmental champions, environmental leaders

Unmasking Corporate Sustainability at the Project Level:

Exploring the Influence of Institutional Logics and Individual Agency

Each year, organizations make substantial investments in sustainability initiatives. Sustainable business spending in the US is forecasted to reach $43 billion in 2015: organizations across all sectors and sizes are launching diverse environmental initiatives ranging from sustainable travel, energy management, green information systems, to sustainability reporting (Verdantix, 2013). Consistent with increasing spending levels, over 7,200 organizations now maintain profiles within the Global Reporting Initiative (GRI)'s Sustainability Disclosure Database.

GRI and similar sustainability reports are meant to provide an integrated view of organizational sustainability efforts. However, it has been suggested that firm-level environmental performance evaluations are inadequate for truly understanding the evolution and impacts of organizational sustainability efforts because they mask the relationships between specific activities and their consequences (Salazar et al., 2012). In other words, the environmental performance of a project can be obscured by more generalized evaluations of sustainability performance across the organization (Keeble et al., 2003). Instead, organizational sustainability efforts may be best viewed as a portfolio of projects, some of which have positive impacts, others with negative impacts, and still others with little or no net environmental impacts (Salazar et al., 2012).

When it comes to sustainability initiatives, the literature suggests that a significant gap remains between corporate sustainability aspirations and actions (Cantor et al., 2013; Nambiar and Chitty, 2014). Complexities of environmental issues (Bansal et al., 2014) and ambiguities created at the intersection of business and the natural environment (Sharma and Vredenburg, 1998) result in many organizations struggling with the implementation of successful green initiatives (Jenkin et al., 2011; Johansson and Magnusson, 2006). Given the essential role projects play in corporate sustainability efforts, it is surprising that little research has been devoted to this subject or to how an environmentally responsible approach to business may be realized in practice (Klettner et al., 2014). Among the few exceptions, Maltzman and Shirley (2010) emphasize both the product and process dimensions of green project management; Lenox et al. (2000) propose the use of tools to assist with Design for Environment; and Johansson and Magnusson (2006) identify organizing approaches such as the inclusion of 'green' sub-projects. However, many of these techniques are not widely adopted, suggesting new perspectives are needed. Consequently, our research is motivated to explore the nature, evolution, and outcomes of 'green' projects in organizations using a multiple case study approach.

We begin our investigation with the assumption that when it comes to implementing green projects, that is, projects that incorporate environmental considerations, organizations must navigate through a complex, competing and evolving set of micro institutional logics (Thornton et al., 2012). Institutional logics are socially constructed patterns of cultural symbols, cognitive schema, normative expectations, and material practices that shape behaviors of institutional actors (Jones et al., 2013)[1]. Traditional project logics integrate dimensions of professional and market logics, and emphasize efficiency and value to the organization (Freidland and Alford, 1991; Thornton et al., 2012). On the other hand, building upon environmental logics (Rousseau et al., 2014), we propose that ecosystem logics give legitimacy to reducing environmental impacts for the benefit of the entire natural ecosystem. Conflicts between these logics provide

[1] We refer to both actors and individuals throughout this paper. Although institutional theory conceptualizes actors as both individuals and collectives (Lawrence and Suddaby, 2006), our interest in microprocesses occurring within projects leads us to focus mainly on individuals rather than collectives.

individuals with the opportunity to exert agency, or the ability to make decisions, take purposeful action, and respond to imposed constraints (e.g., Lawrence and Suddaby, 2006; Wolfgramm et al., 2015). That is, individuals may exert agency by engaging in microprocesses to sustain, transform, and create new logics and practices (Dacin and Dacin, 2008; Thornton et al., 2012).

Our examination of green projects suggests that the adoption of environmental considerations in projects is a dynamically occurring process involving interactions between competing logics, organizational identities, and micro-level processes resulting from individual agency exerted by project members who may or may not act as environmental champions. We further propose that the cumulative effects of these interactions determine the final environmental profile of a project.

This research contributes to the literature in several ways. In addition to extending the concept of environmental logics to ecosystem logics, this study enhances our understanding of the role of agency and the microprocesses employed by individuals to influence corporate sustainability, an important part of moving from aspirations to action (Wolfgramm et al., 2015). To do so, we extend research on environmental leaders and champions by exploring the dynamic nature of their behaviors. In particular, this work highlights the temporal and contextual dimensions of environmental championing (Gattiker et al., 2014), that is how macro-level influences and microprocesses may come together during specific episodes of time and space (Andersson and Bateman, 2000) to influence the sustainability characteristics of projects. Further, our work addresses an important gap in the organizational sustainability literature by focusing on the project level (Salazar et al., 2012). Thus, we move beyond generalized views of sustainability performance to show how environmental considerations become incorporated (or not) into projects. In this regard, the model of green projects that emerges from this research helps to explain apparently contradictory observations, such as when an organization with a strong culture of sustainability produces a project with weak environmental outcomes, or when an organization with a low environmental orientation and traditional project logics achieves strong environmental outcomes.

Literature Review

In early corporate sustainability scholarship, the instrumental view was prevalent. According to this perspective, economic considerations take precedence over environmental and social dimensions, with traditional financial benefits representing a key requirement for environmental initiatives (Hahn et al., 2015). In other words, being ‘green’ was viewed as a win-win when it provided a range of benefits to the organization and to the natural environment (Butler, 2011). Scholarship is now moving toward an integrative approach where competing tensions are viewed as imperative rather than undesirable (for a fuller review of the business and natural environment scholarship, refer to Hoffman and Bansal, 2012). That is, environmental initiatives exist in a paradox, where organizations seek to address contradictory objectives simultaneously (Hahn et al., 2014). Consistent with this view, our research explores the interactions between different sets of institutional logics in the context of organizational projects.

Institutional logics, the set of guiding principles, assumptions, values, and beliefs that provides meaning to situational events, serve to focus the attention of institutional actors and guide their actions and decision-making (Reay and Hinings, 2009; Thornton et al., 2012). Based on membership across institutional orders (e.g., family, religion, state), individuals are exposed to a multitude of logics. These logics make alternative knowledge and schemas available to actors, enabling them to make decisions and take action. Through these actions and interactions, institutions can be reinforced, transformed or created (Reay and Hinings, 2009; Thornton et al., 2012). Therefore, although logics bring stability to institutional structures, they are also key contributors to institutional change. Furthering this idea, we suggest tensions between traditional logics and emerging ecosystem logics can contribute to the development of institutional practices more consistent with corporate sustainability.

A key premise of the institutional logics perspective is cross-level effects. For example, tensions can occur across different levels, including the systemic, firm, and individual (Hahn et al., 2015). Adapted from a cross-level model of institutional logics (Thornton et al., 2012), Figure 1 provides a summarized view of the theoretical launching point of our research. As illustrated, institutional logics are available at the macro level and incorporate distinctive symbols, norms and practices that eventually infiltrate lower-level institutions (Thornton et al., 2012). Once the logics are appropriated by micro-institutions, such as projects, actors become embedded in the dominant (or prevailing) institutional logics (Van Dijk et al., 2011). Individuals store the dominant logic via schemas, or knowledge structures, and use these as frames to conceptualize problems and make critical decisions (Prahalad and Bettis, 1986). Dominant logics focus the attention of individuals, provide a filter and context for understanding events, and define the available strategies, solutions and opportunities (Glynn and Raffaelli, 2013; Thornton et al., 2012).

--- Insert Figure 1 about here ---

Also found at the macro level are organizational identities. Organizational identities are interrelated with institutional logics, but focus more on questions of 'who we are', emphasizing "central, distinctive, and enduring organizational attributes" (Thornton et al., 2012, p. 130). Organizational identities can impose constraints on actors, who often act consistently with their organization's identity. However, just as ambiguity arising from competing logics can trigger a series of social interactions, organizational identities that conflict with dominant logics can create tensions that similarly catalyze employees to act in response to a conflict (Hahn et al., 2015; Thornton et al., 2012).

Within organizational fields (DiMaggio and Powell, 1983), pressures may arise from normative, regulative, and cultural-cognitive forces that seek to align behavior of actors and establish stable social structures (Butler, 2011). Normative pressures represent a prescriptive dimension originating from professionalism and the need to establish legitimacy of practices, responsibilities, and duties; regulative pressures come from the establishment of rules and other binding conditions that enable organizational access to resources; and cognitive-cultural pressures arise from shared understandings of the social reality as reflected in societal or industry expectations (Aguinis and Glavas, 2012; Carberry et al., 2014; DiMaggio and Powell, 1983; Scott, 2001; Van Dijk et al., 2011; Vermeulen et al., 2007). When conflicts among pressures are routine in nature, automatic responses based on dominant logics tend to be activated (Thornton et al., 2012) and provide legitimacy for reinforcing the existing institutions (Scott, 2001; Van Dijk et al., 2011). Alternatively, institutional change can occur when dominant logics are replaced or transformed by other logics (Greenwood et al., 2002; Hoffman, 1999). In non-routine or novel situations, the individual's situated identity, alternate goals and schemas may be activated. Once activated, these elements support individual agency and shape the social interactions of the actor (Thornton et al., 2012) which may lead to decisions that do not conform with the dominant logics.

At the individual level, a substantial amount of effort has been given to understanding the role of employees in promoting environmental issues in organizations (Andersson and Bateman, 2000). Two main streams of research in this area exist, focusing on environmental leaders and environmental champions. Environmental leadership is defined as ‘‘the ability to influence individuals and mobilize organizations to realize a vision of long-term ecological sustainability’’ (Ergi and Herman, 2000, p. 572) and represents the commitment of top managers to enact policies and processes that improve the environmental performance of organizations (Boiral et al., 2014; Crossman, 2011). Environmental leaders, through their ecocentric values and organizational position are able to affect changes in organizations consistent with a pro-environmental vision (Crossman, 2011). However, being an environmental leader charged with implementing environmental practices does not necessarily make one an environmental champion (Bouten and Hoozée, 2013; Cantor et al., 2013). Environmental champions are "individuals who, through formal organizational roles and/or personal activism, attempt to introduce or create change in a product, process or method within an organization" (Andersson and Bateman, 2000, p. 549). Organizations need environmental champions as well as leaders, because champions can build individual and organizational awareness of environmental issues and support for sustainability initiatives (Andersson and Bateman, 2000; Gattiker et al., 2014).

As described previously, the personal identities of environmental leaders and champions may influence the social actions of these individuals. In our research, we take into account the potential role of environmental leaders and champions by focusing on social interactions as microprocesses. In this respect, we do not focus only on the environmental leader's or champion's role in projects, but rather examine behaviors of all project actors, trying to understand how those behaviors come about and the decisions and outcomes that result. To that end, we examine individuals' microprocesses, "a series of specific dynamics operating at the micro level" (Kellogg, 2011, p. 497), such as learning, linking knowledge, and proving value, that occur in the course of daily activities and interactions (Hargadon, 2002; Reay et al., 2006).

They are instrumental in the building and changing of institutional forms (Lawrence and Suddaby, 2006; Powell and Colyvas, 2008) through the interpretations, actions, interactions, and innovations that arise (Chreim et al., 2007; Johnson et al., 2000). Social interactions support decision-making by ensuring that problems are matched with appropriate solutions within the decision context (Thornton et al., 2012), by enabling actors to make sense of the situation, mobilize resources, and form decisions necessary for the achievement of collective goals through communications and negotiations. However, when actors' identities are not aligned with the organization's identity or dominant logics, individuals may seize the opportunities arising from the conflicting pressures to exercise agency leading to incremental or radical changes within organizations (Van Dijk et al., 2011).

Institutional Logics of Projects

Embedded within specific contexts, projects are hosts to both prevailing and competing institutional logics and provide important opportunities for change (Leonard-Barton, 1992). Recognizing the importance of projects to organizational sustainability efforts (Salazar et al., 2012), this research is motivated to understand how environmental considerations are incorporated into, and influence the outcomes of, information system (IS) projects. IS projects are temporary organizational structures (Galbraith, 1973) comprising "a set of activities that starts and ends at identifiable points in time and that produces quantifiable and qualifiable software deliverables" (King, 1992, p. 2), from conceptualization through implementation (Sambamurthy and Kirsch, 2000). They may involve the design and development of software and systems, as well as the acquisition and implementation of information technology hardware and infrastructure.

As the primary approach for developing and implementing IS in organizations, project management practices have become institutionalized (Mignerat and Rivard, 2012), carrying value beyond the technical requirements of the project and incorporating important social dimensions (Newman and Robey, 1992; Sambamurthy and Kirsch, 2000). While most IS projects operate according to traditional project logics, we suggest a new ecosystem logic, more attuned with the natural environment, is emerging. This is because IS projects are important contributors to organizations' environmental impacts: on a global scale, organizations' increasing reliance on IS has already resulted in global carbon emissions higher than air travel and could account for up to 6% of worldwide carbon emissions by 2020 (The Climate Group, 2008). As a result, IS departments are beginning to experiment with green projects. In Table 1 and the following discussion, we highlight the main differences between traditional and ecosystem project logics.

--- Insert Table 1 about here ---

Traditional project logics. Traditional project logics integrate elements of profession and market logics (e.g., Freidland and Alford, 1991; Thornton et al., 2012). IS projects are formed around a series of tasks (Sambamurthy and Kirsch, 2000), consistent with a root metaphor of transactions. Project stakeholders interact with each other to complete these tasks as efficiently as possible, taking into account the triple constraint of time, scope and cost (Project Management Institute, 2004). Authority in traditional IS projects is top-down, originating from senior management (Gemino et al., 2008) and their representatives, project managers (Kirsch, 2000), and is supported by hierarchical structures. Major IS projects are governed by a wealth of standard methodologies and tools, such as project plans, functional specifications and project approval processes, that have been developed and institutionalized within this context (Mignerat and Rivard, 2012). Professional associations also contribute to the authority in projects and play an essential role in framing situations and guiding members' actions. Compiling and codifying collective knowledge about projects has been instrumental in defining norms for actors who identify themselves as part of the IS project management profession. Actors' identities arise from their personal reputations and association with the craft, where they gain legitimacy from their unique expert knowledge (Mignerat and Rivard, 2012).

Traditional project logics have brought increased stability to an important organizational practice. However, these project logics may now be constraining organizations (Leonard-Barton, 1992) as they seek to improve their environmental impacts. To help explain the evolution of green projects, we propose the emergence of ecosystem project logics.

Ecosystem project logics. Corporate environmentalism can be traced back to the activism of the 1960s (Hoffman, 2001) and has gained momentum in the last two decades. Various attempts have been made to define the logics associated with organizational environmentalism: it has been suggested that certain corporate social responsibility (CSR) practices reflect market logics, while other practices embody community logics (Glynn and Raffaelli, 2013). Alternatively, Rousseau et al. (2014) developed environmental logics, in which managers seek to minimize the firm's environmental impact through pollution prevention and a green corporate culture. Although environmental actions are often considered under the umbrella of corporate social responsibility, studies show that environmental and social actions are associated with different institutional logics and thus should not be confounded (Bansal et al., 2014; Rousseau et al., 2014).

Our reading of the inter-disciplinary sustainability literature leads us to define a set of ecosystem project logics which we suggest play a key role in green IS projects. Our definition of ecosystem logics builds upon environmental logics (Rousseau et al., 2014). Although environmental logics capture various aspects of sustainability, it is still rooted within an instrumental logic (Hahn et al., 2015), which is the dominant market-corporate logic, as evidenced by academic theorizations such as the natural resource-based view (Hart, 1995). In contrast, the ecosystem logics we propose take a broader view. An ecosystem is a natural unit made up of all living and non-living parts interacting to produce a stable system (Levin, 2009). As a complex adaptive system, the ecosystem includes both natural capital and built capital arising from human-generated activities and processes (Levin, 2009; Winn and Pogutz, 2013) that simultaneously and mutually influence one another. Ecosystem logics recognize the complex interdependencies among ecosystem parts and the fundamental ecological embeddedness of individuals, organizations and other social institutions (Whiteman and Cooper, 2000; Winn and Pogutz, 2013). These logics represent a 'strong' sustainability approach that focuses on creating sustainability rather than on reducing unsustainability (Hoffman and Bansal, 2012).

As compared to traditional project logics, the root metaphor of these logics, consistent with the concept of an ecosystem, is systems – complex and adaptive interconnections among different elements. From an economic perspective, ecosystem logics draw on ecological economics, an interdisciplinary approach that seeks to examine the interactions and co-evolution of human economies within the natural ecosystems in which they are embedded (Carpintero, 2013; Common and Stagl, 2005; Lucas, 2010). In this way, it contrasts to traditional capitalist economic approaches that privilege human systems over natural ones. The ecosystem itself is the main source of authority under ecosystem logics. Through extreme weather events (e.g., Hurricane Katrina) or changes in ecosystem functions (e.g., drought conditions in Africa), ecosystems exert authority over other actors within the system. Within society, social movements and non-governmental organizations also give voice to the ecosystem (Rousseau et al., 2014), and help to shape norms. Actors secure legitimacy through their levels of environmental impact, rather than personal expertise, and their identities derive from their positions and reputations as environmental champions (Andersson and Bateman, 2000), rather than their professional reputations.

Methodology

To explore the influence of institutional logics and individual microprocesses within the context of green projects, we conducted four case studies. Employing multiple cases allows for a more 'robust' theory because of the possibility for pattern-matching and replication across cases (Eisenhardt and Graebner, 2007). Although case research does not allow for the same controls as other methods (e.g., surveys, experiments), the rich real-world data enable a much deeper understanding of complex issues (Eisenhardt and Graebner, 2007).

Case studies are useful when complex and dynamic social phenomena are being examined (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2009), as was the case here. Case studies may take an inductive, deductive, or integrative (deductive and inductive) approach to theorizing (Yin 2009). We chose the integrative approach because combining them has been advocated as a way of avoiding the limitations of each and enhancing theory development (e.g., Shepherd and Sutcliffe, 2011; Weick, 1996). For instance, without an existing framework, researchers may be overwhelmed by the volume of data (Eisenhardt, 1989). Therefore, following leading case researchers (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2009), we used the existing literature to help guide the development of research questions, case selection, as well as data collection and analysis. Thus, we leveraged the existing literature on institutional logics and microprocesses, as represented in Figure 1, to guide our study (deduction), but allowed for emergent insights and concepts (induction). We describe our case selection, data collection and analysis process in more detail below.

In securing cases, our first priority was to identify well-defined projects: those that were not part of normal operational activities and had specific objectives, timeframes, and resources assigned to them. Our second priority was to select cases that allowed for cross-case comparisons. We searched for potential cases by attending IS practitioner workshops on environmental sustainability in organizations, drawing on colleagues' practice networks, and monitoring the practitioner literature. From initial conversations with thirteen organizations, we acquired a convenience sample of four green IS projects[2]: the organizations self-identified these projects as green. Table 2 summarizes the case characteristics.

---Insert Table 2 about here ---

Data collection and analysis procedures

For each case, we conducted a preliminary screening, reviewed organizational documents, interviewed project participants, toured the facilities affected by the project, and followed up with telephone interviews or emails to clarify or supplement information. Initial interview participants were identified by our main contact at each organization. Thereafter, we recorded the names of other individuals engaged in the project and asked the participants for additional contacts. Data collection continued until we reached saturation; that is, we did not identify additional contacts or resources, and we achieved a thorough understanding of the project.

Data were collected using several approaches to minimize key informant bias. In order to develop project chronologies and assess the organizations' environmental identities, we collected data from organizational websites, public documents, and proprietary project documents. On-site

[2] In terms of our sampling approach: although we sampled for the same overall category of project (IS-related), and were fortunate to find two contexts (datacentres and kitchens) across two organizations each, as well as attaining both private and public organizations, we believe that a convenience sample better represents what we did, rather than theoretical sampling.

interviews represented the majority of our data collection. In total, we interviewed 34 participants as reported in Table 3. At least two authors were present at each interview and the majority of interviews were conducted with single individuals (rather than groups). Face-to-face interviews were audio-recorded and transcribed. In total, 1,539 minutes of interviews were conducted, resulting in 586 single-spaced pages of transcripts and notes for analysis.

--- Insert Table 3 about here ---

We followed the criteria for case studies as outlined by Eisenhardt and Graebner (2007), Miles and Huberman (1994), and Yin (2009) for analyzing the data. We developed a case study protocol, including interview questions and lists of data sources, wrote up cases individually, and created a case study database. Using an iterative process that moved between the data and theoretical interpretations, we applied multiple analytical methods to analyse our data, as illustrated in Figure 2. As we collected data, we developed a case summary sheet for each case to capture main project events and facilitate the extraction of early theoretical insights. These summaries were augmented as additional data were collected and new insights attained through weekly meetings of the authors. In addition, we provided summary reports to the organizations.

--- Insert Figure 2 about here ---

Detailed coding began once all of the data had been substantially collected. We used NVivo to facilitate our coding and our final coding structure is shown in Figure 3. Our first step involved screening for relevance to the focal project. For instance, during interviews, participants sometimes spoke about other projects or issues not directly related to the IS project we were studying. Beginning with this step helped to ensure clear boundaries around our cases. Following this high-level classification of our data, we coded along three main categories: process, attributes, and outcomes. With respect to process, we conducted longitudinal and process coding

(Saldana, 2009). To reflect the time-based dimension, we created three codes to capture the main IS project phases of initiation, design, and implementation, consistent with Sabherwal and Grover (2010). For microprocesses, we used process coding to connote individuals' activities. We drew on a wide set of microprocesses from the literature to derive an initial set of codes, while remaining open to emergent microprocesses. Descriptions of the microprocess codes with illustrative quotes are shown in Table 4.

--- Insert Figure 3 and Table 4 about here ---

For attributes, we engaged in structural (content-based) coding (Saldana, 2009). For organizational identity, we included organizational environmental orientation in our analysis to represent the most relevant dimension for this research. Based on the literature, we created three codes of shared understanding, environmental policies, and cultural artifacts as a basis for qualitatively assessing the strength of each organization's environmental orientation (Table 5). Given the relatively short lifespan of the projects under investigation, we assumed that organizational environmental orientation remained stable. For institutional pressures, we specified codes for cultural-cognitive, normative, and regulative pressures, and for each, we created sub-categories to represent the two logics, traditional and ecosystem (Table 6).

--- Insert Tables 5-6 about here ---

With respect to outcomes, we used open coding to identify all outcomes associated with the project (including environmental: see Figure 3). As indicated earlier, we did not initially assess the projects' environmental outcomes as the projects were presented to us as green by the organizations: however, our early analyses led us to examine this assessment more closely. To estimate the projects' environmental impacts, we could not rely on company assessments as none had performed objective analyses (although participants reflected on their subjective assessments). Consequently, we had to develop mechanisms for qualitatively evaluating the environmental outcomes of each project. To do this, we restricted our next phase of outcome coding to those outcomes associated with the environment. To do so, we developed codes based on the GRI's environmental issues, which has become an important way for organizations to demonstrate their environmental performance (Glynn and Raffaelli, 2013; Klettner et al., 2014). This resulted in four environmental sub-codes. Then, we calculated the percentage of number of environmental outcomes coded over the total number of outcome references coded. This value was used to qualitatively assess a project's environmental profile (Table 7).

--- Insert Table 7 about here ---

Following coding of data, we focused on theoretical integration (Corbin and Strauss, 2008) by performing a series of analyses (e.g., matrix reports) that combined the longitudinal and process data and the other constructs. These analyses were conducted within and across cases to detect patterns and themes. Our coded elements served as building blocks that were examined in different configurations in order to develop a coherent theoretical understanding. Pattern-matching allowed for replication across cases, providing analytic generalizability (Yin, 2009). However, it should be noted that our results may not apply to contexts beyond those studied here (i.e., IS projects involving kitchens and data centres).

Case Discussion

As described earlier, the four projects included in this study were identified as green by their organizations. However, upon examination of their environmental profiles (Table 7), we see variations in the projects' environmental outcomes both in terms of the type and extent of their environmental benefits. For instance, the project at Datacenter 1 (DC1) demonstrated the highest environmental profile, while the environmental profile of the Kitchen 2 (KIT2) project was the lowest. Somewhat surprisingly, these outcomes contrast with their organizations' environmental orientations (Table 5), with DC1 showing a weaker and KIT2 a stronger organizational environmental orientation. In other words, we observed inconsistencies between the environmental identities of these organizations and the greenness of their projects.

Exploring this result further, our analysis will suggest that these disconnects can occur because of competition between traditional logics, ecosystem logics, and organizational identity within projects. We will theorize that conflicts between logics provide windows of opportunity for agency where individuals, including environmental champions, can use a variety of microprocesses to influence project decision-making. However, as we will demonstrate, not all conflicts lead to the active use of microprocesses, nor do all types of microprocesses lead to green decisions (Table 8). Before describing our theoretical model, we present the four cases.

--- Insert Table 8 about here ---

Data Center 1

Datacenter 1 (DC1) involved upgrading the power and heating/cooling infrastructure at an existing data center of a multi-national software development corporation. The project was initiated in 2009 after the data center's backup generator failed during a local brownout, highlighting a key IT operational risk. Additionally, the organization's growth-through-acquisition strategy placed increasing demands on IT resources.

Participants at DC1 observed that many vendors within the industry, such as Dell and Google, were beginning to pursue an environmental agenda through their product and service offerings and by taking actions internally to reduce environmental impacts. Despite the presence of emerging ecosystem logics within the industry, DC1's organizational identity reflected a low environmental orientation and participants were more aligned with traditional logics focused on efficiency and business value. There was no formal environmental leader in this company; however, a key project actor, the IT director responsible for the data center project, was viewed by himself and peers as an environmental champion. Being relatively new to IT, this individual brought with him previous engineering and sustainability training that led him to look at problems holistically to ensure a full understanding of the issues before making decisions. In the context of this project, this individual had a large degree of flexibility and authority for decision-making as delegated by senior management:

> *There's always multiple options, and it's just a matter of "This is the choice and why." But [the CIO], my boss, has delegated that really to me, so I more or less tell him rather than ask him. And I expect the same of my team as well.* (DC1-C)

In this case, we identified several points of conflict between traditional and ecosystem logics (Table 8). The first two occurred during the initiation phase of the project with both resulting in automatic responses leading to traditional decision-making. In the first situation, for instance, we observed a common pressure faced by many IS departments: the potential for taking a leadership role in green IS. In this situation, the conflict between the competing pressures was not perceived to be extraordinary and participants did not feel compelled to resolve the conflict or to act in contradiction to their traditional project approaches. While the organization was not averse to achieving green benefits, these benefits were viewed as side-effects of traditional market-oriented objectives:

> *Is it the first thing in my mind, green, when I'm doing the data center work? It's probably more driven by, my thought process is, it's costing me $1 million here, can I do it for $500,000? And if I get some green benefit out of it, great.* (DC1-B)

As the DC1 project moved into the design phase, tensions between traditional and ecosystem logics increased and became more focused. We suggest that these conflicting pressures resulted in a window of opportunity and activated the 'environmental champion' identity of the IT director responsible for the data center project. That is, faced with ambiguity and conflicts, he routinely invoked learning microprocesses, which eventually led to green decision-making. One such episode involved the choice of coolant for the data center (Table 8, row 3). The project team had two options: ethylene glycol (EG) and propylene glycol (PG). Although both would achieve the desired outcomes, one, EG, is toxic (but less expensive), and the other, PG, is not toxic. In this situation, competing pressures came from two main sources. On the one hand, DC1 was geographically located beside a green space and there were regulations requiring the organization to conduct its business in such a way that did not threaten the protected area. In addition, the organization was a significant local employer and its actions were subject to scrutiny. As a result, the organization felt compelled to conduct itself with consideration for the local ecosystem. In other words, it recognized its position as just one part of the interconnected natural and human built systems in which it was located. Countering these ecosystem logics, industry knowledge and practices defended traditional approaches to data center cooling. Given the northern climate in which DC1 was located, EG (which does not freeze) was the default approach and only one of five potential vendors recognized the environmental issues associated with EG:

> DC1-E: [Vendor X] *recommended ethylene glycol. They recommended ethylene glycol, but as soon as we mentioned the fact that we have this greenbelt right here, right away, nope, propylene glycol. That was interesting because they were the only ones that* [suggested it].

Had DC1 decided to implement the consensus recommendation, the result would have been the implementation of EG, the less environmentally responsible solution. However, when faced with this conflict, the IT director invoked microprocesses related to learning. He pushed the team to do its own investigations into the choices available:

> *We ended up just sitting down with the vendors and getting them to explain it and then you always take what a vendor says with a grain of salt and then we go do our research.* (DC1-C)

Members of DC1 project spent extensive time researching different options to decide which would be the most appropriate solution. In the case of air conditioning coolant, DC1 selected the environmentally-friendly option despite the slightly higher cost. In this situation, the episode supported green decision-making for the protection of natural spaces and contributed to an improvement in the project's environmental impact.

The process described above repeated in a similar fashion several more times. Through these episodes, DC1 addressed a wide range of environmental outcomes (Table 7), thereby elevating the environmental profile of the project, notwithstanding the organization's weak environmental orientation.

Data Center 2

Datacenter 2 (DC2) consisted of building a green data center at a private educational institution. It contained water-cooled servers, tri-generation power, increased power efficiency and monitoring. The project was initiated in 2007 in order to replace an existing data center that was reaching capacity and could not be retrofitted easily. The desire to demonstrate environmental leadership consistent with the organization's goal to be carbon neutral by 2040, and to have a world-class research facility for computing and engineering, also motivated this project. The chief information officer (CIO), a manager of external affairs, and a researcher played key roles in this project.

DC2 had a strong organizational environmental orientation, driven from the very top, and a sustainability office responsible for encouraging and supporting environmental initiatives. Consistent with the organizational vision, the CIO saw himself as a sort of environmental champion within the IT group in his efforts to look at the environmental impacts of technologies in a holistic fashion, considering not only energy but also manufacturing and disposal of IT equipment:

> *We've tried to look at [green] more broadly, to say yeah, energy usage is one factor, but there are other pieces to this, including environmental impacts of manufacturing, equipment disposal, the rare earth mineral stuff. There are all these different pieces*. (DC2-B)

The project was identified from the outset as being a showcase for green IS and therefore was able to attract external partners to help fund it and provide the necessary expertise. However, in terms of final outcome, we rated the project's environmental profile as moderate (see Table 7). As discussed further below, we believe that this outcome is attributable to the different windows of opportunity and greening episodes that occurred during the project.

In setting out to create one of the first recognized green data centers, DC2 experienced substantial macro-level conflicts leading to several points of contestation between traditional and ecosystem logics. Two of these resulted in green decision-making while the third did not. For example, during project initiation, the availability of funding created considerable pressure on the project to incorporate new technologies and innovative solutions to address environmental considerations (Table 8, row 6). Counteracting this pressure were normative pressures of traditional logics resulting from industry conservatism regarding data centers: participants believed that few green innovations would be undertaken if the project was left to incumbent firms and professionals:

> *Architects, engineers, other consultants, tend to be very risk averse in IT spaces, particularly data center facility spaces. They don't want to try new stuff.* (DC2-A)

These pressures and the contestation between old and new ways of building data centers were felt strongly by project participants and activated their identities and alternative logics. It was during this stage that the sustainability office was most heavily involved in the project. Within the context of its environmental leadership role, the office helped to facilitate discussions necessary for the project to get off the ground:

> *The sustainability office was very involved during the initial planning and became more involved when we brought* [a partner] *in. So the sustainability office was working with our office to develop the energy usage patterns and worked with us to develop partnerships with* [a partner]. *Once the design was in place and they knew that that was getting constructed, they sort of backed out at that point*. (DC2-D)

In addition, other actors, who were not normally strong environmental champions, demonstrated their commitment to ecosystem logics in this context. They felt that building a green data center was an important innovation for reducing environmental impacts and could help to change future IS practices. Thus, guided by ecosystem logics, they engaged in building networks and proving value microprocesses. The external affairs manager, in collaboration with the CIO, actively sought out and assembled a group of like-minded, green organizations to participate in the project:

> *I kind of started the project with* [vendor] *and then recruited all the internal assets to do this and I'm certainly not technically qualified to do anything about the design, but I just made sure the right people got involved and then it took off.* (DC2-C)

Through partnerships with these organizations, DC2 could align interests and develop a cohesive vision for an 'ideal' green data center.

In conjunction with building networks, the three main actors also employed microprocesses to prove the value of the green project. Because industry conservatism represented a substantial source of legitimacy for traditional practices, DC2 emphasized the various benefits (green and non-green) of the project, consistent with a more instrumental approach. In particular, setting up the data center as a showcase was effective for getting vendors on board because of the potential for positive publicity. Thus, microprocesses of proving value worked in conjunction with building networks and provided increased legitimacy for choosing more environmentally sound project practices.

Despite the high green intentions of the DC2 project, not all contests of logics resulted in green decisions. During the design phase of the project, a conflict arose with respect to the question of type of power supply (Table 8, row 8). In data centers, there is a movement toward the use of DC power (as opposed to AC power) in order to improve energy efficiency such that DC power would have been the obvious choice for a showcase green data center. In this situation, responsibility for resolving the issue fell to the data center manager because it was not an issue of interest for other actors. This manager was more strongly committed to traditional logics, and subsequently used microprocesses associated with fitting in to current systems. He framed the question not in terms of how the environment might be impacted, but what would be easier and cheaper in the existing IT environment:

> *One of the big transitions in this industry… DC power is a large theme in IT world. Computers run on DC. It makes sense to generate DC. We don't actually generate DC right now, we generate AC and rectify it. But we could, if we had enough computers out here that were DC.* (DC2-C)

In this situation, we propose that microprocesses related to fitting in reinforced traditional decision-making and DC2 missed this opportunity to enhance their environmental profile by further reducing their environmental impacts. Through these illustrative episodes, we can see how an organization with a strong environmental identity supported by environmental leadership and the presence of various environmental champions can implement a project resulting in only a moderate environmental profile.

Kitchen 1

Kitchen 1 (KIT1) involved the implementation of a kitchen energy monitoring system at a public educational institution. The project was initiated in 2008 as part of a major renovation of the main kitchen and cafeteria areas. The scope of the project was to implement the necessary equipment (sensors and sub-meters) and software to enable monitoring of the kitchen's electricity, natural gas, hot and cold water, and heating and cooling. The project was motivated by the need for more accurate utility billings for the kitchen, to enable optimization of kitchen management decisions with respect to utilities, and to help achieve the organization's goal of becoming carbon neutral by 2020. Unlike the other three cases, this project was initiated by the sustainable development group with limited involvement from the organization's IS group.

Similar to DC2, KIT1 demonstrated a strong organizational environmental orientation, dating back over 40 years. The organization had a well-established sustainability department with substantial funding. Not only did this group provide environmental leadership to the organization, the director viewed himself as an environmental champion. He explained the cultural evolution as follows:

> *I started in that position, energy and environment engineer, I was all alone. And now, we're almost five people doing sustainability full-time.* (KIT1-A)

Despite this strong culture of sustainability, like DC2, we observed only a moderate environmental profile for the KIT1 project. Several main points of contestation were identified in this project that help to explain this outcome.

During the initiation phase, a tension existed between traditional project logics focusing on elements such as cost, scope and timeline, and the organizational identity that favoured sustainability. Navigating through this tension, the sustainability director was able to secure approval for the sensor and sub-metering project by cultivating change opportunities and proving value (Table 8, row 9). As one participant explained, the larger kitchen renovation opened up possibilities for environmental initiatives:

> [The kitchen was a] *total gut, right down to the floor drains. The floor was all ripped up and redone. And so we thought, well, why don't we do some serious metering?* (KIT1-A)

Over time, the sustainability director reduced his involvement in the kitchen renovation, assuming that the green requirements would be implemented as specified. However, during the design phase, his absence as the voice of ecological concerns and authority allowed underlying traditional logics to resurface because the project's consultants had no previous green models (or logics) on which to base their work:

> *They* [consultants] *just did a tiny little bit of lip service to our request* [for sub-metering]. *They hadn't done it before; they didn't know what it meant.* (KIT1-A)

Therefore, although the requirements for sub-metering were provided upfront, they were largely ignored, contradicting the organization's environmental orientation and explicit project requirements. From the point of view of the team charged with renovating the kitchen, conflicts between project requirements were treated as routine and automatic responses involving traditional decision-making were invoked (Table 8, row 10). To balance the elements of cost, scope and requirements, the green requirements for sensoring and sub-metering were easily dismissed.

Later in the project, the sustainability director discovered the oversight with respect to sub-metering. This gave rise to a new point of contestation between logics and opened a new window of opportunity (Table 8, row 11) for individual agency through environmental championing. Had this conflict and return to traditional behavior patterns not been identified, we surmise that KIT1 likely would have missed a key environmental objective and suffered a major drop in the environmental profile of this project. However, it was identified, and the sustainability director increased the intensity of microprocesses and developed networks with external vendors with expertise in this area. By drawing on additional resources, new knowledge became available to the team and uncertainties were reduced. In addition to building external networks, the sustainability director also built internal networks with kitchen management, working with them to identify opportunities for savings in order to make the sub-metering component more attractive, an example of a proving value microprocess:

> *We financed a part of the renovation through the savings, because they couldn't find the money and then I mentioned how much we were going to save* (KIT1-A)

These microprocesses supported green-decision making, such that all sub-metering requirements were eventually implemented within the project. In turn, this allowed the project to deliver a moderate level of environmental benefits.

Kitchen 2

Kitchen 2 (KIT2) consisted of the implementation of automated inventory management software for the kitchen, beverage, and banquet departments of a not-for-profit government agency. The project began in 2008, triggered by audit concerns regarding manual inventory processes. The organization was also contemplating an expansion that could not be supported with the legacy systems. The project was managed by an internal project manager with collaboration between the business units (BU) and the IS department. The key actors in this project were the IS Director (and his department), a project manager from the Knowledge Management group, and the BU managers. In their various roles, these actors seemed to identify more closely with traditional logics.

In this organization, green initiatives had been underway since 2005 and environmental responsibility was ingrained within the organization's identity. The assistant general manager (AGM) of the facility was the environmental leader for the organization and he had an eco-coordinator and eco-adviser working under his direction. He was also universally recognized as an environmental champion. As one colleague noted:

> *I had just come back from my first child, and he* [AGM] *had started talking about "greening" and we were all kind of laughing about it ... "Sure, we're not going to go anywhere with this." But I think he's been a big factor in moving our building forward and getting the research and bringing it back, and then helping to bring in the people that we needed to make the changes as well. He's our little hamster moving the wheel, for*

> *sure. I think it's partly just something that's interested him. It was kind of natural for him to take that extra step forward and ... run with it, really.* (KIT2-H)

Besides the AGM, various other managers championed environmental initiatives within the context of their own work domains. The IS Director (who first identified this project as a green project to us) viewed himself as a promoter of green initiatives, but within a more instrumental approach. He felt that green efforts would only succeed if framed within the business manager's perspective, where saving money and resources would naturally lead to environmental benefits. In addition, the Executive Chef was regarded as being particularly attentive to environmental issues. Under his direction, the kitchen had begun to focus on local purchasing, composting and reducing waste. However, he did not see the implementation of this inventory management system as contributing to sustainability efforts.

Despite the organization's strong environmental orientation, this project seems to demonstrate the lowest environmental profile (Table 7). We theorize that this resulted from few episodes of strong contestation between traditional and ecosystem logics. In fact, throughout this case we found only one generalized point of conflict arising between their organizational identity and the business drivers for this project (Table 8, row 12). Rather than coming to a head, this conflict remained in the background for most of the project's duration and had little effect on promoting environmentally-favorable decisions.

Responding in part to this low level of tensions, key actors most frequently engaged in microprocesses associated with fitting in to current systems, for example, by making the new inventory system work within the existing job practices of the kitchen and beverage staff. The concept of green IS in the normal operating context was viewed skeptically by project members, such as the Executive Chef. As the project advanced, actors began to use other microprocesses to build internal networks and learn how to most effectively use the system. However, these microprocesses still reflected the need to fit in:

> *One of the difficulties that our kitchen group has right now with respect to the project is that not everybody in the kitchen has direct access to an automated workstation. So if all of my information is flowing through automated means, how do I get that information to you if you are standing at a station, peeling carrots? And is it easier or better to give you that information via a paper flow? Hard to say at this point. Or, do I equip these people with iPads?* (KIT2-B)

From this case, we observe that both the dominant type (fitting in) and timing of other types of microprocesses (late in project) had the effect of reinforcing dominant logics, resulting in traditional decision-making and a lower environmental profile for this project, despite the organization's strong environmental identity.

Development of Theoretical Model

Building on our findings from the cases, we now describe our theoretical model of how environmental considerations are incorporated into projects, as illustrated in Figure 4. This model, which expands on the one earlier diagrammed in Figure 1, is broken down into three phases: 1) initial contextual conditions, 2) a period during which contestation plays out, which we refer to as an episode, and 3) the outcomes that result. The model also incorporates three levels: the macro level for the organization situated within its organizational field, the meso level of projects, and the micro level involving individual project actors.

--- Insert Figure 4 about here ---

Our explanation begins in the top left-hand corner of Figure 4. Consistent with the earlier model, the initial contextual conditions at the macro level include multiple institutional project logics (here, we focus on traditional and ecosystem) and the identity of the organization (here, environmental orientation). From these initial conditions, normative, regulative and cognitive-culture pressures develop and infiltrate the project level. Where these multiple pressures are aligned or otherwise present routine situations, our findings suggest that automatic responses based on dominant logics are activated, supporting either traditional decision-making when traditional logics are dominant, or green decision-making when ecosystem logics are dominant. That is, in non-conflictual situations, dominant logics provide a readily available filter for individuals to understand context and formulate decisions (Thornton et al., 2012). For instance, in episode 2 (Table 8, concerning a centralized data center), DC1 experienced few competing pressures between its traditional logics (coupled with a low environmental orientation) and emerging ecosystem logics, and traditional decision making resulted. Therefore, we propose that:

> P1a: When traditional logics, ecosystem logics, and organizational identity result in weak conflicting pressures, the dominant logic will be activated.
>
> P1b: When the activated dominant logic is ecosystem, green decision making is supported.
>
> P1c: When the activated dominant logic is traditional, traditional decision making is supported.

Alternatively, when strong conflicting pressures occur, we propose that traditional project logics are undermined, creating a window of opportunity. Windows of opportunity occur when conditions allow individuals to view a system in a way that provides new insights to emerge and for changes to occur (Tyre and Orlikowski, 1994): they only occur in rare situations when the right conditions exist simultaneously in time (Buhr, 2012). Consistent with the earlier model, competing pressures can also result in the activation of individuals' identities. We suggest this can happen when pressures arise, activating actors' individual identities and creating an opportunity for individual agency. For example, KIT1's strong environmental orientation conflicted with traditional logics, resulting in competing pressures for episode 9 (concerning sensors and sub-metering) that led to a window of opportunity and activated the sustainability director's green identity. Therefore, we propose that:

P2: When traditional logics, ecosystem logics, and organizational identity result in strong conflicting pressures: a) a window of opportunity opens within the project and b) actors' personal identities are activated.

The creation of the window of opportunity marks the start of the second phase, the episode, where episodes are "events that stand apart from others" (Newman and Robey, 1992, p. 253). In these episodes, we propose that the confluence of individual identities and windows of opportunity provide the conditions necessary for individuals to exert agency based on their commitment to a particular logic, which may result in championing behaviors (Andersson and Bateman, 2000). For example, the competing pressures in episode 11 activated the sustainability director's green identity and the window of opportunity provided the opening for him to exert his individual agency. Although he was not involved with the day-to-day management of the project, this opening compelled him to engage in environmental championing part way through the project; that is, he became a temporary champion for the ecosystem in the project. Our finding in this respect is consistent with previous research demonstrating that environmental leaders may also become environmental champions when the right conditions are present (Bouten and Hoozée, 2013). Therefore, we suggest that:

P3: Windows of opportunity and individual identity come together to provide occasions for individual agency.

Continuing with this example, at this point in time in the project, the sustainability director's identity was more consistent with ecosystem logics and he utilized microprocesses such as 'proving value' to help support a desired green decision. More generally, examining the types of microprocesses used in our cases leads us to propose two distinct sets of microprocesses: enabling and reinforcing. We found that certain microprocesses - learning, networking, and proving value - appear to be more in line with changing existing practices, so we categorize these as enabling microprocesses. These microprocesses support change by drawing in new knowledge and requiring a more critical and holistic evaluation of the issue at hand. In contrast, we observed that other microprocesses, such as fitting in, seem to contribute more to the preservation of existing practices by relying on established knowledge and providing constraints on the potential set of solutions. We label these reinforcing microprocesses. We propose that actors exert embedded agency during episodes: that is, they engage in reinforcing or enabling microprocesses based on their personal identities. This can occur regardless of whether the individual is an environmental leader or an environmental champion. Therefore we propose that:

> P4a: Individuals whose identities are consistent with traditional logics are more likely to engage in reinforcing microprocesses.

> P4b: Individuals whose identities are consistent with ecosystem logics are more likely to engage in enabling microprocesses.

We also suggest that when an enabling microprocess is employed during an episode, this can result in traditional institutionalized project practices changing, which can result in a green decision. Otherwise, when a reinforcing microprocess is used, existing project practices remain unchanged, supporting traditional decision making. For example, in the case of DC2, we observed that when microprocesses related to fitting in were used (Table 8, episode 8), traditional decision making resulted, whereas when microprocesses such as building networks were employed (Table 8, episode 7), green decision making occurred. Consequently, we propose that the type of microprocess relates to the type of decision making:

> P5a: The use of reinforcing microprocesses are more likely to result in traditional decision-making.

> P5b: The use of enabling microprocesses are more likely to result in green decision-making.

At this decision point, the immediate contest between contextual pressures is resolved (for the time being) and the episode comes to a close.

The effects of time on project decision making

Although proposition 5 posits that different types of microprocesses support particular types of decision making, we suggest that phase of the project in which the microprocess occurs represents another important factor to consider. That is, the influence of enabling and reinforcing microprocesses on decision-making seems to be related to the point in time at which they are invoked. Enabling microprocesses appear to have more impact when they occur in the earlier phases of projects. Once projects move into the implementation phase, enabling microprocesses are less effective, and traditional practices are more difficult to change. For example, KIT2 incorporated learning and networking microprocesses during the implementation phase of the project, but still came to a traditional decision (episode 12). Consistent with Prahalad and Bettis (1986), it appears that it is more challenging to unfreeze existing institutionalized practices later in the project. Further, when reinforcing microprocesses are used early in projects, we propose that there is less opportunity for individuals to utilize enabling microprocesses, and traditional logics become more dominant. That is, as traditional project logics become more dominant, they provide stronger filters and schemas through which individuals view the situation, problems and potential solutions (Thornton et al., 2012). Thus, we suggest later efforts to incorporate environmental considerations may become difficult. Consequently, we propose that the point at time in which microprocesses occur interacts with the type of microprocesses to affect decision making:

> P6: Enabling microprocesses that occur early in the project are more likely to result in green decision making than enabling microprocesses occurring later in the project.

From individual episodes to overall project environmental profile

The previous propositions relate to individual episodes. During the life of a project, multiple episodes may occur based on different tensions, activating different responses by individuals and the resulting decisions. As previously discussed, traditional decision-making is more likely to lead to traditional outcomes related to financial or managerial dimensions, whereas green decision-making is more likely to enhance the project's environmental profile, especially when it occurs early in the project. Over the life of a project, we propose that outcomes of green and traditional decision making accumulate and collectively influence the project's eventual environmental profile. The most visible illustration of this cumulative effect is the case of DC1 in which the project, which started out with no real environmental objectives, ended up with a higher environmental profile as a result of several occurrences of green decision making. Thus, we suggest that:

> P7: The environmental profile of a project changes over time in response to the cumulative effects of green and traditional decision-making.

Discussion

Our research findings suggest that projects' environmental profiles are a function of the contestation between different institutional logics and organizational identities, which create windows of opportunity for project actors to exercise individual agency, as demonstrated through the microprocesses they employ. Recognizing the importance of these interactions, project scholars and managers will need to remain vigilant to the potentially evolving macro and micro conditions surrounding green projects. Indeed, our research highlights the difficulty of determining the greenness of organizational projects *a priori*. Some projects may begin in the context of strong organizational environmental orientations, or with the support of a formal environmental leader, but struggle to attain moderate project environmental profiles, while others may begin with few environmental objectives but end up with high environmental profiles. Our results suggest that simply adding environmental requirements to the initial scope of the project many not be sufficient. As projects move from phase to phase, different pressures arise that can change their course depending on how individuals perceive conflicts, whether their environmental identities are activated, how they respond, and what microprocesses they invoke. Thus, the incorporation of environmental considerations into projects may vary from situation to situation (even within the same project) and involve processes outside of traditional project scope management.

While the occurrence of competing logics and organizational identities creates important windows of opportunity for change, it is important also to recognize the role that individual actors play in green projects, and, by extension, organizational greening. Although we did not focus specifically on the role of environmental leaders and champions, some important observations emerged. In particular, our research demonstrates that there is a role for both environmental leaders and environmental champions in the realization of green projects. As we observed in two of the four projects, the sustainability leader may be instrumental in defining environmental goals at the initiation of the project. In general, these environmental leaders seemed to be located in upper-middle management positions, having a substantial amount of authority within the organization and ability to influence decisions. Therefore, we suggest that well-placed and effective environmental leaders can, through the use of enabling microprocesses during the critical early stages of a project, help project teams to identify potential for raising the project's environmental profile. We also saw the potential negative effects when environmental leaders reduce their involvement and allow others with lower environmental identities to take responsibility for project design and implementation. As projects are dynamically evolving, this transition creates a potential for backsliding on environmental goals when the void left by the environmental leaders is not filled. This seems to be a key space for the emergence of environmental championing behaviors.

Through the four cases studied, we found that environmental championing was not a constant activity, but was temporal and contextual. We observed that individual actors may invoke different microprocesses and act, in effect, as champions. In general, these individuals occupied middle management positions with close relationships to senior management and the autonomy to make decisions related to the project. We also observed how the absence of an environmental champion in one project reduced the extent to which environmental considerations were incorporated into that project. It appears that without an environmental champion to give voice to concerns regarding the natural environment, it is easy for financial or other market-driven considerations (traditional logics) to take priority in decision-making. Although these results support other findings regarding the importance of environmental champions (e.g., Andersson and Bateman, 2000; Bansal and Roth, 2000), they also point to the importance of context and personal experiences and beliefs (Swaim et al., 2014) and highlight how conflicts serve to activate actors' identities, goals and schemas, and how available logics guide them in identifying problems and potential solutions (Thornton et al., 2012). Understanding this influence could provide new approaches for developing business leaders who are willing and able to effectively champion environmental initiatives (Swaim et al., 2014).

Finally, it is worthwhile to elaborate on the importance of different types of microprocesses. Enabling microprocesses include learning, proving value, and building networks and appear especially influential if employed during the earlier phases of the projects. As noted previously, these types of microprocesses facilitate the creation and dissemination of new knowledge. Thus, our findings are consistent with Sharma and Vredenburg (1998) who argue that uncertainties created at the intersection of business and ecological issues spark higher-order learning. The benefit of enabling microprocesses may be driven by the novelty of green projects and the complexity associated with evaluating the environmental impacts of alternatives. This is particularly true when environmental challenges are approached from the ecosystem perspective, where success is viewed in terms of the whole system and not measured solely in terms of its component parts (Levin, 2009).

In contrast to enabling microprocesses, we found that reinforcing microprocesses, such as fitting in, are likely to reinforce traditional practices. Although embedding change within familiar structures can be effective at reducing resistance to change, our results suggest that reinforcing microprocesses may inhibit green decision-making by giving legitimacy to established practices. While our results are situated at the individual and project level, analogous results have been found at the organizational level. For instance, Bansal and Roth (2000, p. 728) found organizations that are "motivated by ecological responsibility often chose independent and innovative courses of action, rather than mimicking other firms whose motive was legitimation". At the individual level, reinforcing microprocesses that emphasize conformity with existing practices or structures may create constraints on the way in which problems are defined and the potential pool of solutions available. If traditional organizational practices related to projects are to change, a process of unlearning old logics to make room for new logics must occur (Prahalad and Bettis, 1986). Enabling microprocesses may present the most effective avenues for greening organizational projects.

Contributions, Future Research, and Implications for Practice

Organizations are under increasing pressure to account for their environmental performance and are doing so through consolidated reports such as the GRI. However, these reports often mask the impacts of individual projects (Keeble et al., 2003), a problem that has been compounded by the relative paucity of research devoted to organizational greening at the project level (Johansson and Magnusson, 2006). In highlighting the difference between traditional capabilities and new requirements, projects can contribute to the development of new organizational knowledge and capabilities (Leonard-Barton, 1992). Thus, by situating our work at the level of projects, we address an important limitation of previous research. The model and propositions developed here provide new insights at the level at which institutional work is done (Lawrence and Suddaby, 2006), in other words, how institutional practices are created, challenged, and reformed.

Our purposeful approach to looking at projects also allowed us to discover the evolving nature of green projects and the roles of competing forces and individual agency within them. These dynamic interactions may help to explain a number of puzzling observations, such as why organizations with good environmental intentions continue to have difficulties achieving strong green projects (Nambiar and Chitty, 2014). Simply, there is no single path that organizational projects follow to become green: to consider project (or organizational) greenness at any one point in time is to lose sight of this evolutionary process. Extrapolating from the level of projects, our work provides a novel explanation of how organizational greening unfolds on a larger scale. Further, the potential for differential results in projects supports suggestions that corporate sustainability is better viewed from a portfolio perspective (Salazar et al., 2012) where the impacts of specific projects and initiatives must be considered in order to truly understand the environmental performance of the organization as a whole.

A third notable contribution of this work is the development of a multi-level model to explain how environmental considerations are incorporated into projects. Unlike much corporate sustainability research, our work is not limited to a single level of analysis. In so doing, it responds to calls for additional multi-level research with respect to both microprocesses (Chreim et al., 2007) and organizations and the natural environment (Hoffman and Bansal, 2012; Starik and Kanashiro, 2013). Although microprocesses are essential to the greening of organizational practices (e.g., Andersson and Bateman, 2000), they have been largely overlooked (Reay et al., 2006). In contrast, we incorporate a process perspective to describe how microprocesses operate within episodes. Further, we identify two different categories of microprocesses – defined as enabling and reinforcing. These new insights serve to integrate and deepen our understanding of organizational actors as agents of change (Hoffman and Bansal, 2012). By incorporating macro, meso, and micro level considerations into our model, our work highlights the benefits of approaching environmental decision-making from a multilevel perspective and can serve as a foundation for future research.

A fourth major contribution of this work is our description of ecosystem logics. During the past two decades, environmentalism and green management have emerged as alternate institutional logics to challenge the traditional market logic (Lounsbury et al., 2012). Although market and corporate logics are still dominant, researchers propose that sustainability logics should become dominant (e.g., Watson et al., 2012) and have called for more research into whether institutional logics are shifting towards the environment (Howard-Grenville et al., 2014). By building on previous work we present the key dimensions of ecosystem logics and contrast them with traditional project logics that are based on market and professional logics. Further our research shows how ecosystems logics can be used as a theoretical lens for understanding complex interactions within organizations and projects.

Finally, our results allow us to develop a more nuanced understanding of the activities of environmental leaders and champions. Consistent with the previous literature, we find that they both can contribute to corporate sustainability performance (e.g., Andersson and Bateman, 2000; Boiral et al., 2014; Crossman, 2011). However, our work extends beyond this observation to show the importance of environmental leaders early in project initiation and the ongoing need for environmental championing activities throughout the design and implementation phases of projects. Given that not all environmental projects are the same (Gattiker et al., 2014), our work unpacks key temporal and contextual dimensions of environmental championing through the integration of macro, meso and micro-level processes. Thus, it is important that organizations and organizational researchers look at environmental champions as not only existing within a defined and static role, but rather consider more broadly how environmental championing behaviors can emerge and grow within the context of daily work.

Limitations and Future Research Directions

Several limitations of this research must be acknowledged. First, we studied four cases of convenience within the IS domain. Although we attempted to find projects with greener environmental profiles, this proved to be challenging given the emergent state of environmental IS practices. By following a multiple-case design, our findings are more robust, grounded, accurate, and generalizable than a single case (Eisenhardt and Graebner, 2007). However, as with any case study (e.g., Slack and Morris 2015), the data are restricted and the cases may not have provided maximum variation, presenting another limitation to this research. Thus, our results may not apply to contexts other than those studied here. We suggest that similar studies be aimed at other types of organizational projects in different contexts. Eventually, it may be possible for theory-based interventions to be developed and tested in an action-research setting (e.g., Keevers et al., 2012). This type of field-based work would enrich organizational sustainability scholarship, and also contribute to necessary real-world changes for the benefit of the global environment.

It should also be noted that we did not examine in-depth why certain microprocesses were effective while others were not. We can speculate that learning and building networks allow project groups to develop the specialized knowledge and skills needed to address environmental issues. However, other explanations are possible. For instance, providing an opportunity for learning about sustainability issues in projects may result in improved employee engagement, which is an important factor in the success of eco-initiatives throughout the organization (Ramus and Steger, 2000). Therefore, we believe that there are opportunities for fruitful research that investigates enabling and reinforcing microprocesses in greater detail.

Our proposed model is limited in scope to understanding how environmental considerations are addressed in organizational projects. In this respect, it explains how specific points of contestation activate individual action and influence decision-making within projects. Although this is an important contribution to the organizational sustainability literature, our propositions do not specifically answer the question of how institutional logics and organizational identities are changing. Based on the work of others (e.g., Dacin et al., 2002; Lounsbury et al., 2012; Thornton et al., 2012), we would suggest that there is an additional linkage between decision-making at the project level and the multiple institutional logics and organizational identity at the macro level. Specifically, each episode and decision provides experience and knowledge that lays the groundwork for larger changes (Leonard-Barton, 1992). Unfortunately our data do not allow us to integrate those types of relationships into the model. Future research that examines the evolution of projects longitudinally would be worthwhile to deepen our collective understanding of institutional change in the sustainability context.

In terms of directions for future research, we hope that our development of ecosystem logics and related propositions will serve more broadly as a basis for other scholars seeking to understand how competing forces and individual agency come together to influence green practices in organizations. In this respect, our work is a launching point for future scholarship in business and the natural environment. In particular, we encourage researchers to maintain an integrative approach (Hahn et al., 2015), accepting the existence of tensions and paradoxes (Smith and Lewis, 2011), and seeking to explore how managers and other individual actors can take advantage of them to push organizations closer towards environmental sustainability.

Implications for Management Practice

The practical implications of this work are fourfold. First, organizations cannot rely solely on a strong environmental identity or environmental leaders to drive environmental performance in their projects. As demonstrated, even organizations with high regard for sustainability can achieve projects that deliver very little environmental benefit. Therefore, organizations need to leverage conflicts between old and new practices to create effective conditions for change.

Second, like Maltzman and Shirley (2010), we suggest that the project management book of knowledge be updated to guide project managers on how to address environmental considerations by, for example, updating project management techniques that are more aligned with ecosystem logics. In so doing, project managers will then have access to alternative logics that can be activated when ambiguity and conflicts arise.

Third, managers should recognize that it is possible for ‘ordinary’ projects to develop green environmental profiles as they unfold. The presence of a temporary environmental champion who engages in enabling microprocesses can, within the context of the project work, encourage greener decisions that do not necessarily interfere with the project’s other requirements and objectives. Organizations and their managers should be open to these opportunities and work to establish favourable conditions for environmental championing.

Fourth, in line with this goal of providing favorable conditions, it is important that organizations revisit the skills and competencies of their employees with respect to sustainability. Research suggests that managers require five key competencies in sustainability: the use of systems thinking; the ability to anticipate potential environmental issues; the skill to recognize and reconcile sustainability values, principles and goals; the aptitude to design and implement interventions; and the interpersonal competency to motivate peers and encourage collaboration (Wiek et al., 2011). In other words, knowledge about environmental issues is not sufficient. Instead, managerial training should focus on developing these other competencies, many of which, such as systems thinking, were evident among the environmental leaders and champions in our four cases. In addition, we suggest that organizations approach sustainability education using a critical pedagogy which challenges trainees to question assumptions, recognize power relationships, and engage with others in collaborative and cross-disciplinary efforts (Welsh and Murray, 2003). This critical approach parallels the tactics we saw project actors take when applying learning and networking microprocesses. This could be quite valuable for organizations because many project and business managers are equipped with a traditional management education and may not have the knowledge necessary for understanding environmental problems and formulating solutions favourable to the ecosystem (Swaim et al., 2014).

Conclusion

The challenge of environmental sustainability is a global priority. Increasingly, organizations have no choice but to improve their environmental performance and projects are one mechanism through which this can be achieved. However, achieving organizational greenness through projects is not a trivial undertaking and organizations must be prepared to navigate through complex multi-level interactions in order to realize their sustainability goals.

References

Aguinis, H., & Glavas, A. (2012). What We Know and Don't Know About Corporate Social Responsibility: A Review and Research Agenda. *Journal of Management, 38*(4), 932-968.

Andersson, L. M., & Bateman, T. S. (2000). Individual Environmental Initiative: Championing Natural Environmental Issues in U.S. Business Organizations. *Academy of Management Journal, 43*(4), 548-570.

Banerjee, S. B. (2002). Corporate Environmentalism: The Construct and Its Measurement. *Journal of Business Research, 55*(3), 177-191.

Bansal, P., Gao, J., & Qureshi, I. (2014). The Extensiveness of Corporate Social and Environmental Commitment across Firms over Time. *Organization Studies, 35*(7), 949-966.

Bansal, P., & Roth, K. (2000). Why Companies Go Green: A Model of Ecological Responsiveness. *Academy of Management Journal, 43*(4), 717-736.

Boiral, O., Baron, C., & Gunnlaugson, O. (2014). Environmental Leadership and Consciousness Development: A Case Study among Canadian Smes. *Journal of Business Ethics, 123,* 363-383.

Bouten, L., & Hoozée, S. (2013). On the Interplay between Environmental Reporting and Management Accounting Change. *Management Accounting Research, 24*, 333-348.

Buhr, K. (2012). The Inclusion of Aviation in the EU Emissions Trading Scheme: Temporal Conditions for Institutional Entrepreneurship. *Organization Studies, 33*(11), 1565-1587.

Butler, T. (2011). Compliance with Institutional Imperatives on Environmental Sustainability: Building Theory on the Role of Green IS. *Journal of Strategic Information Systems, 20,* 6-26.

Cantor, D. E., Morrow, P. C., McElroy, J. C., & Montabon, F. (2013). The Role of Individual and Organizational Factors in Promoting Firm Environmental Practices. *International Journal of Physical Distribution & Logistics Management, 43*(5/6), 407-426.

Carberry, E., Bharati, P., Levy, D. L., & Chaudhury, A. Direct or Indirect Activism? Social Movements and the Adoption of Green Information Systems. In *Academy of Management Annual Meeting, Philadelphia, PA, 2014*

Carpintero, O. (2013). When Heterodoxy Becomes Orthodoxy: Ecological Economics in the New Palgrave Dictionary of Economics. *American Journal of Economics and Sociology, 72*(5), 1287-1314.

Chreim, S., Williams, B. E., & Hinings, C. R. (2007). Interlevel Influence on the Reconstruction of Professional Role Identity *Academy of Management Journal, 50*(6), 1515-1539.

Common, M., & Stagl, S. (2005). *Ecological Economics: An Introduction*. Cambridge, UK: Cambridge University Press.

Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Crossman, J. (2011). Environmental and Spiritual Leadership: Tracing the Synergies from an Organizational Perspective. *Journal of Business Ethics, 103*, 553-565.

Dacin, M. T., & Dacin, P. A. (2008). Traditions as Institutionalized Practice: Implications for Deinstitutionalization. In R. Greenwood, C. Oliver, R. Suddaby, & K. Sahlin-Andersson (Eds.), *The Sage Handbook of Organizational Institutionalism* (pp. 327-351).

Dacin, M. T., Goodstein, J., & Scott, W. R. (2002). Institutional Theory and Institutional Change: Introduction to the Special Research Forum. *Academy of Management Journal, 45*(1), 45-56.

DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review, 48*(2), 147-160.

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review, 14*(4), 532-550.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building from Cases: Opportunities and Challenges. *Academy of Management Journal,, 50*(1), 25-32.

Ergi, C., & Herman, S. (2000). Leadership in the North American Environmental Sector: Values, Leadership Stypes, and Contexts of Environmental Leaders and Their Organizations. *Academy of Management Journal, 43*(3), 571-604.

Freidland, R., & Alford, R. (1991). Bringing Society Back In: Symbols, Practices and Institutional Contradictions. In W. W. Powell, & P. J. DiMaggio (Eds.), *The New Institutionalism in Organizational Analysis* (pp. 232-263). Chicago: University of Chicago Press.

Galbraith, J. R. (1973). *Designing Complex Organizations*. Reading, MA: Addison-Wesley.

Gattiker, T. F., Carter, C. R., Huang, X., & Tate, W. L. (2014). Managerial Commitment to Sustainable Supply Chain Management Projects. *Journal of Business Logistics, 35*(4), 318-337.

Gemino, A., Reich, B. H., & Sauer, C. (2008). A Temporal Model of Information Technology Project Performance. *Journal of Management Information Systems, 24*(3), 9-44.

Glynn, M. A., & Raffaelli (2013). Organizational Design, and Practice Adoption: The Structural Embeddedness of CSR Pograms. *Research in the Sociology of Organizations, 39B*, 175-197.

Greenwood, R., Suddaby, R., & Hinings, C. R. (2002). Theorizing Change: The Role of Professional Associations in the Transformation of Institutional Fields. *Academy of Management Journal, 45*, 58-80.

Hahn, T., Pinske, J., Preuss, L., & Figge, F. (2015). Tensions in Corporate Sustainability: Towards an Integrative Framework. *Journal of Business Ethics, 127*(2), 297-316.

Hahn, T., Preuss, L., Pinske, J., & Figge, F. (2014). Cognitive Frames in Corporate Sustainability: Managerial Sensemaking with Paradoxical and Business Case Frames. *Academy of Management Review, 39*(4), 463-487.

Hargadon, A. B. (2002). Brokering Knowledge: Linking Learning and Innovation. *Research in Organizational Behaviour, 24*, 41-85.

Hart, S. L. (1995). A Natural-Resource-Based View of the Firm. *Academy of Management Review, 20*(4), 986-1014.

Hoffman, A. J. (1999). Institutional Evolution and Change: Environmentalism and the U.S. Chemical Industry. *Academy of Management Journal, 42*(4), 351-371.

Hoffman, A. J. (2001). *From Heresy to Dogma: An Institutional History of Corporate Environmentalism*. Stanford, CA: Stanford University Press.

Hoffman, A. J., & Bansal, P. (2012). Retrospective, Perspective, and Prospective: Introduction to the Oxford Handbook on Business and the Natural Environment. In P. Bansal, & A. J. Hoffman (Eds.), *The Oxford Handbook of Business and the Natural Environment*. Oxford, UK: Oxford University Press.

Howard-Grenville, J., Buckle, S., Hoskins, B., Sir, & George, G. (2014). From the Editors: Climate Change and Management. *Academy of Management Journal, 57*(3), 615-623.

Jarvenpaa, S., & Ives, B. (1991). Executive Involvement and Participation in the Management of Information Technology. *MIS Quarterly, 15*(2), 205-225.

Jenkin, T. A., McShane, L., & Webster, J. (2011). Green Information Technologies and Systems: Employees' Perceptions of Organizational Practices. *Business and Society, 50*, 266-314.

Johansson, G., & Magnusson, T. (2006). Organising for Environmental Considerations in Complex Product Development Projects: Implications from Introducing a "Green" Sub-Project. *Journal of Cleaner Production, 14*, 1368-1376.

Johnson, G., Smith, S., & Codling, B. (2000). Microprocesses of Institutional Change in the Context of Privatization *Academy of Management Review, 25*(3), 572-580.

Jones, C., Boxenbaum, E., & Anthony, C. (2013). The Immateriality of Material Practices in Institutional Logics. *Research in the Sociology of Organizations, 39*(A), 51-75.

Keeble, J. J., Topiol, S., & Berkeley, S. (2003). Using Indicators to Measure Sustainability Performance at a Corporate and Project Level. *Journal of Business Ethics, 44*, 149-158.

Keevers, L., Treleaven, L., Sykes, C., & Darcy, M. (2012). Made to Measure: Taming Practices with Result-Based Accountability. *Organization Studies, 33*(1), 97-120.

Kellogg, K. C. (2011). Hot Lights and Cold Steel: Cultural and Political Toolkits for Practice Change in Surgery. *Organization Science, 22*, 482-502, doi:*10.1287/orsc.1100.0539*.

King, D. (1992). *Project Management Made Simple: A Guide to Successful Management of Computer Systems Projects*. Englewood Cliffs, NJ: Yourden Press.

Kirsch, L. (2000). Software Project Management: An Integrated Perspective for an Emerging Paradigm, Chapter 15. In R. W. Zmud (Ed.), *Framing the Domains of IT Management: Projecting the Future ... Through the Past* (pp. 285-304). Cincinnati, OH: Pinnaflex Education Resources, Inc.

Klettner, A., Clarke, T., & Boersma, M. (2014). The Governance of Corporate Sustainability: Empirical Insights into the Development, Leadership and Implementation of Responsible Business Strategy. *Journal of Business Ethics, 122*, 145-165.

Lawrence, T. B., & Suddaby, R. (2006). Institutions and Institutional Work. In S. R. Clegg, C. Hardy, T. B. Lawrence, & W. R. Nord (Eds.), *Handbook of Organization Studies (2nd Edition)*. London, UK: Sage.

Lenox, M., King, A., & Ehrenfeld, J. (2000). An Assessment of Design-for-Environment Practices in Leading U.S. Electronics Firms. *Interfaces, 30*(3), 83-94.

Leonard-Barton, D. (1992). Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development. *Strategic Management Journal, 13*(Summer), 111-125.

Levin, S. A. (Ed.). (2009). *The Princeton Guide to Ecology*. Princeton, NJ: Princeton University Press.

Lounsbury, M., Fairclough, S., & Lee, M.-D. P. (2012). Institutional Approaches to Organizations and the Natural Environment. In P. Bansal, & A. J. Hoffman (Eds.), *The Oxford Handbook of Business and the Natural Environment*. Oxford, UK: The Oxford University Press.

Lucas, M. T. (2010). Understanding Environmental Management Practices: Integrating Views from Strategic Management and Ecological Economics. *Business Strategy and the Environment, 19*, 543-556.

Maltzman, R., & Shirley, D. (2010). *Green Project Management*. Boca Raton, FL: CRC Press.

Mignerat, M., & Rivard, S. (2012). The Institutionalization of Information System Project Management Practices. *Information & Organization, 22*, 125-153.

Miles, M. B., & Huberman, M. A. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks: Sage Publications, Inc.

Nambiar, P., & Chitty, N. (2014). Meaning Making by Managers: Corporate Disclosure on Environment and Sustainability in India. *Journal of Business Ethics, 123*, 493-511.

Nelson, R. R. (2007). IT Project Management: Infamous Failures, Classic Mistakes, and Best Practices. *MIS Quarterly Executive, 6*(2), 67-78.

Newman, M., & Robey, D. (1992). A Social Process Model of User-Analyst Relationships. *MIS Quarterly, 16*(2), 249-266.

Nidumolu, S. (1995). The Effect of Coordination and Uncertainty on Software Project Performance: Residual Performance Risk as an Intervening Variable. *Information Systems Research, 6*(3), 191-219.

Powell, W. W., & Colyvas, J. A. (2008). Microfoundations of Institutional Theory. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The Sage Handbook of Organizational Institutionalism* (pp. 276-298). London, UK: Sage Publications Ltd.

Prahalad, C. K., & Bettis, R. A. (1986). The Dominant Logic: A New Linkage between Diversity and Performance. *Strategic Management Journal, 7*(6), 485-501.

Project Management Institute (2004). *A Guide to the Project Management Body of Knowledge: PMBOK Guide* (3rd ed.). Newtown Square, PA: Project Management Institute, Inc.

Ramus, C. A., & Steger, U. (2000). The Roles of Supervisory Support Behaviors and Environmental Policy in Employee "Ecoinitiatives" at Leading-Edge European Companies. *Academy of Management Journal, 43*(4), 605-626.

Reay, T., Golden-Biddle, K., & Germann, K. (2006). Legitimizing a New Role: Small Wins and Microprocesses of Change. *Academy of Management Journal, 49*(5), 977-998.

Reay, T., & Hinings, C. R. (2009). Managing the Rivalry of Competing Institutional Logics. *Organization Studies*, *30*(6), 629-652.

Rousseau, H. E., Berrone, P., & Walls, J. Let's Talk: Examing Dialogue among Firms and Outside Actors on Social and Environmental Issues. In *Academy of Management Annual Meeting, Philadelphia, PA, 2014*

Sabherwal, R., & Grover, V. (2010). A Taxonomy of Political Processes in Systems Development. *Information Systems Journal, 20,* 419-447.

Salazar, J., Husted, B. W., & Biehl, M. (2012). Thoughts on the Evaluation of Corporate Social Performance through Projects. *Journal of Business Ethics*, *105*, 175-186.

Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. London, UK: Sage Publications Ltd.

Sambamurthy, V., & Kirsch, L. (2000). An Integrative Framework of the Information Systems Development Process. *Decision Sciences, 31*(2), 391-411.

Scott, W. R. (1987). The Adolescence of Institutional Theory. *Administrative Science Quarterly, 32*, 493-511.

Scott, W. R. (2001). *Institutions and Organizations*. Thousand Oaks: Sage Publications.

Sharma, S., & Vredenburg, H. (1998). Proactive Corporate Environmental Strategy and the Development of Competitively Valuable Organizational Capabilities. *Strategic Management Journal, 19*(8), 729-753.

Shepherd, D. A., & Sutcliffe, K. M. (2011). Inductive Top-Down Theorizing: A Source of New Theories of Organization. *Academy of Management Review, 36,* 361-380.

Smith, W. K., & Lewis, M. W. (2011). Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing. *Academy of Management Review, 36,* 381-403.

Starik, M., & Kanashiro, P. (2013). Toward a Theory of Sustainability Management: Uncovering and Integrating the Nearly Obvious. *Organization & Environment*, *26*(1), 7-30.

Starik, M., & Rands, G. P. (1995). Weaving an Integrated Web: Multilevel and Multisystem Perspectives of Ecologically Sustainable Organizations. *Academy of Management Review, 20*(4), 908-935.

Swaim, J. A., Maloni, M. J., Napshin, S. A., & Henley, A. B. (2014). Influences on Student Intention and Behavior toward Environmental Sustainability. *Journal of Business Ethics*, *124*, 465-484.

The Climate Group. (2008) Smart 2020: Enabling the Low Carbon Economy in the Information Age. In *The Global Sustainability Initiative*, Brussels, Belgium.

Thornton, P. H., Ocasio, W., & Lounsbury, M. (2012). *The Institutional Logics Perspective: A New Approach to Culture, Structure and Process*. Oxford, UK: Oxford University Press.

Tyre, M. J., & Orlikowski, W. J. (1994). Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organizations. *Organization Science*, *5*(1), 98-118.

Van Dijk, S., Berends, H., Jelinek, M., Romme, A. G. L., & Weggeman, M. (2011). Micro-Institutional Affordances and Strategies of Radical Innovation. *Organization Studies*, *32*(11), 1485-1513.

Verdantix (2013). Forecasting US Corporate Spending on Energy, Environment & Sustainability - 2013 to 2017 Executive Summary. http://www.verdantix.com/index.cfm/papers/Products.Details/product_id/532/forecasting-us-corporate-spending-on-energy-environment-sustainability-2013-to-2017-webinar-/-. Accessed March 15 2015.

Vermeulen, P. A. M., Van Den Bosch, F. A. J., & Volberda, H. W. (2007). Complex Incremental Product Innovation in Established Service Firms: A Micro Institutional Perspective. *Organization Studies, 28*(10), 1523-1546.

Watson, R., Lind, M., & Haraldson, S. The Emergence of Sustainability as the New Dominant Logic: Implications for Information Systems. In *Thirty-third International Conference on Information Systems, Orlando, FL, 2012*

Weick, K. E. (1996). Drop Your Tools: An Allegory for Organizational Studies. *Administrative Science Quarterly, 41*, 301-313.

Welsh, M. A., & Murray, D. L. (2003). The Ecollaborative: Teaching Sustainability through Critical Pedagogy. *Journal of Management Education, 27*(2), 220-235.

Whiteman, G., & Cooper, W. H. (2000). Ecological Embeddedness. *Academy of Management Journal, 43*(6), 1265-1282.

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key Competencies in Sustainability: A Reference Framework for Academic Program Development. *Sustainability Science, 6*, 203-218.

Winn, M. I., & Pogutz, S. (2013). Business, Ecosystems, and Biodiversity: New Horizons for Management Research. *Organization & Environment*, *26*(2), 203-229.

Wolfgramm, R., Flynn-Coleman, S., & Conroy, D. (2015). Dynamic Interactions of Agency in Leadership (Dial): An Integrative Framework for Analysing Agency in Sustainability Leadership. *Journal of Business Ethics*, *126*, 649-662.

Yin, R. K. (2009). *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage Publications.

Figure 1: Cross-level model of micro-institutional logics (adapted from Thornton et al. 2012)

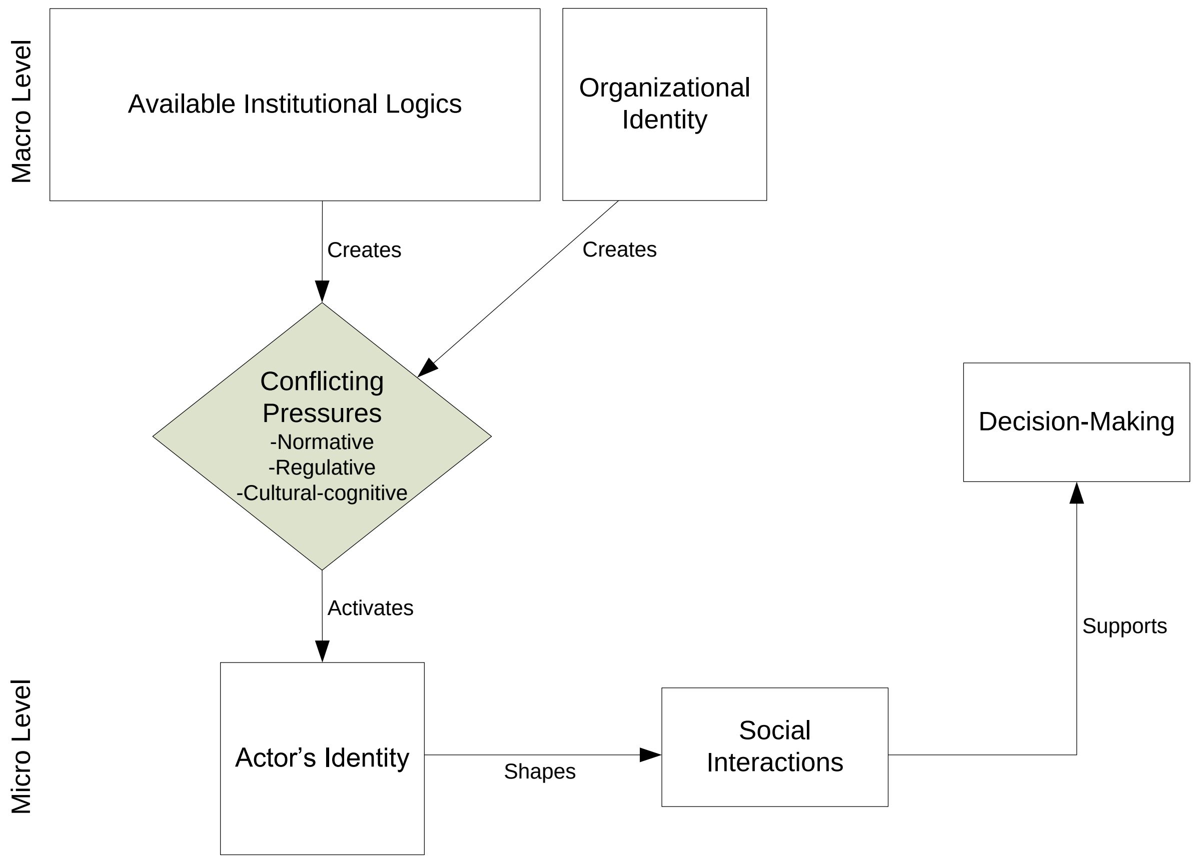

Figure 2: Data collection, coding and analytical processes

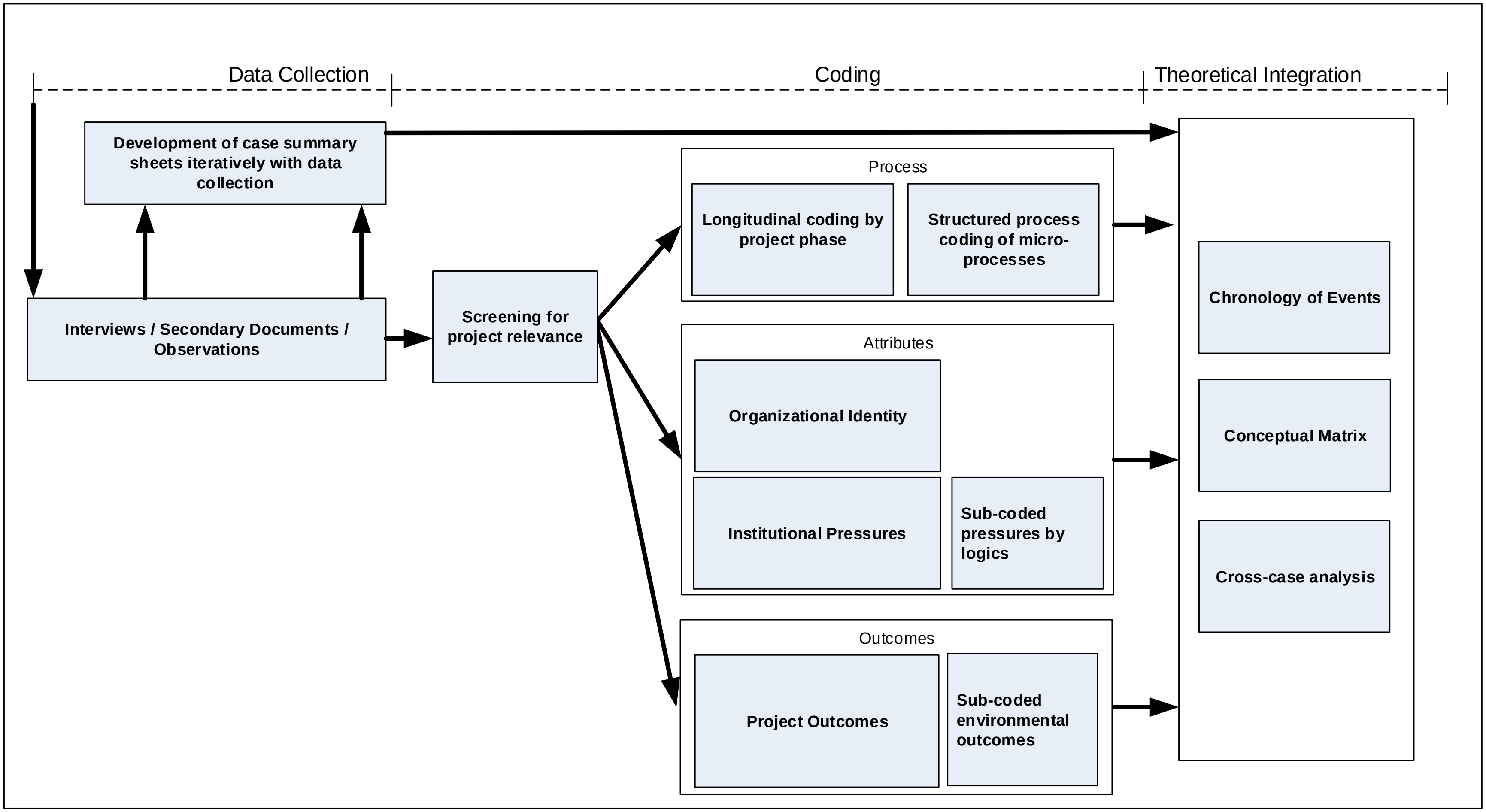

Figure 3. Final data coding structure

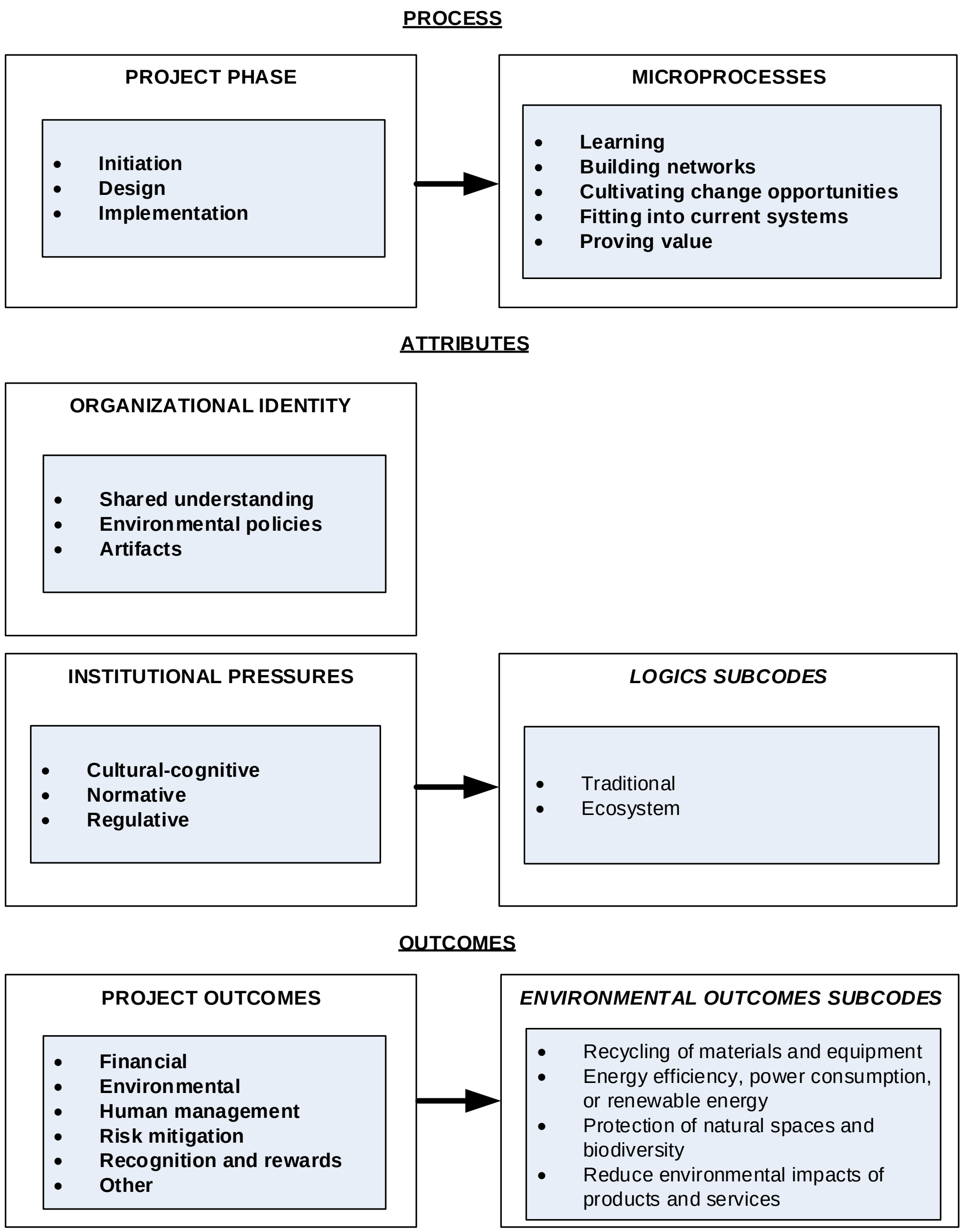

Figure 4: Conceptual model of green projects

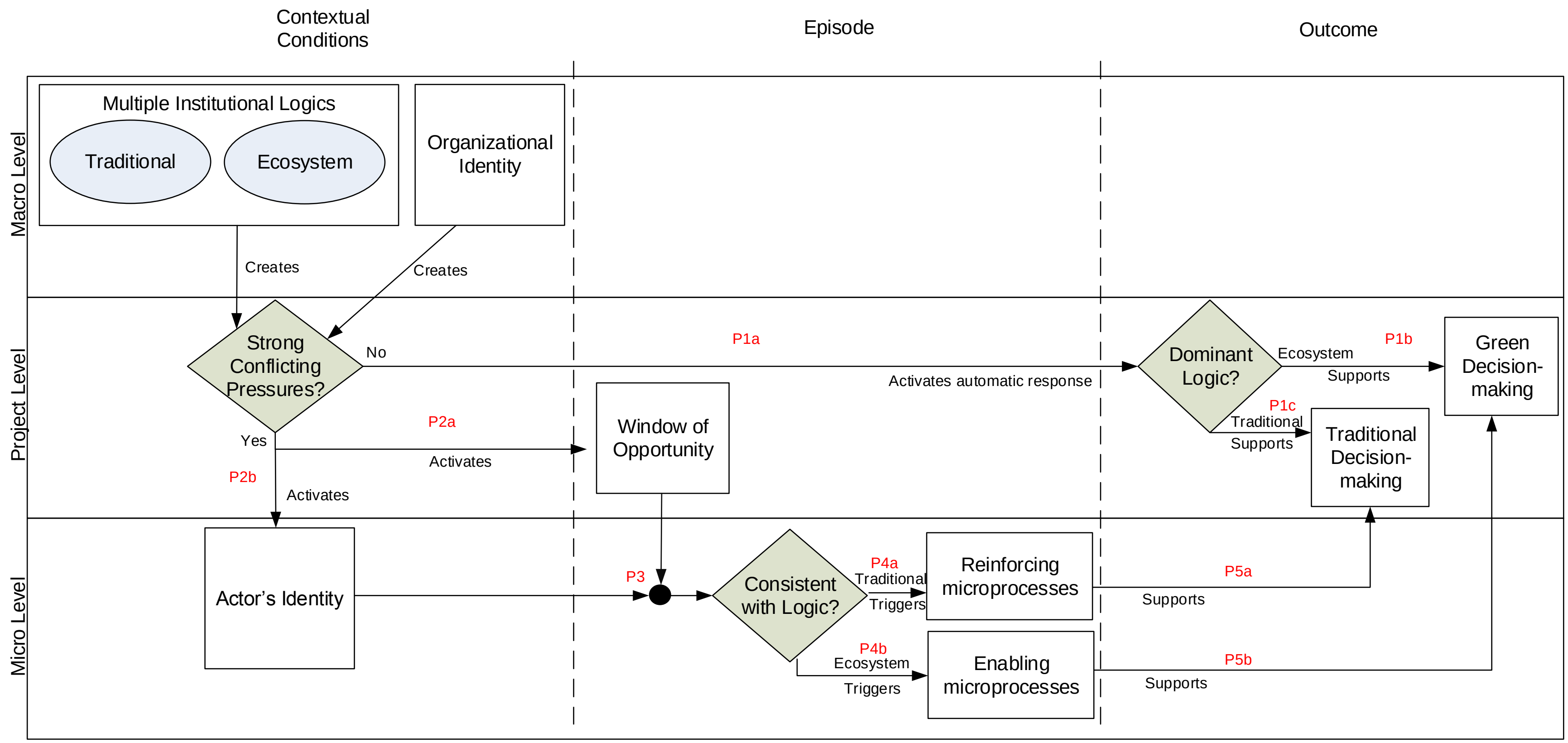

Table 1: Comparison of traditional and ecosystem project logics

Category	Traditional Project Logics	Ecosystem Project Logics
Root metaphor	Transactions: Interactions between project stakeholders needed to complete tasks (Sambamurthy and Kirsch, 2000)	System: The state and well-being of the entire system and its subsystems (Levin, 2009), not limited to a single entity, individual, or organization
Legitimacy	Personal expertise: Expertise in managing projects and with professional designations, such as the Project Management Profession (PMP)	Environmental impact: Increasing transparency of sustainability reporting allows organizations to be accountable for their behaviors (Glynn and Raffaelli, 2013), giving legitimacy to their claims of ecosystem responsibility
Sources of identity	Personal reputation: The profession of project managers has grown substantially in the last five decades with the creation of the Project Management Institute and PMP designation (Mignerat and Rivard, 2012)	Environmental championship: Activities undertaken by individuals in an attempt to change, or introduce new, products or processes that have more positive environmental impacts (Andersson and Bateman, 2000)
Sources of authority	Project associations and managers: The Project Management Institute (PMI) and similar associations; project sponsors and steering committees located within the top echelons of the organization (e.g., Gemino et al., 2008; Jarvenpaa and Ives, 1991) and their representatives, project managers (e.g., Kirsch, 2000; Nidumolu, 1995)	Ecosystem: Organizations must not only seek to mitigate ecosystem changes, but also to learn how to adapt to evolving conditions (Winn and Pogutz, 2013)
Basis of norms	Membership in project association: Through collective expertise, a body of project management knowledge has been created (Gemino et al., 2008; Kirsch, 2000; Nelson, 2007)	Social movements, environmental organizations, NGOs: Environmentally oriented movements can alter normative pressures within an organizational field, influencing green practice adoption (Carberry et al., 2014)
Economic systems	Market capitalism: Decision-making based on rational economic models in order to achieve the most effective balance among the triple constraints of time, cost and scope (Project Management Institute, 2004)	Ecological economics: An interdisciplinary economic framework that considers the interactions of human economies within the natural ecosystem in which they are situated (Common and Stagl, 2005; Lucas, 2010)

Table 2. Case characteristics

Cases	Datacenter 1	Datacenter 2	Kitchen 1	Kitchen 2
Organization Type	Corporation (for-profit)	Educational institution (private)	Educational institution (public)	Wholly owned government agency (not-for-profit)
Industry	Software development and service	Education	Education	Hospitality and event services
Green IS Project	Upgrading existing data center: power grid, power distribution, A/C, UPS	New data center containing water-cooled servers, tri-generation power, more DC power use, and sensors.	Kitchen energy monitoring system: implementation of software, sensors and meters to assess utilities' usage	Automated kitchen, beverage, and banquet inventory management system
Organization size	4,000 employees worldwide	4,000 employees (full-time faculty and staff)	4,000 employees (regular faculty and staff)	1,000 (100 full-time)
Project team size	Internal project team: 5. External: 8	Varied: planning (10-12); construction (15-20)	Varied; PM for client, PM for vendor, plus others as needed (approximately 5-12)	Varied by phase: approximately 12-15
Facility Size	2,700 sq. ft. production data center (+ development data center space)	6,000 sq. ft. (+ 6,000 sq. ft. other space)	5,000 sq. ft.	17,000 sq. ft.
End-User group	IS	IS	Energy manager, business admin (billing and accounting)	Kitchen, beverage, and banquet departments
Timeframe	2009-present	2007- present	2009-2010	2008-present
Other green projects related to this project	Server virtualization	Server virtualization; green building construction	Conversion of kitchen from steam to gas cooking, more efficient appliances, composting	Server virtualization; composting and local sourcing
Entry point	CIO	CIO	Director, Engineering and Sustainability	CIO

Table 3. Data sources

Cases	Datacenter 1	Datacenter 2	Kitchen 1	Kitchen 2
Individual participants	8	8	7	11
Participants by department (role)	7 IS (CIO, data center manager, project PM, staff/project members); 1 Development (senior executive)	3 IS (CIO, data center manager); 1 Facilities (project PM); 1 Research / Academic (professor); 2 Sustainability (managers); 1 Business Development (partnership manager)	1 Sustainability (director); 1 Facilities (manager); 2 Vendor representatives (sales, project PM); 3 Kitchen (chef, management)	3 IS (CIO, staff); 3 Business Management (senior executive, sustainability coordinator, events manager); 1 Knowledge Management (project PM); 4 Kitchen & Beverage (chef, management, staff)
Minutes of interviews and calls	473	393	223	455
Pages of transcripts and notes (single-spaced)	191	132	96	167
Other data sources	Organization website, facility tour	Organization and vendor websites, public documents, facility tour	Organization and vendor websites, public documents, internal project documents and reports, facility tour	Organization website, public documents, facility tour

Table 4. Examples of microprocesses from cases

Microprocess	Description	Illustrative Quote
Learning	Activities that individuals "engage in to extend their ability to comprehend and act within their environment" (Hargadon 2002, p. 57). Learning "involves four distinct activities: (1) learning about the existing resources of each new domain; (2) learning the related problems in that domain; (3) learning what others in their own firm know; and (4) learning how to learn" (p. 58).	*I'm going to go out in the marketplace and I'm going to talk to three vendors that are very, very smart in air conditioning and they're going to bring the latest and greatest technology to me. So I'm going to learn at the same time with them and we're going to pick the right solution, for power consumption, for heating and for green.* (DC1-B)
Building networks	The activities that individuals use to construct new networks around valuable new combinations of ideas (Hargadon 2002).	*At the same time, we were having some conversations with* [vendor] *about ways that we could partner or activities that might be of mutual interest, finding some ways to connect the institutions.* (DC2-A)
Cultivating change opportunities	Individuals' "ongoing alertness and recognition of events and situations that can be used to advance a change initiative" (Reay et al. 2006, p. 985).	*We knew we wanted to sub-meter the kitchen a lot more thoroughly than it was.* [The kitchen renovation] *was a perfect opportunity. (*KIT1-A)
Fitting into current systems	Fitting into prevailing systems, becoming "hooked into the [current] work procedures, resource allocations, and structures" (Reay et al. 2006, p. 986).	[IT analyst] *sat on one of the committees to evaluate the different types of software. One of the criteria was obviously it had to work within our systems and software, and that's how we helped evaluate it.* (KIT2-A)
Proving value	Individual's "attempts to get others, especially professional colleagues, to recognize the value" of the change (Reay et al. 2006, p. 988).	*The original discussion I had was, 'Yes, we're spending significantly more money upfront, but it does get us green. It does save us money. It checks off a lot of boxes. It makes sense to make this investment.'* (DC1-C)

Table 5. Organizational environmental orientations

Attribute	Description	DC1	DC2	KIT1	KIT2
Shared understanding	Strong norms for environmentally responsible behaviors (Starik and Rands, 1995); recognition and integration of environmental concerns into organization's decision-making processes (Banerjee, 2002)	No evidence	No evidence	Environmental tracking and reporting since 1974	Environmental efforts began as grass-roots initiatives and then formalized into organizational policies and operations
Environmental policies	Commitment of organizational resources to environmental protection contributes to environmental paradigm (Andersson and Bateman, 2000)	No evidence	LEEDs buildings; Goal of carbon neutrality by 2040	Goal of carbon neutrality and zero waste by 2020	LEED and BOMA certifications
Artifacts	Slogans, symbols, rituals and stories that articulate and reinforce environmentally sustainable behaviors (Starik and Rands, 1995)	No evidence	Sustainability Office	Sustainability Office	Environmental Committee and Eco-team (coordinator and advisor)
Overall Environmental Orientation (qualitative assessment)		weak	strong	strong	strong

Table 6. Examples of institutional pressures from cases

Type	Description	Pressures supporting Traditional logics	Pressures supporting Ecosystem logics
Cultural-cognitive	Pressures to reduce uncertainty when sustainability goals are poorly understood and it is unclear how to proceed; includes copying other organizations; conforming to industry, societal practices, competitive pressures, or cultural expectations, such as imitating successful peers (DiMaggio and Powell, 1983; Scott, 1987).	Organizations respond by continuing to adhere to and follow traditional business practices, such as those advocated by industry vendors, customer or societal expectations that emphasize traditional outcomes.	Organizations adopt green practices to conform with stakeholder expectations, such as: recycling or donating equipment, using energy efficient equipment, implementing green programs pioneered by other organizations.
Normative	Pressures to adopt practices resulting from professionalism, which socializes personnel within the organization to view certain types of structures and processes as up to date, legitimate and effective (DiMaggio and Powell, 1983; Scott, 1987).	Professional standards that don't take sustainability fully into consideration, professional background.	Voluntary sustainability reporting, being in part of environmental organization or commitment (e.g., President's agreement), voluntary certifications (such as LEED, ISO 14000), desire to win awards or other external recognition, professional background.
Regulative	Both informal and formal pressures, exerted by organizations on which the organization is dependent; may be reactive or anticipatory (DiMaggio and Powell, 1983; Scott, 1987).	Regulations that ignore environmental concerns, but impose pressure to achieve financial returns for shareholders; requirements of key suppliers.	Environmental regulations, requirements imposed by major customers or suppliers, requirements of funding organizations.

Table 7. Environmental profiles of cases

Environmental Outcomes	GRI Code	DC 1	DC2	KIT1	KIT2
Recycling of materials and equipment	EN2	yes			
Energy efficiency or renewable energy	EN6	yes	yes	yes	
Protection of natural spaces and biodiversity	EN14	yes			
Reduction of environmental impacts of products and services	EN26	yes		yes	yes
Overall Environmental Profile (% environmental benefits to total outcomes)		highest (40%)	moderate (19%)	moderate (17%)	lowest (14%)

Table 8: Episodes and decision making in cases

DC1	Episode Name	Sources of Conflict			Phase	Strong Conflicting Pressures?	Actors' Identities	Identities consistent with an Ecosystem logic	Micro-processes	Decision-making
		Ecosystem Logics	Traditional Logics	Organizational identity						
1	Green IS leadership	Industry pressure to incorporate environmental considerations into IS projects	Skepticism about 'greenness' of IT companies; focus on efficiency and costs	Low environmental orientation; more aligned with traditional logics	Initiation	No: green IS still emerging, not part of mainstream IS practices	NA	NA	NA	Traditional: Automatic responses leading to traditional decision-making
2	Centralized data center	Government funding available to support green R&D efforts, including infrastructure (e.g., centralized data centers)	Traditionally high levels of developer independence in industry, such that development teams can horde their own servers and systems		Initiation	No: green IS still emerging, not part of mainstream IS practices	NA	NA	NA	Traditional: Automatic responses leading to traditional decision-making
3	Data centre coolant (EG vs. PG)	Regulative pressure arising from environmental protection of adjacent green space	Industry standards dictate use of EG coolant in Canada		Design	Yes	IT Director: professional engineer with sustainability training, inquisitive, determined to find right answer	IT Director, High: training in sustainability, values environment and protecting immediate community and ecosystem	Learning	Green: Decision to implement more environmentally responsible option (PG) despite higher cost to organization
4	Backup generator	Ministry of Environment certificate for air must be passed in order to use generator; industry move toward high-energy efficiency generators	High-efficiency generator may not be the greener option under all conditions (e.g., less than full utilization)		Design	Yes			Learning	Green: Decision to implement most environmentally responsible generator given their context of use
5	Common data center standards	Certain countries / communities have higher expectations with respect to environmental protection and behaviors	Certain countries / communities place higher value on economic development and market goals than ecosystem wellbeing		Design	Yes			Cultivating change opportunities	Green: Decision to implement higher (consistent) standards in all data centers

DC2										
6	Green data center leadership	Pressure from funding sources (government and vendors) requiring new and innovative approaches	Data center design practices are particularly conservative and risk-averse due to mission critical nature of DCs	High environmental orientation, more consistent with ecosystem logics	Initiation	Yes	CIO: traditional IS External affairs: market logics Researcher: professional	CIO, External Affairs and Researcher: moderate	Proving value, building networks	Green: Decision to proceed with showcase green data center despite higher cost
7	LEEDs	LEEDs building certification dictates various environmental standards	LEEDs building certification does not fully consider unique attributes of green data centers		Design	Yes	IT manager: traditional IS PM: professional	IT manager: moderate PM: high	Building networks, learning	Green: Decision to proceed with green elements despite lack of LEEDs recognition
8	Power Supply	DC electricity is more energy efficient and green; movement in industry toward DC power in data centers	Electricity grid is set up as AC and IT industry has traditionally used AC power		Design	Yes	IT manager: traditional IS	IT manager: low	Fitting in to current systems	Traditional: Decision not to implement DC because of lack of sufficient computers to make it worthwhile
KIT1										
9	Green leadership (corporate)	Not evident in context of project	Traditional construction project management practices	High environmental orientation, more consistent with ecosystem logics	Initiation	Yes	Director sustainability : ecosystem logics	Director sustainability: high	Proving value	Green: Decision to include requirements for sensors and full sub-metering
10	Sensor oversight	Not evident in context of project	Traditional construction project management practices, lack of expertise with sensors and sub-metering		Design	No: Multiple layers between organization goals and kitchen project	NA	NA	NA	Traditional: Automatic responses leading to traditional decision-making
11	Pursuing sub-metering	Not evident in context of project	Traditional construction project management practices, lack of expertise with sensors and sub-metering		Design	Yes	Director sustainability : ecosystem	Director sustainability: high	Building networks, proving value	Green: Decision to hire vendors to implement the desired functionality

KIT2										
12	Green IS Leadership	Not evident in context of project	Pressures to address audit and control concerns, traditional IS project logics	High environmental orientation, more consistent with ecosystem logics	Implement-ation	Yes	CIO: Green IS with instrumental approach PM: Traditional IS BU managers: market and professional (e.g., culinary) logics	CIO & PM: low BU managers: moderate	Fitting in to current systems, building networks*, learning* * late in project	Traditional: Green considerations were not incorporated into project