Multiple Visions of Sustainability as an Organizing Principle for Change in Higher Education: How Faculty Conceptualizations of Sustainability in Higher Education Suggest the Need for Pluralism

by

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ABSTRACT

As the United Nation Decade of Education for Sustainable Development draws to a close, there are growing calls for a critical reappraisal of the state of sustainability in Higher Education. The emerging literature suggests that despite modest gains in some areas, Higher Education's overall engagement with the principles of sustainability has been both piecemeal and accommodatory leading many to ask: what is blocking this transformation? Both the protean nature of sustainability and the complexity of institutional cultures present significant challenges to more fully incorporating sustainability into Higher Education. Understanding how the cultures of different university constituencies interact with the concept of sustainability is exceedingly important for developing contextually sensitive change strategies. Given the importance of university faculty members in terms of governance and education, this study focused on the intersection of academic culture and sustainability. The questions that guided this research were: how do academics conceptualize 1) sustainability, 2) sustainable universities, and 3) the role they see for the university in envisioning a sustainable future. The purpose was to better understand what a culturally sensitive vision of organizational change for sustainability at the university could resemble and to offer insight into how to negotiate cultural or values-based barriers to change. A case study was conducted at Dalhousie University using semi-structured interviews and Q method to elicit the perspectives of faculty members from a variety of academic departments. An inductive thematic analysis of interviews and Q factor analysis of Q method data using PQ Method software suggested a horizontal segmentation of perspectives at Dalhousie University concerning sustainability and the role of the university with respect to it. This suggested that pursuing a consensus vision of sustainability for the university is fraught. This thesis discusses how culturing a perspective of critical 'sustainabilities,' based in pluralism and critical openness, as a vision of change for sustainability at the university is likely to be more aligned with academic culture while concomitantly helping to foster the development of diverse and transformative notions of sustainability.

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CHAPTER 1 INTRODUCTION

1.1. Problem Statement

The scale of human enterprise is such that we can no longer take for granted the ability of the planet's ecosystems to sustain future generations (Ehrlich & Ehrlich, 2013; MEA, 2005; Rockstrom et al. 2009). Indeed, such warnings are being advanced with greater frequency and urgency and are evidence of the collective realization that we are running headlong into socio-ecological catastrophe. The inherent complexities of emergent crises have created a need and a space for an ecologically sound, socially equitable, and economically viable discourse about future trajectories. Though exceedingly difficult to operationalize, sustainable development has emerged as a prominent discourse for global change with a strong degree of social resonance (Dryzek, 2005).

The United Nations World Commission on Environmental Development (WCED) is credited with bringing the concept of sustainable development to the attention of the global community. Its 1987 publication of the Bruntland Commission defined the term as "meeting the needs of the present without compromising the ability of future generation to meet their needs" (WCED, 1987 p.4). The concept was given greater substance and direction through its re-articulation in the 1992 Rio and 2002 Johannesburg declarations, respectively (UN, 2002). Given its articulation and subsequent dissemination as an important discourse for global change, institutions of higher learning have been called upon take up the challenge of sustainable development in a meaningful way. Most notably, the United Nations declared 2005 to 2014 the Decade of Education for Sustainable Development (DESD), within whose framework is outlined an exceedingly important role for institutions of higher learning (UNESCO, 2005). In addition, the past 30 years have seen a proliferation of Declarations for Sustainability in Higher Education

to which many IHEs have become signatories, (Lozano et al., 2011; ULSF, 1990; UNESCO, 2001; UNESCO, 1997; Wright, 2004).

The role of higher education in helping to create visions for sustainability cannot be under estimated. Universities and colleges see many of the future leaders of our society pass through their lecture halls. By virtue of their ability to engage students through their educational mission many contend universities are morally obliged to promote sustainability through their curricular and pedagogical dimensions (Clugston & Clader, 1999; Cortese, 2003). Moreover, with growing concerns regarding the current course of human society informing a growing consensus about a need for vision and innovation toward sustainability, Universities are looked to as a vanguard in creating and mobilizing knowledge to this end. Yet despite clarion calls for global sustainability and widespread agreement as to the importance of sustainability in higher education, contestations around substantive dimensions of the concept are still a source of ongoing tension and discord presenting a significant challenge if sustainability is to be an organizing principle for change (Fihlo, 1999; Thomas, 2004; Wals & Jickling, 2002). As a result, institutional change for sustainability has been criticized for being partial, lackluster (McMillin & Dyball, 2009; Sterling, 2004), and primarily focused on reducing the institutions ecological footprint (Cotton et al., 2009; Graedel, 2002; Lozano, 2011). Some argue that this is evidenced by the consistent productions of graduates for whom higher education is a road to greater affluence and power but who lack basic ecological literacy and as a result are among the most unsustainable populations on the planet (Orr, 1992; Rees, 2010). Clearly there exists a gap within the institution between rhetoric and practice.

Sustainability in Higher Education (SHE) is an emerging field of inquiry primarily concerned with how to incorporate sustainability into the physical, curricular, and pedagogical operations of universities (Barth & Thomas, 2012; Clugston & Calder, in Fihlo, 1999; Wright, 2010). Work within the field has been dominated by exploratory case studies (Barth & Thomas, 2012; Corcoran et al., 2004; Wright, 2010) much of which has identified barriers to institutional transformation toward sustainability especially with respect to incorporating curricular and pedagogical reform (Cotton et al., 2009; Dawe et

al., 2005). A synthesis of the literature concerning barriers illustrates that one of the key challenges is developing a cohesive and inclusive vision of sustainability that speaks to the lived experiences of university stakeholders. This is unsurprising, as much of the literature on organizational change contends that engaging with key stakeholder groups in developing a vision for change that is sensitive to institutional culture, is paramount to ensuring that change efforts within the institution bear fruit (de la Harpe & Thomas, 2009; Kezar & Eckle, 2002; Kezar, 2009; Wals & Jickling, 2002). To date, (with a few notable exceptions centered on ESD: Cotton et al., 2009; Cotton et al., 2007; Reid & Petocz, 2006), there exists little in the way of studies focused on assessing the conceptualizations of sustainability held by university stakeholders; this represents a significant gap in the literature (Wright, 2009).

1.2. Project Overview

This research is part of a larger, pan-Canadian initiative seeking to explore how university leaders conceptualize sustainability, sustainable universities, and the role of the university in envisioning a sustainable future (Horst & Wright, 2013; McNeil et al., 2013; Wilton & Wright, 2013; Wright, 2010). In a departure from the scope of the larger project, the research that follows is an instrumental case study (Stake, 2005) of faculty members at Dalhousie University. Participants were identified using purposeful stratified sampling that sought to sample as wide an array of departments as possible (Coyne, 1997; Sandelowski, 2000). Data were collected using two distinct research methodologies. Respondents participated in individual semi-structured in-depth interviews. Midway through the interviews, the Q-method (a rank-ordering exercise used to explore subjectivity on an issue) was administered in order to probe more deeply into how respondents' perspectives on sustainable universities clustered within the university (Brown, 1993; Watts & Stennor, 2005). Inductive thematic analysis was employed to explore emergent themes (Charmaz, 2006; Ryan & Bernard, 2003) and analysis of Q-methods data was performed using the PQMethod 2.20 software package (Shmlock, 2011).

1.2.1. Research Question

The research questions that guided this thesis were:

1. How do university professors conceptualize sustainability?
2. How do university professors conceptualize sustainable universities?
3. What role do university professors feel the university should play in helping society to envision and create a sustainable future?

Goals pursuant to this were to: 1) better understand the relationship between academic culture and organizational change for sustainability; 2) explore if and how respondents from a variety of disciplines cluster with respect to potentially divergent conceptualizations associated with the categories listed above; and, 3) offer recommendations on negotiating cultural tensions associated with institutional change toward sustainability.

1.2.2. Thesis Structure

This thesis is divided into six chapters and 5 appendices. Chapter 1 outlines the research scope and question and a review of the literature conducted for this study. Specifically, it discusses the national and international climate for SHE through a review of SHE declarations; the complexity of organizational change in higher education; the current state of thinking around sustainability in higher education; and a description of Dalhousie University, the school that provides the site for this case. Chapter 2 is a detailed description of the methods employed during this thesis. Chapters 3 through 5 are stand alone papers exploring: a) how academic culture intersects university professors' conceptualizations of sustainability and the perceived role of the university in envisioning a sustainable future, and what this means for organizational change; b) the use of Q methodology to explore university professors' conceptualizations of sustainable universities, and c) discrepancies between SHE conceptualizations of sustainability in higher education and the lived experiences of university faculty. Chapter 6 is the concluding chapter and provides a review of key findings, the primary conclusions of this study, contributions to theory and practices, and recommendations for future research directions.

1.3. Background Literature

The following section is a summary of the literature reviewed for this thesis.

1.3.1. Declarations for Sustainability in Higher Education

The United Nations World Commission on Environmental Development (WCED) is credited with coining and popularizing the term sustainable development. Its 1987 publication of the Brundtland Report defined the term as "meeting the needs of the present without compromising the ability of future generation to meet their needs" (WCED, 1987 p.4). Despite widespread agreement as to the importance of sustainability, consensus around a definition remains elusive. As the term evolves, it is co-opted, reinterpreted, and competing conceptualizations are formed that are often foundationally different and seemingly irreconcilable (Fihlo, 1999; Sylvestre et al., 2013; Wals & Jickling, 2002). This presents a significant challenge in achieving even partial consensus surrounding a vision of a path to a sustainable future.

Higher Education is thought to be among the vanguard in helping to direct our societies toward more sustainable paths. Increased awareness of environmental degradation in the early part of the 1970s prompted a revaluation of the nature of the relationship of humans to their environments. The Stockholm Declaration (UNESCO, 1972), though primarily situated in environmental law and discussing environmental concerns through a largely anthropocentric frame, was the first piece of writing of its type to discuss the notion of reorienting education for sustainability. Echoing the spirit of the Stockholm Declaration, the Tibilisi Declaration (UNESCO-UNEP, 1977), produced by the Intergovernmental Conference on Environmental Education, further articulated the importance of environmental education for all. This is considered to be one of the most important moments in the emergence of sustainability-centered education (Wright, 2002). Since the publication of the Brundtland Report in 1987, there has been a proliferation of declarations and charters produced by university leaders and associations outlining higher education's commitment to sustainability. SHE declarations and charters (as they are

often referred to) are non-binding statements that act as frameworks for institutions of higher education (IHE) to better incorporate sustainability into their operations (Lozano et al., 2011). Moreover, becoming a signatory to a declaration or charter is meant to signal the commitment of IHEs to sustainability (Bekessy et al., 2003; van Weenen, 2000; Wright, 2004).

Though declarations have evolved somewhat over time, displaying a tendency to build upon one another, many of the themes and values are static, offering a degree of continuity to the body of writing as a whole (Lozano, et al., 2011; Wright 2004). The works of Clugston and Calder (1999) and Wright (2004) are summarized by Lozano et al., (2011), who identify the following themes as being most prevalent across the declarations until 2002:

- Focus on environmental degradation, threats to society, and unsustainable consumption;
- Ethical or moral obligation of university leaders and faculties to work towards sustainable societies, including the inter-generational perspective;
- Inclusion of SD throughout the curricula in all disciplines;
- Encouragement of SD research;
- Collaboration with other universities;
- Move towards more sustainability orientated university operations;
- Stakeholder collaboration, engagement and outreach e.g. public, governments, non-governmental organizations (NGOs) and businesses;
- Transdisciplinarity across the previous points.

(Adapted from Lozano et al., 2011)

Lozano et al., (2011) expands on this list in their own analysis of important declarations after 2002, adding: 1) the importance of latent curriculum for SD by incorporating it into day-to-day life on campus; 2) the importance of educating educators on how best to convey practices and values around SD; and, 3) the importance of developing indicators to measure progress at institutions. Though this list represents a broad vision for the transformation of higher education, the complexity of implementing many of these steps has made it so that the state of change for sustainability in universities has been criticized as being both piecemeal and accommodatory (Bekessy et al., 2007; Haigh, 2005; Sterling, 2004). Universities have proven much more successful

at greening their physical operations then they have at incorporating sustainability into other dimensions of the university (Beringer & Adomßent, 2008; Cotton et al., 2009; Lozano, 2011; Tilbury, 2004). This is unsurprising since strategies targeted at reducing the ecological footprint of a university often save the university money and tend to involve fewer constituencies than change efforts aimed at more fundamental organizational transformation. If universities are to fulfill their 'moral obligation' to more fully engage with the principles of sustainability in a meaningful sense, then a deeper understanding is necessary of both what it means to be a sustainable university and the nature of organizational change within Higher Education.

1.3.2. Organizational Change in Higher Education

Universities are unlike most other organizations. Their cultures and structures are shaped by complex, often contrasting belief systems (Kezar, 2001). Understanding their nature is essential to developing contextually appropriate change strategies (de la Harpe & Thomas, 2009; Kezar, 2001; Kezar & Eckel, 2002). Unlike other organizations of similar size, (such as businesses and corporations) that tend to have clearly defined missions, universities have multiple missions and relatively ambiguous goals (Kezar, 2001; Sporn, 1996), related to their institutional imperatives to education, research, and public service. As a result they tend to focus on people rather than profits making managing the diversity of values within the institution all the more important (Sherren, 2010). Moreover, the long pedigree of the institution produces embedded behavioural patterns that have considerable inertia and translate into deeply held values among faculty relating to autonomy, collegiality in decision making, and cultures of esteem as reward systems rather than monetary gain (Delanty, 2001 ;Sherren, 2010). All of these characteristics work in tandem to create strong institutional and academic cultures, where culture is understood as "the deeply embedded patterns of organizational behavior and the shared values, assumptions, beliefs, or ideologies that members have about their organization or its work (Peterson & Spencer, 1991, p. 142, in Kezar & Eckel, 2002).

Many contend that cultural models of change are most appropriate for higher education and in particular the culture of academics within the institution (Keup et al.,

2001; Kezar, 2001; Kezar & Eckel, 2002; Sporn, 1996). Cultural models of change contend that the values and beliefs of institutional constituencies play an important role in shaping the nature of the institution. Rather than conceptualizing the university as a rational entity guided by a clear set of rules and norms where change is a linear process and constituencies can be manipulated or managed, cultural models of change are more sensitive to the complexity and contradiction that are the hallmarks of academic culture (Kezar, 2001; Sherren et al., 2010). Therefore, instead of attempting to mold people to a specific change strategy through education and incentivizing it is the vision of change that is tailored to suit the context on which it will be applied.

Of the multiple constituencies at the university, academics and administrators figure prominently in terms of governance. These two groups possess distinct cultures and pursue different, sometimes conflicting ends. Academics, as noted above, display a tendency in many institutions to favour collegially democratic and shared decision making structures (de la Harpe & Thomas, 2009; Mora, 2001; Sherren, 2010; Sporn, 1996). In addition, their career scripts mean they tend to display greater loyalties to their disciplines than to the institutions where they are employed. As a result, academics' values or cultures tend to transcend institutional boundaries with change in their respective disciplines often driving change at the university (Kezar, 2001; Sherren, 2010). In contrast, administrators' cultures are more managerial and bureaucratic focusing on the processes of running the institution rather than what it produces, with their primary focus being efficiency and fiscal responsibility (Kezar & Eckel, 2002; Sporn, 1996). The need for shared governance between these constituencies translates into multiple power and authority structures with power being diffused among the various sub-units and often wielded informally making planned change more challenging (Kezar 2001). The way in which these different cultures intersect (along with other constituencies not mentioned here) with each other and the history of a particular university creates that school's institutional culture (Kezar & Eckel, 2002)

Though institutional values and beliefs are doubtlessly important to consider in developing a change strategy, unplanned change may also work to confound change efforts. While some contend that universities are relatively stable entities (Graedel, 2002;

Kezar, 2001) others point out that although this has historically been the case new cultural arrangements are emerging due to significant external pressures to adapt to a rapidly changing world (Chan & Fisher, 2008, pp. 62, Delanty, 2001; Kirby, 2012; Sporn, 2001; Sporn, 2006). Sporn (2001) identifies five trends that she contends are transforming higher education: "restructuring of national economies, changing role of the state, shifting demographics, new technologies, and increasing globalization." To this Mora, (2001) would add the arrival of mass higher education and Delanty (2001, pp. 109), the rise of the knowledge economy. These interrelated trends combine to reshape the identity of contemporary universities

In the Canadian context, reduction of local (provincial) public grants has caused universities to expand their dependence on tuition, industry partnerships, and the provision of goods and services (Kirby, 2012; Metcalf, 2010). Greater dependence on private funding means that Canadian universities are more beholden to market pressures and forced to market themselves as they compete for a shrinking student base (Kirby, 2012). In addition, targeted (outcome based) federal funding has replaced traditional funding practices with the goal of spurring innovation and economic growth. This has compelled university administration to adopt more managerial forms of governance, rely on continued expansion of the student body as a means of generating revenue, and to adopt performance indicators as a means of driving innovation and maintaining accountability (Newsome & Polster, 2008, pp. 131). This erosion of traditional academic values, power, and autonomy is often framed as an artifact of the neoliberalization of higher education and extends far beyond the Canadian context discussed above. (Brady, 2012; Naidoo & Jamieson, 2005). While some suggest that this is a natural and welcome adaptation to a rapidly changing world (Mora, 2001; Sporn, 2001), many academics criticize what they see as the instrumentalization or marketization of the university and argue that in liquidating itself to the hegemonic, socio-economic discourse of neoliberalism the university is no longer able to sustain its various imperatives (Fischer et al., 2012; Giroux, 2000; McKenzie, 2012; Newsome & Polster, 2008; Noble, 1998).

Neoliberalism is a socio-economic theory that emerged out of the failure of Keynesian economics throughout the 1970s and 1980s (Harvey 2007). Over the past 30

years it has evolved from a fringe economic theory to a hegemonic socio-political ideology that promulgates the moral superiority of individual over collective freedoms, the primacy of private property rights, the heralding of the expansion of free markets as a proxy for the social good, and the unequivocal benefits of free trade and globalization (Brady, 2012; Harvey, 2005; McKenzie, 2012). The result within the public sphere has been progressive deregulation, privatization, and a withdrawal of the state from its role as a provisioning entity within the public sphere. As outlined above, neoliberalism's effect on higher education has been a relocation of power from the academy to the marketplace (Brady, 2012). This has led to a transformation of the university's traditional identity as a site of free and open inquiry to that of a servant of the 'knowledge economy' and to a reconstitution of students as customers seeking skills training in order to be competitive in the new global economy. Though some contend that this promotes a greater level of accountability on the part of the academy to the societies in which they are embedded and as a result will ensure greater quality (Mora, 2001); it is argued elsewhere that organizational transformation along neoliberal lines will likely deter innovation and promote passive and instrumental attitudes towards learning (Naidoo & Jamieson, 2005). Though it is beyond the scope of this review to explore in depth the nature of the ongoing neoliberal organizational transformation of higher education, given its pervasiveness within the institution, organizational change efforts for sustainability must necessarily take into consideration how this reality affects how both sustainability and the university may be conceptualized by institutional actors.

Whether or not the current transformation will benefit or confound planned organizational change for sustainability is likely dependent on the nature of the desired change. How organizational change should contend with the intersection of academic culture and the managerial pressures of new external arrangements is as of yet unclear. However given the complexity of institutional cultures and the pervasiveness of socio-political pressures shaping contemporary universities, organizational change efforts for sustainability will likely have to be highly sensitive to both dimensions.

1.3.3. The Contested Nature of Sustainability and the Challenge of Organizational Change

The contested nature of sustainability makes operationalizing it as an organizing principle for change exceedingly complex (Bosselman, 2001; Reid & Petocz, 2006; Sherren et al., 2010; Thomas; 2004; Thomas, 2009). Since its original articulation by the Brundtland Commission (1987), it has been subjected to a proliferation of interpretations by diverse interests all seeking to frame it in terms favourable to their aims (Dobson, 1996; Dryzek, 1997; McManus, 1996). Therefore, it is safe to assume that different constituencies at the university are likely to hold different conceptualizations of sustainability.

A treatment of the plethora of sustainability discourses is beyond the scope of this review; what is important to note is that different ways of thinking about sustainability drive different usages of the term which are often divergent, conflicting, and sometimes irreconcilable (McKenzie, 2012). When conceptualizing change for sustainability it is therefore important to consider a plurality of perspectives, as consensus based constructions of sustainability risk muting or diminishing important conceptual differences and limiting thinking around what it means to be sustainable (McKenzie, 2012; Sylvestre et al., 2013; Wals & Jickling, 2002). This is should not be misconstrued as a call for anything goes pluralism but rather that given the complexity inherent in sustainability and sustainability related problems it is important to culture a diversity of thought and that adherent to different ways of thinking about sustainability should communicate through critical and open dialogue as a way of promoting social learning for sustainability (Wals, 2011).

Developing or engaging with multiple conceptions of sustainability should not be confused as a call for relativism. Unreflectively admitting all positions as equally valid is not helpful in working to construct critical notions of sustainability (Wals, 2010). Rather by pluralism what is most often intended is that there exists tremendous opportunity for learning when actors or constituencies with different ways of thinking about sustainability meaningfully interact (Haigh, 2005; Sterling, 2004; Wals, 2010). Though

this is a laudable goal and should be encouraged, it arguably makes organizational transition towards sustainability considerably more complex since those working for change must contend with high degree of ambiguity with regards to their organizing principle, making developing a clear vision for change, as is often suggested, far more challenging (de la Harpe & Thomas, 2009; Kotter, 1995). The challenge for organizational change then becomes finding ways to uncover how different constituencies at the university understand sustainability and how to navigate disparities.

1.3.4. Transformation to Sustainable Universities

Though many different ways of conceptualizing organizational change for sustainability exist, with specific institutions tending to tailor change efforts to their own institutional contexts, there also exists common themes as to how both SHE as a field- as well as how SHE declarations- frame a sustainable university. As noted above, higher education's engagement with sustainability has been criticized as piecemeal, with the majority of efforts being centered on individual projects primarily aimed at greening physical operations (Dahle & Neumayer, 2001; Graedel, 2002). The concept of a sustainable university project moves beyond change centered on any one dimension of the university towards institutional transformation for sustainability as a whole (Beringer & Adomßent, 2008; Scott & Gough, 2007). This implies a change on a systemic level where re-orientation of the traditional dimensions of the university (education, research, physical operations, and knowledge mobilization) are reconstituted towards a vision of sustainability (Cortese, 2003; Lukman et al., 2007; Pittman, 2004; Velasquez et al., 2006). Though conceptualizations of sustainable universities do vary, Figure 1, as in Velasquez et al., (2006), typifies a common vision for institutional transformation, whereby a vision of sustainability developed by the university is incorporated and finds articulation through all its various dimensions.

The success of organizational change for sustainability as described in much of the SHE literature hinges on developing a vision for sustainability at the university. Though much of the literature admits that diversity is essential to developing a robust

understanding of sustainability, such discussion is much more muted when describing sustainability as organizing principle for change. Often what authors intend by 'sustainable', when discussing how to foster change toward a sustainable institution, seems either implicitly assumed or is described in broad abstract directions rooted in assumptions about unequivocal 'goods' (Clugston & Calder, 1999; Comm & Mathaisel, 2003; Cortese, 2003; Lukman et al., 2007; Pittman, 2004; Van Weenen, 2000). However positively a vision of sustainability may be framed, failing to engage with how contested it is as a concept, as discussed above, risks diminishing important differences and may

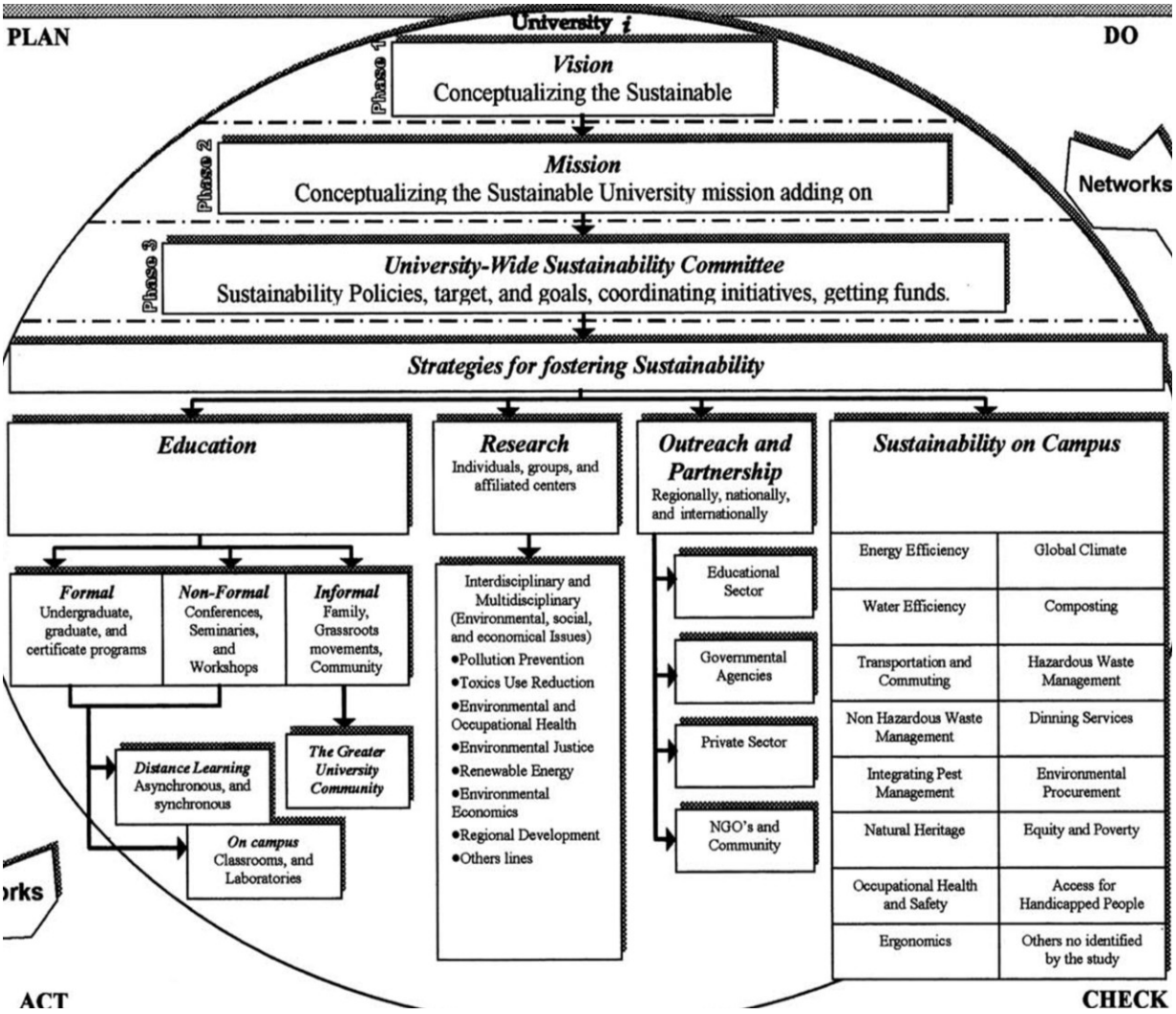

Figure 1: Model for a sustainable university (adapted from Velasquez et al., 2006)

lead to hegemonic conceptualizations that may marginalize dissenting positions and may encounter significant resistance from faculty who may view it as imposed upon them (de la Harpe & Thomas, 2009; Kezar & Eckel, 2002; Kopnina, 2012; Sylvestre et al., 2013; Wals, 2011). Explicit mention of the contested nature of the concept of sustainability as in Beringer & Adomßent, (2008) or Velasquez et al., (2006) is encouraging but the implications of this for organizational change are either treated peripherally or, as in the case of Velasquez et al., the nature of sustainability becomes the responsibility of individual universities to define in institutionally appropriate terms. Therefore, from this perspective, organizational transformation for sustainability begins by determining what sustainability means for the particular institutions on which it will be applied.

Having individual institutions develop their own vision of sustainability aligns well with both Kezar & Eckel's (2002) assertion that "change efforts can be thwarted by violating cultural norms or enhanced by culturally sensitive strategies" (pp. 436), and de la Harpe & Thomas' (2009) observation that "engaging in an intellectual effort to develop an agreed vision and shared understanding" (pp. 77) is essential for successful organizational change. Nevertheless, although individual institutions do possess unique institutional cultures, and as a result seeking to frame sustainability in locally relevant and institutionally appropriate terms is laudable, it fails to take into account that culture within an institution is not homogenous (de la Harpe & Thomas, Sherren, 2010). As discussed above, cultural differences between academics and administrators (Kezar 2001) as well as differences between disciplines (or departments) (Sporn, 1996), would likely work to confound the notion of finding broad consensus around a vision of sustainability. In fact, given the importance of diversity with regard to the university and to sustainability in general, the wisdom of pursuing a singular vision of sustainability for the university may be seen as questionable (Foster, 2001; Sylvestre et al., 2013; Wals & Corcoran, 2004; Wals and Jickling, 2002). This alternative perspective suggests that rather than viewing contestation around sustainability as a barrier to change, allowing a plurality of perspectives of sustainability makes a vision, or visions rather, of sustainability for the university much more reflexive and potentially aligned with academic culture. From this perspective the challenge of organizational change for sustainability may be framed as how best to provide spaces for communication and social

learning that facilitate the interaction of different ways of knowing about sustainability (Sterling, 2004).

Social learning as it is understood here represents a commitment to reflexive learning through meaningful social interaction with individuals who hold divergent perspectives (both epistemological and ontological) with the aim of promoting the transformation of values, norms, and mindsets (Reed et al., 2010; Wals, 2011). Given the complexity and contestation surrounding the concept of sustainability and the nature of the university, social learning is particularly amenable to promoting sustainability in this context as it is conceptually committed to the sort of pluralism (albeit rooted in critical argumentation rather than "anything goes" pluralism) that can both admit and accommodate a diversity of thought. Though there exist a number of conceptualizations of social learning (see Reed et al., 2010), fundamentally as a mode of learning it moves beyond individual and instrumental forms of learning, focusing rather on the important of discursive dialogue and communication between people who possess different mindsets functioning as a cohesive community of learners (Reed et al., 2010; Wals, 2010). Herein lies the strength of this form of learning, as Wals (2011) notes: "people learn more from each other when they are different from one another than when they are like-minded, but only when there is 'chemistry' or social cohesion in the group; otherwise the differences between them may become barriers for mutual learning." The open epistemological and ontological commitments embedded in this sort of thinking about education are likely to be instrumental in entertaining a notion of plurality around sustainability in higher education.

The tension that emerges between the divergent perspectives on organizational change in the two preceding paragraphs is perhaps most succinctly expressed as teleological versus cultural conceptualizations of organizational change. A teleological change model assumes that the university is "purposeful and adaptive" and that "change occurs because leaders, change agents, and others see the necessity for change" (Kezar, 2001, p. 33). Managers or leaders are essential in seeing the necessity and developing the impetus for change. . Common attribute of this form of changes as listed by Kezar (2001) are: the elevation of human creativity in developing a strategy; rewards and incentives;

planning goal formation and implementation; and the presence of a change 'hero'. These models tend to be highly successful and widely applied in corporate change where the mission and goals of the organization are clear (see for instance Kotter 1995 & Kotter 1997) and are often described in the SHE literature (de la Harpe & Thomas, 2009; Lozano, 2006; Thomas, 2004). However, given differences between universities and corporations, some contend that though teleological models demonstrate moderate success they are not appropriate to the context of higher education, preferring cultural change models (Kezar, 2001; Kezar & Eckel, 2002; Sporn, 1996). Nevertheless, though cultural change models may be more theoretically appropriate for higher education they tend to favour slow and gradual change occurring naturally over time-scales that make their usefulness to SHE practitioners questionable. Moreover, the literature on cultural change surveyed for this research offered very little in the way of practical guidance on developing culturally sensitive change strategies. It is likely that in the context of creating sustainable universities, incorporating the lessons of cultural change theorists into SHE conceptualizations of organizational change would help to ensure that change strategies are more institutionally appropriate.

It is important to note that neither collection of authors discussed above who hold divergent perspective of organizational change can be said to occupy their position *ad absurdum*; only that they display a greater tendency toward one side or the other. In fact, most if not all of the literature surveyed for this review is clear on the importance of stakeholder engagement and developing institutionally appropriate visions for change. However, what is intended by stakeholder engagement is often unclear; does it represent an institutional project to re-orient values along more sustainable lines to facilitate transition to a sustainable 'state', or does it involve committed engagement to understanding the complex cultures developing culturally sensitive change strategies? We contend the question that emerges is that of the importance of seeking consensus on a direction for sustainability. It is as of yet unclear whether encouraging a plurality of competing conceptualization of, or attempting to construct a consensus around, the concept of sustainability would be better aligned with academic culture and as a result conducive to successful organization transformation.

1.3.5. Education for Sustainable Development

The emergence of ESD can be can be traced to back to the burgeoning attention given to Environmental Education (EE) at both Stockholm conference on Man and Environment (1972), and the UNESCO-UNEP conference on Environmental Education in Tbilisi (1977). As noted above, growing concern over rapid environmental degradation had prompted a re-examination of humanity's place in the biosphere. Education was then heralded as one of the most important tools for combating patterns of production and consumption that were (and are) at the heart of wide-spread socio-ecological degradation (Wright, 2003). In many ways this concern was re-articulated at the 1992 UNCED Earth Summit but through the conceptual framework of sustainable development. From Rio emerged Chapter 36 of Agenda 21, '*Promoting Education, Public Awareness, and Training,* where education was framed as vital for advancing sustainable development in both function and form (Wals & Kieft, 2010; Wright, 2004).

Building on the momentum of Rio and a growing acceptance of the necessity of global sustainability, the United Nations Decade of Education for Sustainable Development (UNDESD) was proposed and accepted at the World Summit of Sustainable Development in Johannesburg, (2002) and adopted by the UN general assembly shortly thereafter (Tilbury, 2007; Venkataraman, 2005, Wals, 2009; Wals & Kieft, 2010; Wright, 2004). The United Nations Educational Scientific and Cultural Organization (UNESCO) was designated as lead agency and tasked with oversight of how to implement the resolution and bring it in line with ongoing UN educational initiatives (UNESCO, 2011). UNESCO describes the four main thrusts of the UNDESD as:

- Promoting and improving the quality of education;
- Reorienting existing education to address sustainable development;
- Building public understanding and awareness;
- Providing practical training

(UNESCO, 2011)

Understanding that local contexts and cultures vary significantly and as a result dictate what is possible insofar as education and SD are concerned, UNESCO avoids being prescriptive in their framing of ESD and opts rather discuss it in terms of essential characteristics to direct educational initiatives along similar paths. For UNESCO ESD:

- is based on the principles and values that underlie sustainable development;
- deals with the well-being of all four dimensions of sustainability – environment, society, culture and economy;
- uses a variety of pedagogical techniques that promote participatory learning and higher-order thinking skills;
- promotes lifelong learning;
- is locally relevant and culturally appropriate;
- is based on local needs, perceptions and conditions, but acknowledges that fulfilling local needs often has international effects and consequences;
- engages formal, non-formal and informal education;
- accommodates the evolving nature of the concept of sustainability;
- addresses content, taking into account context, global issues and local priorities;
- builds civil capacity for community-based decision-making, social tolerance, environmental stewardship, an adaptable workforce, and a good quality of life;
- is interdisciplinary. No single discipline can claim ESD for itself; all disciplines can contribute to ESD

(UNESCO, 2012)

Seeking agreement on a set of guiding principles rather than seeking consensus on what ESD ought to be, drives a diversity of conceptualizations of ESD. For instance, a report by the Council of Ministers of Education Canada (CMEC) on ESD in Canada evokes essential themes outlined by the United Nations Economic Commission for Europe (UNECE) to frame their report rather than attempting to define ESD. They suggest that education is a lifelong process of formal, non-formal, and informal learning and should be reoriented to address an array of key sustainability themes ranging from: broad social issues like poverty alleviation, global citizenship, gender equity and cultural diversity; to economic concerns, such as rural and urban development, production and consumption patterns, and corporate social responsibility; and finally ecological considerations such as biodiversity, resource management, and climate change (CMEC, 2007). The National Curriculum of England (2004) takes a similar conceptual tack but

also defines ESD as education that "enables people to develop knowledge, values, and skills to participate in decisions about the way we do things individually and collectively, both locally and globally, that would improve the quality of life now without damaging the future of our planet" (adapted from Lukman et al., 2007 pp. 106). The focus on skills and problems demonstrates an inclination toward the sustainable development side of the ESD.

In contrast, UNESCO's mid-point UNDESD report (Wals & Keift, 2010) articulates their vision as:

> "Education for sustainable development is a vision of education that seeks to balance human and economic well-being with cultural traditions and respect for the Earth's natural resources. It emphasizes aspects of learning that enhance the transition towards sustainability including future education; citizenship education; education for a culture of peace; gender equality and respect for human rights; health education; population education; education for protecting and managing natural resources; and education for sustainable consumption." (pp. 7)

Embedded in this particular interpretation is the importance of developing critical faculties, capacity building, and engaging in forms of education that are emancipatory and empowering rather than transmissive. These three divergent conceptualizations reflect a pedagogical dichotomy between transmissive and transformative forms of education (Foster, 2001; Jickling & Wals, 2008; UNESCO, 2009; Wals & Kieft, 2010). For both the UNESCO (2009) report and Wals & Kieft (2010) this tendency is the result of policy choosing to focus on either the educational (E) or the sustainable development (SD) side of ESD. Within formal education, tensions between the desire to instruct learners and the desire to empower them are in no way novel to sustainability (Freire, 2000). One would assume strong support for ESD among academics given how it is framed by most international declarations and organizations. However, many attempts to incorporate ESD curriculum into formal learning environments have been critiqued for their instrumentalist tendencies (Foster, 2001; Scott & Gough, 2007; Wals, 2001). This is of particular importance for universities as they typically value critical thought in education and eschew indoctrination. Wals and Kieft (2010) contend that his is due to a focus on the content of ESD (the SD dimension) with little thought to its pedagogical

commitment (the E dimension). Such a focus would doubtlessly risk fomenting significant resistance from university constituencies who conceptualize the university as a site of free and critical thought (Sherren, 2010).

It is unlikely that any advocate of ESD in university curriculum is actively seeking to promote indoctrination. Regardless, given the necessary definitional ambiguity around the concept of ESD (much like the concept of sustainability), not reflecting on ones' assumptions regarding its nature and the nature of education in general can easily generate undesirable outcomes (Eliam & Trop, 2010). For instance, similar studies by Brody & Ryu (2006) and Emanuel & Adams (2011) use change in (or presence of) pro-environmental to assess the success of ESD initiatives at different American colleges. Specifically they assume that a reduction in ecological footprints demonstrated the effectiveness of sustainability related curriculum at promoting behavioural change. Though actively seeking to reduce one's ecological footprint is no doubt commendable, using it as a metric to measure the effectiveness of an educational program for sustainability is specious. This is due to the conception of sustainability inherent in such a metric is largely technocentric and as a result overly narrow. In addition the importance afforded to individual action is taken as given and any focus on social learning or community engagement is deemphasized. There seems to be no reflection on the nature of the values embedded in these perspectives which are arguably crucial components in developing any sustainability related curriculum (Sauve, 1996). In the case of Brody & Ryu, even though they employed problem based learning in their course design, choosing such a narrow metric for measuring success suggests a similarly narrow framing of sustainability in their course. Therefore, rather than building capacity or fostering critical thinking in students, their evaluation makes it seem as though transferring a desired set of behaviours was the object of the course. The intent here is not to criticize the methods of either paper per se, but rather to argue that limiting the conceptual frame of ESD is not likely to produce the sort of critical premise reflection or transformative experiences that are deemed necessary to prepare sustainability minded students (Foster, 2001; Huckle, 2010; Martin & Jucker, 2005; Scott & Gough, 2007; Thomas, 2004; Wals, 2011; Wals & Jickling, 2002; Wright, 2006).

Internal tensions within ESD mirror external criticisms. Regardless of the stated mission of ESD, many proponents of Environmental Education (EE) and some critical ESD scholars criticize mainstream ESD for its instrumentalizing approach to education and suggest that due to its definitional ambiguity and its being "a policy driven phenomenon closely linked to globalization" (Jickling & Wals, 2008, p.3) it is easily appropriated by social structures wedded to neoliberal ideology (Selby & Kagawa, 2010). Moreover, Kopnina (2012), claims of pluralism in conceptualizations of both ESD and sustainability that are seen as inherent to the ESD framework are viewed as potentially misleading since large international organizations tend to monopolize the ESD discussion and the privileged access to communication that is a hallmark of their power within global society works to marginalize dissenting perspectives. In addition, some are critical of the haziness of development models supported by mainstream ESD putting forward that by not critiquing market driven growth they are tacitly supporting it (Selby & Kagawa, 2010). Others contend that anthropocentrism inherent to ESD negatively impacts much of the consciousness raising and sensitization work done through EE (Kopinina, 2012; Perez & Llorente, 2005). Therefore rather than being emancipatory, ESD is conceptualized as a strategy for muting radical critique, or perception, of how current neoliberal socio-economic-political arrangements reproduce socio-ecological degradation in the pursuit of economic growth.

Much like the concepts of sustainability and sustainable universities outlined above, ESD is the subject of much contestation. One can observe a growing level of complexity insofar as organizational change is concerned as contestation around sustainability, sustainable universities, and ESD are all mutually reinforcing. As we shall see in the following section, the nature of the university as an organization entails its own complexities with respect to organizational changes. If organizational transformation for sustainability is to bear fruit the complexities and nuances of the university system must also be taken into account.

1.3.6. Dalhousie University

Dalhousie University is a comprehensive (research and teaching centered) public Canadian university located in Halifax, Nova Scotia, Canada. With approximately 18000

full-time students and over 6000 full-time faculty and staff, it is considered a moderately sized university by Canadian standards. Dalhousie is organized into twelve undergraduate, Graduate, and professional faculties offering over 180 degree programs (Dalhousie, n.d.a). Its physical plant consists of 3 campuses within the urban center of Halifax and a recently acquired agricultural campus outside of Truro, Nova Scotia.

Governance of the university is the responsibility of the Board of Governors and the Dalhousie University Senate. The Board of Governors is tasked with the overall conduct, management and administration of the university in accordance with the statutes outlined in Chapter 24 of the Acts of 1863 (most recently amended in 1996) (Dalhousie, n.d.b). The Board consists of the university president, 5 vice presidents, and representatives from the Senate, Faculty, student, and the Halifax Regional Municipality. Their primary function is to represent the interests of the university in the management of its properties, revenues, and administrative affairs through a stewardship role, delegating the day-to-day management of the university to the president (who functions as a chief executive officer) and the senior administration (University Secretariat, 2012). The Senate is the senior academic governing body for the university, consisting of 72 members from across Dalhousie's Faculties. Their primary functions are: the approval of new programs; the granting of degrees and diplomas; reviewing Faculties, Centers, and Institutes within the university; establishing the academic calendar; and setting academic regulations in ordnance with the Senate Constitution (University Secretariat, 2012). Though academic matters are the purview of the Senate, all decisions are subject to review by the Board of Governors.

Funding of universities in Canada is the responsibility of the provinces in the form of provincial grants; there is no Federal ministry for education. Government funding of universities in Canada over the past two decades has steadily decreased in proportion to private funding while operating costs have continued to climb (Snowdon, 2005). This has led to a greater reliance on tuition funding by students. The province of Nova Scotia has a population of just under a million residents and 11 institutions of higher learning. This presents a significant challenge in terms of funding universities. Traditionally, research-intensive universities like Dalhousie enjoyed a disproportionately high

percentage of provincial funding owing to the perception that much of the work going on behind the walls of the university have tangible economic benefits to the province (Cameron, 2000). However, as Cameron (2000) describes, in the pursuit of more equitable funding policies, the provincial government adopted a strategy wherein grants were allocated in relation to the size of the student population. This presented a significant challenge to Dalhousie since it has strong commitment to research and a large number of expensive but small Graduate programs. Though the federal government of Canada directly funds research, the salaries of academics are still the responsibility of their institutions (Cameron, 2000). Moreover, provincial funding of universities in Nova Scotia declined by 3.5% in 2011 and was again cut by 3.1% in 2012 (Dalhousie, n.d.). Diminishing government grants and rising operating costs has created projected budget shortfall of $17.6 million for Dalhousie University.

1.3.7. Sustainability at Dalhousie

Though Dalhousie University has signaled no intention to transform its organization into a sustainable university but it has signaled its commitment to sustainability in a number of ways. Over the past two decades it has signed three international sustainability declarations:

- The Talloires Declaration, (signed in 1990)
- The Halifax Declaration, (signed in 1991)
- UNEP International Declaration on Cleaner Production (signed in 1999)

(Office of Sustainability, 2012a).

It created an Office of Sustainability with a view to incorporating the principles of sustainability into the physical operations of the campus and to promote sustainable behaviour in students, faculty, and Staff (Office of Sustainability, 2012a). Its key goals include:

- Enhancing values, knowledge, skills, and social norms that support sustainability;
- Encouraging and supporting organizational behaviours and physical systems that enhance sustainability;
- Decreasing natural resource use (energy, water, products), waste, toxins and air emissions;

- Increasing use of renewable energy;
- Enhancing health and social attributes of the campus ecosystem;
- Increasing sustainable transportation;
- Drawing people to Dalhousie as a result of sustainability activity.

(Office of Sustainability, 2012a)

As a result of much of the ongoing work of the office of sustainability, Dalhousie was recently awarded a silver ranking from the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking, Assessment and Rating System (STARS). In addition, stakeholder consultation has been an important factor in campus sustainability at Dalhousie. This is best evidenced by the creation of the President's Advisory Council on Sustainability. Being comprised of a variety of university constituencies, it is an ongoing forum to promote discussion of campus sustainability related issues with university senior administration (Office of Sustainability, 2012b). Finally, Dalhousie has an array of academic offerings that align with ESD. Most notably is the founding of the College of Sustainability where students pursue a double major in sustainability and the field of their choice. The College draws upon faculty from across the university to provide an interdisciplinary and problem based, team taught, learning experience.

1.3.8. The Current Study

Universities differ from most organizations in society in that their goals are many and they have an exceedingly wide array of stakeholders (Kezar, 2009). When paired with the fact that universities also face numerous, often pressing (and sometimes conflicting) calls for change both internally and externally (Kezar & Eckel, 2002), one begins to grasp the unique complexity of creating change in higher education. That complexity is no doubt compounded when the lens through which change is envisioned is itself as conceptually ambiguous and politically contested as is the concept of sustainability. Put another way, the challenge of trying to create a vision of a sustainable university conceptually speaking, is the challenge of attempting to embed a politically contested meme into the DNA of a complex open system in the hope that this meme will be meaningfully absorbed and will partially recreate the system in its own image.

Many have argued convincingly that making change efforts more culturally sensitive is an exceedingly important part of their being taken up in a genuine manner (de la Harpe & Thomas, 2009; Kezar & Eckel, 2002). If organizational change for sustainability is to be more than adjectival and centered on physical operations a meaningful re-thinking or re-envisioning is required of how the values of the institution can best intersect with the various visions of sustainability. Gaining deeper insight into how academic culture may contend with the problematics of sustainability is paramount. Of the different constituencies at the university, faculty members are among the most important regarding meaningful change for sustainability. Though several studies have sought to elicit professors' thoughts on incorporating ESD into university curriculum (Cotton, et al., 2009; Cotton et al., 2007; Reid & Petocz, 2006; Shephard & Furnari, 2012), few studies have attempted to explore the complexity around how faculty conceptualizations of sustainability, sustainable universities, and the role of the university in envision a sustainable future interact to form potentially divergent uses of the concept and how these uses may inform what is possible insofar as organizational change is concerned. This represents a significant gap in the literature.

Given the criticism of higher education's commitment to sustainability as the end of the Decade of Education for Sustainable Development draws to a close a critical reappraisal of change in higher education is necessary if we are to navigate and more fully understand many of the persistent barriers blocking meaningful engagement with sustainability. Therefore, this study is as important as it is timely in that it attempts to shed light on how the cultures and lived experiences of faculty at the university engage with the concept of sustainability with a view to garnering a more in-depth and contextually sensitive vision of sustainability in higher education.

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CHAPTER 2 METHODS

This chapter provides a description and rationale for the methods used in this research. The three broad research questions guiding this study were: 1) how do faculty members conceptualize sustainability? 2) How do faculty members conceptualize sustainable universities? And 3) what role do they feel the university should play in achieving a sustainable future?

2.1. Case Study Rationale

Dalhousie University was selected as a matter of convenience. Owing to the schedules and workloads of university faculty, interviewing them requires a great degree of flexibility and time (Stephens, 2007). Given that data collection was estimated to take several months, locating the research site outside of Halifax would have been impractical. Conducting a case study conferred a number of advantages for exploring faculty conceptualizations of sustainability. As Yin (2003 p. 1) discusses, "… case studies are the preferred strategy when "how" or "why" questions are being posed, when the researcher has little control over events, and when the focus is on a contemporary phenomenon within some real life context". Furthermore Yin contends that the need for case study research "arises out of the desire to understand complex social phenomena" (2003 p. 4). This is complemented by Stake (1995) who contends that the nature of the tool allows for an in-depth, context rich investigation of the system under study. Therefore case study research, as a research orientation, is epistemologically well placed to complexity inherent in how the intersection between sustainability and the university is constructed by academics.

Delineating the case boundary to one institution allowed for a manageable sample size and the development of a purposively designed sampling stratum that could draw from a wide range of the Faculties at the university. Given the important role of disciplines in academic culture (Kezar, 2001; Sporn, 1996), and the criticism they garner in terms of blocking organizational transformation for sustainability (Everett, 2008; Orr, 1992), both the choice to employ case study research and to use Dalhousie as the case,

seemed the most robust way to facilitate the comparison of conceptualizations across various cultures. Since a goal of this study was to gain insight into how different faculty cultures interact with the idea of sustainability in higher education, which is an issue that is not intrinsic to the particular case under investigation, it is understood as an instrumental case study meaning to use the case to investigate a larger phenomenon (Stake, 2005). This is an important distinction to make since it justifies focusing the literature review and subsequent analysis on academics and their culture rather than the institutional particulars of Dalhousie University.

2.1.1. Sampling Frame

A respondent pool of Dalhousie faculty was compiled in a Microsoft Excel database by mining the university's website. Individual faculty members were stratified by department, with cross-appointed faculty being group into the department that most closely aligned with their current research. Professional faculties were excluded from the study for pragmatic reasons. Both Morse (2000) and Crouch & McKenzie (2006) discuss the benefits of relatively small sample sizes in interview based research. They argue that although large sample sizes (50+) no doubt generate more data, the volume of data becomes unwieldy and results in a loss of analytic sensitivity. With Dalhousie having over 90 different departments, it became necessary to delineate a study boundary which included only academic Faculties resulting in 49 departments in the database. Faculty members were randomly selected from within their departments. Potential participant were invited to participate via email. If a potential participant failed to respond as second invitation was issued. Potential participant who chose not to participate had their names removed from the candidate pool and a new name was randomly selected. The number of participants for this study was n=33 (See table 1 for list of participants, departments, Faculties).

Table 1: List of participants (participants labeled with an * were not part of the final Q analysis)

Respondent	Faculty	Department
1*	Arts & Social Science	French
2*	Arts & Social Science	Latin Studies
3*	Management	Resource and Environmental Management
4*	Science	Biology

5*	Arts & Social Science	Theater
6*	Engineering	Food Science
7*	Management	Information Management
8*	Arts & Social Science	Political Science
9*	Science	Agricultural Science (Sustainability)
10	Arts & Social Science	History
11	Science	Earth Sciences
12	Engineering	Mineral Resource Engineering
13	Science	Chemistry
14	Planning & Architecture	Planning
15	Arts & Social Science	Music
16	Engineering	Biological Engineering
17	Arts & Social Science	History of Science and Technology
18	Science	Atmospheric Physics
19	Engineering	Civil Engineering
20	Science	Oceanography
21	Arts & Social Science	Classics
22	Computer Science	Computer Science
23	Arts & Social Science	Religious Studies
24	Engineering	Computer Engineering
25	Arts & Social Science	International Development Studies
26	Arts & Social Science	Contemporary Studies
27	Management	Business
28	Arts & Social Science	English
29	Management	Commerce
30	Science	Immunology
31	Science	Biology
32	Engineering	Industrial Engineering
33	Arts & Social Science	Philosophy

2.2. Data Collection

In order to add methodological rigour to this study, a combination of qualitative and quantitative methods were employed. Since reality is multi-faceted, triangulation in qualitative research is often employed as a means of better capturing the complexity of

the phenomenon being studied (Denzin & Lincoln, 2005, pp. 5). Both semi-structured in-depth interviews and the Q method were employed by this study and are discussed below.

2.2.1. Interviews

Semi-structured interviews allow one to engage participants with a specific line of inquiry in mind, but also give the freedom to pursue unforeseen avenues should they present themselves (Stephens, 2007; Whiting, 2008). Since sustainability lends itself to a myriad of nuanced interpretations (Dobson, 1996; Leal Fihlo, 1999), semi-structured interviews were an appropriate choice for eliciting a variety of interpretations. Moreover, they combine the strengths of structured interviewing, where the use of an interview script and the neutral role of the interviewer provide a degree of consistency during data collection, while allowing the researcher to pursue interesting veins of inquiry as they present themselves (Fontana & Frey, 2005).

Interviews were typically conducted in the participant's office. On rare occasions when participants preferred being interviewed outside of their physical departments, a space was provided in the School for Resource and Environmental Studies (SRES) at Dalhousie University. Interview sessions were scheduled for an hour but ranged from 31 minutes to 1 hour and 20 minutes. Participants were asked a series of open ended question with a pause after question 6 to administer the Q method (described below). The list of open ended interview questions follows:

1. What do you feel is the role of the university in contemporary society?
2. From your perspective, what do you feel will be key issues to the functioning of the university in the next 10 years?
3. When you hear the term sustainable development, what does this mean to you?
   3.1. Do you feel there are any differences between the concepts of sustainability and sustainable development
4. Can you check off which items you feel are part of sustainable development (i.e. item is essential to sustainable development)?
5. What role do you feel universities should play in achieving sustainability?
6. When you hear the term sustainable university what does this mean to you?
7. What are the current barriers to preventing full implementation/realization of sustainability at your university?
8. What do you foresee as barriers to implementing sustainability initiatives on your campus in the future?
9. What would it take to put becoming a model of sustainability on the top of your university's list of priorities?

The bulk of the interview script was developed by Dr. Tarah Wright (with the exception of Questions 1, and 3.1) and piloted in her 2010 study of university presidents. Probing question were left to the discretion of the interviewer and varied necessarily according to participant responses.

Interviews were audio recorded to ensure fidelity during the transcription phase. In addition, this allowed for note taking in the audit journal concerning important gestures, significant pauses, but also to facilitate the flow of the interview itself (Whiting, 2008). An audit journal is a common strategy used during interviews to increase reliability and validity (Whittemore et al., 2001; Baxter & Eyles, 1997). Impressions gleaned from the interviews were noted in the audit journal prior to, during, and after the session as a means of enriching data (Whiting, 2008). To further enhance credibility through member checking, verbatim transcripts were returned to participants and any direct quotes used in the research paper were shown to participants in the context that they were being employed (Baxter & Eyles, 1997).

2.2.2 Transcription

Verbatim transcription of interviews was carried out by the principal investigator (PI), using Express Scribe™, (NCH Software, 2010) and was an important first step in the interpretation and analysis process (McClellan et al., 2003). Changes in tone, laughter, and pauses noted in audio recording were included in the transcripts as well. This adheres to a framework of naturalized transcription, where the spoken words of the participant are privileged in the research process (Oliver, et al. 2005). Transcripts were error checked for accuracy with a second listening of the interviews against the original transcripts (McClellan et al., 2003). Once the accuracy of the transcripts was checked all interview data was moved into NVivo 9 (QSR International, 2011) for analysis.

2.2.3 Code Development and Thematic Analysis

Inductive thematic analysis of the interviews occurred in two stages. An initial treatment of the data was conducted using the Constant Comparative Method (CCM) to

develop a structural codebook (Boyatzis, 1998 p. 9; Ryan & Bernard, 2003; Charmaz, 2005). Data was initially analyzed on a per question basis. 'Cutting and sorting' is a common CCM procedure where the researcher collates responses on a basis of similarity to each other to develop an initial set of structural codes (Ryan & Bernard, 2003). This entails a simple reporting of all the things that were uttered by participants in response to specific questions. Following the preliminary grouping process the researcher returns to the 'piles' of similar responses and parsimoniously describes the common thread that binds the responses and labels the description with a moniker; the description and moniker comprise the structural code which in turn represents the theme embedded in the responses. Themes are understood as common abstract constructs used in expressions and thoughts of respondents in the interviews (Ryan & Bernard, 2003). To facilitate the construction of the codebook in this study, three transcripts were randomly chosen from each of the Faculties and analyzed on hard copy to develop an initial set of codes (Boyatzis, 1998). Responses from the hard copies were literally cut and placed into piles with conceptually related responses. Over the course of multiple iterations an initial codebook was constructed and used to analyze the remainder of the transcripts. Analysis of the remaining transcripts was conducted using Nvivo 9 qualitative analysis software (QSR International, 2011). This greatly facilitated the process of data analysis as themes in the text are simply highlighted and dragged into the codebook.

It is important to note that thematic analysis and coding are iterative. Though an initial codebook was constructed to facilitate analysis of the bulk of the interview data, in no way did it represent a final version of the structural codebook. Throughout the analysis, novel themes emerged and early codes were often split or clumped in light of this new information. Therefore, the codebook is constantly evolving and changing as variations on pre-existing themes and novel themes emerge. In this sense the structural codebook can be said to not be fully complete until the last interview has been analyzed.

As alluded to above, the structure of the interview guide provided a scaffold through which to organize the structural codebook. Subsequent, higher level, analysis attempted to develop context specific mid-range theories (Charmaz, 2005) describing the nature of divergent conceptualizations relating to the 3 broad research categories list in

Chapter 1. This entailed a deeper level of abstraction away from the original responses of participants. The 'scaffold' provided by the interview script was abandoned and the next stage of the analysis was framed through the 3 broad research categories. Conceptually related themes from the structural codebook were drawn together to create new sets of themes. This 'type' of theme is referred to in a number of ways; for instance, Charmaz (2006) refers to them as theoretical codes; whereas Boyatzis (1998) describes them as latent themes. For the purpose of this study clusters of conceptually related structural themes were referred to as discourses and the themes described in the structural codebook as 'structural themes'. Discourse is framed using Hajer & Versteeg's (2006 pp. 175) definition as "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices". Comprehensive descriptions of thematic clusters (discourses) were constructed using both the structural codes and a re-immersion into the interview data. Descriptions were then supplemented and further contextualized by rooting them in parallel conceptualizations embedded in the literature. Through this the "ideas, concepts and categories" (re)produced by participants were tied to "social and physical phenomena" represented in the literature thereby tying participant discourses to pre-existing discourses (of which theirs is a particular (re)production). The purpose was to provide more than just a description of what was said by participants or to produce discourses whose contextual relevance was limited to Dalhousie, but rather to begin to sketch the different ways in which different cultures at the university engage with sustainability. Tying this to pre-existing discourses was done to demonstrate the potential for transferability of the results of this study

2.2.4. Overview and Rationale for the Use of Q Methodology

Q methodology is a systematic means of studying subjectivity (Brown, 1993). It employs both qualitative and quantitative methods in order to infer how individual points of view cluster around a given issue. The assumptions that underpin the method are that subjectivity is communicable and that there are only a limited number of points of view on any given subject (McKeown & Thomas, 1988; Van Exel & de Graaf, 2005). Methodologically speaking, the Q method is a rank sorting exercise where participants

are presented with a series of statements inscribed on small cards known as a Q sample (typically between 40-80 is considered adequate) (Watts & Stennor, 2005). Within the field of Q methods research, a concourse is the collection of all the discourses that work to (re)produce a specific subject. The Q sample is meant to be a representative sample of statements relating to all potential discourses in a given concourse. Upon presenting the Q sample they are asked to perform the Q sort.

Participants are given a condition of instruction and told to read through the statements and sort them into several piles, typically ranging from 'most agree' to 'most disagree', and then rank them over a quasi-normal distribution (See figure 2 for the distribution used in this study). In addition, a series of open ended interview questions are administered regarding the participants distribution. The structure of the distribution is meant to represent a participant's point of view on a given subject, where the position of one statement can only be understood through its relationship to the statements around it (Dryzek & Berejikian, 1993). Subjectivity is understood as being operant, meaning it is defined functionally through the participant's interaction with the Q sample (Brown, 1993). This differs from constructed or operational definitions of subjectivity used in Likert's scales and other similar study designs where the researcher's bias around the phenomenon under study tends to dictate how subjectivity can be expressed in the study (Brown, 1980). Q methodologists argue that this form of bias is absent from Q studies because of the nature of participants' interaction with the Q sample. As discussed above, rather than ranking individual statements on a scale, all statements are ranked and therefore understood in relation to each other and is more closely related to how subjectivity is actually expressed in reality (Brown, 1993).

Q sorts are compiled and centroid factor analyzed to determine how many different viewpoints are in evidence. Viewpoints that load on the same factor are thought to bear a 'family resemblance' and as a result all participants who cluster on the same factor are thought to share a common point of view (Van Exel & de Graaf, 2005). A modal Q sort is constructed that best represents the shared perspective of the cluster. Subsequent analysis involves using the modal Q sorts and their associated open ended

question to create parsimonious factor descriptions of each of the viewpoints uncovered by the study (Dryzek & Berejikian, 1993). This allows for exploration of the nature and distribution of tension and consensus within the study population.

Given that this study sought to explore how various academic cultures interacted with the contested nature of sustainability and its relationship to higher education, Q method was an obvious choice in terms of appropriateness, reliability, and avoiding bias. This study was modeled after similar studies exploring divergent perspectives on incorporating ESD (Shephard & Furnari, 2012) and EE (Vincent & Focht, 2009) into higher education curriculum. The choice to focus exclusively on sustainable universities for this portion of the study was predicated on the apparent lack of studies eliciting university professors' conceptualizations of sustainable universities and was thought to be of more use to the field.

2.2.5. The Q sample

Construction of the Q sample differed from other studies in the literature that have employed this method. In this study, the initial set of 20 statements for the Q-sample were adopted from a list developed by Wright (2010) who conducted a comprehensive review of the SHE literature and identified key common understandings and misunderstandings of the term. A "rough and ready" cell matrix (Dryzek & Berejikian, 1993) was engineered (Figure 2) from these original statements to infer the structure of the concourse. This is done by noting what categories naturally emerge from the statements and building a matrix around those categories. When developing the Q sample we aim for equal representation from all cells developed from the induced categories. A second informal review of the SHE literature was conducted to incorporate more recent articles (from 2008-2012). 200 new statements were pulled from a literature search using the term "sustainable university" in ISI Web of Science and ScienceDirect, and used to further populate the concourse matrix. New statements were randomly selected from the concourse matrix to supplement the original 20 statements ensuring equal representation of all categories, for a total of 48 statements. Both Dryzdek & Berejikian (1993) and Brown (1993) note that how the concourse matrix is framed is of little importance to the comprehensiveness of the Q sample. Using a cell matrix to frame a concourse is done to

facilitate sampling, and since its structure is inferred from the large sample of statements drawn from the literature, any organization of these statements is likely to yield an adequate Q sample.

Sustainable University Cell Matrix

Main Effect	Levels	n
A) Institutional Dimensions	a) Physical Operation b) Curricular/Pedagogical c) Policy d) Outreach/Knowledge mobilization	4
B) Inclination	d) Prosaic e) Transformative	2
C) Change Type	f) Managerial g) Collegial	2

Q sample N = (Main effect)(Replications) = ([A][B][C])m

A*B*C = (4)(2)(2) = 16 combination: adf, aef, adg…

Replication m=3

N= (16)(3) = 48

Figure 2: Sustainable university concourse matrix with sample size calculation

The Q sample was piloted on 12 faculty members; 6 of whom work in sustainability related fields and 6 who did not. Subsequent discussion helped to uncover what, if any dimensions were thought to be missing from the Q sample and what statements were too vague or confusing. Statements that were unclear or viewed as redundant were eliminated and replaced with new statements generated from these interviews. The resultant Q sample was 46 statements (see Appendix C). Each statement was inscribed onto an 8X5 card and enumerated (1 through 46 for later statistical analysis) before being laminated and affixed with a piece of Velcro to facilitate the Q sort.

2.2.6. The Q sort

Participants were presented with the 46 statements, instructed to read them with the guidance of the "condition of instruction": What do you feel are essential aspects to a sustainable university? Participants were then asked to create 3 piles of statements: statements they agreed were essential; statements about which they were ambivalent; and statements they disagreed were essential. Participants rank-ordered statements over a quasi-normal distribution on a 9-point scale horizontal scale (+4 to -4) (Figure 3).

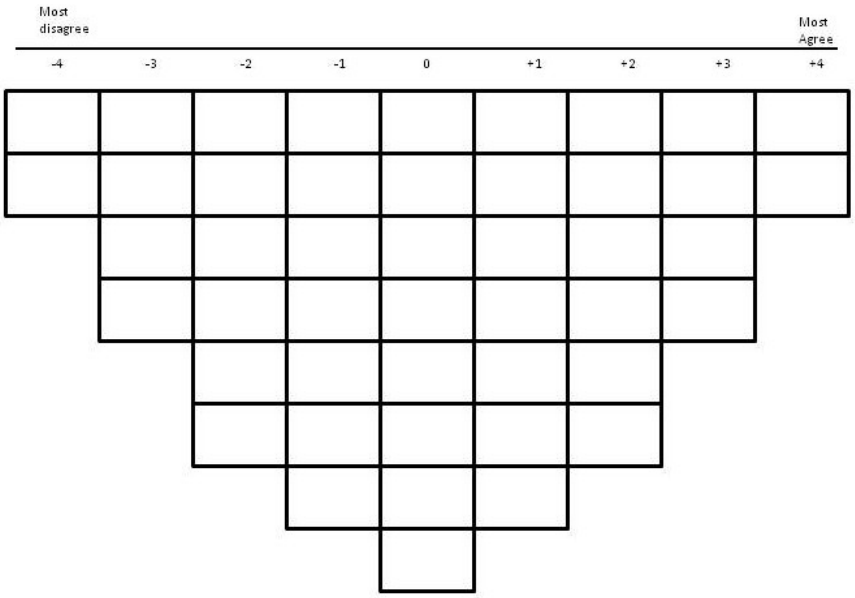

Figure 3: Quasi-normal distribution for sustainable university Q sort

The vertical axis in the distribution is used to facilitate analysis but is not itself scaled in the same way as the horizontal axis. Statements were placed on a 46 cell grid on a foam board (thus the need for the Velcro). The choice to use the quasi-normal distribution was informed by Brown (1993), McKeown & Thomas (1988), Van Exel & de Graaf (2005), and Watts & Stennor (2005) who found that the technique simplifies the sorting procedure for the participant and makes analysis and interpretation of the Q data significantly less onerous with little resultant loss in sensitivity. Once the Q sort was complete participants were asked the following open ended questions:

- Why did you afford these two cards the position of 'most agree'?
- Why did you afford these two cards the position of 'most disagree'?

Probing questions were used as needed.

2.2.7. Q Quantitative and Qualitative analysis

The numerical representations of the distribution of individual Q sorts obtained from the enumerated statements were recorded on a Q sort score sheet (Appendix D) and entered into PQ Method 2.20 (Schmlock, 2011). Q method software programs are common and make quantitative analysis significantly less onerous (Brown, 1993). PQ Method constructs a correlation matrix by first calculating the sum of the squares of the total scores for each participant (the number of being the same for each participant) and the discrepancy between all the potential pairings of participants (which is the sum of the square of the difference between scores for each statement. Correlation was obtained by calculating the ratio of the sum of the squares for both the preceding calculations (Brown, 1993). The correlation matrix was then centroid factor analyzed for seven factors. Analyzing for 7 factors has little explicit rationale in the literature; it is offered up as a general rule of thumb (Brown, 1993; Van Exel & de Graaf, 2005). Fundamentally, factor analysis is conducted to determine how many modal Q sorts are in evidence (a modal Q sort representing a point of view shared by several participants). Factors with an Eigenvalue of >1.00 are considered to be "real" and were selected for factor rotation (Brown, 1980 pp. 40).

Factors were rotated using Varimax rotation to maximize the amount of variance explained by the extracted factor. Watts & Stennor (2005) encourage the use of Varimax rotation over manual rotation since more weight is given to the topographical features of the correlation matrix, thus introducing less researcher bias. For this study, factor analysis and rotation yielded four distinct and statistically significant factors on which participants loaded, representing four distinct viewpoints (note: only participant factor loadings greater than 0.38 ($p>0.01$) were considered significant and carried forward to the interpretive stage as informed by Van Exel & de Graaf, 2005). Participants who loaded positively and significantly onto more than one factor were excluded from further consideration.

PQ Method constructed a composite or modal Q sort for each factor. This is meant to represent a best-fit description for all the participants loading on a particular factor as well as outlining distinguishing statements that set that factor apart in a statistically significant manner ($p>0.01$) and is the central goal of the quantitative analysis. In addition, the software produced a series of factor arrays which illustrated agreement and disagreement across all statements between each of the factors.

Inductive thematic analysis (described in detail in section 2.2.3) was performed on the open ended interview questions administered after the Q sorts. Interviews were grouped according to factors and a structural codebook was developed through thematic analysis for each factor with the goal of identifying key differences between factors (Van Exel & de Graaf, 2005). Parsimony was the goal during factor interpretation, but as Dryzdek and Berejikian (1998) note: "[they] are not constructed by merely cutting and pasting statements with extreme scores on each factor; for the narrative must also take into account how statements are placed relative to one another in each discourse… and the comparative placement of statements in different discourses." (pp. 52). Interpretation of the quantitatively derived modal Q sorts was combined with the inductive thematic analysis of open ended interview question to produce deeply contextual factor descriptions.

2.2.8. Limitation of Q Method

Though Q method proved to be an effective tool in exploring respondent conceptualizations of sustainable universities there exist some limitations to the method. Although Q method employs a quantitative aspect in its uncovering of different points of view some of the literature overstates the objectivity (Brown, 1993) inherent in the results produced by Q studies. As much as the factors are empirically derived, the qualitative nature of Q sample development, the use of open ended questions to contextualize Q sorts, and the fact that factor descriptions are preformed within the theoretical landscape of the researcher all introduce a degree of bias with respect to the researcher's theoretical inclinations (Robbins & Krueger, 2000). Though these biases can be mitigated through

awareness of one's own potitionality within the research, it cannot be completely eliminated.

Beyond this, as Shephard & Furnari (2012) note: "Q methodology makes no claim to be able to categorize viewpoints that remain constant over time. It is very likely that on any given day participants could potentially rank-order statements differently. This is not to discredit the results uncovered by this study but rather to demonstrate that Q method is reductive by nature, looking for patterns of subjectivity and should not be employed as a tool to explore the conceptualizations of specific individuals.

Finally, there exists no clear method for developing a Q sample and no tests for external validity of the representativeness of the Q sample (Watts & Stennor, 2005). This poses significant challenge as missing dimensions could potentially skew results (Brown, 1993). Though this study vetted its Q sample with experts in the field and a means of increasing its validity and as a result it is likely to be broadly representative, developing a representative Q sample is likely to remain an important challenge to the field of Q methods research.

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CHAPTER 3 EXPLORING FACULTY CONCEPTUALIZATIONS OF SUSTAINABILITY IN HIGHER EDUCATION: CULTURAL BARRIERS TO ORGANIZATIONAL CHANGE AND POTENTIAL RESOLUTIONS

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3.1 Abstract

It is often suggested that for institutional change efforts toward sustainability to bear fruit a common vision for sustainability in higher education is necessary. Given the contested nature of the concept and the complexity of academic institutional culture, seeking broad consensus around sustainability presents a significant challenge to those seeking organizational change for sustainability. This paper describes a research project that explored professors' conceptualizations of sustainability in higher education in the case study of Dalhousie University. We identified a number of divergent and conflicting conceptualizations around not only the concept of sustainability but also around the role of the university in education for it, and promoting sustainability outside of its walls. Given the nature of the tensions in this study in particular and how they relate to important debates in the field of Sustainability in Higher Education generally, we propose embracing a vision of sustainability rooted in plurality and dialogue.

3.2 Introduction

Emerging socio-ecological crises present us with a host of intractable or 'wicked' problems, whose inherent complexity precludes it from being meaningfully addressed through the narrow application of linearly focused disciplinary thinking, or the same instrumental rationality which may be at the root of current crises. Addressing wicked problems will require a massive and concerted mobilization of our collective creative capacities (Brown et al., 2010). As centers for scholarship and research that bear a profound responsibility to the societies in which they are embedded and by which they are supported, institutions of higher education (IHE) have been called upon to be among the vanguard in our response to the challenge of global sustainability (Cortese, 2003).

Much of the sustainability in higher education (SHE) literature discusses the need for sweeping institutional transformation through a common vision of sustainability (Bekessy et al., 2007; Sterling, 2004; Lukman & Glavic, 2007; Velasquez et al., 2006). Such change requires deep and systemic learning on the part of institutional stakeholders in order to concomitantly reduce the ecological footprint of the university while aligning its intellectual footprint with the principles of Education for Sustainable Development (ESD). If one envisions the intellectual footprint of the university as the memes that it disseminates, aligning the university with sustainability entails engaging in transformative and participatory forms of sustainability related education aimed at developing socio-ecological literacy in its students (Cortese, 2003; Tilbury, 2004; Wright, 2006). For Sterling (2004 p. 51) the primary challenge with this student focus is that "without the deep learning that this implies, on the part of policymakers, administrators, curriculum developers, lecturers and all the other actors in higher education, the response of [*higher education*] to sustainability is always likely to be partial and accommodatory rather than full and transformative." Thus it is unsurprising that research suggests that the "greening" of physical operations has met with greater success than efforts directed at incorporating sustainability principles into the curricular, pedagogical, and management structures of IHEs (Beringer & Adomßent, 2008; Cotton et al., 2009; Tilbury, 2004). This is likely because making technical systems more ecologically efficient saves money, and typically does not involve negotiating the sorts of

cultural or ideological differences inherent in socially constructed notions of: how we educate and why; the nature of the university in society; and the nature of sustainable development itself.

The contested nature of the concept of sustainability also presents significant challenges if it is to be a banner under which to rally institutional change (Cotton et al., 2007; Thomas, 2004). Many contend that for institutional change efforts towards sustainability to bear fruit, university stakeholders must share a common understanding of the concept (de la Harpe & Thomas, 2009; Wright, 2010). Though some level of common understanding is important, seeking a singular, consensus-based vision of sustainability runs the risk of glossing over important conceptual differences which may mute conflicting or incompatible interpretations of sustainable development (SD) (Wals, 2011). For instance, while some theorist and advocates of SHE envision sustainability as a platform from which to critique the social and institutional structures that are driving socio-ecological crises (Huckle, 2010; Sterling, 2004; Wright, 2009), others conceptualize SD as an ideological strategy that works to support and legitimate the very structures we seek to critique. For adherents to the latter position, many of the tacit assumptions embedded in mainstream interpretations of SD work to (re)produce (or at least leave unquestioned) a neoliberal ideology based in instrumental rationality and economic growth (Gonzales-Gaudiano, 2006, Selby & Kagawa, 2010). This is not to comment on the legitimacy of either position but to note that universities produce a number of different conceptualizations of sustainability and divergent conceptualizations tend to drive different usages of the term that are not easily brought into alignment. Moreover, exploring a plurality of sustainable potentialities is arguably the most important role the university has to play with respect to sustainability in society (Foster, 2001).

In this respect, universities present a number of unique challenges for organizational change. Institutional cultures, and academic culture in particular (Kezar & Eckel, 2002), espouse longstanding values like academic autonomy, freedom, and collegial governance which are often perceived as essential components of the university (Kezar, 2001; Sporn, 1996). These can represent values-based obstacles to managerial or

top-down forms of governance wishing to implement transformation for sustainability (de la Harpe & Thomas, 2009). In addition, operationally-based barriers including the perceived irrelevance of sustainability to academic staff, a curriculum that is already perceived as overburdened, and limited awareness and expertise on the part of university stakeholders (Dawe et al., 2005). Finally, challenges related to the inherent ambiguity of the concept of sustainability itself as noted above, results in a lack of shared understanding, and language for discussing sustainability meaning that consensus building of a common vision is often fraught (Cotton et al., 2007; Reid & Petocz, 2006; Sherren et al., 2010).

Academics are an exceedingly important constituency to consider when exploring change at the university (Kezar, 2001; Sporn, 1996; Sherren, 2010). While tensions around the concept of sustainability and the role of university with respect to it are clearly the subject of much debate in the literature, it is unclear how these tensions actually play out on the ground or how they relate to the lived experiences of university faculty. Though important work has been done to explore how SHE-engaged faculty at certain universities envision curriculum change for sustainability (specifically change toward ESD) (Cotton et al., 2009; Reid & Petocz, 2006; Shephard & Furnari, 2010; Sherren, et al., 2010), little research to date has sought to explore how university faculty outside of SHE conceptualize sustainability and the role of the university in achieving a sustainable future as well as how this may affect organizational change. Understanding how theoretical debates found in the sustainability literature are articulated within the context of academics' lived experiences at the university may help in tailoring change efforts in such a way that they will be meaningfully adopted by the organization. Moreover, this lack of knowledge represents a missed opportunity to bring a level of practical and material substance to this high level theoretical debate.

To address this gap in the literature we conducted a case study at Dalhousie University which was comprised of a series of in-depth interviews with faculty members from a variety of departments. The decision to involve as wide an array of departments as possible was an attempt to incorporate disciplines into a discussion of sustainability in higher education that have traditionally been marginalized (Reid & Petocz, 2006). It is

our hope that in doing so we could better capture the potential plurality of perspectives that exist with respect to sustainability on campus. This is pertinent since disciplinary boundaries are often touted as significant barriers to transformative sustainability at the university (Cotton et al., 2009). Through a case study at Dalhousie University we sought faculty perspectives within two broad categories: conceptualizations of sustainable development; and, the role they envision for the university in helping society become more sustainable. The purpose was to identify any ideological tensions that may exist between divergent conceptualizations associated with these categories, and more specifically, what challenges these tensions may present with respect to creating a common vision of sustainability at the university.

3.2 Methods

Dalhousie University is a comprehensive Canadian university with approximately 18000 full-time students and over 6000 full-time faculty and staff. Though there is currently no institutional mandate for organization-wide transformation for sustainability, a number of significant initiatives have demonstrated the university's commitment to it. It is a signatory to the Talloires Declaration, the Halifax Declaration, and the UNEP Cleaner Production Declaration (Dalhousie University, 2012). Over the past decade it has founded an Office of Sustainability with a view to creating campus-based solutions that foster positive ecological, social health, and economic outcomes (Office of Sustainability, 2012). In addition, a President's Advisory Council on Sustainability was created which provides a forum for students, faculty, administration, and community partners to provide advice and input into campus sustainability programs and policies (Advisory Council on Sustainability, 2011). More recently, the university has founded the College of Sustainability where students may pursue a double major in sustainability and the discipline of their choice in a program that draws upon faculty from across the university to provide an interdisciplinary and problem based learning experience. Beyond this, Dalhousie obtained a Silver ranking in STARS, a self-reporting sustainability performance indicator system produced by the Association for the Advancement of Sustainability in Higher Education (AASHE, 2012). Therefore we expect that academics at the university should have some familiarity with the concept of sustainability.

For this study, we randomly selected one faculty member from 33 academic departments at Dalhousie University for in-depth, face-to-face interviews. The decision to exclude professional faculties (such as dentistry and nursing) was pragmatic in nature. Their inclusion would have yielded an unwieldy sample size with respect to interview data and would have resulted in a subsequent loss of sensitivity during thematic analysis (Crouch & McKenzie, 2006; Morse, 2000). Limiting the number of academic departments to 33 was the result of entire departments choosing not to participate. Faculty members were invited to participate in a one hour long semi-structured face-to-face interview. A list of indicative question is listed here:

1. What do you feel is the role of the university in contemporary society
2. From your perspective, what do you feel will be key issues to the functioning of the university in the next 10 years?
3. When you hear the term sustainable development, what does this mean to you?
4. What role do you feel universities should play in achieving sustainability?
5. When you hear the term sustainable university what does this mean to you?
6. What are the current barriers to preventing full implementation/realization of sustainability at your university?
7. What do you foresee as barriers to implementing sustainability initiatives on your campus in the future?
8. What would it take to put becoming a model of sustainability on the top of your university's list of priorities?

Interview data were transcribed verbatim and coded inductively for emergent themes. Analysis and data management were conducted using NVivo 9 qualitative analysis software (QSR International, 2011). Participant responses were initially coded by question and analyzed to create a substantive codebook where responses were grouped based on inherent similarities (Charmaz, 2006; Ryan & Bernard, 2003). Over multiple readings of the substantive codebook themes were developed inductively that explained the nature of the similarity between coded responses under a specific code. Themes as understood here are common abstract constructs used in expressions and thoughts of respondents in the interviews (Ryan & Bernard, 2003). Clusters of conceptually related themes were woven together into discourses describing the range of divergent conceptualizations present within the respondent pool. We employed Hajer & Versteeg's (2006 pp. 175) definition of discourse as "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is

produced and reproduced through an identifiable set of practices". This enabled us to identify discursive tensions present within the institution.

3.3 Findings

The following section reports on the analysis of the data and is organized according to the two broad research categories outlined above: conceptualizations of sustainability; and, conceptualizations of the role of the university in making society more sustainable. Within each of the broad categories, thematic discourses emerged that are discussed below.

3.3.1 Conceptualizing Sustainability

Thematic analysis revealed six distinct discourses present in the interview data. Each of the discourses discussed below received titles derived from the participants own words. It is important to note that since individual perspectives tend to be highly complex they cannot be neatly housed inside the boundaries drawn around a single discourse. Many respondents engaged during their interviews with more than one of the discourses outlined below. Table 2 offers a breakdown of the distribution of discourses by faculty.

Table 2: Reproduction of discourse by faculty expressing conceptualizations of sustainability

Sustainability Discourses	Faculty						
	Arts and Social Sciences (n=13)	Engineering (n=6)	Management (n=4)	Science (n=8)	Computer Science (n=1)	Architecture and Planning (n=1)	Total
Zero Sum Game	5	4	1	7	1	1	19
A Positive Legacy	0	3	2	1	0	0	6
A Trojan Horse for Perpetual Growth	6	0	1	1	0	0	8
Socially Transformative Potential	6	0	0	1	0	0	7
Nothing New	1	2	1	1	0	1	6
A Contested Concept	9	0	2	3	0	0	14

Discourse One: A Zero Sum Game (ZSG)

This discourse was by far the most frequently reproduced by respondents, with 58% of them subscribing to the concepts associated with ZSG in some shape or form. It entails an inherently conservative view of sustainability where the relationship between sustainable development, environmental protection, social equity and economic expansion is viewed as a zero sum game. This discourse is characterized by explicit discussion of planetary resources as finite and tends to be critical of mainstream socio-economic ideologies that are wedded to a notion of perpetual growth. For example, one respondent stated:

> […] *sustainable development is not development just for development's sake, not just to say "oh we grew by 2% or 3% or 4%" but that [society] is sustainable in the long run in terms of its impact on the environment and its impact also on future generations.(Participant 20)*

Respondents who produced this discourse tended to draw heavily on the language of intergenerational equity often associated with the Brundtland Report as a way of initially framing their responses. Sustainability also tended to be framed in largely technical terms:

> *[…] I think of it in term of resources and environment particularly, more than perhaps the economics and business side of things. I think about using resources as sparingly and effectively as possible, getting down our consumption of metals, plastics, food materials, and so on. Getting it down to the point where we can replace them more easily… I think of it in terms of the amount of damage to the environment that is created by production. (Participant 11)*

Moreover change for sustainability was conceptualized less as a fundamental questioning of socio-economic structures than as a fine-tuning of these structures to bring them more in line with the principles of sustainability by sensitizing them to the presence of biophysical limitation inherent to the biosphere. In addition, the natural world was typically conceptualized in terms of resources, indicating a strong anthropocentric vision of sustainability. In many instances there was explicit discussion of the necessity of reining in business and industry, but again, only to ensure that they operate with a strong

awareness of biophysical limitations. As Table 2 illustrates, this discourse tends to be most developed by respondents in the Faculty of Science and Engineering, or departments with a strong connection to the natural sciences. Although this discourse was also present within the Faculty of Arts and Social Sciences, their engagement with the discourse was typically weak, characterized by a brief reiteration of Brundtland-like rhetoric without a subsequent discussion of biophysical limits or focus on environmental sustainability.

Discourse Two: A Positive Legacy (APL)

This discourse parallels the ZSG discourse in many ways, for instance by evoking the Brundtland rhetoric of inter and intra-generational equity and the importance of prudence in the consumption of natural resources. Nevertheless it diverges conceptually in several important ways and was reproduced by only 18% of participants mainly from the Faculty of Engineering and the Faculty of Management. Most notably, this discourse developed a much more optimistic conceptualization of sustainability beyond "doing things less badly" which tends to be the focus of the ZSG discourse and outlines a much more prominent role for business, industry, and financial institutions in general rather than framing them as a force to be reined in. With respect to the former, respondents felt that traditional conceptions of sustainability were overly pessimistic and tended to prefer a vision where technical prowess and innovation for sustainability, aside from helping to stem environmental destruction through conservation and austerity (doing things less badly), could be used as tool for bettering society, strengthening economy, all the while respecting biophysical limits (doing better things). Tied to this was an explicit belief in the importance of development. One participant in particular draws a distinction between sustainability and sustainable development preferring the latter:

> *I'd say that "sustainable development" would have more buy in from more parties and be more practical, because "sustainability" in my view is too branded with the idea of resistance to change. Most people want to move forward, whether it's with their own personal agendas or with their company's agendas. So I think that sustainable development is a better label for trying to balance things. (Participant 32)*

This is a techno-optimist position and is perhaps most succinctly articulated by the belief

that human society has consistently come to a better place and that our ability to learn and innovate will enable us to negotiate and avert emerging socio-ecological crises. Sustainable development as framed by these respondents seems to center on a reflexive relationship between development and the socio-ecological realm whereby a deeper understanding of how development affects systems necessarily leads to better development:

> […] *my own metaphor about this is that it's like being a little child, you don't quite understand how things work, … pretty soon you get conscious about how everything is interdependent, you get over that arrogance of "I understand it all" and "I can fix it all". With that mindset that I think we actually would see a resolution. [We're] still a work in progress… if you track over generations and centuries we progressively have come to a better place. Now we have reached the limit of the anthropocentric world where we are realizing now the value of other living and inanimate things and their interaction with human well being. (Participant 27)*

Furthermore, respondents discussed creating a "positive legacy" or positive change for sustainability as being contingent on balancing the needs associated with the interrelated spheres of economics, culture, society, and environment, demonstrating a high degree of sensitivity to the inherent complexity of sustainability related problems.

Discourse Three: A Trojan Horse for Perpetual Growth (THPG)

The 24% of respondents, predominantly from the Arts and Social Sciences, who articulated this discourse took a significantly different and far more critical stance regarding sustainable development. Generally speaking, respondents identified it as conceptual double-speak that functions to maintain socio-economic structures that are inherently unsustainable. In particular they discussed it as rhetoric whose purpose is perpetuating an economic ideology rooted in perpetual growth:

> *[…] one form of sustainable development, at least abstractly, is exponential growth, if it's sustainable, right? So you can at least imagine that's one of the visions that you'd have, exponential growth which is notions of we have a 10% or a 3% growth each year which is exponential in the long run because it's compound right? That's not sustainable at all and it's always built on what will come next. It's not very clear that what will come next will save our bacon… So the very term sustainable growth*

is either problematic or self-contradictory and I'm not sure which is more troubling. (Participant 17)

In contrast to the 'A Positive Legacy' discourse, there was a strong skepticism concerning sustainable development as employed by business, industry, and what was viewed as the dominant socio-economic ideologies of our time. As a result, present in this discourse are themes that articulate the necessity of challenging mainstream ideologies and the way in which they frame sustainability to their benefit:

[…] from the side of it being an oxymoron to the extent that development of resources and development of wealth is in my view, fraught with, let's say structures and processes, that are designed to sustain inequality, unmanageability, unsustainability, and the quickest retrieval of resources at the minimal expense with the least amount of cost to those who are making the profits from those resource. Sustainable development can only mean a continuation of those structures and of those inequalities. (Participant 33)

Presenting sustainable development as a common oxymoron is prevalent in this discourse. Framing sustainable development as such often took the form of a semantic challenge to what was perceived as inherent contradictions built into the language on which the concept is based. Though respondents who produced this discourse often noted that there existed potential for the concept and the practice of sustainability to be socially transformative, they felt progressive and transformative conceptions of sustainability tended to be marginalized by proponents of mainstream conceptualizations.

Discourse Four: Socially Transformative Potential (STP)

Much like the THPG discourse, the 21% of respondents who developed this discourse, predominantly from the Faculty of Arts and Social Sciences, tended to be highly critical of the perceived unsustainability of pre-existing socio-economic structures. However, rather than regarding sustainability as a rhetorical ploy to reinforce and perpetuate these structures, they discuss sustainability as a concept through which these structures may be critiqued:

[…] In my view, absolutely fundamental to any positive development of the notion of sustainable development requires a transformation of the whole paradigm by which wealth production and society formation are linked.

What that takes, I don't know, but it seems to be very clear that when the development of wealth is understood fundamentally as a private affair as opposed to a public good then we are doomed to a sustainable development in the oxymoronic sense. (Participant 33)

Though this respondent alludes to the contested nature of the concept, it is clear that the respondent envisions a socially transformative potential embedded in the idea, perhaps primarily based in a novel conceptualization of development.

As with the ZSG discourse, respondents who developed this discourse display a strong sensitivity to the biophysical limits of the planet. Nevertheless, they tend to produce a more comprehensive vision of sustainability by discussing biophysical limits in tandem with issues of social, cultural and economic development which demonstrates an understanding of sustainability that is beyond technical fixes. As one respondent notes:

[…] industrial and commercial development is linked with excess and destruction. So clearly sustainable development is an attempt to change that historical problem, to recognize it and to think about ways in which we develop economically, environmentally, the way we develop spaces, economic and social systems that do not lead to overdevelopment and to resource exhaustion, but instead lead to something sustainable for the future and for the present.(Participant 28)

For these respondents, the perceived need for a fundamental rethinking of the dominant socio-economic paradigm is clear. It is on this point where this discourse diverges most significantly from both the ZSG and APL discourses.

Discourse Five: Nothing New (NN)

As the title suggests, respondents who produced this discourse found nothing novel in the concept of sustainable development. The broad assertion from this 18% of respondents, for across most Faculties, was that doing things sustainably has always been a goal and the fact that the global rhetoric has shifted to discussions of "sustainable development" is likely a question of political correctness. As one respondent noted:

[…] I think that before the term was generated there were people who were thinking along sustainable lines but they didn't use the term, and then it became sort of a politically correct term. I don't have a better term, and I don't take issue with it and I agree with the principles, but I would argue that there are people who were probably doing things with

sustainability in mind long before it became a popular term. (Participant 13)

Sustainability is conceived of here as being inherent to most production processes which seek to produce goods and services with greater degrees of efficiency. This parallels the strong technical vision of sustainability inherent in the ZSG discourse except there is little to no discussion of resource conservation and efficiency in relation to the inherent biophysical limitations of the planet. This is not to say that they are omitted completely only that they have not been explicitly expanded upon. It may be that environmental protection being the driving force behind efficiency and conservation is thought to be common sense, but this is impossible to discern from respondents engaged in the production of this discourse.

Discourse Six: A Contested Concept (ACC)

This discourse speaks to an understanding that the concept of sustainable development is itself highly ambiguous and as such is a contested concept. It is interesting to note that the 42% of participants who developed this discourse typically opened their discussion with this point before moving into a description of their particular view. A standard example of this in the interview data is as follows:

[…] sustainable development… It's one of those terms that, to me, mean everything and nothing. It's kind of like development, it can mean whatever any organization or any person wants it to mean, you can just sort of put your spin on it. I think it's a [phrase] that used to mean something and it's become co-opted- something akin to the term empowerment. (Participant 2)

These respondents share the theme that the concept of sustainable development is easy to co-opt. Much of which this discussion centers on challenges inherent in defining something that because of its scope is necessarily ambiguous.

As with the THPG discourse, this critique is centered on the semantics associated with the concept, yet rather than isolating their critique to how the term may be co-opted to reproduce the status quo, many of the respondents who engaged in this discourse spoke more broadly. In this vision, respondents suggest that the ease with which the term is co-opted is due to the near impossibility of operationalizing a concept like sustainability and

as a result the term sustainable development has become vacuous over time. For example, one respondent describes the evolution of the concept of sustainable development away from something which may have been politically radical or transformative into a popular buzzword or catchphrase:

> *[…] I personally think that it takes away from the original intent … You see that with a lot of terms [or] buzzwords, they're supposed to have some sort of radical political edge to them and then they become so common in everyday parlance or become co-opted by groups to mean something else. They lose that activist, radical, political edge that they used to [have]. (Participant 25)*

Therefore, through its broad application by different parties seeking to employ the term for their own ends, sustainable development is perceived as devoid of meaning in a general sense; or at the very least devoid of transformative potential. It is interesting to note that the majority of the respondents who engaged with this discourse were associated with the Faculty of Arts and Social Sciences (Table 2).

3.3.2. Conceptualizing the role of the university in helping society to become more sustainable

Responses about the role of the university in helping society to become more sustainable grouped into three broad themes: education; research; and, engagement and outreach. However, the form that these should take with respect to sustainability was the source of divergence among respondents. In this section, results are divided into three major themes, each of which produced three sets of binary discursive tensions. Table 3 shows a breakdown of the distribution of discourses by faculty.

Theme One: Education and Sustainability

A strong binary tension emerged between respondents who felt that sustainable development should figure prominently in university education (ESD in Table 3), and those who felt that educating for sustainability created a negative instrumentalizing effect on university teaching and learning since the focus of education should be for culturing critical thinking (CCT) in (Table 3) and creating a prepared mind. While viewpoints within the anti-instrumentalist, CCT discourse, tended to be quite homogenous, there

were differences within the ESD discourse, on which we will expand in a moment, that would likely underpin institutional disagreements concerning forms, functions, and outcomes of ESD within the university.

Table 3: Reproduction of discourses by Faculty tied to themes expressing the perceived role of the university in helping society to become more sustainable

Themes	Discourses on the Role of the University in Sustainability	Faculty: Arts and Social Sciences (n=13)	Engineering (n=6)	Management (n=4)	Science (n=8)	Computer Science (n=1)	Architecture and Planning (n=1)	Total
Education and Sustainability	Culturing Critical Thinking	9	1	1	0	0	0	11
	Education for Sustainable Development	4	4	3	5	1	1	18
	No Response	0	2	0	3	0	0	5
Knowledge Creation for Sustainability	Applied Research and Problem Solving	4	1	3	4	0	0	12
	Meta-critique and Active Debate	5	0	2	0	0	0	7
	No Response	5	5	1	4	1	1	17
Public Service and Sustainability	Modeling Sustainability	5	3	1	4	0	0	13
	Engaging the Public Sphere	6	1	1	1	1	1	11
	No Response	3	3	2	4	0	0	12

Respondents in the anti-instrumentalist discourse expressed broad concern about what they perceived as potentially deleterious effects on the university should ESD be broadly implemented across the curriculum. As one respondent warned:

> *[…] well there's the danger that it [ESD] can become very facile and politically correct. I know my Canada, which is obsessed with sin and redemption, very puritanical, and this is not a good climate in the university. (Participant 10)*

In addition, several respondents alluded to ESD being too narrow as an educational paradigm. For instance, its problem-centered learning may not promote the sort of premise reflection necessary for behavioral change. However, respondents in the anti-instrumentalist discourse rarely dismissed ESD outright. Rather, they perceived

sustainability at the university and within the broader society as being reproduced along largely technical lines, with disciplines such as engineering and the natural sciences dominating the discussion. Therefore, although some respondents clearly display resignation to broadly incorporating ESD into the curriculum, the issue is not so much with the concept of sustainability but rather with instrumentalizing education in general. As one respondent from the Humanities notes:

> *[..] from the perspective of my discipline, which is really all that I can speak to in a really detailed way, the humanities are not job training. Again I come back to this concept of instrumentalizing. The humanities [are] not where you come, in a very finite literal way to get a job. This is both one of our great strengths and our great weakness in the contemporary world. We provide students ways of thinking, ways of understanding the past and the present, ways of understanding culture, the human mind, human societies, but those ways of thinking don't translate quickly and obviously into jobs. (Participant 28)*

Respondents who favored educating for sustainability (ESD discourse) clearly did not view their position as one of indoctrination. In fact they too were strong advocates of the idea that education should foster critical thought. However, in contrast to the anti-instrumentalist discourse, they felt that since sustainability issues are likely to be among the most pressing issues of our time that educating students in this context 'is' educating to create a prepared and critical mind. As one respondent notes:

> *[…] biodiversity, energy options, oceans, atmosphere and so on. So there will be a generation of students emerging with very particular knowledge of these questions and awareness of what's happening and I see that as being a very major contribution. These are people who will be eventually running business at high level in governments, contributing to community groups, NGOs; they're many of the people who will be actively involved in solving the messes that my generation made.(Participant 11)*

The rationale that underpins much of how respondents who support ESD justify explicitly incorporating the values of sustainability into education is the belief that universities are sites that produce future leaders and that if universities educate for sustainability a consequence of this will be a broad dissemination of the principles of sustainability throughout the social sphere. Though broad consensus does exist

concerning ESD as a positive strategy in promoting sustainability, the form it should take is a point of contention.

Some respondents advocated making ESD central to the university's educational mission, and beyond this, creating programs and majors that deal specifically with sustainability. Other respondents contended that sustainable development should be incorporated into all curricula across all departments:

> *[…] well definitely the role of… educating, I think all students going through the university system should get a strong education in sustainability , ecological sustainability so that they can take that with them integrate it into whatever other stream [they are] focusing on. So I don't think it should be siloed, sure it's good for some students to concentrate and be specialist but even if they're not everyone should be getting that. (Participant 3)*

Put even more strongly, as well as further supporting our claim that respondents perceive ESD and fostering critical thought as mutually reinforcing, one respondent expressed the following:

> *We need to be preparing students so that they can play a positive role and that they are able to function in whatever area they are planning to go into, whether they go out as dentists or um, historians or whatever, that they will be able to understand the issues of sustainability that they we'll be facing and my view is that any person who graduates from university in this century will need to have an understanding of the concept, and will be better able to thrive and have a positive impact on society which is I believe our role is as a university. (Participant 29)*

Theme Two - Knowledge Creation for Sustainability

As with education and sustainability, knowledge creation for sustainability as a response category produced two divergent discourses with little respondent overlap between the two. The first Engaged with sustainability problems through applied research and problem solving were seen as important roles for the university with respect to sustainability. For example, one respondent offered:

> *[…] since it's a multi-faceted problem I think that the university is one of the key agents that can identify aspects of this problem and provide solutions to those aspects. So in my own work, I work on fisheries for*

example, which have become fairly unsustainable in many parts of the world and the question is how to transfer these to sustainable fisheries again. So I can, I can provide solutions and then society can decide which of those solutions they think they can implement given certain constraints. (Participant 30)

It is important to note that while some respondents explicitly framed research in terms of inter- or transdisciplinary problem solving (typically those coming from departments engaged in sustainability-related work), many only alluded to this through cursory discussions about research indicating a lack of familiarity with the way in which research in sustainability is typically conceived.

The second discourse was formed around the perceived necessity for a broader approach to sustainability-related work at the university. These respondents identified one of the most important aspects of knowledge creation at the university to be meta-critique and active debate (Table 3). Though they clearly saw a role for the university in generating practical solutions to sustainability related problems, they felt that the drive to problem solve was overshadowing discussion and critique that ought to occur, conceptually speaking, prior to discussion of sustainability and its related problems. One respondent explains rather clearly:

[…]if the university becomes the solver of these questions in an instrumental manner then the [ability] to say: "what are the parameters of the problem" or "is there a problem" might get waylaid in our rush to say that there is a problem and the university must solve it … There should be at least some kind of distance, where the earnestness of solving the problem immediately is one that can have a few breaths to reflect on it, without [the university] liquidating itself into these issues. (Participant 17)

Embedded in this is a critique of the instrumentalizing tendency that a concept like sustainability may have with respect to a vision for institutional change. As with the earlier quotes illustrating some respondents' skepticism with respect to ESD as an organizing principle, the issue is not necessarily with the concept of sustainability but with instrumentalizing forces within the university.

Theme Three: Sustainability and Public Service

Within the university imperative of public service, two different discourses of potential avenues for action emerged. The first was inwardly focused where respondents spoke of the importance of displaying leadership in sustainability through being a model of sustainability:

> *[...] Well it should be a beacon in society, it should adopt an appropriate model of sustainability within its own enterprise and then implement that to the best of its ability and then advertise that fact so that the rest of society can follow. (Participant 4)*

Beyond merely an outward display of sustainability to society, many respondents saw modeling as an opportunity for educating people within the university (Modeling Sustainability in Table 2). The way in which most respondents developed this idea displays the perceived importance of latent curriculum for sustainability. Rather than merely educating for sustainability, the university ought also to embody the ideals of sustainability and as a result of day to day exposure, students and staff are thought to adopt many of these values themselves:

> *[...] A whole pile of the leaders of our future society go through our turnstiles ... whether they're working as managers or CEOs, if they've been in an environment where these issues are taken very seriously then they bring with them a kind of ethos. (Participant 17)*

The second discourse was also populated with statements about engaging the public sphere (Table 3). This relates in many ways to the notion of being a model but differs in that respondents seek to overcome what is perceived as the traditional ivory tower mentality which engenders a gulf between the institution and society.

Although many respondents expressed that the university should be more sensitive to the needs of society and to be better at mobilizing knowledge to the segments of society who could stand to benefit, there was some disagreement as to the form that engagement should take. Some respondents saw the necessity for a more engaged advocacy type role within the public sphere, such as this respondent:

> *[...] to educate the broad public through, public lectures, speaking, radio, and television. [it's] really important for scientists, professors,*

people who know something about it, to take on an advocacy role and get it out there. (Participant 3)

Other respondents disagreed, feeling that such acts went beyond the ken of the university and would likely be problematic:

[…] I think it has to be a place where everything is on the table, everything is being discussed, and I think that that would be the biggest thing it could do. I think it would be very problematic to take a role in sort of engineering the solution or trying to enforce the solution. I think the university does a very poor job when it decides to, as it were, act and try to accomplish something. I think it does a much better job when it can educate people and get them to reflect. (Participant 21)

3.4. Discussion

Our research suggests that creating a unified vision of sustainability at the university that could act as an organizing principle for institutional change would likely be a significant challenge given the plurality of divergent and often conflicting perspectives held by faculty members. This is a result of twotensions present in the findings: (1) tensions related to contestation and ambiguity around the concept of sustainability; and, (2) tensions which occur outside of the sustainability debate. Our findings support those of Reid & Petocz (2006) and Cotton et al. (2009) in particular, who found faculty members' range of viewpoints on sustainability would likely not be amenable to broad institutional transformation for sustainability. Our own study expands on this previous work by beginning to elucidate how these perspectives may potentially interact, and attempts to explain what this may mean for a vision (or visions) of sustainability on campus that is aligned with the lived experiences of university stakeholders. Given our results, we suggest that the field moves away from thinking in terms of creating a single vision of sustainability for the university and beginning to consider a critical vision of "sustainabilities" (note the plural) for the university.

Given the plurality of perspectives in evidence, and the tensions inherent to them, the quest for consensus around sustainable development within the university runs the risk of diminishing difference and limiting the confines of the discussion. If the

contemporary university is to be conceived of as site that grapples with complex socio-ecological problems we should wish to avoid institutional behaviors and reforms that risk limiting the institution's ability to define and creatively address such problems. That many respondents produced themes often found in the SHE literature demonstrates the potential amenability to the sorts of reforms called for in that same body of literature. Nevertheless, as one may expect, respondents in disciplines typically associated with sustainable development were the ones to display strong alignment with SHE values. Incorporating perspectives from disciplines that are typically peripheral to discussions of sustainability enabled us to better understand the institutional climate toward sustainability and more importantly uncovered a number of dissenting viewpoints with which any institutional change for sustainability must necessarily contend.

3.4.1. Disciplines and Divergent Thinking Around Sustainability

Conceptions of sustainable development displayed a tendency to break down along disciplinary lines. This is in no way a novel finding as one would expect faculty member's discussion of a concept like sustainability to draw significantly from their area of expertise. However, consistent with Cortese (2003), respondents produced nuanced conceptions of sustainability in relation to their disciplines while tending to deemphasize aspects associated with the disciplines of others could be taken as evidence that disciplinary boundaries inhibit communication and produce narrow conceptions of sustainability. Therefore, an alternative way of framing this finding is that individual disciplines can offer unique and important lenses through which to view sustainable development. Moreover, critique of disciplines (Everrett, 2008), though warranted in some respects may be overstated in others. As mentioned before, the divergent conceptions of sustainability can lead to divergent approaches to achieve it and could help to avoid the emergence of narrow thinking within sustainability. This is not to underscore the importance of interdisciplinarity, but only to echo Sherren's (2010) observation that strong interdisciplinary research in sustainability is contingent on the presence of healthy disciplines. Therefore, rather than dissolving disciplines, creating

institutional structures that facilitate and encourage communication across the disciplines may be more beneficial to advancing sustainability on campus.

Though a good deal of divergence exists among conceptualizations, none of the conceptions of the participants is demonstrably false or contain misconceptions as all of the reported conceptions in some way relate to pre-existing discussion around sustainability. This is not to say that all conceptualizations are equally valid, but just that expanding the boundaries of the debate could be fruitful in avoiding ossification around the concept (Wals & Corcoran 2004). In addition, there is a degree of complementarity between divergent conceptualizations, where conceptual depth in one conceptualization could potentially address conceptual weakness in another. For instance, the Zero Sum Game and Positive Legacy conceptualizations hold an instrumentalist view of the natural world, framing it in terms of resources; this being a common critique of sustainable development in general (Kopnina, 2012; Selby & Kagawa, 2010). In contrast, the critical premise reflection implied within both the Trojan Horse for Perpetual Growth and Socially Transformative Potential conceptualizations clearly holds the potential for developing alternative frames through which to construct the human/environment relationship. Thus the interaction of divergent epistemological and ontological positions inherent in disciplinary perspectives could be used to develop more holistic ways of thinking about sustainability and solving sustainability related problems. Suggesting the importance of a plurality of ontological and epistemological positions should not be construed as an argument for a descent into 'anything goes' pluralism. Rather, the conception of inter- or transdisciplinarity could potentially promote an examination of the boundaries of one's knowledge and the assumptions on which that knowledge is based (Russell, 2010).

3.4.2. Cultural Tensions That Occur 'Prior to' Sustainability and the Challenge of Organizations Change

In contrast to discursive differences concerning conceptualizations of sustainability, divergence among respondents that occur outside of sustainability relate to

ideological commitments concerning the nature of the university and education, and do not display as strong a tendency to break down along disciplinary lines as did sustainability related tensions. The most obvious example of this is the clear tension between respondents who advocate ESD at the university and those who critique it as instrumentalizing and counter to what they perceive to be the educational mission of the university; namely educating to create a critical and prepared mind. This tension finds clear resonance in the literature; for instance, Wals (2011) and Foster (2001) frame similar tensions to those in our study in terms of instrumental perspectives versus emancipatory perspectives of education, while Jickling & Wals (2008) describe this dichotomy as transmissive versus transformative approaches to education. The contention is that educating toward specific ends, as is implied by both the instrumental and transmissive perspectives, (as well as the way in which ESD is often framed in our own results) is akin to indoctrination and risks narrowing thinking around socio-ecological issues. Furthermore some research has demonstrated that transferring knowledge and values to students does not lead to the sort of behavioral change that proponents of these forms of education suggest (Kolmuss & Aygeman, 2002; Wals, 2011). Moreover, we do not necessarily know what behaviors and skills will be beneficial to future social, economic, and ecological contexts and as such directing education in this manner risks making future societies mal-adapted to the problems they may face (Scott & Gough, 2007).

In contrast to this position, Kopnina (2012) argues that the pluralism inherent in educating without specific ends within Environmental Education and ESD in particular, risks seeing marginalized perspectives (such as eco-feminism or deep ecology) being muted by dominant hegemonic anthropocentric discourses and may run counter to developing novel frames through which to view and educate about socio-ecological issues. Given the severity of current socio-ecological crises and the socio-economic pressures to continue patterns of production that are in and of themselves unsustainable, directing education toward creating an environmental consciousness or a sustainability consciousness is arguably necessary. Clearly the depth to which the debate is framed by experts in the field goes beyond how it is reproduced by respondents in this study.

Nevertheless, we see clear parallels within our results that suggest the presence of similar opinions within the respondent pool.

3.4.3. Organizational Change and Sustainability: The Need for Pluralism

Many of the broad philosophical quandaries expressed in the literature are articulated to one degree or another by our respondent group. While some of the tensions we have described relate to disciplinary ways of conceptualizing sustainability, others are rooted in normative beliefs and deeply held convictions about the nature of education and of the university in general. Therefore the probability seems unlikely of successfully constructing a vision for sustainability at the university which speaks to the lived experience of actors as a principle on which to anchor sweeping institutional change efforts. In addition the wisdom of settling on one vision is questionable when you witness the learning benefits of students being confronted by divergent views (Foster, 2001; Moore, 2005). Rather than asking what should sustainability at the university look like; the question may become: how can we encourage and facilitate meaningful interaction between these groups? Such a question implies commitment to a communicatively rational stance, as well as a deep ontological and epistemological openness the likes of which admittedly appear almost exclusively in theoretical texts (e.g. Habermas, 1984; Brown et al., 2010 Chap. 1-4). Nevertheless, providing a place within the organization for an interdisciplinary concept like sustainability could promote the sort of conceptual space advocated by Sterling (2004) and Wals & Corcoran (2004), pp. 223-224, which could transform many of the barriers discussed in this section into opportunities for deep social learning (Sherren, 2010).

If the institutional culture of academics at the university is one of dialectical tension, dialogue, and discord, then abandoning our pursuit of a singular vision of sustainability seems warranted. Without sounding glib, the need for this is perhaps most succinctly explained by our cultural relationship to spaghetti sauce. This unlikely parallel was inspired by a presentation given by Malcolm Gladwell at the Technology, Entertainment, and Design conference (TED, 2005) on the work of Howard Moskowitz, a

market researcher and psychophysicist. In using consumer centered sensory analysis to help the Campbell's soup company develop "the perfect spaghetti sauce" (Moskowitz & Hartmann, 2008; Moskowitz & Gofman, 2007), Moskowitz's research revealed, that consumer preferences were not distributed along a normal distribution. Rather his results showed that consumers were horizontally segmented according to sets of divergent preferences (e.g. chunky versus smooth). In other words, this translated into the observation that there was in fact no one perfect sauce, just perfect sauces.

The oddity of this analogy should not undermine the complexity of the revelation or its bearing on the current study. Given the nature of contestation surrounding sustainability and the role of the university, surely pursuing a singular or consensus vision of sustainability is fraught. We argue that, like this example, our findings suggest a degree of horizontal segmentation which is represented by divergent conceptualizations sustainability at the university. To reiterate our recommendation above: rather than trying to craft a vision of sustainability for the university, we should encourage the development of a vision of critical sustainabilities, where affixing the term critical to the term sustainabilties implies a necessary and constant dialogical/discursive interaction of divergent positions which attempts to avoid 'anything-goes' pluralism. The challenge becomes finding ways to institutionalize and create organizational structures that support this, while at the same time remaining reflexive and avoiding becoming ossified. We advance this as a potentially fruitful vein of inquiry for the study of sustainability in higher education.

3.5. Conclusion

The task of promoting sustainability, both within and without the university, requires diversity in thinking about how to educate and what role the university should occupy within society. Much of the current thinking around sustainability in higher education displays some sensitivity to the need for diversity and many comprehensive frameworks for institutional change have been developed. Nevertheless, the concept of sustainability and associated educational theories bring with them sets of assumptions that may have

limited the bounds of the debate and work to reproduce the social and ideological structures that are at the root of global socio-ecological crisis.

This study uncovered divergent views among faculty at the university which echo many ongoing debates in the literature. Since these divergent viewpoints are not easily resolved, and may indeed present an opportunity for deep learning and the continued maturation of the concept of sustainability, developing institutional structures which encourage difference and facilitate the interaction of disparate perspectives around a common theme, rather than diminishing difference through the pursuit of a singular vision of sustainability, may be more institutionally plausible and in-line with reflexive conceptualizations of sustainability at the university. Thus rather than the pursuit of sustainability at the university, we suggest examining the potential for multiple critical sustainabilities operating simultaneously and in dialogue with one another.

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CHAPTER 4 A TALE OF TWO (OR MORE) SUSTAINABILTIES: A Q METHODOLOGY STUDY OF UNIVERSITY PROFESSORS' PERSPECTIVES ON SUSTAINABLE UNIVERSITIES

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4.1. Abstract

If change for sustainability in higher education is to be effective, change efforts must be sensitive to the institutional culture in which they will be applied. Therefore gaining insight into how institutional stakeholders engage with the concept of sustainable universities is an important first step in understanding how to frame and communicate change. This study employed Q methodology to explore how a group of professors conceptualize sustainable universities. We developed a Q sample of 46 statements comprising common conceptions of sustainable universities and had 26 professors from Dalhousie University rank-order them over a quasi-normal distribution. Our analysis uncovered four statistically significant viewpoints amongst the participants: ranging from technocentric optimists who stress the importance of imbuing students with skills and values to more liberal arts minded faculty suspicious of the potential of sustainability to instrumentalize the university. An examination of how these viewpoints interact on a subjective level revealed a rotating series of alignments and antagonisms in relation to themes traditionally associated with sustainable universities and broader themes associated with the identity of the university in contemporary society. Finally, we conclude by discussing the potential implications that the nature of these alignments and

antagonisms may hold for developing a culturally sensitive vision of a sustainable university.

4.2. Introduction

The Sustainability in Higher Education (SHE) literature is awash with statements to the effect that universities bear a profound moral obligation to promote ideals of sustainability by incorporating them throughout their institutional dimensions (Clugston & Calder, 1999; Cortese, 1992; UNESCO, 1997; UNESCO, 2000). As one of the dominant producers of both social and intellectual capital in the Western world, institutions of higher education see many of our future political, cultural, and technological leaders pass through their turnstiles (Cortese, 2003; Orr, 1992). As such, it is difficult to imagine a more effective venue for the development and dissemination of a vision (or visions) of what it is to be a sustainable society, and what courses of action we should pursue to set us on a sustainable path.

In the years since the term "sustainable development" was first articulated by the Brundtland Commission (1987), a host of organizations (CRE, 1994; ULSF, 1991; UN, 2002) have called on institutions of higher learning to take up the challenge of sustainable development in a meaningful way. Most notably, the United Nations declared 2005 to 2014 the Decade of Education for Sustainable Development, the framework for which outlined an important role for institutions of higher learning (UN, 2002). Universities have in many ways responded to this call. This is perhaps best evidenced by a proliferation of SHE declarations which outline sets of challenges and avenues for universities to engage in their pursuit of becoming "sustainable" institutions (Lozano et al., 2011; Wright, 2002; Wright, 2004).

Nevertheless, as the Decade of Education for Sustainable Development draws to a close, questions of its ultimate relevance for tertiary education arise as universities have proved somewhat resistant to fully engaging with the concept of sustainability in an institutionally holistic fashion (Cotton et al. 2009; de la Harpe & Thomas, 2009; Scott & Gough 2007a; Sherren, 2010). Universities have been much more successful at incorporating the principles of sustainability into their physical operations than they have

been at incorporating them into their curricular, pedagogical, and management structures (Cotton et al., 2009; Lozano, 2011; Tilbury, 2004). This is likely owing to the straightforward nature of implementing technical fixes to problems of inefficient use of resources and the concomitant economic benefits these present. By contrast, deep structural changes are far more challenging to accomplish in that they require profound deliberative efforts to have such a change effort reflect the various needs and desires of institutional stakeholders in a context of paramount academic freedom (Cotton et al., 2007; Cotton et al., 2009). In higher education institutions, competing needs and desires complicate change efforts for sustainability since stakeholders often hold divergent, even conflicting conceptualizations of not only sustainability but of how to educate with sustainability in mind, and the role of the university with respect to sustainability in general (Reid & Petocz, 2006; Sylvestre et al, submitted).

Consequently, change efforts are often confounded by substantial institutional inertia. Like many institutions of similar breadth, universities have a long historical pedigree, perpetuated by being discursively reproduced in their contemporary context by both internal stakeholders and the societies in which they find themselves embedded (Delanty, 2001; Seo & Creed, 2002). As discrete, historical entities they possess the ability to mobilize their constituent parts (Gough & Scott, 2007b pp. 166; Pittman, 2004) but are also the product of generations of institutional learning that create a sense of identity that can act as a significant barrier to change (Kezar & Eckel, 2002; Sherren, 2010). In addition, universities have complex governance structures with no centralized organizing body responsible for implementing change initiatives (de la Harpe & Thomas, 2009). In their interaction with the public sphere, they are sites of cultural production whose boundaries are increasingly permeable to external agents that seek to frame (often in terms favorable to themselves), and are themselves in part framed by the Institution. (Delanty, 2001 pp. 88; Jickling & Wals, 2008). Therefore they are both socially constituted and constitutive. Now more than ever the university is a complex living system embedded in internal and external webs of significance. As a result, many contend that the university is undergoing a crisis of identity in the Western world.

The idea that Western universities are undergoing a transformation as a result of external pressures is widely accepted (Delanty, 2001 pp. 152-158; Metcalf, 2010). This transformation is often framed as the neoliberalization, or commoditization of higher education (Delanty, 2001, chap 8; Giroux, 2002; Olssen & Peters, 2005). It has been argued that the pervasiveness of a neoliberal socio-economic discourse erodes the notion of the university as a public good. As a result both education and research are instrumentalized to the detriment of critical thought and academic freedom (Giroux, 2002; Jickling & Wals, 2008; Noble, 1998). This creates a tension at the university not only between its administrative elements and faculty, but also between faculty members as well (Newsome & Polster, 2008; Noble 1998). The effects this may have on what is possible as a vision for a sustainable university and how it affects stakeholders' conceptualizations is yet unknown. Neoliberal ideology has, however, historically proven itself to be less than sympathetic to transformative calls for sustainability (Prugh et al. 2000).

Although powerful external pressures work to frame the university, the culture of a university is not completely the product of external relations. Change within individual institutions is also a product of agency exerted by institutional actors. De la Harpe & Thomas (2009) found that for institutional change efforts to bear fruit stakeholders need meaningful engagement and a clear vision of what change should look like. In addition, Kezar and Eckel (2002) show that sensitivity to institutional culture is highly important in tailoring a vision and strategy for change to a particular institutional context. They define institutional culture as "deeply embedded patterns of organizational behavior and the shared values, assumptions and beliefs, or ideologies that members have about their organization and its work" (Kezar & Eckel, 2002). Faculty, as the primary interface between students and the university, are a key constituency for sustainability at the university. Therefore understanding the culture(s) of faculty at the university is exceedingly important for understanding how to frame change. Although Kezar & Eckel's definition of the term "culture" seems to imply a high degree of institutional determinism with respect to institutionally embedded agents, and may not take into account the effects that disciplines or economies of esteem (Sherren, 2010) have on academics' identities, we feel this notion is still useful for conceptualizing distinct

cultures within a university and how these may relate to external forces. Thus we envision the potential for an important intersection where potentially diverse cultural forms emerging out of faculties' lived experiences within the university must necessarily interact with broader conceptions of the shifting identity of the university in a contemporary socio-economic context. In order to create a robust and contextually sensitive vision of sustainability at the university, we contend that engaging with both macro and micro level cultural influences is necessary. Given the importance of negotiating cultural barriers to change at the university, as well as "the diversity of opinion and lack of clarity about the roles of higher education players in sustainability" (Shephard & Furnari, 2012 pp.3), it is essential to explore how university faculty interact with the concept of what it means to be a "sustainable university".

This study employed Q methodology to explore how a diverse cohort of faculty at Dalhousie University/King's College conceptualizes a sustainable university. The purpose was to explore: the nature of tensions and agreements around what it is to be a sustainable university; how Q can be used to more effectively communicate a vision for change; and finally, what the nature of tensions at the university ultimately means for creating a vision for change. Q method has proved effective in other studies exploring the construction of sustainability discourses (Barry & Proops, 1999) and in the specific context of tertiary education both within environmental education (Vincent & Focht, 2009) and education for sustainable development (ESD) (Sheppard & Furnari, 2012). This study provides an interesting point of departure for unearthing heretofore functionally transparent institutional cultures at the university and how these cultures interact with the concept of "sustainable university

4.3. Methods

The Q method is not about right or wrong responses; rather it is a systematic means of studying subjectivity that employs both quantitative and qualitative methods (Brown, 1993). Generally speaking, participants are presented with a series of statements (Q sample) that they are instructed to rank-order over a quasi-normal distribution (Q sort) in response to a condition of instruction presented to them by the researcher (Brown, 1993; McKeown & Thomas, 1988). Since a respondent's reaction to a statement can only

be understood in its relationship to all other statements in the Q sort (Dryzdek & Berejikian, 1993), the structures that these produce are meant to represent an individual's point of view given the condition of instruction. The data is then factor analyzed to determine where distinctive clusters of correlation exist. However, rather than looking for patterns across traits as with traditional factor analysis, participants are treated as variables, and we seek to empirically derive patterns from across the participant pool (Brown, 1993; Van Exel & de Graaf, 2005). Out of the factor analysis emerges clusters of individuals rooted in a common configuration of viewpoints. The structure of, and divergence between, modal Q sorts for each cluster as well as open ended interview data collected from participants after the Q sort are used to contextualize and describe the viewpoints themselves as well as to explore the nature of tensions and consensuses that exist between divergent perspectives.

4.3.1. The Q sample

The methodology for this Q study followed both the approach described by Watts & Stennor (2005) and Van Exel & de Graaf (2005), as well as the procedure employed by Sheppard & Furnari (2012) to study a similar population. The Q study focused on understandings of the term "sustainable universities". An initial set of statements for the Q sample was gathered from a comprehensive literature review of sustainability in higher education (SHE) articles conducted by Wright (2008) seeking to identify common conceptions of sustainable universities. A second more informal review of the SHE literature was conducted to fill the space from the date of the initial literature review to present. This was achieved by entering the search term "sustainable university" into ISI Web of Science and ScienceDirect, and mining results for gaps in the original review. The reviews were combined to produce a list of 200 statements.

Since there is no standardized way of constructing a Q sample, we followed Brown (1993) and Dryzdek & Berrijikian (1993), and constructed a "rough and ready" cell matrix in order to help infer a logical structure to the statement pool of 200. Such a matrix helps to ensure that our sample adequately represents the dimensions we've identified. The matrix was then populated with statements that fit into the established categories and then statements are randomly selected from the cells. By doing so, we

attempted to limit the potential that a category of statements could be over-represented in the Q sample and thus potentially skew the result along those dimensions. This procedure provided us with 48 statements.

The Q sample was piloted on 12 faculty members (6 of whom work in sustainability related fields). After the piloted Q sorts, the faculty members were informally interviewed about the nature of the Q sample; what they thought was missing and/or unclear. Statements that were unclear or viewed as redundant were eliminated and replaced with new statements generated from these interviews. The resultant Q sample was 46 statements (see Appendix C).

4.3.2. The Q sort

The Q sorting with the study population was completed during face-to-face interviews with individual participants who were randomly selected from different departments across faculties at Dalhousie University and the University of King's College (a college affiliated with, and on the main campus of Dalhousie University). Prior to, and after, the Q sort, participants were interviewed about their conceptualizations of sustainable universities (see Sylvestre et al., submitted). Participants were then presented with the 46 statements (each printed on a 8x5 laminated card with a piece of Velcro on the back) and instructed to read them with the following guidance: "What do you feel are essential aspects to a sustainable university?" Participants were then asked to create 3 piles of statements: statements they agreed were essential; statements about which they were ambivalent; and statements they disagreed were essential. Participants were then instructed to rank-order statements on a 9-point scale (+4 to -4) distributed horizontally. The vertical distribution of the ranking grid-scale in the +4 (most agree) position was two cells, up to eight cells in the 0 position, returning to two in the -4 (most disagree) position (Figure 4). These were arranged over a quasi-normal distribution, and placed on a 46 cell grid on a foam board. The choice to use the quasi-normal distribution was informed by Brown (1993), McKeown & Thomas (1988), Van Exel (2005), and Watts & Stennor (2005) who found that the technique makes the sorting procedure less onerous for the participant and makes analysis and interpretation of the Q data significantly more manageable with little resultant loss in sensitivity. Once the

Q sort was complete participants were asked a series of open ended questions about the structure of their sort, why they afforded certain cards the position of most agree and others the position of most disagree, and what if any was the central idea they were trying to convey with the distribution they produced.

4.3.3. Quantitative and Qualitative Q analysis

Quantitative analysis of the Q sorts was performed using the dedicated Q analysis software program PQ method 2.20 (Schmlock, 2011). Q method software programs such as this make quantitative analysis significantly easier and are commonly used in the analysis of Q data (Brown, 1993). Data was centroid factor analyzed for seven factors. Analyzing for 7 factors has little explicit rationale in the literature, it is simply described as the magic number of factors to look for (Brown, 1993; Van Exel, 2005). Upon completing the factor analysis, the software calculates Eigenvalues (sum of the squared factor loading for that factor) and factors with an Eigenvalue of >1.00 were selected for factor rotation (Brown, 1980). Finally, factors were rotated using Varimax rotation to maximize variance between groups. Factor analysis and rotation yielded four distinct and statistically significant factors on which participants loaded, representing four distinct viewpoints (note: only participant factor loadings greater than 0.38 ($p>0.01$) were considered significant and carried forward to the interpretive stage as informed by Van Exel, 2005). Participants who loaded positively and significantly onto more than one factor were excluded from further consideration.

For each of the four viewpoints drawn from the analysis a modal Q sort was produced to represent a best-fit description for all the participants loading on a particular factor as well as outlining distinguishing statements that set that factor apart in a statistically significant manner ($p>0.01$). In addition, the chosen software produced a series of factor arrays which illustrated agreement and disagreement across all statements between each of the factors. All of this simplified the task of interpreting and defining the divergent viewpoints embedded in the factors. Nevertheless, this is only half the story.

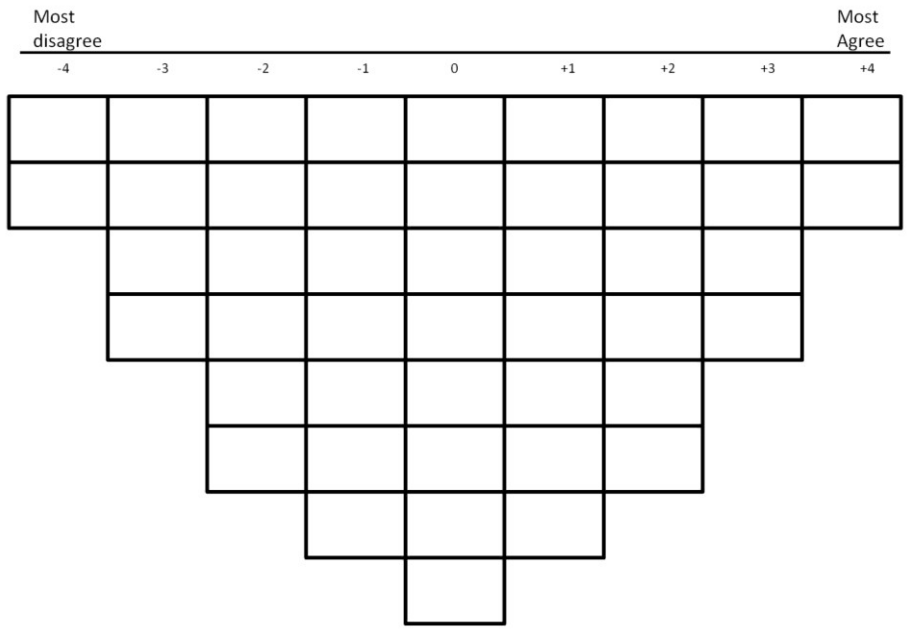

Figure 4: Quasi-normal structure for Q sort

Though parsimony is the goal building a narrative description to explain the factors, Dryzek and Berejikian (1998) note: "[they] are not constructed by merely cutting and pasting statements with extreme scores on each factor; for the narrative must also take into account how statements are placed relative to one another in each discourse… and the comparative placement of statements in different discourses." (pp. 52). In addition, to further contextualize perspectives, we conducted a thematic analysis of open ended interview questions (Brown, 1980 pp. 200-201; Van Exel, 2005) concerning the Q sort as well as the participants' perspectives on sustainable universities.

4.4. Results

The following presents the results of our analysis. Each group discussed below represents a cluster of participants, all of whom loaded significantly on similar factors. The factor descriptions are based on the interpretation of the structure of modal Q sorts for each group, how statements are distributed in relation to each other within the modal sorts, and the similarities and differences between factors. In addition, interview data of respondents who loaded on the same factor were used to further elucidate the nature of each perspective. Numbers found in brackets refer to specific card numbers found in

Appendix C. Please also see Appendix E for a list of factor arrays illustrating relative positioning of statements between Groups.

Table 4: Distribution of Faculties within the four distinct perspectives uncovered by the Q analysis

Factors	Faculties					
	Arts and Social Sciences	Engineering	Management	Science	Computer Science	Architecture and Planning
Group 1	3	0	1	2	0	0
Group 2	2	3	0	3	0	1
Group 3	0	1	1	2	1	0
Group 4	3	1	0	0	0	0

As Table 4 illustrates, disciplines tend not to be over-represented on any of the four factors. This was surprising since, as noted above, disciplines often garner criticism for their role in organizational resistance to sustainability and as such we had expected more discursive alignment within Faculties. We attempt to elucidate reasons for this below. In addition to our describing shared perspectives within participant clusters, we noted a number of clear points of potential tension and alignment between Groups relating to groups of statements that centered on similar themes and thematically related responses to interview questions. Drawing out these points of potential tension and alignment between Groups enabled us to uncover three broad themes that represent areas of tension and consensus. These we use as lenses through which to examine how relationships between Groups shift given different visions of a sustainable university.

4.4.1 Factor Descriptions

Our Q analysis revealed four statistically significant groups that arise from the cohort of 26 professors:

Group1: (n=6 / 23%)

Liberal Arts minded faculty sensitive to the socio-political dimensions of sustainability but skeptical of the instrumentality implied by "sustainable university"

First and foremost Group 1 feels that sustainability is a contested concept that extends far beyond purely technical conceptualizations that they feel dominates the discussion. They tend to be more sensitive to the socio-political dimensions of sustainability. Essentially, they feel that universities in their current form are exceedingly well placed to grapple with the concept of sustainability through their traditional mores of free and open inquiry and how these relate to the institution's mission of education, research, and outreach. They are quite skeptical of the term "sustainable university" in part because of the political contestation around sustainability, but mainly because they can envision how such a transformation could potentially erode academic freedom and make an instrument out of education. Moreover, they display reticence to the notion that education should be "for" anything (unless of course it is for critical thinking and enhancing civil society by educating about the values of a democratic society- which they see as closely linked to each other and to sustainability). In the words of one respondent: "change for sustainability is not a revolution; it is an evolution" (Participant 27). They feel that it is essential that a sustainable university promotes a diversity of critical perspectives (Statements 27, 39, 13), that they engage with their local communities in a meaningful way (Statement 5), and that they seek to enhance civil society by helping to foster an engaged citizenry (Statement 4). If the university is to be a model then it must maintain itself as a site where the freedom exists to construct a plurality of diverse perspectives relating to various, even conflicting visions of sustainability. As one respondent contends: actively "fostering diversity helps to ensure that the institution resists becoming an elitist, self-selecting organization" (Participant 17), and guards against dogmatic adherence to disciplinary conceptions of sustainability. Finally, they feel that the intellectual footprint of the university is more important than the ecological footprint. As

such, they do not find greening the campus initiatives to be exceedingly important, yet nor do they disagree with them (Statements 7, 19, 22, 28); they see the primary site of action of a sustainable university as the social realm, mobilizing knowledge in the form of education and research to the segments of society who need them

Group 2 (n=8 / 31%):

Traditional liberal view of the university with a strong inclination towards greening campus but leery about incorporating sustainability into other institutional dimensions

Group 2 conceptualizes a sustainable university in largely technical terms. To them, a sustainable university is a fiscally sound, technological leader who incorporates the latest research and technology into its infrastructure and thereby stands as a model for the rest of society of best sustainable practice. In this vein, a good deal of import is placed on the university reducing its ecological footprint and incorporating renewable and energy conservation measures into its physical plant with a view to decreasing operating costs (Statements 19, 23, 36, 40). Though financial viability of the institution is important, Group 2 tends not to differentiate between "greening" efforts on the basis of cost recovery. They don't feel that the concept of sustainability is anything new; rather, as one participant states "[*sustainability has*] always been around, we just refer to as it sustainability now" (Respondent 6). To this Group a sustainable university is not about fundamentally changing the university but is about fine tuning the system already in place. Group 2 does not display interest in the socio-political dimensions of sustainability (Statements 4, 29) within the university and worry that as a political project a "sustainable university" is either a buzzword or worse, a political ideology that will erode academic freedom and critical thinking. Put another way, they feel the university should engage with the idea of sustainability without liquidating itself to it. Hence, they are weary of any form of explicit values based education and see this as inherently unsustainable: university education is undertaken in order to create a prepared mind; which they discuss as the central mission of the institution (Statements 9, 41). Furthermore, Group 2 shows ambivalence towards the idea of the university advocating on sustainability issues (Statement 45). They feel that the university can and should provide technical leadership and knowledge, as stated above, but is ill suited to acting

with a specific goal in mind. Aside from a green campus, and technological leadership, they felt a sustainable university must also have a strong vision of economic sustainability. Therefore in an era of diminishing funds the university should ensure that they do not run a budget deficit, while being sensitive to the fact that some short term loss is required to benefit from technical innovations in the future (Statements 16, 30).

Group 3: (n=5 / 19%)

Business savvy techno-optimists who see being a sustainable university as an opportunity to become global leaders and are strong sustainability advocates

Broadly speaking Group 3 feels that many questions currently exist as to the relevance of the university to contemporary society. They contend that making sustainability central to everything the university does is an excellent means of answering such questions. In fact, their Q sort suggests that they support the university actively advocating on these issues, and feel that it ought to be a strong model of sustainability (Statement 45). They feel that ESD should be central to the educational mission of the university (Statement 9). They concomitantly support training students in the skills they will need to be successful throughout their lives while imbuing them with the values of what it is to live in a sustainable society. Therefore to Group 3, a sustainable university is by and large a technical issue centered on training students and developing new and innovating technologies which can be deployed throughout society at large as well as within the university's own infrastructure. In addition to viewing it as the institutions moral obligation, they feel that there is a strong business case for sustainability. With this in mind they display a tendency to favor greening the campus initiatives that lead to clear cost saving outcomes, de-emphasizing those that do not (Statements 7, 19, 28). Moreover they have a strong belief in partnerships, especially partnerships with industry. For Group 3 business and industry are the most powerful institutions of our time; engaging with them would be a highly effective means of promoting both sustainability and remaining socially relevant. Group 3 displays a high degree of receptivity to the needs of society insofar as sustainability is concerned, though they are more nationally and internationally focused than the other Groups (Statement 15). Part of this receptivity is sensitivity to the needs of the Market with respect to curriculum and research. They feel that financial

viability is a key aspect to a sustainable university but hold a nuanced view of economic sustainability. They support running deficits and short term economic hardship if these are framed in terms of investments that will benefit the university in the medium to long term (Statements 16, 30). Finally, they do not find issues of accessibility, diversity, or educating for democratic citizenship to be very important to being a sustainable university relative to the more pragmatic initiatives alluded to above (Statement 4, 27). They prefer a much more practical and direct engagement with sustainability on the part of universities. In effect, they would use the university as the voice of sustainability in society (Statement 45).

Group 4: (n=4 / 15%)

Progressively minded faculty with a balanced vision of environmental and social sustainability who seek a more critical understanding of a sustainable university

Group 4 believes that a sustainable university must strike a balance between big picture meta-questioning or even problematizing of the concept of sustainability while deploying and developing technologies to solve immediate problems as they arise (Statements 4, 7, 10, 19). With this in mind, they see a sustainable university as one that educates to create a prepared mind but is also a technological leader that models the principles of sustainability in its physical operations (Statements 4, 19, 40, 42). Thus Group 4 conceptualizes balance in SHE as promoting sustainability both internally and externally. In creating a vision of sustainability at the university, the institution must at once sustain itself and its mission so it may excel in its provision of services to society. In addition, Group 4 feels that the university must also engage in a meaningful way with the socio-ecological dimensions articulated in broader societal notions of sustainability. While they feel that a sustainable university can and must strike this balance, they do however feel that the mission of the university is far too broad to be contained by the concept of sustainability. They resist anything that can be construed as instrumentalizing, especially education (Statements 8, 9), but do feel that promoting ecological literacy in all disciplines has merit. This is reinforced by either ambivalence or wariness with respect to the involvement of outside constituencies in academic matters which may erode academic freedom (Statements 34, 35, 37). Group 4 also clearly feel that sustainability is

a contested concept and that one of the primary roles of the university is to foster a diversity of perspectives on the issue. Related to this is the importance of enhancing civil society through engaging with democratic values; where all of the respondents in this Group view a democratic society as a society conducive to change (Statement 4).

4.4.2 Dynamic relationships of tension and consensus

We attempted to represent these relationships graphically using flowcharts where color of the connecting arrows implies the nature of the relationship (tension or consensus) and the weight of the connecting arrows the intensity (either mild, moderate, strong, or bipolar; where bipolar indicates that the cards relating to the theme discussed are at opposite or near opposite ends of the distribution of the two Groups being discussed).

The four groups that emerged out of the Varimax rotation represent distinct, but not necessarily opposing points of view. All Groups agreed that the pursuit of sustainability must not hinder the institution's ability to meet their central imperatives; specifically, all groups framed the primary goal of education at the university vis-a-vis sustainability, to be fostering critical thinking in students. All groups were strongly opposed to policy related statements that were seen to limit academic freedom. Finally, though the importance of economic sustainability tended to vary between the Groups, broad agreement existed that the pursuit of greater enrolment as a means of maintaining economic viability was inherently unsustainable since it impedes the university's ability to deliver quality education.

The above analysis revealed that all participants had a serious concern about what they conceived as dangerous trends in higher education. These concerns were further developed and articulated in the answers to the open-ended interview questions (Sylvestre et al, submitted). Though participants' opinions on the effects of these trends speak to the same outcomes - specifically the erosion of academic freedom, a loss of excellence in education, and a perceived growing irrelevance of the university to society- the underlying causes that they identify differ between groups. Therefore, it is not only tension around the concept of sustainability and how best the university can model this

which differentiates groups within this study, but substantive differences in their conceptualizations of the identity of the university in a rapidly changing world.

Further analysis of the Q-sorts revealed three broad themes where potential tensions are likely to exist between Groups that help to elucidate the nature of divergence between the groups:

1. Ecological footprint and intellectual footprint
2. How to educate for sustainability
3. Reflective versus reflexive conceptualizations of the university

What is interesting is that tension and consensus between groups is dynamic and tends to shift as different thematic lenses are applied. The three change-related themes that emerged from the Q sorts are discussed below.

Ecological footprint and Intellectual footprint

This theme has a complex set of tension-consensus relationships. Initially, broad alignment exists between Groups 2, 3, and 4 around the importance of greening campus initiatives when set against the relative de-emphasis of such initiatives demonstrated by Group 1. It is important to note that while Group 1 does not align with the other groups in this category, they do not disagree with greening campuses. Analysis of their interview data shows that they are more or less ambivalent to these initiatives because in terms of promoting sustainability they feel that the university's role as a physical consumer of resources is far less important than its role in creating a politically engaged citizenry. It is around the importance of creating a politically engaged citizenry where Group 1 finds clear alignment with Group 4, illustrating that in fact only a partial tension exists with respect to this particular dichotomy between these two groups.

Within this set of statements we find moderate disagreement between Groups 1 and 4, and Group 2, and a nearly bi-polar disagreement with Group 3 (Figure 2). From the interview data it becomes apparent that the primary difference lies in the perceived role of a democracy for the development of sustainability. Participants in both Groups 1 and 4 speak to democracy as the political system that is most amenable to facilitating change, Group 4 goes so far as to discuss it in terms of democratizing administrative

structures within the institution to be a sustainable university. Alternatively, participants in Group 2 do not broach the topic and Group 3 sees it as largely irrelevant to sustainability with one respondent from the group going so far as to state that the democracy and sustainability are sometimes mutually exclusive.

Regardless, the relationships that are a function of this dichotomy clearly draw alignment between Groups 1 and 4, and Groups 2 and 3, where a near bi-polar disagreement exists between Groups 1 and 3. Deemphasizing the importance of supporting a robust and democratic society may speak to both Groups 2 and 3 conceptualizing sustainability in largely techno-managerial terms set against Groups 1 and 4 being more sensitive to the social dimensions of sustainability, where in some instances they frame it in socially transformative terms. The partial tension that exists between Group 1 and 4 is likely a matter of Group 1 showing little interest in sustainability. An examination of their modal Q sort shows that the agreement end of the Group 1 distribution holds mainly statements with no explicit mention of sustainability, or point to reforms that could be beneficial and possible with or without consideration given to sustainability.

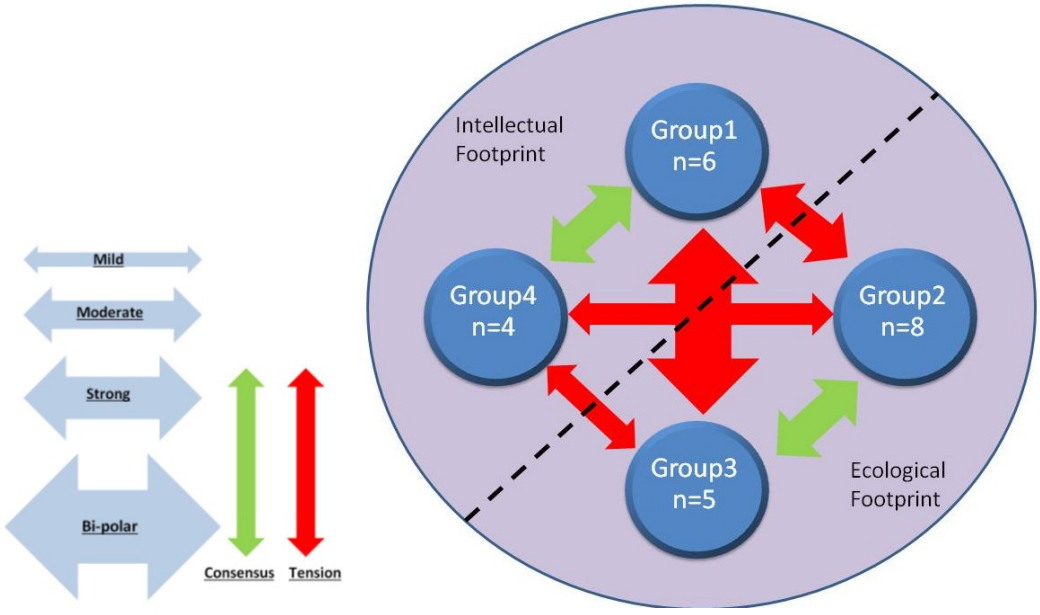

Figure 5: Tension and consensus between Groups in relation to the theme "Ecological versus Intellectual Footprint"

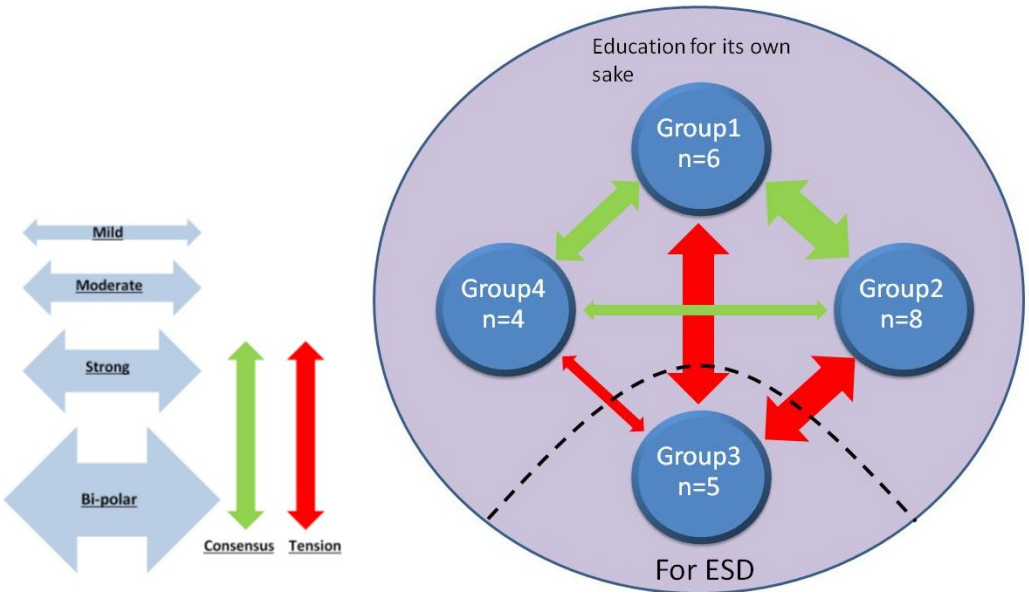

Figure 6: Tension and consensus between Groups in relation to the theme "how to educate for sustainability"

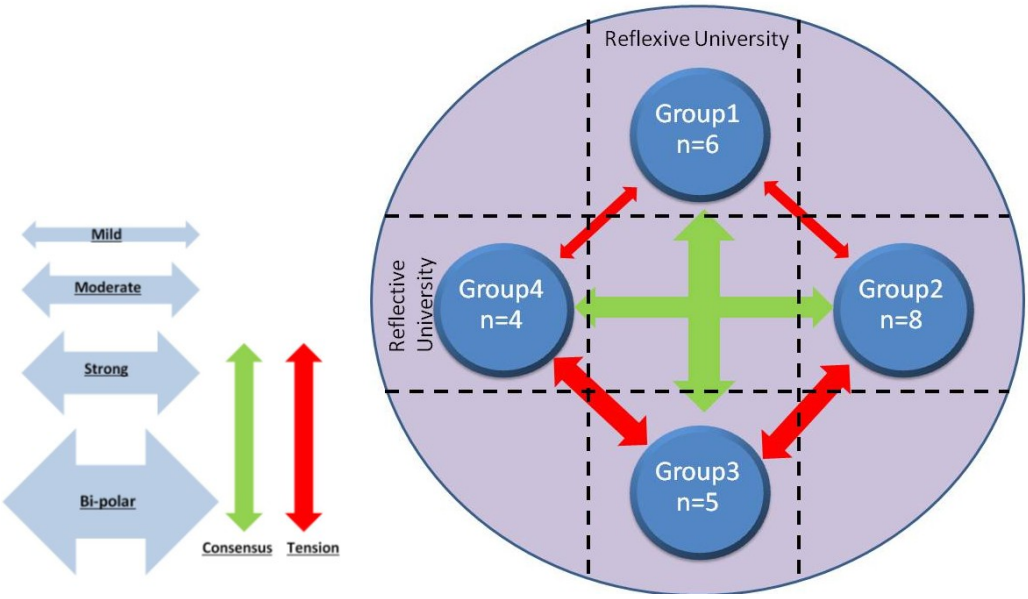

Figure 7: Tension consensus between groups in relation to the theme "Reflective vs. reflexive" conceptualizations of the university

How to educate "for" sustainability

This theme presents a binary tension between the notion of Education for Sustainable Development (ESD) and education for its own sake. For this theme, Group 3 is in favor of ESD which is in tension with Groups 1, 2, and 4 who are all somewhat aligned in their support of the education for its own sake. Discussion during the subsequent interviews indicate that these three groups all feel that the educational mission of the university is far too broad to be reduced to the concept of sustainability. There is evidence to suggest that they would be more receptive to incorporating more sustainability related topics throughout university education in general, but that making it a central tenet would be too instrumentalizing in nature and runs counter to the spirit of educating to create a prepared mind. Nevertheless, a gradation does exist between the liberal-arts minded Groups and it is not accurate to portray all Groups as promulgators of deep liberal sensibilities in education. Where, for instance, Group 4 displays strong resignation to the idea of university education being framed as professional training to give marketable skills to students, Group 1 seems somewhat ambivalent and Group 2 displays moderate amenability to this statement. In fact Groups 1 and 2 begin to move into closer alignment with Group 3 on this particular statement and as such they are still presented as being in tension in Figure 3.

Nonetheless, Group 3 does differ significantly from the other groups in that they see ESD and educating to create a prepared mind as being synonymous. This is illustrated in their modal Q sort by the importance afforded to both the centrality of ESD and education that fosters critical thinking and is further supported by their interview data where they speak to the concept of sustainability as being essential to addressing emerging socio-ecological crises. In other words, if the future will require sustainability minded graduates then education for sustainability is educating to create a prepared mind. Interestingly, the fact that these tensions are represented as tensions relating to sustainability is likely an artifact of this study; the tensions that we describe likely relate to deeply held convictions as to the purpose of university education and the identity of the university in general.

Reflective versus reflexive visions of the university

Bi-polarity between Groups 1 and 3 dissolves in the face of consensus concerning statements that outline a more socially receptive and engaged role for a sustainable university. In fact, both groups find broad agreement on the importance of adopting an advocacy role in society; of culturing more cosmopolitan values, and of forging partnerships with industry and non-governmental organizations (interestingly, all groups equally de-emphasize creating partnerships with government). This is in contrast to Groups 2 and 4 whose modal Q sorts de-emphasize the importance of these as central aims for a sustainable university and whose interview data fail to broach themes of outreach and permeability to the public sphere. Conversely, both Groups 1 and 3 speak to the importance of the university moving away from the antiquated notion of the "ivory tower" in order to ensure that knowledge generated within the institution is reflexively generated, and therefore more socially relevant. In returning to obvious tensions between Groups 1 and 3 outlined above, consensus here would likely break down around the sort of instrumentalism which Group 1 negatively associates with marketization in knowledge production, while Group 3 would frame it as problem solving and being receptive to the needs of society.

Tension between Groups 1 and 3, and Groups 2 and 4 with respect to this theme is a matter of degrees. De-emphasizing outreach could imply a more institutionally focused conceptualization of a sustainable university. This assertion is further supported by Groups 2 and 4 placing a good deal of importance on greening the campus initiatives and their mutual focus on education. Thus a sustainable university in this view is an internal matter bounded largely by the confines of the institution. In contrast, the importance of institutional permeability suggested by the data for Groups 1 and 3 sketches a sustainable university as a site of knowledge mobilization where sustainability is positioned at the interstices of the institution and society. Perhaps at its simplest, this dichotomy is between a sustainable university as reflective, and of a sustainable university as reflexive, respectively.

4.5. Discussion

Our application of Q methodology helps to highlight the diversity of perspectives surrounding "sustainable universities" among faculty members at the university. Our findings show that while some tensions are specifically related to sustainability and reflect a divergence in preference given to particular priorities, others are the result of divergent normative beliefs as to the nature of education and the role of the university in general. Moreover we demonstrate that tensions are not static and well bounded; rather they are dynamic and dependent on the dimension of sustainability at the university to which we refer. We contend that if this one constituency demonstrates so much diversity, the project of a stakeholder-driven university transformation for sustainability is fraught. Furthermore, efforts to develop any one particular vision of sustainability as an organizing concept to anchor change at the university may risk alienating large parts of this important constituency. This presents a twofold challenge: one of finding novel ways of framing sustainability related change that has cultural resonance to help dissolve tensions regarding divergent conceptualizations of sustainability; the other of navigating normative beliefs in order to create culturally sensitive visions for change.

4.5.1. Framing change efforts for sustainability

Visualizing where tensions and consensuses exist is a starting point for identifying context-specific alignments between groups on one level, which can be used to leverage tensions on others. The tension between ecological and intellectual footprints is a good example. We could potentially bring Group1 into alignment with all other groups around the importance of greening the campus initiatives by framing these in terms of experiential learning; a concept to which Group 1 is amenable. Specifically, the SHE literature discusses campus sustainability as form of latent curriculum where students learn the value of sustainability through direct, everyday experience with its benefits (Dawe et al., 2005; Cortese, 2003). This is cited as a contemporaneous benefit of campus sustainability initiatives aside from the direct economic and environmental benefits many greening initiatives tends to generate. Thus, understanding this particular tension for Group 1 allows practitioners to frame their greening operations in terms that

foster alignment, reducing the ecological footprint of the university while expanding the intellectual footprint. Framing a vision for change like this is an effective way of developing a culturally sensitive communicative strategy.

Though Q is often plied as an exploratory tool, we feel that this study demonstrates how Q method could be useful to SHE practitioners. Properly communicating a vision for change is essential if one is to successfully promote organizational transformation (de la Harpe & Thomas, 2009; Kotter, 1996 p. 21). Moreover, as Reid & Petocz (2006) note, lack of a shared understanding and language for discussing sustainability is a barrier to university lecturers engaging with sustainability. Enlarging the scale and incorporating demographic information into a Q study could enable practitioners to *a priori* develop culturally sensitive communication strategies enabling them to circumvent, or at least anticipate, resistance. In addition, Q method could also prove useful for identifying and closing gaps between Groups' understandings of sustainable universities. Nevertheless, as discussed above, some tensions are tied to sustainability only insofar as this study provided that context for their expression. Negotiating such non-sustainability related barriers no doubt presents a much more significant challenge to be overcome.

4.5.2. Institutionalizing difference

Beyond tensions relating to divergent conceptualizations of sustainability, this study identified several areas of tension that would problematize creating a stakeholder driven vision for change. Owing to the "supra-institutional" nature of these tensions and their coverage in other studies (Bosselmann, 2001; Cotton et al., 2009; Sherren, 2008; Reid & Petocz, 2006), we feel confident in claiming that they are not solely the product of Dalhousie University's institutional culture and as such would find expression at other universities. For instance, in our study, resistance to ESD was often framed by participants in terms of a growing instrumentalism brought about by a neoliberal ideology that seeks to commoditize education and erode academic freedom. By contrast, proponents of ESD felt that the values based education and skills training implicit in this educational framework were a pragmatic necessity that aligned well with fostering

critical thought. This echoes similar tensions identified during a Q study by Shephard & Furnari (2012) with educators at a university in New Zealand. These substantive tensions find articulation in the broader literature as well, where it is argued on the one hand that the instrumentality implicit in the majority of ESD frameworks runs counter to the emancipatory and transformative forms of education required to promote deep premise reflection that leads to both action and behavioral change for sustainability (Foster, 2001; Gonzales-Gaudiano, 2005; Jickling & Wals, 2008; Selby & Kagawa; Wals, 2011). Alternatively, proponents of ESD contend that it can be used as platform from which strong social critique and learning can occur (Huckle, 2010; Sterling, 2004), and that a central tenet of ESD is the culturing of critical thinkers through its focus on interdisciplinary and problem-based learning (Cortese, 2003; Thomas, 2009; Tilbury, 2004). It is not the purpose of this paper to comment on the validity of either position. Rather, we advance this juxtaposition of theoretically sound positions to demonstrate the context from which tensions in our own study emerge, illustrating that beyond being values based they also reflect a high degree of critical deliberation on effective forms of education.

Though contention around the nature of ESD is but one example of a values-based tension uncovered by this study, we begin to see how this problematizes developing and communicating a vision for change insofar as 'vision' (singularized) is traditionally conceptualized (de la Harpe & Thomas, 2009; Kotter, 1996 p.68-82). As Kezar and Eckel (2002) note, organizational change is most difficult when values-based differences are involved. We offer that change will likely be further complicated when the foundations of values-based differences are philosophical positions supported by robust arguments on either side. Since organizational change for sustainability at the university necessarily entails a host of assumptions regarding the form and function of education, the role of research, and the nature of public service (Cortese, 2003; Velasquez et al., 2006), developing a vision of sustainability as an organizing principle for change risks marginalizing important and divergent perspectives to the detriment of diversity. Therefore transformation to a sustainable university should occur prior to any one vision of sustainability. Rather than seeking to resolve tensions, a sustainable university should

seek to institutionalize them in such a way that enables, and facilitates communication between, conflicting conceptualizations of sustainability and the role of the university with respect to it.

The vision of a sustainable university alluded to above has the potential of transforming obstacles to change into opportunities for deep social learning and premise reflection. Diversity is an important part of the contemporary university. Therefore there will no doubt always be a multiplicity of perspectives around a contentious issue like sustainability. 'Institutionalizing' tensions implies creating a space that harnesses this diversity. Encouraging a pluralistic vision of "sustainabilities", rather than a singular vision of sustainability reflects the commitment to developing critical education for sustainability (Thomas, 2009; Tilbury, 2004), without succumbing to the hubris of attempting to manufacture behaviours for a future that we cannot know (Scott & Gough, 2007a). Much of the conceptual leg-work has been outlined in previous work like that of Russell (2010), who outlines a deep, critically communicative approach to fostering deliberation which is designed to facilitate the examination of ontological and epistemological assumptions between different disciplinary researchers. Though Russell is speaking to performing transdisciplinary inquiry, we contend that her framework is transferrable to an institutional setting. Exploring how to effectively institutionalize this approach, framing it as a project for a sustainable university, could potentially offer a way forward without having to resolve longstanding tensions within the institution. This could be exceedingly helpful for embracing the diversity of perspectives required to cope with sustainability related socio-ecological problems while avoiding liquidating the university to a particular vision of sustainability. Exploring what possibilities exist for 'retro-fitting' pre-existing institutional structures in such a way as that could create a place within the organization for sustainability related education and inquiry could not only help in developing a more reflexive vision of sustainability for the university, but also is itself a fruitful line for future inquiry.

4.6. Conclusion

Q method has proven to be a useful tool for exploring how university stakeholders conceptualize a sustainable university. Moreover it has helped in identifying

specifics sites of tension and consensus within the institution. To our knowledge, no study to date has attempted to apply this method in exploring university stakeholders' conceptualizations of what a sustainable university can and should look like. It is our hope that our study will be an insightful addition to the body of knowledge seeking to understand the nature of institutional resistance to change for sustainability, and to potentially elucidate avenues by which to negotiate these barriers that may be transferrable to other institutions of higher education.

Q method could be exceedingly helpful for practitioners and researchers seeking to uncover not only conceptual barriers to broad reform for sustainability but potential avenues to navigate these barriers as well. In this study in particular we identified barriers which we argue occur outside of sustainability and relate to what are most likely deep-seeded normative beliefs about the nature of the university. Owing to inherent challenge with transforming normative beliefs (Kezar and Eckel, 2002), and the potential that such a course of action could undermine academic freedom at the university, we suggest trying to find ways of institutionalizing such conflicts where they can ideally be transformed from conflicts to opportunities for social learning.

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CHAPTER 5 INSTITUTIONAL SUSTAINABILITY AS A PROJECT FOR A GREEN CAMPUS: A CONCEPTUAL GAP BETWEEN SHE RESEARCHERS AND THE LIVED EXPERIENCES OF UNIVERSITY FACULTY

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5.1. Abstract

Understanding how the various constituencies at the university conceptualize what it is to be a sustainable university is an important first step in being able to construct a deeply contextualized and reflexive vision of change for sustainability at the university. This paper draws upon a research study undertaken at Dalhousie University that sought to explore what professors from a variety of departments at the university think it means to be a sustainable university. Our analyses revealed an important discursive dichotomy between clusters of themes related to traditional dimensions of sustainability in higher education and clusters of themes related to what we refer to as institutional sustainability. This presents an interesting tension between sustainability 'in' higher education and the sustainability 'of' higher education. We contend that understanding the nature of this tension could help researchers and practitioners within the sustainability in higher education field develop a vision of sustainability for the university that is more aligned with stakeholders' lived experiences at the university.

5.2. Introduction

The scale of human enterprise is such that we can no longer take for granted the ability of the planet's ecosystems to sustain future generations (MEA, 2005; WWF, 2012). Interaction between the biosphere and the human socio-economic sphere threatens to destabilize our world's biophysical operating systems, triggering ecological and social crises (Ehrlich & Ehrlich, 2013; Rees, 2008; Rees, 2010). Already, important planetary boundaries are thought to have been surpassed (Rockstrom et al., 2009), and complex socio-ecological problems are emerging whose dynamic nature precludes the possibility of there being a 'right' solution. Therefore, 'solving' these problems requires a departure from discipline based thinking and technocratic solutions (Brown et al., 2010).

Education has been consistently advanced as a means of exploring and addressing these problems. Since the Brundtland Report (WCED, 1987) there has been a proliferation of declarations for Sustainability in Higher Education (SHE) outlining the commitment of signatory institutions of higher education to sustainable development in research, education, and public service (Wright, 2004). In addition, the United Nations Education Scientific and Cultural Organization (UNESCO) declared 2005-2014 the Decade of Education for Sustainable Development, outlining a specific role for institutions of higher education (UN, 2002). Making an ideological commitment to sustainability in higher education, however, is far less complex then operationalizing that commitment. The emergence of SHE as a field is the result of a growing need to meaningfully incorporate the principles of sustainability into higher education (Wright, 2010).

The study of SHE has traditionally focused its inquiry on avenues to incorporate principles of sustainability into physical operations, research, curricular, and public service dimensions of the university, as well as developing indicators to measure and demonstrate progress in the aforementioned fields (Clugston and Calder 1999; Cortese 2003; Tilbury, 2004; Wright and Pullen 2007). Though a comprehensive examination of various SHE initiatives is beyond the scope of this paper, the models of a sustainable university proposed by Lukman & Glavic (2007) and Velazquez et. al (2006) provide

excellent examples wherein a collective vision for sustainability at a particular university is articulated via a series of strategic change efforts seeking to transform the four institutional imperatives outlined above according to a particular vision of sustainability. Thus, meaningful change for sustainability at the university must engender a deep commitment to institutional transformation, rather than piecemeal mechanistic reforms to preexisting structures that are mal-aligned with sustainability (Cortese, 2003). Framing change in this way necessitates deep social learning on the part of all constituencies at the university if transformation for sustainability is to be more than partial and accommodatory (Sporn, 1996; Sterling, 2004).

Successfully creating and implementing a vision of organizational change for sustainability is contingent on profound and meaningful stakeholder engagement (de la Harpe & Thomas, 2009; Kezar & Eckle, 2002; Tilbury 2004). Understanding how a community of stakeholders frame or conceptualize the way in which the culture of their organization interacts with a particular issue or set of values can be instrumental in tailoring change efforts to the lived experiences of that very community (de la Harpe & Thomas, 2009; Kezar & Eckel, 2002). In addition, such engagement can help to create a sense of common purpose and a shared vision of what sustainability can be for a particular university, making the process of change more participatory in nature (Grieves, 2010 p. 20-22; Pittman, 2004). Universities are particularly challenging in this respect as their culture and governance structures are largely driven by deeply held, often complex and contrasting values systems (Kezar, 2001; Sherren, et al., 2010; Sporn, 1996). As a result many change efforts fail due to internal resistance, and the success of top-down strategic implementation tends to be limited (de la Harpe & Thomas, 2009; Pittman, 2004). Therefore creating a vision of sustainability for institutional change at the university must be highly reflexive and sensitive to the organizational context out of which it is emerging and on which it will be applied.

University professors are an exceedingly important constituency insofar as change for sustainability is concerned. Their role in designing and delivering curriculum, as well as in producing and disseminating knowledge means that they occupy a privileged position within the university. Moreover, professors are largely value-driven agents

whose culture(s) of collegial democracy often clashes with more managerial forms of governance imposed by university administrations (de la Harpe & Thomas, 2009; Kezar, 2001; Mora, 2001). Any change effort for sustainability must be sensitive to the academic culture in which it is being deployed. This implies a high degree of shared governance whereby the success of any such change effort would more than likely be contingent on a vision of sustainability that speaks to the lived experiences of university faculty. Although some research has been done to elicit university faculty's perspectives on curriculum for sustainable development whereby the principles of sustainability are infused into university curriculum (Cotton et al., 2009; Cotton et al., 2007; Reid & Petocz, 2006; Shephard & Furnari, 2012), little research to date has sought to explore how university faculty members conceptualize sustainability, what they feel are the key attributes of a sustainable university, and the role of the university in creating a sustainable future.

Our study has addressed this gap via a case study of faculty members at Dalhousie University, in Nova Scotia, Canada. The results of our study can be found in a number of publications. In Sylvestre et al., (submitted), we identify and discuss a number of divergent and conflicting conceptualizations amongst the participants around the concept of sustainability and the role of the university in creating a sustainable future. Sylvestre et al., (submitted) focuses on the use of the Q-method and the emergence of four distinct viewpoints amongst the participants about sustainable universities and how these viewpoints existed in a dynamic relationship of tension and consensus.

This paper, while still part of the larger case study, describes an unintended outcome of our analysis. Specifically, while coding interview data concerning respondent conceptualizations of sustainable universities, a series of confounding themes emerged that were seemingly unrelated to current scholarly discussions of sustainability in higher education (SHE), focusing rather, on dimensions of institutional sustainability, that is: sustainability themes speaking to the sustainability of the university an institution recognizable to the respondents. These themes where initially coded as misconceptions until the frequency of their appearance and their clear articulation by respondents prompted a re-examination of their status. To our surprise, many respondents used the

context of 'sustainability' offered by this study to discuss their perception of how current management trends in higher education were changing the raison d'être of the university and threatening the sustainability of the institution in a form that benefits society beyond of narrow self-interest. Thus, this paper discusses a thematic dichotomy between the traditional dimensions of SHE and what we have described as institutional sustainability and argues that incorporating institutional sustainability into more traditional transformative visions of sustainability in higher education may help in grounding such visions in the reality of the lived experiences of university faculty.

5.3. Methods

Dalhousie University is a moderately sized, comprehensive Canadian university with approximately 17000 full-time students and over 6000 full-time faculty and staff. Though there is no comprehensive means of ranking Canadian universities' sustainability performance against one another, Dalhousie's commitment to sustainability likely places it above the national mean. It is a signatory to the Talloires Declaration, the Halifax Declaration, and the UNEP Cleaner Production Declaration (Dalhousie University, 2012). Over the past decade it has founded an Office of Sustainability with a view to creating campus-based solutions that foster positive ecological, social health, and economic outcomes (Office of Sustainability, 2012). In addition, a President's Advisory Council on Sustainability which provides a forum for students, faculty, administration, and community partners to provide advice and input into campus sustainability programs and policies (Advisory Council on Sustainability, 2011). More recently the university has founded the College of Sustainability where students may pursue a double major in sustainability and the field of their choice via a program that draws upon faculty from across the university to provide an interdisciplinary and problem based learning experience. Beyond this, Dalhousie obtained a Silver ranking in STARS, a self-reporting sustainability performance indicator system produced by the Association for the Advancement of Sustainability in Higher Education (AASHE, 2012). Though there is currently no institution-wide mandate for sustainability, Dalhousie University has a long history of working toward sustainability and it was assumed that respondents would possess at the very least a cursory familiarity with the idea of sustainability.

For this study, we randomly selected one faculty member from 33 of Dalhousie University's 49 academic departments for in-depth, face-to-face interviews (the 16 departments not included in this study was the result of entire departments not willing to participate). The decision to exclude participants from the professional faculties was predicated on the likelihood that including them would have produced an unmanageable amount of interview data that would have resulted in a loss of analytic sensitivity (Crouch & McKenzie, 2006; Morse, 2000). Interviews were audio recorded and transcribed verbatim. Following the transcription an inductive thematic analysis was conducted on interview text using the constant comparative method to construct an initial substantive codebook (Charmaz, 2006; Ryan & Bernard, 2003). The procedure entails grouping responses to specific interview questions (temporarily structuring the analysis around the question of the interview script) according to their similarity to, and divergence from, one another and then parsimoniously describing and labeling the commonality between the clustered responses (Ryan & Bernard, 2003). This represents little more than an initial reporting on what was uttered by participants. Data management and substantive codebook construction were performed using the qualitative analysis software package NVivo 9 (QSR, 2011).

Once the substantive codebook was constructed the initial analytical structure offered by the interview script was removed and conceptually related substantive themes from across the interviews were further clustered to create what we referred to as discourses. This process is akin to what Charmaz (2006) refers to as theoretical coding, and what Boyatzis (1998) refers to as latent coding, where substantive themes are knit together to develop mid-level theories about the participant group. Discourses here are understood as clusters of conceptually related substantive themes, woven together to create a narrative that elucidates divergent viewpoints present within the respondent pool. For the purpose of this study discourse is framed using Hajer & Versteeg's (2006 pp. 175) definition of "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices." Two discourses emerged from our thematic analysis and highlight potential tensions around the nature of what it means to be a sustainable university and are presented in detail below.

5.3. Findings

This section focuses on results of the inductive thematic analysis of the interviews. Our thematic analyses uncovered two unique discourses: A discourse reproducing the traditional dimensions of sustainability in higher education; and a discourse which we refer to as institutional sustainability. Given the prevalence of the former discourse in much of the SHE literature we will commit a disproportionate amount of this section to the description of institutional sustainability before proceeding to a discussion of the relationship between the two discourses. (See Table 5 for a distribution of discourses by respondent faculty).

5.3.1. Discourse One: Traditional Dimensions of Sustainability in Higher Education

By far the most common responses to questions seeking to elicit respondent conceptualizations of sustainable universities centered on the traditional dimensions of sustainability in higher education, with 26 of the 33 respondents offering some form of response fitting this description. Of these responses, the majority were focused on greening physical operations and by association being a model of sustainability, with modelling often described in technical terms. The most popular strategies advanced for greening physical operation were energy and resource conservation efforts (Table 5) with responses such as these being indicative:

> *[…] it makes sure that in what it needs to consume that it's using principles that, for example recycle, reuse, those sorts of things, makes the smallest imprint on demand for resources, primary resources. When, for example, it consumes energy, that it tries to consume a certain amount of its energy as renewables, keeping in mind that those have a cost to the environment. It makes use of waste to drive other things. For example, if you've got a heating plant that you make sure that it doesn't slough off excess heat. Things like that, that you use it for other things, these are all standard things in any kind of sustainable enterprise, it's no different than a factory.(Participant 20)*

As Table 5 illustrates, other dimensions typically associated with sustainable universities in the SHE literature (ESD, outreach, and research) do not factor strongly into respondent conceptualizations of sustainable universities with ESD and outreach

garnering 5 and 4 mentions respectively and sustainability in research not being mentioned at all. It is evident that the majority of respondents conceptualize a sustainable university along largely technical lines.

5.3.2. Discourse 2: Institutional Sustainability

The second discourse articulated by respondents about the nature of sustainable universities was comprised of a collection of themes concerning the continued existence of the university in a form both recognizable to stakeholders and in such a manner as to continue to fulfill its various missions effectively (See table 5 for distribution of themes by faculty). Institutional sustainability differs from the SHE discourse outlined above in that it is concerned with the internal policies and structures of the institution which enable it to effectively pursue its mission and in particular how current changes in those policies and structures erode its ability to do so. At its simplest, this discourse is best explained as the belief that sweeping changes are occurring within the internal structures of the institution that make sustaining the central imperatives of the university impossible (where imperatives are understood by respondents as excellence in research, education, and service to the community). Thus SHE is used as a platform to critique current management structures at the university where the critique is centered on issues of the sustainability 'of' higher education rather than a lack of sustainability in higher education.

Respondents who produced this discourse tended to frame their visions of institutional sustainability by articulating themes associated with a "critical vision of the university" in order to better develop what it is they feel we should be trying to sustain. As one respondent explained:

> *[…]my broader understanding of that term takes me back to some of the things I started this conversation by talking about, which is the role of the university in society, not just as a resource consuming, a physical resource consuming entity… when I think about the sustainable university I think about the university having a clearly articulated sense of its place in society, what good do we produce, um, what students do we train and to do what and why…this is why I started by talking about my suspicion and my colleagues suspicions when Dalhousie is going rah rah rah we've now hit 17000 students…*

our class sizes get bigger every single year… we have a freeze on tenure track hires, that's not sustainable either, it's not sustainable in that the quality of education I think it's pretty clear goes down… because faculty burn out, morale sinks, we get exhausted, chronically fatigued, depressed, uh we have less meaningful… contact with students […](Participant 28)

Table 5: Sustainable university discourses and related themes distributed by Faculty

Sustainable University Discourses	Sustainable University Themes	Faculty						
		Arts and social sciences (n=13)	Engineering (n=6)	Management (n=4)	Science (n=8)	Computer Science (n=1)	Architecture and Planning (n=1)	Total
Institutional Sustainability	Critical Visions of the University	5	1	4	1	0	1	12
	Growth, and Limits to	7	4	2	1	0	0	14
	Student throughput and excellence	6	3	0	1	0	0	10
	Labour and management issues	5	1	0	1	0	1	8
Traditional dimensions of Sustainability in Higher Education	Energy and resource conservation	6	4	2	5	1	0	18
	Model	6	2	1	5	1	1	16
	Education for Sustainable Development	1	2	1	1	0	1	6
	Transportation Demand Management	3	0	1	1	1	0	6
	Increased Greenspace	3	1	0	2	0	0	6
	Public Service and Outreach	2	0	1	1	1	0	5
	Green purchasing	2	0	1	1	0	0	4
	Waste Diversion	1	0	0	2	0	0	3

Critical visions of the university developed by these respondents presented a nuanced view of the university by expressing critique of current management and labour policies. This is in contrast to respondents in the traditional SHE discourse. In addition, this quote illustrates what university policies respondents see as having inherently unsustainable outcomes. The most prevalent critique among respondents was the perceived commitment to institutional expansion as a means of remaining financially

viable. This theme we refer to as *growth, and limits to*, and as one respondent notes:

> *[…] [a sustainable university] it would also be a university in my view that doesn't have an endless growth model, that is not a university is say at 17000 students today but decides that you know in the next 5 years it wants to hit 20 then 5 years after that it wants to hit 25… if Dalhousie were truly to be a sustainable university I would like to see it think very very carefully about that growth model. (Participant 2)*

The fixation with growth is seen as negatively affecting the sustainability of two other themes within this discourse, namely, *Student Throughput & Excellence* and *Labor & Management Structures.* This intersection can be understood as the unsustainable exploitation of university faculty (through growing class sizes and workloads, with less meaningful interaction with students as a result) and the deleterious effects this has on the ability of the university as a whole to maintain itself as a site of excellence in engaging with its broad commitments to education and research. On this intersection one respondent notes:

> *[…] professors are going to become stretched beyond their limits in terms of ability to really be there for students, paying attention to individual students, um, supporting them, making it sustainable for them like emotionally and intellectually to get through their degree successfully… because a sustainable high quality of learning, a high quality that is going to be passed along from generation to generation and continue to grow and develop is really vital. And also the idea that critical thinking will continue to challenge the assumptions of what was learning in previous generations […] (Participant 5)*

Thus when respondents consider the question "what are we to sustain", a sustainable university is conceptualized as more than just an institution that survives into the future no matter the form it takes. It is an institution that has a clear, dynamic and reflexive vision of its role in society beyond simply survival and instrumentality. These themes relate very closely to how respondents conceptualize the role of the university in general and tend to indicate that respondents seek to sustain a transformative or non-instrumental vision of the university. One respondent sums up the shared perspective surrounding this discourse in general by opining:

> *[…] [I]n Britain, where they've cut the humanities right across the board, unless they serve some kind of social function which usually*

doesn't mean a social function it means an economic function and this has probably created a semi-disaster for teaching people to think about their place in the world… it also creates a disaster insofar as all of the research gets funneled into a notion of trying to increase economy even when the government hasn't thought much about the economy itself except for in this sense of creating better lubrication…

[…] [T]he funding cuts at university which will be absolute over the next while uh, will probably mean bigger classes and less attention that one has with students… that huge Nuremburg rally size classes that other universities are trying to do… Nobody is getting an education in those classes, they're just learning how to go through the motions of this stuff and I think it'll be a disaster. Might as well just close down in the long run if we're going to do that sort of thing… (Participant 17)

This passage clearly echoes concerns expressed by all respondents who reproduced themes that formed the based on the institutional sustainability discourse: that current trends in higher education policy and practice are having deleterious effects on the institutions and eroding what it is to be a university.

5.4. Discussion

Our results reveal a thematic dichotomy between faculty visions of what it is to be a sustainable university. The reiteration of traditional SHE tenets was largely expected, with the exception of the de-emphasis of ESD and research which implied a largely technical focus on the part of our respondents. Many of the themes that were expressed in the institutional sustainability discourse, however, were unexpected and initially confounding. Since, to our knowledge, there is little evidence of the field of SHE engaging with such themes in a meaningful way, knowing how to classify them other than as misconceptions was originally a challenge. In fact, if not for their relative prevalence and their clear articulation by respondents they may have been ignored by this study rather than defined as a discourse divergent to that of the traditional SHE rhetoric.

What we have come to understand as 'institutional sustainability' is a vision of sustainability at the university that is highly critical of administrative strategies that are perceived to erode the institution's ability to fulfill its imperatives. Rather than an outward looking conceptualization of university sustainability as predominantly

concerned with broad social change, institutional sustainability represents a critical self-examination of the socio-political assumptions that govern the institutions strategies for economic viability and how these work to re-define the contemporary university. At the heart of this discourse is the question: what are we to sustain? What underpins this is the belief that being effective contributors to sustainability must be done through excellence in education, knowledge creation, and public service. The current trends that are largely seen as eroding the ability of the university to do these things, represent a threat to the sustainability of the university as an institution and as a result to sustainability in general.

Discourses critiquing the expansionist trend in higher education are in no way novel. Fischer et al. (2012) summarize the "golden thread" that ties many of these themes together when they bemoan the state of the modern university: "Academia is governed today by one simple rule: more is better" (p.1). More specifically, this critique is most commonly articulated as a critique of the neoliberalization, or marketization of higher education (Giroux, 2002; Jickling & Wals, 2008; Noble, 1998; Olssen & Peters, 2005). In the Canadian context, for instance, federal and provincial underfunding of higher education has created the conditions for a shift from collegial forms of decision making to institutional managerialism, the adoption of performance indicators, and targeted funding all, of which significantly erode academic autonomy (Metcalf, 2010; Newsome & Polster, 2008). In addition, growing the student body has become a common response to coping with funding shortfalls and erodes the quality of education through less meaningful interaction between learners and teachers (Fischer et al., 2012). Moreover, university education is increasingly instrumentalized by focusing on transmissive forms of teaching that facilitate social reproduction for a globalized economy rather than emancipatory forms of education that foster social critique (Jickling & Wals, 2008). Though these themes are in no way novel to the lived experiences of university professors, their expression in relation to a vision of a sustainable university indicates an important gap between much of the SHE literature and many of our respondents.

This presents an interesting tension between the idea of sustainability in higher education and the sustainability of higher education. Though critique of the current structures and mental models of universities is quite prevalent in SHE (see for instance,

Cortese, 2003; Sterling, 2004; Tilbury, 2004), there is very little in the way of critique of the socioeconomic and sociopolitical assumptions that underpin much of the current transformation of higher education in contemporary society into more corporatized institutions. With its focus on economic expansion and its erosion of traditional democratic values, neoliberal ideology has been widely criticized as being incongruent with most conceptualizations of sustainability (Farber & McCarthy, 2010). Since this same ideology is equally criticized for its deleterious effects on higher education (and sustainability in higher education by association) we envision an important symbiosis institutional sustainability and ultimate aim of SHE practitioners and researchers as expressed in the SHE literature.

Developing a vision of sustainability at the university that includes how to sustain the university as a site of free and open inquiry (where education can be a transformative process) implies a significant expansion of what it means to be a sustainable university. Using SHE as a platform to critique the basic assumptions under which the institution operates and whether or not these basic structures and assumptions are aligned with the vision or visions of sustainability that proponents of SHE wish to present to students and to society, could entrain a radical re-contextualization of what it means to model sustainability. This position aligns with Huckle's (2010) call for a shift in ESD from idealism to realism that "locate[s] the challenges facing humanity in those structures and processes shaping the global political economy" (p. 140), and moves beyond it by suggesting locating the challenges facing the sustainability of higher education in these very same structures and processes. At the very least, pairing traditional SHE initiatives with notions of Institutional Sustainability could promote closer alignment between these initiatives and the lived experiences of university stakeholders, overcoming what has traditionally been described as "[sustainability's] perceived irrelevance to academic staff" (Gough & Scott, 2007). In this way, aligning SHE change efforts with a critical vision of sustainability at the university that is more closely related to faculty culture and experiences could help in creating novel partnerships and alliances within the institution. Furthermore, similar to Sherren et al., (2010), we contend that demonstrating the symbiosis between the concepts of sustainability in higher education and institutional sustainability could be essential in encouraging the persistence of collegiality in the

academy, a concept that helps form the base of both academic autonomy and freedom.

5.5. Conclusion

Inasmuch as deep social learning is required on the part of university constituencies for effective institutional transformation, our results suggest that learning also needs to occur among SHE practitioners insofar as being able to contextualize sustainability in terms of institutional culture. While our study suggests that faculty perspectives of sustainable universities need to be broadened to include ESD and knowledge creation as integral parts of a sustainable university; SHE practitioners and researchers need broader conceptualizations of sustainability at the university that includes critiquing the unsustainable relations of production inherent in the current neoliberalization of higher education. In the same way that global sustainability begs the question, “what sort of world do we want to live in”, institutional sustainability begs the question, “what sort of universities do we want to work in?” Both questions are integral if universities are to be among the vanguard in our response to calls for global sustainability.

5.6. References

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CHAPTER 6 ~ CONCLUSIONS

6.1. Project Summary and Conclusions

With this thesis I sought to explore how university professors conceptualize sustainability, sustainable universities, and the role of the university in helping society to envision and create a sustainable future. Specifically, I wanted to better understand the cultural barriers inhibiting organizational transformation for sustainability and how they are distributed throughout the institution. The practical intent was to develop advice for SHE researchers and practitioners on how to develop culturally appropriate change strategies that could facilitate organization transformation for sustainability.

I used two different methodologies in this study in order to triangulate my results. Chapters Three and Five report on the inductive thematic analysis of semi-structured interviews. Both manuscripts discuss a number of divergent, and sometimes conflicting, participant produced discourses uncovered during my analysis. These discourses are qualitatively derived points of view that indicate the presence of multiple divergent perspectives vis-à-vis sustainability and the university. Chapter Four reports on my use of Q method to explore faculty perspectives of sustainable universities. This analysis saw participants empirically cluster themselves based on their points of view concerning sustainable universities. A synthesis of all three manuscripts yielded three important findings related to challenges for organization transformation for sustainability:

1. Divergent discourses about sustainability and the university indicate the presence of divergent cultures among professors at Dalhousie. Tensions here are often values-based and thus not easily resolved.
2. Cultural and conceptual tensions around what it is to be a sustainable university are dynamic, and are not clearly related to any visible institutional/disciplinary dimension.
3. When it comes to defining sustainability in higher education there is a disconnect between the SHE literature and the lived experiences of university faculty

The implications of these three findings lead to the following conclusions:

- Seeking to anchor organizational change in a consensus vision of sustainability in higher education is likely to be confounding and ultimately fruitless. The horizontal segmentation of perspectives apparent in the results of all three analyses suggests that admitting a plurality of visions of sustainability at the university would be more culturally appropriate- different definitions and different strategies
- Developing a deeply contextual vision of sustainability in higher education that is sensitive to the lived experiences of professors at the university requires broadening our understanding of SHE to include dimensions of institutional sustainability.

What follows is a review of the three main findings in detail as well as a discussion of my rationale for arriving at these conclusions. In light of this, I will outline what impact this could have for organizational change strategies at the university and offer recommendations for future research directions.

6.2. Review of the Findings

This section presents a review of all major findings from this study.

6.2.1. Divergent Discourse, Cultural Barriers, and the Challenge for Organizational Change

The findings of this study indicate the existence of a plurality of perspectives on sustainability and what role the university should play in creating a sustainable future. This study uncovered six conceptually distinct perspectives concerning conceptualizations of sustainability. Given the protean nature of sustainability, this was unsurprising. In addition, conceptualizations of the role the university should adopt in envisioning a sustainable future clustered into three broad categories relating to what are often perceived as the central imperatives of the university: education, research, and public service, respectively. Within each of these categories dichotomies emerged whose nature suggested the presence of discursive tensions relating to deeply held cultural beliefs.

All participants supported the notion of an ‘appropriate’ interpretation of sustainability as a laudable goal for society. Though some sustainability discourses were in clear conceptual tension with others (for instance, the discourses of sustainability

conceptualized as “A Positive Legacy” and as “A Trojan Horse for Perpetual Growth”) which would doubtlessly lead to different usages of the term, the thread that binds them is a desire for a more sustainable and just society. The literature often discusses the importance of focusing on outlining a common direction for sustainability rather than attempting to construct a definition (Clugston; & Calder, 1999; Cortese, 2003; UNESCO, 2009). The ambiguity inherent in the term is thought to encourage the development of contextually appropriate solutions that are dynamic and adaptive.

This presents a number of practical challenges for organizational change. Although the sustainability discourses uncovered by this study suggest agreement on a common direction, as is discussed in the literature, this study uncovered that tensions around the concept of sustainability are far less important than tensions around the ‘nuts and bolts’ of organizational change for sustainability in higher education relating to redefining education and the role of the university in society; where values and culturally rooted tensions seemed to emerge.

When (re)producing sustainability discourses participants often engaged with multiple discourses. Moreover, though our results indicate that professors did tend to speak to sustainability through the lens of their disciplines, delineating clear discursive boundaries around groups of participants was not possible. By contrast attitudes about the role of the university in sustainability were much more clearly bifurcated. It was exceedingly rare for a participant to engage with discourses on either side of a thematic dichotomy. For example, there was clear agreement among the majority of participants that universities should educate with sustainability in mind. But when it came to discussing the form that education for sustainability should take a clear split emerged between instrumentalist and transformative conceptualizations of education relating to deeply held cultural beliefs about what education is for.

What this means for organizational change for sustainability is that although high level consensus about directing the university along more sustainable lines could conceivably be leveraged to develop consensus around a vision of sustainability (see for instance Pittman, 2004; Sterling, 2004), it does not address the deep cultural tensions that are tied to conceptions of the identity and role of the university in contemporary society

as well as the purpose of university education. This is further compounded by the fact that the assumptions embedded in much of the SHE literature (discussed elsewhere in this thesis) about the purpose of education and the university in contemporary society tend to fall in the instrumentalist camp (Lozano, 2006; Lukman & Glavic, 2007; Velasquez et al., 2006).

6.2.2. The Dynamic Nature of Tensions and Consensus Concerning Sustainable Universities

The application of Q methodology revealed the presence of four distinct perspectives on sustainable universities and rotating relationships of tension and consensus between them. Perspectives uncovered by this study did not clearly break down along disciplinary lines, with no one discipline ever being overrepresented on any of the factors. More importantly, the application of different thematic frames through which to interpret the nature of tension and consensus (see chapter 4) demonstrated that tensions between divergent conceptualizations of sustainable universities are not static between groups; they shift in relation to different sustainability or institutional dimensions. Given that tensions between the four cultural groups are fluid, this illustrates the potential for being able to use consensus on one level to ease tension on another.

Chapter 4 illustrates how tension between the groups concerning the importance of greening the campus initiatives that seek to reduce ecological footprints, can be overcome using information gleaned from the modal Q sorts. For example, analysis of data from the group who deemphasized the importance of greening initiatives revealed that their position was the result of their believing that educational initiatives geared toward sustainability were more effective at promoting sustainability, and as a result should be the primary focus of a sustainable university. Cortese, (2003), Orr (1992), and Thomas (2009) all discuss the educational benefits and learning opportunities that result from campuses demonstrating their commitment to sustainability through the greening of their physical operations. Understanding the nature of the resistant group's thinking around reducing ecological footprints facilitates the development of a contextually sensitive communication strategy where greening operations could be framed as both a cost saving

measure and an educational initiative. Therefore Q method could prove to be a useful tool for SHE practitioners seeking to gain a deeper understanding of how different constituencies or cultures would interact with a particular change effort as well as providing useful information on how to properly frame sustainability change efforts for the different constituencies at a given university.

As in the preceding sections, tensions concerning sustainability in higher education (framed through the context of sustainable universities here) presented themselves as either tensions relating to the concept of sustainability or tensions relating to academic values regarding the university. Though Q proved to be potentially very useful for identifying and elucidating how to address tensions and consensus at the university regarding sustainability, the data it generated offered little insight into how to negotiate the cultural tensions that emerged. Paralleling similar findings from chapter 3, dichotomies emerged regarding instrumentalist versus emancipatory conceptions of education and the university. These represent deeply held beliefs about the nature of the institutions that occur outside of the sustainability debate. Nevertheless, as discussed in the previous section, many of the assumptions embedded in conceptualizations of sustainable universities outlined in the literature frame change in such a way as to bring it into conflict with many academic cultural values such as collegial democracy and academic autonomy.

6.2.3. Sustainability in Higher Education versus Sustainability of Higher Education

Wright (2010) has noted that SHE practitioners and researchers hold relatively common conceptualizations of sustainability in higher education. A review of the literature indicates that these tend to be centered on incorporating principles of sustainability into physical operation, pedagogy and curriculum, knowledge mobilization, and developing indicators to measure success. While these are no doubt important, they fail to take into account ideas of institutional sustainability which are aligned with the lived experiences of university faculty.

Faculty perceptions of sustainable universities from the thematic analysis of interview data fell into two broad categories: the traditional dimensions of SHE; and

institutional sustainability. Initial analyses interpreted institutional sustainability themes as misconceptions about the nature of sustainable universities. Their persistence throughout many of the interviews prompted them to be re-examined. What emerged was a cluster of themes concerned primarily with the sustainability "of" higher education. These consisted of, but were not limited to, criticisms of: the university adopting free market or neoliberal values; growth as an institutional survival strategy; and the erosion of excellence in education and research through a fixation on quantity rather than quality. I took this to represent a desire on the part of certain constituencies at the university to frame sustainability in more institutionally relevant terms.

When discussing sustainability the question that often emerges is: "what are we to sustain?" Academics who produced the theme of institutional sustainability took the term "sustainable university" to mean "What about the university are we to sustain?" While the way in which SHE frames sustainability in higher education often seeks to re-invent the university through a vision of sustainability, that vision tends to be outwardly directed. Institutional sustainability entails a reversal of this ideal. It uses the concept of sustainability as a platform from which to engage in a critical examination of how external pressures are re-shaping the internal structures of the institution in a way that erodes its ability to properly engage with its central imperatives. We contend that this is a deeply cultural interpretation of what sustainability could be for the university and that it is an important dimension of sustainability in higher education that has traditionally been neglected by the field of SHE.

6.3. Conclusions and Recommendations

The following section is a discussion of the two main conclusions drawn from the findings. In defense of my assertions, I advance that the complexity faced by organizational transformation for sustainability demonstrated by this study would likely only increase were more constituencies included. Moreover, given that academic culture transcends institutional boundaries (Kezar & Eckel, 2002; Sherren, 2010; Sporn, 1996) I contend that the conclusions drawn from the findings of this study are likely transferrable to other institutional contexts.

6.3.1. Multiple Visions of Sustainability

Seeking a consensus vision of organizational change for sustainability in higher education is fraught. Ambiguity around sustainability leads to a multiplicity of contested conceptualizations which drive divergent uses and applications of the concept (Dobson, 1996; McKenzie, 2012; McManus, 1996; Thomas, 2004; Wals & Jickling, 2002). The university is a complex system with multiple and ambiguous goals whose mission focuses on people rather than profits (Kezar, 2001; Sporn, 1996; Sherren, 2010). In addition, administrative cultures and academic cultures, existing in tension, permeate universities and dictate what change is possible. What this research demonstrates is that organizational transformation for sustainability (as described by Comm & Mathaisel, 2003; Cortese, 2003; Lukman & Glavic (2007), Velasquez et al., 2006) seeks to re-invent a complex and dynamic system, whose identity is the product of multiple cultural frames locked in dialectical tension with one another, in the image of protean and contested concept. This is not to say that the task should be abandoned, but rather that a somewhat novel approach be employed. Therefore I propose that:

> Seeking to anchor organizational change in a consensus vision of sustainability in higher education is likely to be confounding and ultimately fruitless. The horizontal segmentation of perspectives apparent in the results of all three analyses suggests that admitting a plurality of visions of sustainability at the university would be more culturally appropriate

This finds agreement with Wals & Corcoran's (2004) contention that "if the exploration of sustainability in higher education involves the reconciliation of diverging norms, values, interests, and constructions of reality then the innovation process should be designed in such a way that differences are explicated rather than concealed." (pp. 223-224). Not only does this enable change for sustainability in higher education to be sensitive to a multiplicity of conceptualizations and strategies for promoting them, it also aligns with an often discussed ideal that diversity ought to be the hallmark of the institution's response to sustainability (Foster, 2001). Such an approach to SHE allows the university to engage with sustainability without liquidating itself to it.

This is not a call for 'anything goes' pluralism where all perspectives are validated simply because they exist. Rather a multiplicity of different ways of thinking about SHE in dialectical tension increases the potential for deep social learning, making sustainability a living thing at the university (Sterling, 2004; Wals, 2011). This entails a strong commitment to an open ontological and epistemological position on the part of the institution and its stakeholders. This is a position that has been thoroughly articulated in much of the transdisciplinary literature (see for instance: Ramadier, 2004; Russell, 2010; Wickson et al., 2006). The experiences of researchers undertaking transdisciplinary research could provide important lessons for overcoming many of the communicative barriers associated with different disciplinary backgrounds. Attempting to internalize and institutionalize contestation around SHE through the creation of critically communicative or critically deliberative institutional structures may be a viable option for the university to respond to calls to more fully adopt sustainability principles while still entertaining a plurality of visions as to what it is to be a sustainable university.

6.3.2. The Disconnect Between SHE and Institutional Sustainability

A review of the literature produced little evidence that SHE practitioners and researchers are sensitive to dimensions of institutional sustainability as described by this study. Moreover, the construction of the Q sample for this thesis was the result of two additional literature reviews, one by Wright (2010) and another conducted by this researcher. Of the plethora of statements drawn from the SHE literature few could be said to speak to themes of institutional sustainability. This gap in the Q sample and dearth in the primary literature review highlights a gap between SHE practitioners and the lived experiences of faculty.

Given the importance of developing culturally appropriate visions for change in higher education (Kezar, 2001; Kezar & Eckel, 2002; Sporn, 1996) I contend that:

- Developing a deeply contextualized vision of sustainability in higher education that is sensitive to the lived experiences of professors at the university requires

broadening our understanding of SHE to include dimensions of institutional sustainability.

The themes that underpin institutional sustainability are in no way novel (see Fischer et al., 2012; Giroux, 2000; Newsome & Polster, 2008; Noble, 1998). What is novel is that this study provided the context for their expression through the lens of sustainability in higher education.

I contend that incorporating institutional sustainability into the traditional dimensions of what is considered sustainability in higher education lends a more critical, radical political edge to SHE as a field. Using SHE as lens to critique how dominant socio-political and socio-economic ideologies (such as neoliberalism) are seeking to re-shape contemporary universities entails a radical departure from the traditional focus of the field. Nevertheless, given how these same ideologies perpetuate and attempt to legitimate ecological degradation, social inequity, and reckless consumption (Rees, 2010), critiquing and exposing the influence of these ideologies in higher education is clearly relevant. This position aligns exceedingly well with Huckle's (2010) call for a shift in ESD from idealism to realism that "locate[s] the challenges facing humanity in those structures and processes shaping the global political economy" (p. 140), contextualizing these challenges even further by locating them in the current marketization of higher education.

Making institutional sustainability a challenge for SHE would create a strong alignment between the field and the lived experiences of faculty. Moreover, if higher education is to be among the vanguard in society's response to the question of global sustainability, ensuring that academic values such as autonomy, freedom, and collegiality continue to persist would demonstrate a fundamental commitment to advancing sustainability. From this perspective, the potential exists for a strong symbiosis between sustainability in higher education and academic culture. Recognizing the potential for such a relationship is a way to create strong allies for organizational transformation towards sustainability.

6.4. Contributions to Practice and Theory

This study contributes the advancement of sustainability in higher education in a number of ways. Firstly it demonstrates that the Q methodology could be a very useful tool for exploring the institutional climate toward sustainability in higher education as well as a means of anticipating what a culturally appropriate change strategy may look like.

Secondly it identifies a previously unconsidered dimension of sustainability in higher education that aligns well with academic culture. Incorporating an understanding of institutional sustainability in the way SHE as a field is conceptualized is a potent way to make sustainability in higher education more relevant to university professors.

Finally, it demonstrates that the nature and prevalence of contestation around sustainability, education, and the nature of the university in contemporary society makes finding consensus around a vision for sustainability in higher education at an institution unlikely. Rather, researchers should find ways of organizing change around a plurality of perspectives.

Jickling & Wals (2008) describe the attitude of most SHE practitioners as "roll up your sleeves and start implementing" (p. 6). Though socio-ecological crises do beg immediate attention, and the uptake of sustainability in society is often frustrating slow, I hope that this study demonstrates the importance of carefully reflecting on how change should be framed within higher education. Change in higher education is not a linear process (Kezar, 2001). What this study demonstrates is that the complexity inherent to the higher education system means that change efforts must be reflexive and painfully aware of the contexts in which they will be applied. This study highlights one tool and two ideas that could go a long way to assuring that this is the case.

6.5. Future Research

Completion of this study revealed several veins of fruitful inquiry worth pursuing in the future. This study focused on the culture of academics at the university and how

they conceptualize the intersection of sustainability and the institution. Though academics are an important constituency at the university they are by no means the only constituency. Kezar and Eckel (2002) note the importance of the culture of an institution in developing change strategies. Expanding on this study and doing an intrinsic case study of Dalhousie University could elucidate how academic and institutional cultures interact with respect to sustainability in higher education and could offer insight into which culture has the most bearing on successful change for sustainability.

Though we provide a rationale for the transferability of this case study based on the supra-institutional nature of academic culture, conducting similar studies at other institutions would allow for cross-case comparison. This is noted by both Corcoran et al. (2004), and Barthe & Thomas (2012) as an important way to advance the field of SHE. A meta-analysis of a number of similar case studies would significantly deepen our understanding of how to frame organizational change for sustainability.

Another major area of recommended future research would be developing and testing strategies for institutionalizing contestation around sustainability in higher education. While the transdisciplinary literature discusses ways of coping with different ontological and epistemological orientations within research teams, there appears to be little research to date examining how such strategy could be brought into an organization. Exploring the inner working of pre-existing organizational structure like Dalhousie University's College of Sustainability, could provide a starting point for conceiving ways to construct organizational change strategies capable of supporting and encouraging a plurality of divergent perspectives.

6.6. References

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APPENDIX A PARTICIPANT INFORMATION SHEET

PARTICIPANT INFORMATION FORM

Your participation in this study is voluntary and you may withdraw from the study at any time. Your academic (or employment) performance evaluation will not be affected by whether or not you participate. The study is described below. This description tells you about the risks, inconvenience, or discomfort which you might experience. Participating in the study might not benefit you, but we might learn things that will benefit others. You should discuss any questions you have about this study with Mr. Paul Sylvestre (paul.sylvestre@dal.ca) or Dr. Tarah Wright (tarah.wright@dal.ca)

Title of Study: Exploring Faculty Conceptualizations of Sustainability and the Role of the University in Envisioning a Sustainable Future

Purpose of the Study

This project is part of a larger, pan-Canadian initiative aimed at developing a baseline understanding of administrators, faculty, student leaders, and facilities managers' understandings of sustainability and the role of the university in creating a sustainable future. This portion of the project is an in-depth case study of faculty members at Dalhousie University.

The primary objective is to explore this cohort's conceptualizations of sustainability, sustainable universities, and the role of universities in creating a sustainable future. Goals pursuant to this objective are identifying perceived barriers and avenues to integrating sustainability into the university, Seeing how conceptualization cluster within Dalhousie, and to develop a methodological framework that could be transferrable to other institutions.

Study Design

Your participation in this project will involve around 60 minutes of your time. The research instruments of this study are an in-depth semi-structured interview, a Q-sort, and a checklist concerning commonly held conceptualization regarding sustainability drawn from a literature review. Interviews will be audio recorded, transcribed verbatim, coded and analyzed for emerging themes. If you do not wish to be audio recorded then the interviewer will take notes during the interview instead. You will be given the opportunity to review your transcript for verification. The results from this study will be submitted for publication in a scholarly journal.

Who Can Take Part in the Study

In order to take part in this study you must currently be a full time faculty member at Dalhousie University.

Who Will be Conducting the Research

The PI for the pan-Canadian study is Dr. Tarah Wright from Environmental Science at Dalhousie University. Paul Sylvestre, a Masters of Environmental Studies candidate in the School for Resource and Environmental Studies at Dalhousie University is the researcher primarily responsible for this portion of the project as part of his Masters research.

Permission

If you choose to participate in the study we will contact you to schedule a 60 minute interview at a time and location of your convenience. You will be asked to sign a written consent form before the interview commences.

Confidentiality and Anonymity

Participants are assured confidentiality, and will be given gender neutral pseudonyms in all publications of the data to ensure confidentiality. All audio recording will be destroyed upon their transcription. All transcripts and information pertaining to the study will be kept in a locked filing cabinet for a period of 5 years and then destroyed.

Participation

Participation in this study is completely voluntary. You are free to remove yourself from the study at any time. If you choose to do so all information you have provided will be destroyed.

Possible Risks and Discomforts

There is minimal risk to participating in this study. However should you have any question please feel free to contact Paul Sylvestre (paul.sylvestre@dal.ca) or Dr. Tarah Wright (tarah.wright@dal.ca).

Compensation
No compensation will be offered for participation in this study.

Potential Benefits
There are no anticipated direct personal benefits to participating in this study. This study is, however, expected to make a modest contribution to the body of knowledge surrounding campus sustainability in a Canadian context, and as such may be relevant to participants as members of Canadian universities.

Questions
Should you have any questions or concerns please contact Mr. Paul Sylvestre (paul.sylvestre@dal.ca) or Dr. Tarah Wright (tarah.wright@dal.ca).

APPENDIX B CONSENT FORM

SIGNATURE PAGE

Title of Study: *Exploring Faculty Conceptualizations of Sustainability and the Role of the University in Envisioning a Sustainable Future*

Primary Interviewer
Paul Sylvestre (pl534246@dal.ca)

To be completed by the research participant:	**Circle Yes or No**
1. Do you feel you have received sufficient information to participate in this research study?	Yes No
2. Do you understand that you are about to participate in a research project?	Yes No
3. Have you had an opportunity to ask questions and discuss this study with the PI?	Yes No
4. Do you understand the benefits and risks in participating in this study?	Yes No
5. Do you agree to be audio recorded?	Yes No
6. You are free to refuse to participate or withdraw from this study at any time. You will not have to offer a reason and this will not affect you. All the interview information provided will be discarded at this time. Is this understood?	Yes No
7. Have the issues of confidentiality and anonymity been explained?	Yes No
8. Do you give permission for the use of full quotations in the dissemination of results? Your identity will of course remain confidential.	Yes No
9. Would you like to review and confirm the accuracy of your interview transcripts?	

If you select "Yes", you will be given a maximum of two weeks to do so from the time you receive the transcript.

10. Would you like to receive a copy of the final report?

If you circled "yes" for # 9 or # 10, please provide your email address.

If you have any concerns about this research please contact Mr Paul Sylvestre at (pl534246@dal.ca) or Dr. Tarah Wright at (tarah.wright@dal.ca). Further problems should be addressed to Research Ethics at Dalhousie University at 902-494-8075

I have read the above information and give my consent to be part of this study.

Signature of Research Participant: _____

Printed Name: _____

Date: _____

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Signature of Researcher or Designee: _____

Date: _____

APPENDIX C Q SAMPLE

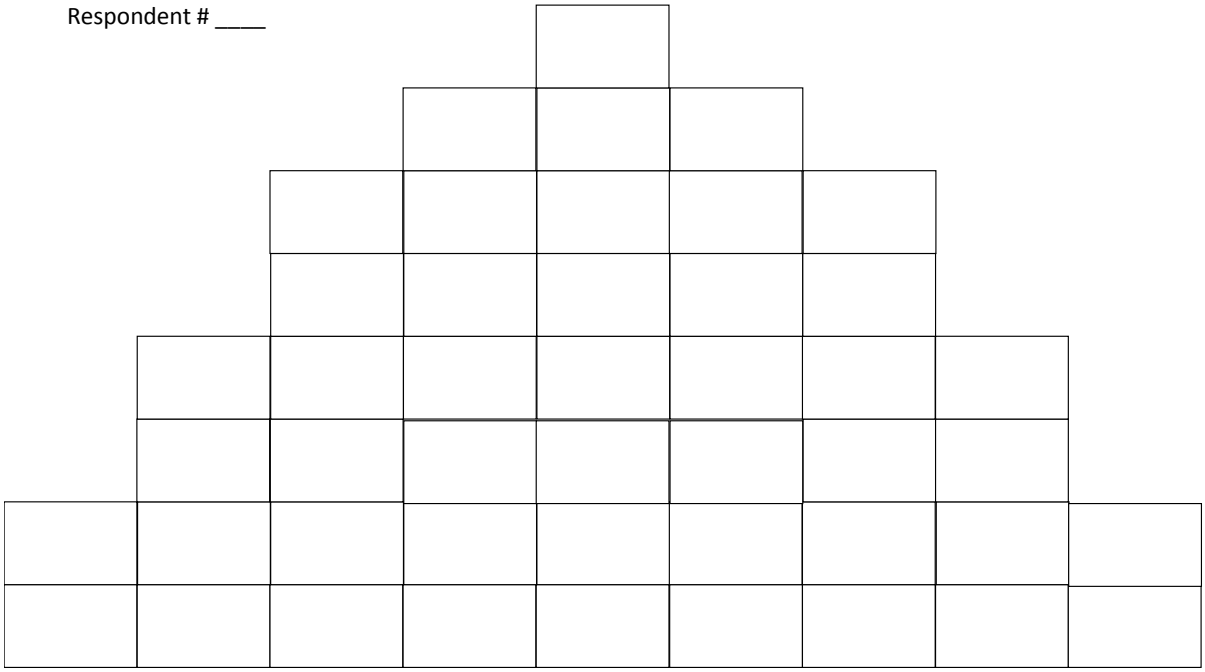
1)	**Provides incentives for students to participate in environmentally friendly activities**
2)	**Values and gives due recognition to the important contribution of traditional, indigenous, and local knowledge systems for sustainability**
3)	**Promotes knowledge transfers in innovative ways in order to speed up the process of bridging gaps and inequalities in knowledge**
4)	**Protects and enhances civil society by training young people in the values which form the basis of democratic citizenship**
5)	**Engages in community outreach programs that benefit the local environment**
6)	**Provides support for individuals who seek environmentally responsible careers**
7)	**Incorporates life cycle assessment (LCA) and sustainable growth, introduces input/output accounting, applied to production processes, products, services, and strategic planning**
8)	**Attempts to ensure that the university graduates students with marketable skill sets that will enable them to find gainful employment upon leaving the institution**
9)	**Makes education for sustainability central to its educational mission**
10)	**Encourages critical thinking about sustainability issues**
11)	**Installs solar panels on campus buildings**
12)	**Creates a written statement of their commitment to sustainability**
13)	**Attempts to maintain a high quality of education while faced with budget constraints by reducing the number of departments in order to better fund remaining departments.**
14)	**Incorporates ecological principles into campus land-use policies as a means of improving biodiversity and ecosystems goods and services on campus**
15)	**Works with national and international organizations to promote a worldwide university effort toward a sustainable future**
16)	**Ensures that sustainability does not impinge upon the financial viability of the institution**
17)	**Maintains that research done on campus must include a summary of potential environmental issues that may be faced during the course of the experiment**
18)	**Encourages students to participate in various volunteer activities around the community**
19)	**Strives to reduce its ecological footprint**
20)	**Establishes environmentally responsible purchasing practices**
21)	**Establishes socially responsible purchasing practices**
22)	**Strives to be carbon neutral**
23)	**Seeks to increase enrollment**
24)	**Performs sustainability audits on the surrounding community**

25) Focuses on sustainable transportation for students, faculty, and staff, as well as alternative fuel or hybrid technology for campus fleets
26) Reuses campus waste
27) Makes social equity/accessibility for all students a primary concern
28) Uses renewable and safe energy that may lead to decreased operating costs
29) Actively fosters and promotes greater degrees of cultural and political diversity throughout all levels of the university
30) Ensures that the university does not run a budget deficit
31) Emphasizes sustainability through campus services (e.g. accessibility center, counseling services)
32) University stakeholders have a common understanding of the term sustainable development
33) Provides monetary reimbursement for individuals taking environmental courses
34) Creates partnerships with government working toward sustainability
35) Creates partnerships with industry working toward sustainability
36) Actively promotes composting and recycling on campus
37) Creates partnerships with NGOs working toward sustainability
38) Consults students on their opinion of sustainability
39) Promotes interdisciplinary networks of environmental experts at the local, national, regional, and international levels, with the aim of collaborating on common environmental projects in both research and education
40) Recognizes campus-wide green building guidelines and green building design for new and existing buildings
41) Incorporates environmental knowledge into all disciplines at all levels of study
42) Promotes experiential learning through measures such as arranging opportunities for students to study sustainability issues in their surrounding community
43) Each department within the university must create their own written statement of their commitment to sustainability
44) Ensure that sources of income outside of tuition and government grants, therefore having a greater degree of self reliance
45) The university adopts a more active advocacy type role within society concerning issues of sustainability
46) Establishes policies that allow for the granting of tenure to faculty based in their knowledge of and work in sustainability

APPENDIX D Q SORT SCORE SHEET

Sustainable Universities Q Sort

Respondent # ____



Agree	Neutral or irrelevant	Disagree
Count: _____	Count: _____	Count: _____

Field of Study: _____

Department: _____ Time at Dalhousie/Kings: _____

Courses Taught: _____ Tenured: Y/N

APPENDIX E FACTOR ARRAYS ARRANGED BY STATEMENT

No.	Statement	No.	Factor Arrays 1	2	3	4
1	provides incent for stu partic in envi activities	1	0	-1	-2	-1
2	values recog trad indigen local knowledge for sus	2	1	-2	0	-2
3	promotes know transfers bridging gaps in know	3	2	2	0	-1
4	protects and enhances civil society	4	4	-1	-3	4
5	engages in community outreach	5	2	1	0	0
6	provides support for ind seek envi resp careers	6	0	-1	-1	-2
7	incorporates LCA	7	-3	0	2	3
8	graduates students with marketable skills	8	-1	1	-1	-3
9	ed for sus central to ed mission	9	-2	-3	3	-2
10	encourages critical thinking about sus	10	4	4	4	3
11	installs solar panels	11	-1	1	-1	0
12	creates a written statement for sus	12	0	-2	0	1
13	maintain quality by reducing departments	13	-3	0	-1	-2
14	incorp ecological princi into land use pol	14	0	0	1	1
15	works with natio and internati orgs world effort sus fut	15	3	1	3	-1
16	ensures sus does not impinge on finan viability	16	-3	-1	-3	0
17	research on campus incl sum of pot envi issues	17	-2	-1	-1	-1
18	encour stu to parti in volun act in com	18	1	0	-2	-2
19	strive to reduce ecol footprint	19	1	4	1	3
20	establishes envi resp purch pract	20	-1	2	1	2
21	establishes social resp purch pract	21	0	-2	0	2
22	strives to be carbon neutral	22	-1	2	2	0
23	seeks to increase enrollment	23	-2	-3	-4	-3
24	performs sus audits on commu	24	-2	-3	-2	-3
25	focuses on sus trans for stud fac and staff	25	-2	2	1	0
26	reuses campus waste	26	1	2	1	1
27	makes social equity access for stu prim conc	27	2	1	-2	0
28	uses renewable ener lead to decrease costs	28	0	3	3	3
29	actively fost and prom cult and poli diversity	29	1	-1	-2	1
30	ensure uni does not run budget deficit	30	-4	3	-4	1
31	empha sus through campus services	31	-1	-2	0	-1
32	uni stakeholders have common understand of sus	32	0	-2	0	2
33	provides monetary reimb for ind in envi course	33	-2	-3	-3	-4
34	create partnerships with gov	34	2	2	2	0
35	create partnerships with industry	35	2	0	3	-1
36	actively promotes composting and recy	36	1	3	0	1
37	create partnerships with NGOs	37	2	1	2	-1
38	consults students on opin of sus	38	0	-1	-1	2
39	promot interdis nets envis expert at levels	39	3	1	1	1
40	recog campus green build guidlines	40	1	3	2	4
41	incorp envi know into all disc at all levels	41	-1	-2	2	-2
42	prmotes experiential learning	42	3	0	1	2
43	each dept creates written statement to sus	43	-3	-4	-1	-3
44	ensures sources of inco outside tuit and gov	44	-1	0	-2	2
45	uni adopts active advocacy role	45	3	0	4	0
46	esta policies hir promot tenur based on sus	46	-4	-4	-3	-4