”The Campus Sustainability Movement: A Strategic Perspective”

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Abstract:

Society is facing a crisis of un-sustainability. The sector of higher education is well poised to support transition to a sustainable society. This thesis assesses the efforts of the Campus Sustainability Movement (CSM) in the US and Canada relative to a Strategic Sustainable Development Framework. Key findings indicate that the CSM is utilizing tools and engaging in a variety of actions towards sustainability. However, it is largely failing to use systems thinking to understand the complex interrelationships of its actions. Most efforts lack a strategy, and when strategy is present, it follows more from barriers than from a long-term goal. Current efforts mostly focus on environmental sustainability. The authors present a backcasting from principles of sustainability approach as one means to improve the strategy of the CSM. They also propose a vision for higher education that incorporates sustainability principles and fundamental human needs in an attempt to bring some concreteness to both the environmental and social aspects of sustainability in higher education.

Keywords:

Campus Sustainability Movement, Sustainability in Higher Education, Vision, Sustainability Principles, Strategy, Backcasting

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Michael: I thank my parents, whose continual support, long after I 'moved out' of their house, has helped me to pursue my dreams in unique and interesting ways. Thanks are offered as well to my many special friends and 'friendies' who gracefully help me to discover the world and myself.

Merlina: I would like to thank my family and friends for the continued support on my many journeys. Without your understanding and love, I would have never been able to follow my passion. Home is where the heart is and thanks to you, I feel at home in so many places of the world.

Stephen: I would like to recognize all of the experiences and relationships that have led me to this point. I offer my deepest appreciation to my beautiful wife Serena, who has endured a Swedish winter waiting for me to complete my thesis. If not for you this experience would not have been possible. And of course to my son Silas, who is a daily reminder for why I have chosen this field of study.

The Statement of Contribution is included in Appendix G.

Executive Summary

Background and Relevance

Global climate change has recently burst onto the public scene with the popularity of Al Gore's documentary, "An Inconvenient Truth", and the release of conclusive reports by the Intergovernmental Panel on Climate Change that affirm humanity's impacts on the planet. Climate change, and other environmental and social crises, will dominate the political stage and popular culture throughout the 21st Century. Politicians, scientists, authors, journalists, and other leaders are expected to understand and contribute to solving these issues of societal sustainability.

What do all of these societal leaders have in common? Likely, they have received a degree from an institution of higher education (HE). These institutions are vested by society with the primary responsibility for educating citizens, so that civil culture may thrive. There is clear indication, however, that college and university graduates are not being prepared to deal with the complex, cross-disciplinary problems that global culture now faces. In addition, HE as a sector consumes an enormous amount of resources, and commands financial capital and intellectual clout, which has ripple effects throughout society. If humanity is to begin on the path towards sustainability, HE must reinvent itself to: 1) train leaders who can solve complex problems, and 2) operate in environmentally and socially sustainable ways.

Individuals and organizations throughout HE are amassing, in an attempt to achieve just such a transformation. The Campus Sustainability Movement (CSM) in the US and Canada emerged in the 1990's through the creation of non-profit organizations and declarations committed to Sustainability in Higher Education (SHE), as well as dispersed "Campus Greening" efforts. It is currently experiencing rapid growth, as more and more campuses seek to take responsibility for their physical and intellectual footprints. This project focuses on the CSM because of its growing strength and profound potential to influence the HE sector, and thereby society.

Objectives and Research Questions

The intent of this project was to analyze the CSM against its own objectives, assess the findings relative to a Strategic Sustainable

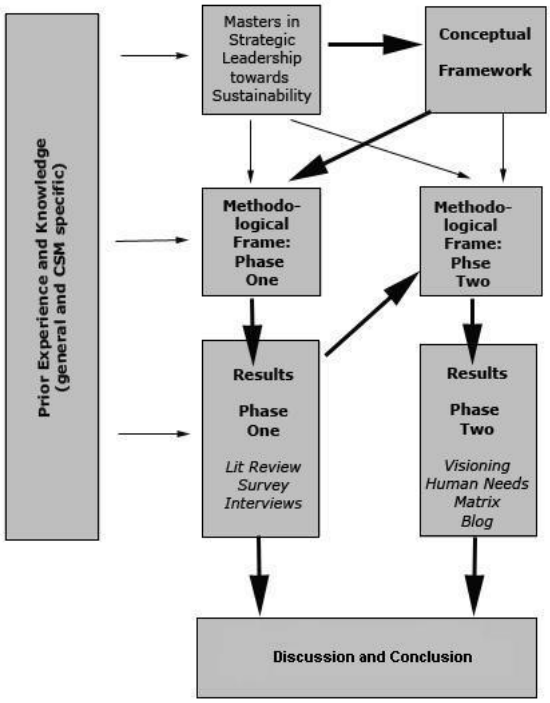
Development (SSD) Framework and identify opportunities to support the CSM's current efforts. These objectives were achieved through research that addressed the following primary and secondary questions:

Using a strategic sustainability perspective, what observations can be made about the CSM?

- What does an analysis of the CSM relative to a *generic* Framework for Strategic Planning reveal?
- How does that compare to the Strategic *Sustainable Development* (SSD) Framework?
- What are some potential opportunities to strengthen the CSM?

Methodology

The methodology utilized an iterative approach to research in which the author's drew on past knowledge of the CSM, their Master's coursework, and a conceptual framework based on SSD. The research was continually adapted as new insight was gleaned.



The conceptual framework included systems thinking, the Five Level Framework for Strategic Planning (System, Success, Strategy, Actions, Tools), and key components of SSD, such as the funnel metaphor for un-sustainability, Sustainability Principles, Nine Fundamental Human Needs, and backcasting (Robèrt et al. 2004).

Research methods were conducted in two phases. Phase One included a literature review, survey, and expert interviews. The literature review sought to encompass the most current efforts of the CSM relative to the five levels of the Framework for Strategic Planning. The survey was distributed widely to practitioners in the CSM through multiple e-mail list serves. Interviewees were selected based on their depth of experience in the CSM.

The Phase Two research methods built on the learning from Phase One, and included a first vision, SSD Experts Visioning Session, human needs matrix, web blog, and proposed vision for SHE based on human needs. The Session consisted of a guided brainstorm with a group of individuals trained in the SSD Framework. The human needs matrix organized current and envisioned components of HE relative to Manfred Max-Neefs Nine Fundamental Human Needs. The web blog was the authors' attempt to share the SSD Framework and begin a dialogue with practitioners in the CSM about their thesis project. The final needs-based vision was the synthesis of the Phase Two methods.

Results

Overall survey results demonstrated that respondents believe that their individual organizations, and the CSM as a whole, are strongest and most focused at the Actions and Tools levels of the generic framework used for analysis. Respondents listed "creating a clearly defined, ultimate end goal" as the level at which their organizations, as well as the CSM, needed the most support. Additional Phase One results from the literature review, survey and interviews are organized according to the five levels and can be seen in the box on the following page.

Phase Two results include the authors' first attempt at creating a Vision for Sustainability in Higher Education based on applying the SSD Framework. Other results include the SSD experts' brainstormed ideas of the current reality of HE relative to SSD, and the experts' visions of how HE could contribute to a sustainable society in the future. The human needs matrix constructed by the authors was the primary source for the creation of a human needs-based vision for HE, which elaborates on each of the Nine Fundamental Human Needs and includes the Sustainability Principles.

Key Findings

System	• Literature on barriers is extensive • Disciplinarity as a deep structural barrier
Success	• Brundtland definition most prevalent • Focus almost entirely environmental • No clear definition of environmental sustainability • No (shared) end-goal/common definition • Many sets of principles/conditions • Difference of opinion of shared vision/principles
Strategy	• Institutionalization as strategy • Focus on process • Backcasting was found in literature • No overall strategies based on end goal • Strategies connected to barriers
Actions	• Most focus on this level for both individual organizations and the CSM • Literature extensive
Tools	• Many tools available • Actions are often categorized as tools • Focus on assessment tools

Discussion

Discussion points are presented according to the five levels used for analysis; however, they are not presented in order, but rather according to the relevance of the findings at each level.

- Most of the efforts of the CSM are focused at the *Actions* and *Tools* level because these levels are simplest to understand, quantify, and implement. In general, the tools and actions employed are helping to move the CSM in the right direction towards sustainability.

- The academic disciplines are a structural barrier for *Systems* thinking towards sustainability, and the author's argue for lowering the walls around the disciplines in favor of inter- and trans-disciplinarity.
- The Brundtland Definition is not concrete or sufficient enough to guide planning towards sustainability, nor is the current environmental focus of the CSM broad enough to ensure socio-ecological sustainability. Supporting the CSM's definition, or end goal, with rigorous sustainability principles and a stronger understanding of human needs could help to build the common vision of *Success* that many CSM practitioners are searching for.
- Current *Strategy* is not guided by a vision of success. However, through improved process management and backcasting from principles of sustainability, the CSM could strengthen its efforts. The authors offer one example of vision to guide the CSM based on concrete sustainability principles and human needs.

One strength of the project was the background experience and contextual understanding of the CSM brought to the project by the authors, which allowed for a nuanced exploration. Two primary weaknesses included confusion amongst research participants regarding the five level framework, and the failure of the web blog to elicit a dialogue.

Conclusion

Individuals and institutions within higher education are taking strides towards sustainability. Efforts within the CSM are flourishing, but lack a clear strategy that flows from a definition of success to arrive at sustainability. Considering the suggestions of the authors, the CSM could engage in its own unique vision and strategy creation processes. The authors believe this could contribute to the CSM within higher education more effectively leading society to sustainability.

Glossary

AASHE: Association for the Advancement of Sustainability in Higher Education. Together with Second Nature, currently the most active non-profit organization engaged in Sustainability in Higher Education in the US and Canada.

ABCD Analysis: A tool for applying backcasting from principles to a planning endeavor. It includes: A) understanding the system, B) assessing current sustainability performance, C) establishing a vision of success and brainstorming solutions, and D) prioritizing strategic actions (Robèrt 2000).

Backcasting: 'planning from success' by starting with the desired outcome in mind and then determining the steps required to achieve that outcome.

Backcasting from Principles: A form of backcasting where 'success' is defined at a principle level.

Biosphere: The earth's outer shell, within which life's processes occur-includes air, land, and water.

Campus Sustainability Movement (CSM): A faction of individuals, organizations, and institutions working towards sustainability within higher education.

Framework for Strategic Planning: Can be used for planning in any complex system. It can be applied in two basic methods: 1) for planning to guide decision-making, or 2) as an analytical tool to carry out a systematic and neutral analysis of an existing planning effort. The five levels are: *System, Success, Strategy, Actions, and Tools* (Robèrt 2000).

Human Needs: Refers to 9 fundamental human needs as defined by the Chilean Economist Manfred Max-Neef (1991). These needs are required to be satisfied in order for people to remain healthy physically, mentally, and socially. The needs are: *Subsistence, Protection, Affection, Participation, Understanding, Creativity, Identity, Idleness, Freedom.*

Strategy: Logical and generic guidelines to inform the process and implementation of a plan.

Strategic Sustainability Perspective: Based on systems thinking and the SSD Framework.

Strategic Sustainable Development Framework (SSD): Based on Framework for Strategic Planning. Designed to help bring clarity, rigor, and insight to planning and decision making to achieve a sustainable society in the biosphere. Grounded by a '*backcasting from sustainability principles*' approach, whereby a vision of a sustainable future is set as the reference point for developing strategic actions. (Robèrt 2000).

Sustainability in Higher Education (SHE): Refers to the efforts undertaken by higher education to move towards sustainability.

Sustainability Principles: Principles for socio-ecological sustainability, which if not violated, provide the basic requirements for a sustainable society.

Vision: The destination set by an organization that determines the starting point for both short and long term planning.

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1 Introduction

The past year has seen a growing popular awareness on the topic of climate change with the success of Al Gore's film, "An Inconvenient Truth". In addition, the release of reports by the Intergovernmental Panel on Climate Change (IPCC)[1] has strongly linked human behavior to the change in climate. The social, economic, and environmental consequences of such changes to the biosphere's atmospheric temperature are grave to say the least. However, we must be careful not to overlook the many other social and environmental issues that confront humanity but have not been discussed as widely in the public and are not related to climate change.

Our future existence will depend on our understanding of the interdependence of complex systems and our ability to act strategically according to that understanding. Many societal players, from the United Nations to a multitude of private companies worldwide, are beginning to use the language and theory of sustainability to reorient their activities. The United Nations Decade of Education for Sustainable Development[2] has put the spotlight on education as a driver for change towards sustainability. Within that, higher education seems to have a special role and responsibility.

1.1 The role of Higher Education in Sustainable Development

In the United States and Canada, higher education holds a monopoly in the business of imparting formal knowledge to the citizens of society. It is the professional training arena for medical doctors, lawmakers, scientists, engineers, educators, and business leaders, amongst others. Through this formal learning environment, millions of people build their knowledge on how the world operates, and through this understanding, shape society. From educating our children, to treating our ill, to designing our cities, it is the role of higher education to train people for the future.

[1] To read the reports, visit http://www.ipcc.ch/.
[2] For details, see http://www.unesco.org/education/desd/.

Each individual human will play an integral part in healing the systems that support life. However, it seems that academia, the training arena for future leaders, with its breadth of knowledge and core business of education, has a particular responsibility to move society towards a sustainable future. Corcoran, Calder, and Clugston (2002, 99) eloquently state:

> "colleges and universities are vested by society with the task of discerning truth, imparting values, and socializing students to contribute to social progress and the advancement of knowledge. They have a profound responsibility to impart the moral vision and technical knowledge needed to ensure a high quality of life for future generations. Sustainable development is the current context in which higher education must focus its mission".

With an economy and job market demanding advanced degrees, the future is looking bright for the higher education sector. Of the professions mentioned above, all but business leaders are required to obtain a degree from an accredited university. Medical doctors and lawyers have long required advanced degrees; the degree requirements for many other professions are also expanding beyond the bachelor's degree to advanced graduate degrees of master's, and PhD's. For instance, to receive professional licensure, K-12 public school teachers in the State of Massachusetts are now required to have a master's degree in their teaching discipline (Massachusetts Department of Education 2007). And yet, in the keynote address of the International Conference on Education for a Sustainable Future in Prague, September 2003, Martin and Jucker stated,

> "the Johannesburg World Summit for Sustainable Development (WSSD) has made one thing unmistakably clear: the political leadership the world over is incapable of rising to the challenges of sustainability. Yet, most of the hundred or so world leaders who attended have a higher education degree from some of the world's most prestigious universities. This raises some serious questions for the higher education sector. 'Why is it that those people, who contribute most to wreaking havoc on poor communities and the Earth's ecosystems, are also those with BAs, MScs, and Ph.D.s… The fact is that the higher education sector is failing society by producing leaders incapable of

> addressing the most pressing problems. If higher education is the 'nursery of tomorrow's leaders', then the sector bears profound responsibilities to create a sustainable future. This implies that graduates of *every* discipline need a sound working knowledge about sustainability".[3]

This profoundly illustrates the systematic contribution higher education has had on moving society in an unsustainable direction. The continued specialization of disciplines reinforces and builds knowledge that is fragmented and isolated. Building knowledge in isolation continues to lure humans away from universal understanding.[4] Sustainability, on the other hand, depends on integrated knowledge and attempts to understand complexity as interconnected systems. This exposes the gap between where we are and where we need to be in a sustainable society. The quote furthermore illustrates the paradoxical relationship that universities have with society and the challenge they will certainly face in training students who are competent in sustainable development. As it stands, academia can openly criticize society for its choices and behaviors; at the same time, higher education continues to both formally and informally teach and reinforce the same behaviors that it criticizes. This may provide some insight into why the higher education sector struggles to meet the complex challenges required for sustainable development. If higher education is to become a leader in creating a sustainable future, it must begin to address these contradictions and embrace an integrated, interdisciplinary approach that provides a whole systems perspective. In essence, the university must begin to put back together the complexity that it has so diligently taken apart through its disciplines and specialization.

Academic institutions can also be a leverage point for instigating large-scale systemic change. Already equipped with the infrastructure and know-how to educate, academia can utilize its research capabilities and foundation of knowledge to bridge the gap between sustainability theory and unsustainable practice. Furthermore, the higher education sector is a

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[3] From the report of the International Conference on Education for a Sustainable Future in Prague, September 2003 held by the International Association of Universities (IAU) (an affiliate of UNESCO created to bring together universities across the globe).

[4] See Appendix A for an historical context of specialization.

powerful economic engine. Total expenditures of post secondary institutions in the United States for fiscal year 2004 exceeded $321 billion. These expenditures, measured as GDP, would rank the United States' higher education system as the 30th largest GDP globally. It is not only economic prowess, but also pure physical size that contribute to the industry's far-reaching impact. Currently there are more than 6,500 post secondary institutions in the United States providing a learning environment for more than 18 million full- and part-time students and employment for more than 3.2 million faculty and staff (NCES 2004).[5] The higher education population represents one-fourteenth of the total US population. In Canada, registered students were greater than 1 million in 2005, an increase of 150,000 students over the previous four years. As an industry, Canadian universities are a CDN $20 billion a year enterprise (AUCC 2007).[6] The sheer size, combined with the charge to critique society, makes the higher education sector a prime leverage point for a shift in social thought and behavior.

In the end, education is humanity's best hope:

> "Education serves society in a variety of ways: The goal of education is to make people wiser, more knowledgeable, better informed, ethical, responsible, critical and capable of continuing to learn. Were all people to possess such abilities and qualities, the world's problems would not be automatically solved, but the means and will to address them would be at hand. Education also serves society by providing critical reflection on the world, especially its failings and injustices, and by promoting greater consciousness and awareness, exploring new visions and concepts, and inventing new techniques and tools. Education is also the means for disseminating knowledge and developing skills, for bringing about desired changes in behaviours, values and lifestyles, and for promoting public support for the continuing and fundamental changes that will be required if humanity is to alter its course, leaving the familiar path that is leading towards growing

[5] National Center for Education Statistics.
[6] Association of Universities and Colleges of Canada.

> difficulties and possible catastrophe, and starting the uphill climb towards sustainability. Education, in short, is humanity's best hope and most effective means in the quest to achieve sustainable development (UNESCO 1997, 18).

1.2 The Campus Sustainability Movement

Change is underway, as a faction has formed to support higher education in shifting its orientation to address paradoxes, utilize leverage points and move towards sustainability.

The United Nations Decade of Education for Sustainable Development (UN DESD 2005-2014), supported by The United Nations Educational, Scientific and Cultural Organization (UNESCO), is working to incorporate sustainability throughout university operations. UNESCO has developed a bold vision of a sustainable future, complete with a renewed responsibility for higher education. This vision reveals a contradiction between where higher education currently is and where many feel it should be.

In a report titled “Higher Education Sustainability Activities” produced for The Alliance for Global Sustainability (AGS), Amanda Graham (2004) describes the growing global movement for campus sustainability and discusses the role of universities in sustainable development. The report gives an overview of the topic and illustrates the many conversations and planning strategies that are currently underway.

In the United States and Canada, institutions of higher education are also implementing plans and taking actions that aim to achieve socio-ecological sustainability within their confines. With 22 million people engaged in higher education throughout this region, the potential for transformation is immense. Known as the Campus Sustainability Movement (CSM), it is expanding across the United States and Canada as campuses work towards greening their operations, as well as tackling the deeper issues of sustainability within their institutions. These initiatives are taking the much-needed first steps towards sustainability, as well as sparking conversations and increasing awareness around sustainable development.

The current sustainability initiatives on college campuses have been supported by a number of organizations outside of academia. We can trace

the origin of the CSM to the 1990 Talloires Declaration stewarded by the organization University Leaders for a Sustainable Future (ULSF), "the first official statement made by university administrators of a commitment to environmental sustainability in higher education…it has been signed by over 300 university presidents and chancellors in over 40 countries" (ULSF 2001a). ULSF, created in 1992, is "working to strengthen the capacity of colleges and universities to make sustainability and environmental literacy a major focus of teaching, research, service, and operations" (ibid).

In 1993, Second Nature was created to "help higher education make the principles of sustainability the foundation of all learning, practice, and collaboration with local communities" (Second Nature 2006). Today it "focuses its energy on initiating, advising, and supporting select high-leverage national and regional Education For Sustainability (EFS) activities" (ibid). Most recently, their focus has been on the American College and University President's Climate Commitment, an initiative that requires high-level administrative support in order to neutralize greenhouse gas emissions on college campuses.[7]

Founded in 1994, the Consortium for Environmental Education in Medicine (CEEM) was "a partnership that included Second Nature, focused on the education of medical students and professionals […]. In 2001, Education For Sustainability West (EFS West) was also created by Second Nature and focused on campuses in the western US and Canada" (AASHE 2007). In 2005, the Association for the Advancement of Sustainability in Higher Education (AASHE) absorbed the CEEM and EFS West and expanded its mission to support any campus interested in sustainability throughout the US and Canada (ibid). Today, this members based organization includes 275 colleges and universities and is the resource center and knowledge sharing hub for all sustainability related activities on college campuses.

These organizations and the campuses they support are the backbone of the CSM. They are leading higher education in the move towards sustainability by inciting and encouraging collaboration, and beginning the process of

[7] For information and details on what the commitment entails visit http://www.presidentsclimatecommitment.org/index.php

integration that the industry of higher education needs in order to shift its orientation towards sustainability.

1.3 Aim and Scope

The preliminary research done on AASHE, Second Nature and ULSF revealed the following objectives of the CSM:

> To promote and support sustainability in all sectors of higher education, including operations, governance, curriculum, research, and outreach, while strengthening its capacity through learning, practice and collaboration.

Figure 1.1. Objectives of the CSM

The aim of this thesis is to analyze and assess the current efforts of the CSM within higher education in the United States and Canada. The researchers believe that an analysis of the CSM's current goals, strategies, and actions relative to a Strategic Sustainable Development (SSD) framework will reveal opportunities to support the CSM's current initiatives.

The scope, or system boundary, for this project is the CSM. However, it cannot be completely separated from the higher education sector as a whole. Recognizing the nested systems shown in Figure 1.2. helps to connect the actors and reveal the interrelationships of the systems. This is crucial to SSD, as it frames the overall context. Also, expanding the system beyond institutions of higher education to include society in the biosphere will serve as a reminder that the university cannot be sustainable in isolation of the society in which it exists. Thus, a systems perspective helps to recognize complexity and connect relationships between all the actors in a defined system in order to better plan for sustainability.

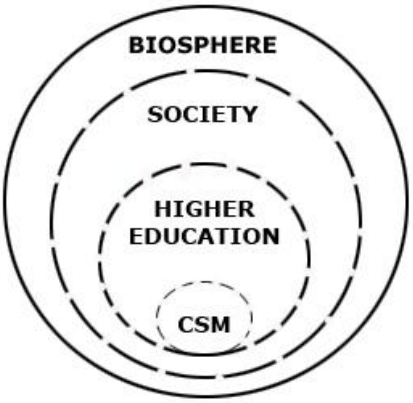

Figure 1.2. The CSM in its Nested System

1.4 Research Questions

Being that it is the intent of the authors to support the current efforts of the CSM, the research was guided by the following questions:

> Using a strategic sustainability perspective, what observation can be made about the CSM?

- What does an analysis of the CSM relative to a generic Framework for Strategic Planning reveal?
- How does that compare to the Strategic Sustainable Development Framework?
- What are some potential opportunities to strengthen the CSM?

1.5 Limitations

The authors note that the constraint of time and the isolation of place were primary limitations to this project. Although an extensive literature review was completed, we recognize that the findings do not comprise all efforts currently being employed towards SHE. Thus, this project is a high level assessment that could be derived from the methods within the time allowed for this project. The researchers recognize that their individual experiences within the CSM bring subjectivity to the research, but are also credible contributions to the project. As a result, the potential for researcher/subject bias is acknowledged. In accordance with the aim of the study, certain key assumptions require elaboration here: 1) it is the opinion of the researchers that higher education has an important role to play in the transition to global socio-ecological sustainability, and 2) that the existing efforts of the CSM would benefit from a systems perspective and strategic approach. Finally, it is the authors´ contention that a collaborative, cooperative, purposeful approach is beneficial to the objective of the project and outweighs the possible disadvantages of not conducting a fully empirical study.

2 Methodology

2.1 Iterative Approach

Within the limited scope and timeframe of this thesis project, the authors sought to employ a variety of methods in order to advance their understanding of the Campus Sustainability Movement (CSM) and Sustainability in Higher Education (SHE) relative to the research questions. An iterative research process was employed, resulting in a two phase, chronological methodology. This methodology acknowledges the prior experience and knowledge of the authors, the conceptual framework employed, the learning loops that evolved into the two-phase process, and the specific research methods utilized. Figure 2.1 demonstrates the chronological development and flow of the thesis project.

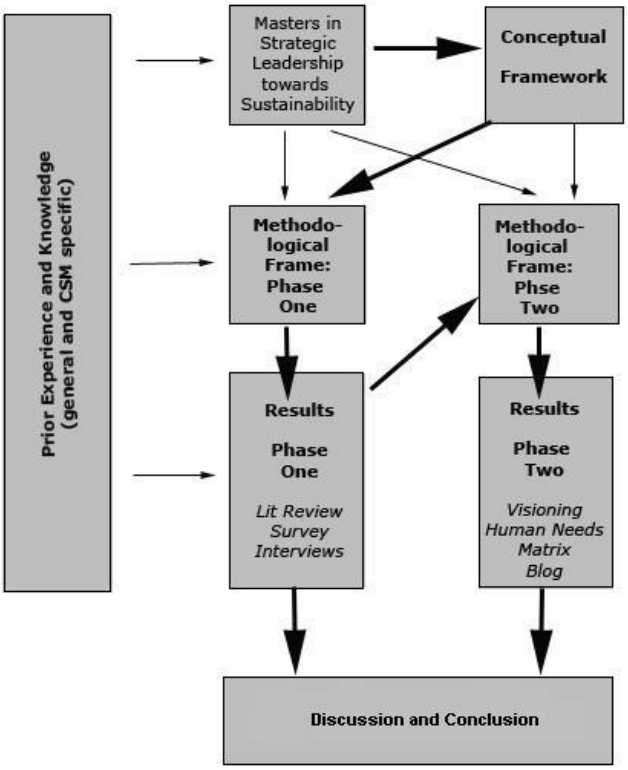

Figure 2.1. Research Development

2.2 Conceptual Framework

The analysis is guided by a 5-Level framework (Figure 2.2), which is based on a systems perspective. Pioneered by Karl-Henrik Robèrt (2000), it can be used as an analytical as well as a planning tool (for general applications or specifically for sustainability). When used for planning for sustainability it is known as the Strategic Sustainable Development (SSD) Framework. For general analyzing and planning it will be referred to as a generic Framework for Strategic Planning. The five levels are interdependent, though not overlapping.

The authors will use the framework to analyze the Campus Sustainability Movement (CSM) against its own objectives (Figure 1.2), and then compare that analysis to the SSD Framework.

Figure 2.2. Framework for Strategic Planning (adapted from Waldron et al. 2006)

2.2.1 Systems Thinking

Humans tend to view and explain the world around them in a linear, static way. However, this model is often insufficient when trying to explain the complexity of the real world. Systems thinking is a science built on the understanding of connections and relationships between seemingly isolated things. In addition, it overcomes our tendency to look at problems on a local level, where we often only see the symptoms and therefore create downstream solutions, rather than looking at the bigger picture and the actual upstream causes (Harraldson 2004). The analysis of the Campus Sustainability Movement (CSM) is based on a systems perspective. While the CSM within HE is a system in itself, it is also part of a larger system, society, which is embedded in the Earth, known as the biosphere or ecosphere (as seen in Figure 1.2).

2.2.2 Framework for Strategic Planning

The System. The system level describes how the planning or analyzing endeavor operates at its most basic level. Nature itself is a complex system of interconnectedness, much of which humanity does not understand. However, we do understand basic mechanisms such as the laws of thermodynamics, the conservation laws and much of the basic functions of ecosystems with their biodiversity and bio-geo-chemical cycles. Complexity increases when looking at society within the biosphere. Human society is understood through the study of diverse fields such as psychology, sociology, biology, physics, economics, politics, philosophy and many more. The field of higher education, and within it the CSM, is a whole field of study in itself that combines many of the above, but also has its own rules and regulations. The complexity of the system seems overwhelming, but nonetheless it is necessary to try to understand the basics of the system to derive a definition of success from it.

Success. It seems intuitive that when trying to change the current system and devising a strategy for doing so, one ought to have a vision of another state, or success, in mind. Before starting a journey, one usually asks, 'where is it that I really want to go?' In other words, what does success for the planning endeavor look like? We ask these questions naturally as individuals, but in larger groups such as organizations, not to mention society, they are often lost and replaced by unspoken assumptions that leave room for conflicting interpretations.

Strategy. By describing what an organization will look like in the future when it has been successful, one can determine the destination and direction for an organization. Therefore, being strategic refers to planning with an end state, or success, in mind. Without knowing what one wants, one cannot be strategic.

Actions. The actions level refers to things we do and that tangibly occur. In relation to sustainability, this could include recycling, energy saving, or signing sustainability commitments, to name just a few.

Tools. Tools help us to be more efficient, or even to achieve any of the above levels. They can help to monitor the transition through indicators, management systems, tools for decision support, and through measurements and documentation of decreased impacts in the system.

2.2.3 SSD Framework

The SSD Framework is distinguished from the generic framework primarily at the Success and Strategy levels.

S*uccess in the SSD Framework*. In the Strategic Sustainable Development framework, the success level is defined by four basic principles for complete, socio-ecological sustainability. In a planning situation or organization, they are applied in the context of not contributing to a violation of the principle. These principles have been developed through consensus building work done amongst scientists, attempting to determine what can be ecologically and socially agreed upon relative to sustainability. Sustainability only becomes important as we understand the un-sustainability of our system, which is defined as the situation where the environmental and social fabrics are systematically undermined. As shown in Figure 2.3, the metaphor of a funnel (as opposed to a cylinder where the walls remain constant) is used because it visually represents the increasing pressure on society through the decline of resources, purity, biodiversity and so on, as well as the growing population, global demand, and the like (Holmberg, Robèrt, and Eriksson 1996).

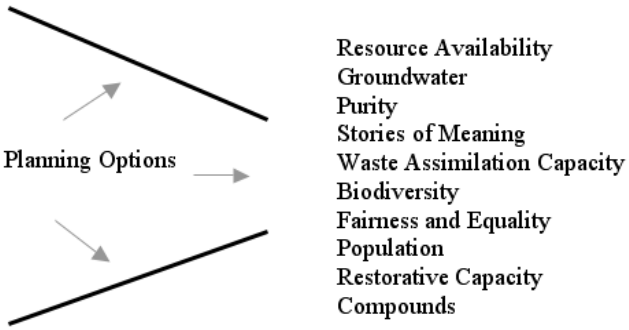

Figure 2.3. Un-Sustainability; systematic decline in options for society. (adapted from Robèrt et al. 2004)

Understanding humanity's systematic contributions to un-sustainability, it is logical to define what we can NOT do if we are to achieve sustainability. Therefore, principles phrased as restrictions set boundaries for our actions,

and at the same time allow for creativity in redesigning the system to become sustainable.[1] The principles were developed according to the following criteria: they must be necessary and sufficient to achieve sustainability, general enough to be applied to all activities relevant to sustainability, concrete enough to inspire action and give direction and mutually exclusive, so as to allow a structured analysis. These Principles for Sustainability were originally published in 1996 (ibid) and have evolved over the last 10 years to take their present form (Ny 2006).[2] See Figure 2.4 for the most current wording:

In a sustainable society, nature is not subject to systematically increasing…

I…concentrations of substances extracted from the Earth's crust,

II…concentrations of substances produced by society,

III…degradation by physical means

and, in that society…

IV…people are not subject to conditions that systematically undermine their capacity to meet their needs.

Figure 2.4. Sustainability Principles

Strategy in the SSD Framework. In the SSD Framework, backcasting is used as a planning method through which success is imagined in the future, and one then asks how to get there from the current situation. This method is helpful when the problem to be addressed is complex and the dominant trends are part of the problem. An ABCD Analysis can be a helpful tool when applying this method: (A) refers to awareness of the current system;

[1] At first glance, it seems contradictory that restrictions allow for creativity. However, by defining only what *cannot* be done according to four basic principles, the options for what *can* be done are unlimited. On the other hand, if the principles stated what *must* be done in a sustainable society, there would be room for little or no creativity.

[2] These principles are often also referred to as The Natural Step Principles because they are promoted by the NGO of the same name.

(B) denotes the baseline reality, which requires an assessment of the current system from the perspective given by the principles of success; in step (C), one brainstorms solutions to the problems listed in the (B) step, including a vision of the future; in (D), one strategically prioritizes the measures brainstormed in (C). This prioritization involves asking the following three questions: does the action take us in the right direction?, is it a flexible platform for further investments and changes ahead to avoid blind alleys?, and what is the return on financial, social, and political investment? Figure 2.5 is a visualization of this process.

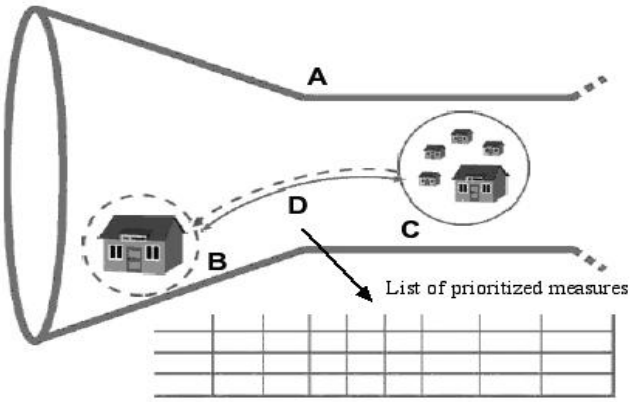

Figure 2.5. The ABCD Analysis within the funnel (Robèrt et al. 2004, 47)

2.2.4 Human Needs

The Sustainability Principle IV, mentioned above, refers to human needs. In order to work towards achieving this Principle, it may be helpful to more concretely define human needs. One attempt at this has come from Chilean economist Manfred Max-Neef, in his work *Human Scale Development* (1991). He proposes nine fundamental, distinct, basic human needs (Table 2.1) that are common to all people and roughly follow the same criteria as the Sustainability Principles. It is important to understand the distinction between needs and satisfiers – human needs are constitutional and distinct, while satisfiers are culturally particular and may change over time. For example, food is a *satisfier* for the *need* of subsistence. Utilizing fundamental human needs that are systematic, non-overlapping, and comprehensive allow for a methodical approach to social sustainability (Robèrt et. al 2004, 148-150). It is important to note that the Sustainability Principles are phrased as restrictions and outline the *basic* requirements for

sustainability. Therefore the basic requirement for social sustainability should be to remove obstacles to people's capacity to meet their needs. The satisfaction of the needs, shown in Table 2.1, exceeds the basic and minimum requirements, but nonetheless are helpful in framing a dialogue on social sustainability.

Table 2.1. Nine Fundamental Human Needs

Subsistence	Protection	Participation
Idleness	Creativity	Affection
Understanding	Identity	Freedom

2.3 Research Methods

2.3.1 Phase One

Phase One consisted of defining terminology (see Glossary), establishing the conceptual framework of analysis (see Section 2.2), completing a literature review of the CSM and the field of SHE, conducting a survey and performing interviews.

2.3.2 Literature Review

The literature review focused on Internet-based search databases, including ELIN (accessed from the BTH Library website), Google Scholar (www.scholar.google.se), and Questia (www.questia.com). In addition, the authors searched the *International Journal of Sustainability in Higher Education*, as well as the websites of Second Nature, ULSF, and AASHE. Search words included: sustainability, sustainable development, higher education, academia, "Campus Sustainability Movement", "Education for Sustainability", strategy, vision, and framework. The literature reviewed includes books, journal articles, dissertations, theses, "Campus Sustainability Master Plans" and web pages of institutions.

As the field of SHE is relatively new and still rapidly evolving, the authors chose to focus only on the most current research. A small portion of the information reviewed provided background and context, and was included in the Introduction. Otherwise, the data gathered from the literature review was used as field notes to answer the research questions, and is therefore included in the Results.

2.3.3 Survey

The goal of the survey was to garner information that would help to answer the research questions, as well as to network and identify individuals within the CSM who are willing to begin a dialogue. The intent was to keep the survey succinct and clear, but also provide space for respondents to give interpretation of their organization's involvement in the CSM. Questions were designed to determine how different individuals, and subsequently the organizations they work for, interpret the key terms of the research, such as definitions of sustainability and the generic Framework for Strategic Planning (System, Success [ultimate goal], Strategy, Actions, and Tools). The survey was distributed through e-mail list-serves focused on SHE, including the EFS-Acad (318 subscribers), Brown University Green Schools (345 subscribers), and the AASHE Weekly Bulletin (2805 subscribers). The actual number of survey responses was 55. The results were analyzed primarily through a qualitative process based on the research questions and the Framework for Strategic Planning, as well as statistical analysis of the multiple choice questions included in the survey. The survey questions, and distribution of answers, are listed in Appendix B.

2.3.4 Interviews

The goal of the interviews was to expand the authors' understanding of the history and context of the CSM, the role of HE in sustainable development, the importance of a vision of success for the CSM and the barriers to sustainability in HE. Interviews were conducted with 11 key individuals within the CSM, including Wynn Calder, Anthony Cortese, Julian Dautremont-Smith, Georges Dyer, Michelle McKay, Julie Newman, David Orr, Leith Sharp, Mike Shriberg, Mitchell Thomashow, and Sheri Tonn (See References-Interviews Conducted). These individuals were selected based on their influential positions within the CSM, including individuals involved with non-profit organizations focused on SHE, Sustainability Directors/Coordinators at leading institutions, upper level university

administrators, and academics whose work has been most cited in the field. Most interviews were conducted via conference call, with all three members of the thesis group listening while one member primarily conducted the interview. An attempt was made in each interview to engage in a dialogue between the authors and the interviewee. Interviews were audio recorded and summarized according to emerging themes. The results from the interviews were analyzed in a similar method to the survey results; that is, screened through the research questions and the first three levels of the Framework for Strategic Planning. In the following chapters, interviewees will be referred to as 'experts'.

2.3.5 Phase Two

Based on the results from Phase One, the authors developed a web blog to publish ideas and results. They also created a first vision for SHE, facilitated a "Higher Education (HE) in a Sustainable Society" Visioning Session with a group of SSD experts, and created a Human Needs Matrix for HE. These components comprise the Phase Two Methodology.

2.3.6 Web Blog

Early on in the research, it was discovered that reaching out to leaders in the CSM with a SSD Framework could come across as imposing, and limit the authors' ability to effectively communicate. Therefore, the authors decided to create a dialogue space for research participants. This space took the form of a web blog, on which the authors introduced themselves, as well as the aim and scope of the project. After completing the survey, respondents were linked to the blog and encouraged to read the information and post comments about the survey and the project hypothesis. Twenty-six individuals who provided their personal contact information in the survey were contacted. This contact was initiated through an e-mail that directed recipients to the blog, where information about the Framework for Strategic Planning was provided. The results and conclusions of the thesis are posted on the web blog as a resource to anyone interested in SHE, with the hope of continuing the dialogue (see csmdialogue.blogspot.com).

2.3.7 Vision Development

A First Vision. After an initial review of the Phase One results, the authors used a B-C analysis (see Chapter 2.2.3) to inform the creation of an initial vision statement for SHE, which could guide the CSM. The vision

combined field notes, existing vision statements, components of the SSD Framework, and the authors' prior personal experience with the CSM.

SSD Experts Visioning Session. Collaboration, transparency, and creativity are important components of the SSD Framework. It is essential that a diversity of stakeholders and knowledgeable individuals are consulted throughout the process of vision creation because it encourages investment and participation in the work required to achieve that future vision.

With all of this in mind, the authors held a visioning session with a group of international SSD experts from the Master's Programme in Strategic Leadership Towards Sustainability (MSLS), who all have prior and current experience as participants in the HE sector and experience in various fields. The intent was to provide a dialogue space, free from the authors' assumptions and experiences, to discuss the sustainability challenges and opportunities within HE. An invitation was sent out by e-mail to members of the MSLS Programme. Seven individuals from two genders and five countries across four continents attended the 2-hour session. Two smaller groups brainstormed the current reality of HE relative to sustainability and shared their respective ideas. The same process was used to brainstorm the potential that HE has to foster healthy individuals and society. All ideas were recorded and the notes and drawings from each group were saved to influence the continuing development of a vision statement for HE.

Human Needs Matrix. In order to understand the current, and envision the potential, role of HE in society, the authors engaged in an assessment through the lens of the Nine Fundamental Human Needs (Max-Neef 1991). The distinct needs allowed for structured thinking about how HE currently functions, and more importantly provided a method for creating a structured, rigorous vision statement for HE. The matrix was adapted to use the five commonly identified realms of HE: curriculum and research, operations, community development, mission, and outreach. The results were summarized for each of the nine needs based on these five categories.

Re-Contextualizing the Vision. The first vision, SSD Expert Visioning Session, and Human Needs Matrix culminated in the creation of a re-contextualized vision based on human needs.

3 Results

The results from Phase One are presented according to the Framework for Strategic Planning. Phase Two is presented separately.

3.1 Foci, Strengths and Weaknesses

Survey participants[1] were asked to rank their organization's and the CSM's efforts according to the generic Framework for Strategic Planning.

For their organization:

- The focus of efforts relative to the five levels was ranked from most focused to least: (1) actions, (2) tools, (tied at 3) strategy and system, (5) a clearly defined, long-term goal (success).

Additionally,

- 37.5% of respondents felt that their organization was strongest in the actions level;
- 32.5 % felt they could use more support with a clearly defined goal, 25% with strategic decisions.

For the CSM:

- The focus of efforts relative to the five levels was ranked from most focused to least: (1) actions, (2) tools, (3) strategy, (4) a clearly defined goal (success), (5) system.

Additionally,

- 35.3% of respondents felt that the CSM was strongest at actions, followed by tools (26.5%), and
- 26.5% felt they could use most support with a clearly defined, long-term goal (success), 23.5% with strategic decisions.

[1] Appendix B lists survey questions and qualitative results. Grouped results and survey respondent details are in Appendix C. Correlational data is in Appendix D.

3.2 System

Key Findings

- Literature on barriers is extensive
- Disciplinarity as a deep structural barrier

3.2.1 Structural Barriers

In the literature, strict academic disciplines are a primary concern relative to sustainability. For example, Ford writes that

> "because academic disciplines function as independent units, free from the findings and operative assumptions of other disciplines and free from the facts of the real world, their "truths" cannot be contradicted or modified by the truths uncovered by other academic disciplines or by the events of the world itself" (Ford 2002, 40).

Other writers are revealing the inherent contradictions that can emerge from detached disciplines, such as the physics department telling us that the potential for growth of physical flows is limited based on the laws of nature and the department of economics talking about the growth of the market economy as the means to meet the emerging needs of an increasing human population (M'Gonigle and Starke 2006, 32). Still other authors are critiquing the roots of the disciplines, claiming that the "modern university is the embodiment of the mechanistic, utilitarian worldview that shaped the scientific and industrial revolutions" (Clugston and Calder 1999, 3). Clugston and Calder go on to talk about disciplinary leaders who are charged with delving deeper into their fields, always staying true to their discipline even as they move from campus to campus. The rigidity of the academic disciplines is rarely disputed.

The experts agree that the heart of academia revolves around research and teaching, but also believe that specialization, although necessary, is not sufficient for moving us toward a sustainable society. Among many factors, the experts claim that the faculty training and reward system provides incentives for them to cling to their disciplines.

However, calls of action to challenge these structures are emerging:

> "if, as it seems, universities are deeply involved in current world-wide patterns of unsustainability, could it perhaps be that existing university structures need to be replaced by a completely new type of 'universal knowledge network'' which is derived from a totally different paradigm of their role and function?" (VanWeenen 2000, 20).

As one expert aptly pointed out, the world is an interdisciplinary place and life is an experience in interdisciplinarity. Academia, and its orientation towards specialization, is a false lens through which to view and understand the world.

3.2.2 Operational Barriers

In addition to academic disciplines, the literature discusses a variety of other barriers to SHE (Shriberg 2002, Cortese 2003, Harris et al. 2001, Sharp 2002, Lozano 2006, Thomas 2004, Filho 2000). The most comprehensive list of barriers comes from Velazquez et al. (2005), in which he ranked the barriers according to their occurrence in the literature: lack of awareness, interest, and involvement; organizational structure (lack of integration, conservative decision-making, compartmentalization of science); lack of funding; lack of support from university administrators; lack of time; lack of data access; lack of training; lack of opportune communication, and information; resistance to change; profits mentality – universities run like businesses; lack of more rigorous regulations; lack of interdisciplinary research; lack of performance indicators; lack of policies to promote sustainability on campus; lack of standard definitions of concepts; technical problems; lack of designated workplace.

Our survey respondents mirror Velazquez´ findings. Their answers to barriers fell into the following general categories (some answers were counted under multiple categories): funding (27%), lack of commitment from administration (24%), apathy (18%), culture (11%), short-sightedness (9%), staffing (9%), lack of cross campus collaboration (9%), time (7%).

The experts shared barriers relating to organizational structures, ranging from a lack of top-level commitment, to middle managers control over decision-making, to finance and accounting structures, to a quick student turnover, all of which impede sustainable development. They spoke about

the difficulty of expanding sustainability efforts beyond environmental impacts to include the social aspects as well. Also mentioned was the slow pace of change found within academia, adding that sustainability suffers from a lack of priority, time, funding, and political will.

3.2.3 Leverage points

Despite the recurrent theme of barriers prevalent in campus sustainability literature, many authors also choose to focus on the systemic leverage points of HE, the unique aspects of this sector that make it well suited for leading society towards sustainability. The authors of this paper have used many of these arguments in the introduction as support for the relevance of this project.

3.3 Success

Key Findings

- Brundtland definition most prevalent
- Focus almost entirely environmental
- No clear definition of environmental sustainability
- No (shared) end-goal/common definition
- Many sets of principles/conditions
- Difference of opinion about shared vision

3.3.1 Common definitions

"It is curious to note that while we have difficulty envisioning a sustainable world, we have no difficulty detailing what is unsustainable in our society…"(Hopkins and McKeown 2002, 13). Despite the difficulty of defining sustainability, many examples are cited in the literature. One common definition that emerges within the CSM is the Triple Bottom Line approach to balancing economic, environmental, and social considerations (Zylstra 2005, ULSF 2001b). Other definitions refer to ecological integrity, social justice, and the protection of all life on the planet. Still others use the

language of the Brundtland Commission[2], or words similar to it (Moore 2005). Another finding is that some definitions of sustainability utilized in HE consider only environmental aspects (Van Weenen, 2000). However, other definitions commonly include broad, inclusive language, such as AASHE's reference to human and ecological health, social justice, secure livelihoods, and a better world for all generations (AASHE 2007).

The respondents to our survey supported the findings above:

49 % listed some variation of the Brundtland definition .[3]

17 % listed the Triple Bottom Line (harmony between economy, society and environment).

15 % listed an environmental definition, but incorporated considerations for future generations

11 % listed a strictly environmental definition such as no waste or no depletion of resources

8 % listed some other definition

About 75% of respondents believed that there was agreement on the definition of sustainability at some level (department, organizations, CSM, HE). However, only about 44% thought that the entire CSM agreed on the definition they provided. Yet, even in the latter group, not everyone gave the same definition:

57 % listed the Brundtland definition

21.5 % listed the Triple Bottom Line

21.5 % listed an environmental definition, 2 of these incorporated considerations for future generations

The implications of these findings will be addressed in Chapter 4.

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[2] As published by the UN World Commission on Environment and Development in Our Common Future (1987): "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

[3] Quality of life was assumed to mean satisfaction of needs and was therefore counted as the Brundtland definition.

3.3.2 Principles, Conditions, Criteria

In addition to the multitude of definitions the literature also revealed many sets of principles, criteria, or conditions for SHE. One author describes the following three fundamental principles for sustainability: 1) waste minimization, 2) conservation of natural environment, and 3) minimization of resource consumption (Harris et al. 2001). Harvard University's Green Campus Initiative has developed six sustainability principles to "enhance human health and foster transition towards sustainability": 1) increase efficiency and renewables, decrease waste, 2) promoting health, productivity, and safety, 3) enhancing campus ecosystem, increasing diversity, 4) developing planning tools to aid decision making, 5) encourage environmental inquiry, 6) establish indicators for monitoring, continual improvement (HGCI 2007). A comprehensive list of "critical conditions for success" for SHE is proposed by Clugston (1999): 1) power/influence of sustainability leaders on campus, 2) key administrators on board, 3) how will sustainability strengthen all departments, 4) fit with organization's culture, 5) engage whole campus community, 6) be academically legitimate, and 7) bring in resources.

Experts named four criteria of success relative to SHE: 1) having a variety of champions throughout the community, 2) having buy-in from high level administrators, 3) creating structures for cross campus collaboration, and 4) working with students to educate and encourage student activism. Additionally, the process of decision-making and creating a vision must be inclusive of all stakeholder groups.

3.3.3 A need for a stronger vision?

Another theme in the literature is a call for the creation and adoption of a stronger vision of success for SHE. This is acknowledged as a core problem by Graham (2004), who writes, "at the root of the debate is the imprecise nature and lack of consensus on what sustainability means." Another author recognizes the need to envision what a 'sustainable' campus looks like (Moore 2005), and there is concern that "what is missing is a clear orientation on exactly what a sustainable university should be" (Velazquez et al. 2006, 810). Another author eloquently states:

> "An essential element to direct development processes is a broadly shared future orientation […]. At a global scale, 'Our common future' and Agenda 21 have provided this

> kind of orientation. Unfortunately, this orientation has not been sufficiently concrete to identify and initiate the necessary […] sustainable development challenges" (Jansen 2003, 325).

Still further, "evidence suggests that the greatest leverage in achieving institutional change occurs when all three subcultures or groups [students, faculty and administrative staff] have a shared vision and a sense of organizational alignment in their respective actions" (Sharp 2002, 137). Calder and Clugston (2003, 1) weigh in on this important issue by writing that "some colleges and universities are actively pursuing an authentic commitment to sustainability, yet there is little consensus as to what the end goal looks like. We need to develop analytic frameworks for further defining and understanding sustainability in higher education." Finally, support for backcasting (see Chapter 2.2.3) and a shared vision is present in the literature: "Broadly shared future orientations serve primarily as a source for backcasting" (Jansen 2003, 236). However, the call for a shared vision does not seem to have resulted in any movement-wide vision creation process.

The literature reveals an equal, if not stronger, resistance to the idea of creating one definition of SHE or adopting a shared vision of success or end goal. Wals and Jickling are outspoken critics, mentioning the shortcomings of the term sustainability because it is exclusive and provides no guidance on mediating between contesting conceptions of what it means. They go on to write that there is no one right vision of how to sustain the earth; instead, HE allows students to "critique, construct, and act with a high degree of autonomy and self-determination, if not in their personal lives than at least in their professional lives" (Wals and Jickling 2002, 124). They go so far as to claim that looking for "necessary conditions for sustainability become[s…] uneducational" (129). Several authors talk about sustainability as process, rather than an end goal or definable concept (Zylstra 2005, Perras 2000). A good summary of this debate comes from Filho (2000, 10):

> "[…] there is unlikely to be a consensus - at least a total one - on the meaning of sustainable development, although most people would agree on what it is all about. There is nothing negative in that, but, equally, there is the need to establish some ground rules so that the search for a consensus, on what it is and what it means, may not be

made hopelessly impossible due to individual differences in opinion and perspectives. Another way to overcome the problem is by looking at approaches to sustainability - meaning the processes which may ultimately lead to sustainable development."

Ultimately, actions towards sustainability should not be withheld until a consensus definition is found; instead, efforts should be taken to address the most immediate problems (Fien and Tilbury 2002).

The experts seemed to agree more with the latter opinion. While all agreed that a vision of success is necessary, they felt that the *process* of creating such a vision was more important. Due to its complexity they believed that sustainable development should not have a single shared vision. They felt that flexibility in the process of creating a vision, and the quality of making decisions, were crucial and would lead to healthy actions and solutions. It was expressed that what was needed more than a vision, was consciousness of process. The experts claimed that people were united through common challenges and working together, more than a common vision of success. However, the authors believe that consensus on a long-term goal is necessary, and indeed possible, if approached at the scientifically appropriate level of detail. This point will be elaborated on in Chapter 4.

3.3.4 Long-term goal

The survey question about ultimate long-term goal revealed many commonalities. The answers could be grouped in the following categories (some of the answers were counted under multiple categories):

26.5% Change of Culture/Education

26.5% Actions i.e. climate neutrality

25% General Sustainability

25% Environmental Sustainability

6% Institutional commitment

4% Integration

2% Natural Step Principles

The respondents who listed general sustainability did not provide a definition of what this means. 16.5% of these respondents gave environmental examples. Another 16.5% (no overlaps with above) listed a purely environmental definition of sustainability in the definition question. One respondent specifically mentioned that social sustainability is often not incorporated into campus sustainability. Those who listed environmental sustainability also did not provide a definition. 67% defined sustainability with the Brundtland definition or the Triple Bottom Line.

The agreement on the ultimate long-term goal was highest internally (within department or organization), and decreased the bigger the system became (see Appendix B). Again, the respondents who thought that the CSM, or wider sector of Higher Education, was in agreement on this ultimate long-term goal, listed different goals: 35% gave environmental sustainability, 35% gave an action, 29.5% gave general sustainability, 12% gave change of culture/education and 6% gave institutional commitment.

These findings will be addressed in the Discussion.

3.4 Strategy

Key Findings

- Institutionalization as a strategy
- Focus on process
- Backcasting was found in literature
- No overall strategies based on end goal
- Strategies connected to barriers

In general, strategy is a difficult level to interpret, as Van Weenen (2000, 20) acknowledges: "As many different definitions and interpretations of the concept [sustainable development] exist, it is not surprising that the strategies of the universities that are beginning to strive for sustainability show some differences."

3.4.1 Institutionalization

Sustainability policy statements are mentioned as strategic steps towards achieving SHE because they complement existing policy, and outline a

definitive plan of action (Harris et al. 2001, 153). Shriberg (2002, 290) argues that campus sustainability efforts are strong when they appeal to institutional strategic positioning, while traditional appeals to cost saving and regulatory compliance are only effective in initial, short-term efforts. The University of Waterloo identifies their main strategy as incorporating sustainability into the Sixth Decade Campus Master Plan (Kiang 2004). The AASHE website also provides an extensive listing of campus sustainability policy statements from a variety of its member institutions.

The experts also mentioned the placement of sustainability coordinators as a strategy, which can help institutionalize sustainability. According to them, they must be placed in a position that allows them to have far reaching influence across the university, giving an opportunity to build bridges within, and between, all sectors (administration, faculty, staff, and students) of the institution. However, many of the experts claimed that ultimately institutionalization depends on the support from upper level administration.

3.4.2 Focus on Process

The development of HE institutions into learning organizations, which are focused on process management, is another theme. Sharp states: "the challenge for the university sector is to become skillful at the process of change itself…Universities must become learning organizations" (Sharp 2002, 129). Sharp goes on to mention maximizing face-to-face interaction and building informal and formal support as important strategies. Dialogue is a component of a healthy learning organization, and is ultimately a way to understand deeply held values (VanWynsberghe et al. 2003). The value-focused thinking process allows participants to determine what is important to people by eliciting clear connections between values and objectives (Moore 2005). Thompson (2005, 8) summarizes the links between policy and process in the following passage:

> "In the absence of strong administrative leadership, proponents of sustainability basically have two overarching strategies. First, they can look for ways to push sustainability onto the IHE's [Institutions of Higher Education] "action agenda". Second, they can work to implement sustainability incrementally through discrete projects that do not need to be important items on a President's agenda. These projects, however, can be used as instruments for attempting to put

sustainability squarely onto the IHE's action agenda. Quite importantly, as sustainability proponents pursue an incrementalist approach, they can build political capital by creating a range of programs and projects in which other faculty, staff, students, and administrators can participate".

3.4.3 Backcasting

The concept of backcasting was discussed in multiple sources. One author writes that "backcasting approaches (from need to product and from future to present) are means to develop creative jump-like approaches that at the same time open profitable short-term opportunities", and that this orientation often requires stretching the time scale that one considers (Jansen 2003, 232). The "Education for Sustainability" approach taken by the organization Second Nature has an inherent sense of backcasting. It is a strategy for sustainability with three parts: 1) envisioning a sustainable future, 2) determining HE's role in the transition to a just and sustainable future, and 3) the transformation of HE (Second Nature 2005). This approach follows the ABCD process for backcasting (see Section 2.2.3), which similarly involves creating a vision for the future, understanding the current reality of your sector or organization, and then beginning the actions that will create transformation.

In the survey and interviews, the concept of backcasting was not explicitly mentioned, nor was it apparent that it was being utilized in strategy formation.

3.4.4 On the ground

While the literature mentioned strategy extensively, the survey responses were weaker in this area. 33% of respondents made a reference to a strategic plan in the question about strategy, but only 19% said they had a strategic plan (7% said not yet, 7% said none). At the same time, 33% of people listed actions rather than a plan, and 37% gave a very broad or vague answer, but did not refer to a plan.

Of the people who listed environmental sustainability as their ultimate goal, half said they had a strategic plan, and half gave a broad answer or listed an action as their strategy. Of the people who listed general sustainability as the ultimate goal, half made a reference to a strategic plan (25% said they had one; 75% either said none or not yet).

On the other hand, many of the strategies listed correlated with the barriers mentioned in a separate survey question. The implications of this will be addressed in the discussion.

3.5 Actions

Key findings

- Most focus at this level for both individual organizations and the CSM
- Literature extensive

Even a cursory exploration into the CSM reveals that a great deal of action is taking place on college campuses in the name of sustainability. Perhaps the best examples of the efforts at this level come from the AASHE Digest, a comprehensive, annual listing of campus sustainability actions conducted by AASHE member campuses. This young organization has thus far produced two such digests, one each for the years 2005 and 2006.[4] This resource is the best one-stop spot for an overview of the current actions being taken within the CSM.

The 2005 AASHE Digest begins with the highlights from the year. These include the formation of three new organizations dedicated to SHE, including AASHE, the HE Association's Sustainability Consortium, and the US Partnership for the Decade of Education for Sustainable Development. There were also multiple conferences and special events, ranging from Ball State University's 6th annual "Greening of the Campus" Conference to a national Campus Sustainability Day. Highlighted action trends include clean energy, green building, local food, student activism, human rights, waste reduction, and global warming. The 84-page document, divided up into themed, and operations based chapters, makes a strong statement for the growth of the CSM.

[4] Both digests can be downloaded at http://www.aashe.org/publications/digest.php

The 2006 AASHE Digest makes an even stronger statement in its 161 pages, with more than twice as many stories as the 2005 Digest (629, up from 250). This Digest organized actions into the following chapters: 1) institutional change, 2) education and outreach, 3) social responsibility, 4) green building, 5) energy management and renewable energy, 6) food and agriculture, 7) transportation, and 8) waste, water, landscaping, and procurement. A few specific highlights include the hiring of 11 Campus Sustainability Directors, Coordinators, or Managers, 22 new sustainability-themed academic programs, the creation of the Arizona State University School of Sustainability, and the fact that the combined green power purchases of the top 10 university purchasers tripled over the course of 2006. Regarding green buildings, LEED[5] Gold became the new standard for campus buildings (12 of 18 new buildings), replacing the most common rating of Silver from 2005.

Other notable literature at the actions level include the seven recommendations to transform universities towards sustainable education (Moore 2005), a case study of activities at Sheffield Hallam University (Downey 2004), multiple articles from the book *Sustainability and University Life* (Filho 1999), an example of environmental sustainability through quantifying impacts and taking actions (Graedel 2002), and action items organized according to different aspects of operations (Creighton 1998). Actions towards sustainability are countless, though well documented by organizations such as AASHE, many scholars in the field, and the campuses themselves as they publish their activities and seek media recognition. Perhaps the greatest testament to the increase of campus sustainability activity was the AASHE 2006 Conference, which trumped all previous campus sustainability conferences with over 700 participants (AASHE Digest 2006).

The flurry of actions found in the literature was also reflected in the answers to the survey. The range of actions was diverse and divided into categories, from purchasing environmental products and comprehensive

[5] Refers to Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, a nationally used benchmark for the design, construction, and operation of high performance green buildings. For more information see http://www.usgbc.org/DisplayPage.aspx?CategoryID=19

energy policies, to better marketing of current actions. For a complete list of categories see Appendix C.

One expert also mentioned courses being taught that connect both theory and practice in regard to sustainable development. They gave the example of designing new buildings ecologically, so as to use them as teaching models for impacts on the environment. The experts acknowledged that most actions are focused on environmental sustainability with a renewed focus on climate change due to "The American College and University Presidents' Climate Commitment".

3.6 Tools

Key Findings

- Many tools available
- Actions are often categorized as tools
- Focus on assessment tools

3.6.1 Current breadth

The AASHE website[6] provides the most comprehensive list of assessment and auditing tools in the Members Resource section of their website. Nine tools are listed, and a few of the most commonly referenced tools include the Campus Sustainability Assessment Framework (CSAF), the Sustainable Pathways Toolkit, and the Sustainability in Higher Education Assessment Framework (SHEAF). In addition to information on the tools themselves, AASHE lists a plethora of published work that discusses the process and results of campus sustainability assessment. Second Nature[7] primarily provides presentations, consultations, and workshops as a tool for campuses to assess their current reality relative to sustainability. These workshops touch on topics such as faculty and curriculum development, sustainable operations, sustainable purchasing practices, etc. Overall, they are intended to identify the best ways to move in the right direction towards

[6] http://www.aashe.org/resources/assessment_tools.php.
[7] http://www.secondnature.org/advisory/advisory_overview.htm

sustainability. The primary tool developed by ULSF[8] is the Sustainability Assessment Questionnaire (SAQ), "a qualitative questionnaire designed to help you assess the extent to which your college or university is sustainable". The National Wildlife Federation Campus Ecology Program also maintains a list of environmental assessment projects being done on campuses around the United States, in particular to strengthen campus sustainability efforts.

The survey showed that many of the respondents are aware of the vast quantity of tools available. Their list of tools ranged from the Clean Air-Cool Planet Calculator[9] to recycling. In total, the authors distinguished 25 categories. However, many items listed were also provided as an answer to the question about actions. This, and the wide range of answers, may indicate some confusion regarding the distinctions between the five levels. See Appendix C for a more detailed list.

3.6.2 Importance of Assessment

The primary functions of assessment tools include discovering, 1) where an institution stands, 2) problem areas/strengths/weaknesses, 3) strategies for improvement, and 4) building a culture of commitment. They are also helpful for developing a timeline (Legacy 2004). Campus audits are also seen as a critical first step for implementing sustainability (Shriberg 2002). Uhl (2004) argues that indicators are what allow us to gauge systematic increases in concentration in the waste stream, and that indicators for campus sub-systems are helpful on a wider level because they can be scaled up to the city or region. There are many studies about how to advance sustainability in higher education through the results of audits, assessments, ecological footprinting, strategies for supporting economical sustainability through savings (energy conservation, green purchasing, etc), the role of race/gender programs to promote social sustainability, negative impacts of neo-liberalism, and so on and so forth (Fien 2002). New tools are continuously being developed, and little consensus seems to exist as to which tool provides the best groundwork for advancing campus sustainability.

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[8] http://www.ulsf.org/resources.html

[9] For more information on the organization and their tools, visit http://www.cleanair-coolplanet.org/

Experts agreed that current practices needed to be assessed before they could make large decisions. They said they used many of the tools available to collect quantitative data for comparison and to set benchmarks. It was also mentioned that such assessment tools become incentives for improving performance in the spirit of competition between universities.

3.7 Phase Two

3.7.1 Web Blog

The web blog was the authors' attempt to create a dialogue space. Unfortunately, the invitation failed to elicit response, and therefore did not produce any results. However, the authors will still utilize the blog to post results and continue to attempt dialogue.

3.7.2 Vision Development

Initial analysis of Phase One results revealed a potential to assist the CSM at the Success and Strategy levels. Based on the CSM's objective (Figure 1.1), its vision is inherently linked to the definition of success in SHE. However, the research did not reveal any processes for or attempts at creating a long-term or comprehensive vision to guide the CSM. Therefore, the authors chose to focus on developing a potential vision of success for SHE, in order to guide strategy for the CSM. This portion of the project is termed Phase Two, and includes the following three components:

1. A first vision guided by the SSDF
2. SSD Expert Visioning Session
3. Re-contextualizing the Vision

A First Vision. Based on the results of Phase One, the authors crafted a first draft for a vision of higher education. This was meant as a thought experiment and is intended to provide one idea of how a vision could be structured. It serves as a starting point from which the CSM can go on to derive its own vision, or as an impetus for discussion. This first vision is presented in Figure 3.1 below.

Higher education has re-discovered its core purpose of contributing to the betterment of society and has become a strong catalyst in the evolution towards a sustainable society*. It is free and accessible to all. By engaging with their local communities to satisfy individual and collective needs while striving to reinforce the socio-ecological fabric of the greater global community, campuses and their surrounding communities operate/act as exemplars of sustainable development.

With a conscious and collective decision-making process, campus governance mirrors a fair and democratic society, where all community members' needs are met. For the individual, these learning communities foster qualities of intellect, creativity, and character, so that they may live fulfilling lives and contribute meaningfully to their vocations, their communities, and the world. Their youthful energy coupled with an understanding of the (sustainability) challenges of today and tomorrow, will provide the competence required to create solutions.

Curriculum and operations reflect an integrative approach to learning and practice and systems thinking has permeated all levels of academia, so that all departments and disciplines work collaboratively. The content and context of education emphasizes systematic, trans-disciplinary thinking, experiential learning and real-world problem solving. The knowledge gathered in the disciplines is enhanced through a collective awareness of the whole and a purposeful understanding of knowledge itself.

*In order to create a concrete vision that can strategically guide actions, a rigorous, scientific definition of ecological sustainability must be derived, challenged, and continuously improved. The following principles are the most rigorously defended attempt at such a definition:

In a sustainable society, nature is not subject to systematically increasing…

I. concentrations of substances extracted from the Earth's crust;
II. concentrations of substances produced by society;
III. physical degradation of ecosystems

and, in that society…

IV. people are not subject to conditions that systematically undermine their capacity to meet their needs.

Figure 3.1. The First Vision

SSD Expert Visioning Session. The second step was to convene a visioning session with SSD experts. The results from this workshop are presented according to the B-C component of the ABCD process described in Chapter 2.2.3 and are shown in Appendix E.

Re-contextualizing the vision. The experts continually emphasized the need to focus on social sustainability and this idea was supported by the discussion during the SSD Visioning session. The authors of this paper therefore decided to rephrase the vision of SHE through the lens of the nine human needs (Chapter 2.2.4, see Discussion for more detail). In order to do so the authors developed a Human Needs Matrix of higher education (Figure 3.2). The authors are merely presenting a suggestion and starting point for discussion. It is by no means intended to be prescriptive, but rather as an invitation for dialogue. An attempt at a vision (Figure 3.3), which fills in some aspects relevant to HE under each need, follows the matrix. Also, the authors believe that rather than satisfying the minimum requirement for sustainability (not to undermine the capacity to meet human needs), higher education can go further and work towards restoring the social fabric. Therefore, they did not word the entire vision as a constraint.

	Mission	Curriculum and Research	Operations	Community Development	Outreach
Subsistence (physical+ mental health)	University to be a healthy place for all students and employees; maybe create healthy places within community; University to equip students with skills to deal with challenges faced with in life after school so that they may provide their own subsistence	Preparing you to provide your own subsistence in the future --> adequate courses to deal w/ real world problems; required courses for all students on health+wellbeing; adequate compensation for faculty	Dormitories; meals plans/dining services (importance of food); health services, counseling services, gym; housing program for employees? adequate compensation and health insurance package for employees	Peer Support Groups (Clubs, RA Systems, etc); Sports teams	Supporting Local Economy
Protection	University to be safe place	Psychology classes, civics+law classes	Public/Campus Safety; Lighting; Locks on doors; Building supervisors; Identification; Insurance systems for employees, students, institution; Health Services including sexual health	Open discussion about sexual health, violence, etc; Building supervisors; develop trusting community; make sure everyone gets the care they need	Supporting local development
Affection	Instill respect, tolerance, generosity	Psychology classes, philosophy classes, etc - all classes that help one understand oneself + others	Common Space comfortable and aesthetically pleasing	Facilitates relationships (personal, platonic, professional); diverse social interaction (cultural, sexual, religious); student groups - tolerance, like-mindedness; inter/intra personal development, respect tolerance	Respect, tolerance, generosity, relationships, community service
Understanding	Develop and support the individuals capacity to meet society's fundamental human needs	formal learning-lectures, discussion groups, assignments, group process, projects; research-experiential, interdiscipliinary; reflection; student centered learning environment	Physical design (energy, food, material flows, procurement, etc) Governance; inclusive decision making process, transparent administrative process	Organized social activities; extra-curricular activities; professional development	build relationships with greater community; dovetail theory and practice

	Mission	Curriculum and Research	Operations	Community Development	Outreach
Participation	accessibility; non-discrimination	discussion groups, class participation, civics classes, design your own education	physical labor for campus; disability access; nature walks	cross campus groups; spirit days; fully democratic decision making/administrative processes; sports; arts; frats/sor; student govt; extra-curricular activities; voter educ.	accessibility; community service
Idleness	relax, reflect, free time	free time	open space/nature; gym; coffee shops; comfortable social/group space; individual space	entertainment; meditation groups	
Creation	imagination; free time; status quo-rules/regulations	art classes	space for sharing creations	envisioning your future; community visioning/building opportunities	
Identity	uniqueness	teaching/exploring history-who you are, where you come from, your group affiliations		school spirit/traditions; student groups; personal development; relationship building	
Freedom	equal rights; full inclusion; democratic governance	emotional development to satisfy self esteem and free ind. From self imposed constraints; open-mindedness; dissent; civic/ethics	governance mirrors democratic society; ind. Responsibility in making decisions	emotional development/profressional development; inclusion and responsibility in decision making	civil service; voter registratrion

Figure 3.2. Higher Education Human Needs Matrix

In a sustainable society, higher education does not undermine but rather contributes to satisfying the fundamental human need for:

Subsistence by teaching and encouraging campus community members to maintain their physical and mental health through nutrition, physical activity, and emotional support made possible through appropriate campus infrastructure. Respect for the bio-geo-chemical cycle is vital to human subsistence and can be guided by the following three principles:

> In a sustainable society, nature is not subject to systematically increasing…
>
> I. concentrations of substances extracted from the Earth's crust;
>
> II. concentrations of substances produced by society;
>
> III. physical degradation of ecosystems

Protection by emphasizing open discussion of topics such as sexual health and violence, reaching out to support healthy local communities, and rebuilding trust in human relationships.

Affection by facilitating diverse relationship (personal, platonic, professional) based on respect, tolerance, and generosity.

Understanding by exploring, improving, and expanding the breadth of learning techniques utilized in the formation of critical, creative, systems thinkers prepared to work towards meeting society's fundamental needs.

Participation by emphasizing active, experiential, inquisitive learning, in an atmosphere of cooperation and interaction, with fully democratic and transparent decision making/administrative processes. Extra-curricular, community service, outreach and other group affiliation opportunities proliferate and community members feel

personal responsibility for their participation.

Idleness by providing comfortable and ecologically designed individual, and social space, and equipping community members with enough stress-free time to utilize these spaces for entertainment, spiritual nourishment, relaxation, reflection, sleep, and communion with nature.

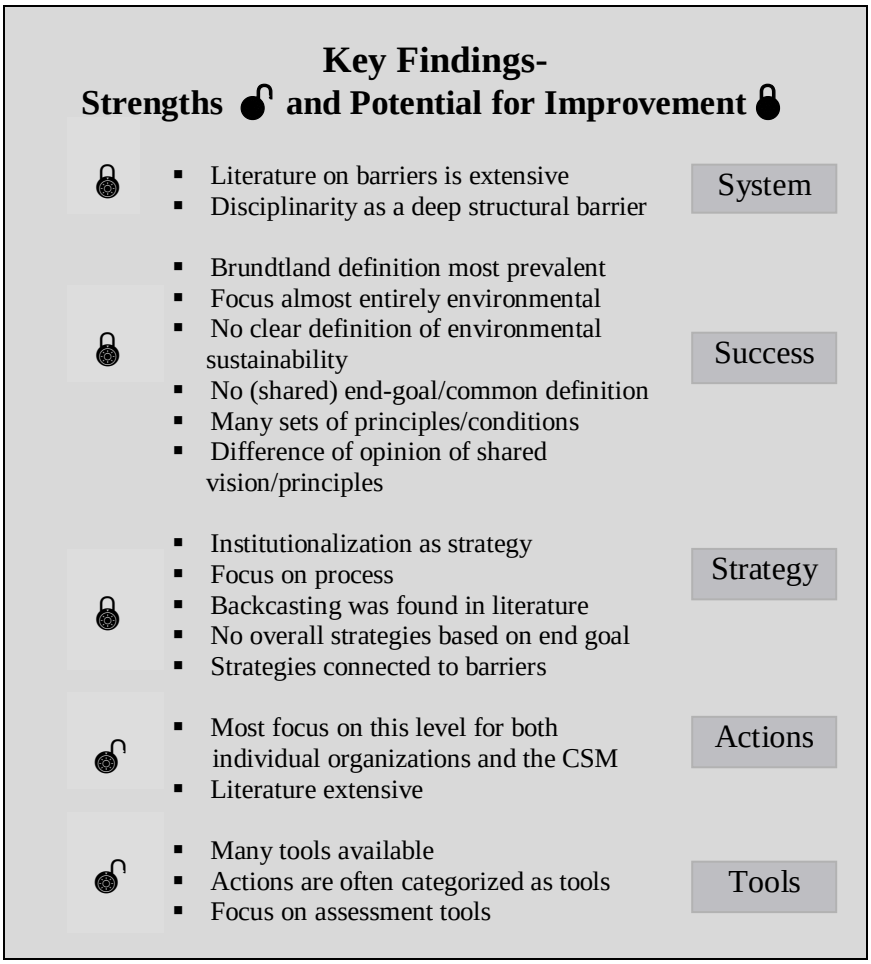
Creation by the authentic inclusion of ALL members in co-creating their educational communities freely and imaginatively, particularly tapping the relatively fresh, uninhibited creativity of young students.

Identity by a deep and transparent understanding of institutional history, which instills conscientious pride and spirit in members of each educational community and the institution of Higher Education as a whole.

Freedom by creating an atmosphere of equal rights and full inclusion that lays the foundation for healthy emotional development and self-esteem, thereby freeing individuals from external and self-imposed constraints.

Figure 3.3. Towards a Human Needs-Based Vision

4 Discussion



The results presented in Chapter 3 are based on an analysis of the CSM's own objectives (see Figure 1.1) according to the five levels of the generic Framework for Strategic Planning. Using this generic framework allowed the authors to focus the research and present the findings in an organized manner. The discussion points that follow are an attempt to critique the findings relative to the components of the SSD Framework detailed in Chapter 2.2.3. The structure of the following chapter, however, does not flow directly from system to tools; rather, it is based on the relative significance of each key finding, culminating at the strategy and success

level, where the authors discovered the most significant gaps and room for improvement.

4.1 Strength and Focus

The results clearly demonstrate that the CSM is focused at the Actions level. The prevalence of activity witnessed and recorded by AASHE is prime evidence that actions are taking priority at individual campuses, as well as in the CSM as a whole. The literature on the actions taking place, particularly in the operations side of the university, is extensive. The focus on operational and facilities management aspects indicates an emphasis on environmental sustainability. Additionally, the survey results show that a wide variety of actions are being taken, and that individuals within the CSM have no trouble listing actions that they believe are leading towards sustainability (see Appendix C). Survey results also show that individuals within the CSM feel that their organizations, as well as the CSM as a whole, are focused at the actions level. Individual organizations and the CSM are also strongest in this area.

The Tools level represents another focus of the CSM. A plethora of tools is available, as demonstrated by the literature on their application and the resources available from leading CSM organizations. The focus is on assessment tools that allow campuses to quantify their environmental impacts, thereby providing a means for prioritizing actions to reduce impacts, which are at this point primarily related to campus operations. According to the survey, tools are second to actions as the focus of both individual organizations and the CSM, and are the second most effective level relative to the CSM's current efforts (for a list of tools mentioned in the survey, see Appendix C). From an SSD perspective, however, many of the tools mentioned in the literature are not sufficient for socio-ecological sustainability. For example, ecological footprinting focuses on quantities of materials used, and implies dematerialization as the means for sustainability. However, persistent compounds foreign to nature accumulating in the biosphere also compromise sustainability. Therefore, such compounds must be substituted and eliminated, rather than merely reduced, to achieve a sustainable society (Robèrt et al. 2002).

Some survey respondents confused actions and tools. For example, installing a windmill was listed as a tool, when it seems more appropriate at the action level. There is, however, a tool that has been developed for

assessing the viability of wind energy on college campuses.[1] This tool supports the action of actually installing windmills. It is the authors' contention that the prevalence of actions and tools results from their simple, straightforward, and quantitative nature. They also believe that the current use of tools and taking of actions are heading in the right direction regarding environmental sustainability. The flurry of actions is encouraging, given that this level will inherently dominate the day-to-day efforts of any planning endeavor. However, the results indicate that the other three levels contain room for improvement, which will be elaborated upon in the following discussion points.

4.2 Emphasis on Barriers

The literature review and interviews correlate in demonstrating that the structure and strength of the academic disciplines contribute to the un-sustainability of HE, particularly regarding teaching and research. The biosphere, as well as the systems nested within the biosphere, are extremely complex. The spectrum of human knowledge about all of these complex systems cannot be effective at addressing the problems of society when it is compartmentalized and isolated, as it currently is within the disciplines of academia. Research at the university level continues to delve deeper and deeper into drillholes, often without stopping to think about how this research will be integrated with other research and knowledge creation concurrently happening. This demonstrates that HE has not fully embraced systems thinking as a legitimate science. Embracing a whole systems approach however, helps to avoid reductionism and allows for holistic understanding and more effective planning.

The authors recognize that disciplinary research is necessary and relevant to sustainable development, but point to the emergence of interdisciplinary and cross-disciplinary programs throughout HE as an acknowledgement of its limitations as well. In fact, the CSM can trace its roots to the emergence of interdisciplinary environmental studies programs in the 1970's (Tony Cortese Interview 2007). Trends towards integrating knowledge have

[1] For information on this tool, visit
http://www.academicimpressions.com/web_conferences/0507-wind-turbine.php

continued within the CSM, but the larger institution of HE continues to uphold strict disciplines. Multiple expert interviews revealed that top thinkers and practitioners in the field of SHE are calling for a loosening of the academic disciplines in favor of holistic, systems thinking approaches to knowledge creation, and management. Ultimately, research must maintain a systems perspective (Chapter 2.2.1) that ensures efforts in one discipline will not hinder, but enhance, the efforts of others towards the end goal of sustainability. This systems thinking approach is gaining wider acceptance through organizations such as the International Society for the Systems Sciences created at Stanford University and the Society for Organizational Learning, affiliated with Massachusetts Institute of Technology (MIT).

The focus on disciplinarity and operational barriers at the systems level might indicate that it is easier for the practitioners in the field to maneuver within the complex system by understanding its barriers. Or, it might indicate that systematic barriers are abundant and that the practitioners focus on them because they face them on a daily basis.

4.3 Defining the destination

Definitions of sustainability are fundamentally important to understanding what one wants to achieve and necessary in order to inform any long-term vision. The authors therefore regard long-term ultimate goal, definition of sustainability, and vision of success, as inseparable. However, as discussed below, the survey respondents overall did not make this connection.

4.3.1 The Limitations of Brundtland

According to the Brundtland Report, sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs". This is an eloquent summary of a complex idea, but not concrete or sufficient for planning or making decisions toward sustainable development (Jansen 2003, also see Chapter 3.3.3.). The authors recognize that the definition's strongest attribute is that it is a broad and overarching philosophical definition. However, human needs have not been concretely defined. Due to this quality, there is unlimited room for interpretation as to the concrete implication for analyses of the current situation (B), envisioning of solutions and desirable scenarios (C) and planning (D). Furthermore, if the human needs were more concretely

defined, this would lead to a prescriptive approach and limit creativity. A definition based on constraints would avoid this (see Chapter 2.2.3).

4.3.2 Environmental Focus

To date, the CSM has interpreted sustainability to mean mostly reducing environmental impacts. The term "greening of the campus" attests to this environmental focus, especially relative to operational efforts. All results from Chapter 3 support this. There could be many reasons for this, including the ability to reduce cost, easily measure improvement, and the publicity that can result from relatively minor reforms. The choice of this focus can be linked to the lack of definition of human needs. Furthermore, studies on impacts in the social system, and on human needs often lead to even more value-based discussions and divisiveness than studies of the environmental systems. This approach is not enough especially since the connection between social and ecological sustainability are well known.[2]

4.3.3 What is the goal?

Survey respondents' answers about their ultimate long-term goal could be grouped in several categories (see Chapter 3.3.4). The authors were especially interested in the two broadest categories – general and environmental sustainability. It was interesting to see that respondents who listed general sustainability did not provide a definition of what this means, but many of them referred to environmental examples or listed an attempted environmental definition of sustainability in the definition question. Those who listed environmental sustainability also did not provide an operational definition, but a majority listed the Brundtland definition or the Triple Bottom Line as their original definition. This seems to indicate that even when sustainability (general or purely environmental) is set as a goal, there is no concrete understanding of what this means.

[2] The Millenium Ecosystem Assessment demonstrated the consequences of ecosystem change for human well-being. For more information, visit http://www.milleniumassessment.org/en/index.aspx

4.3.4 A common vision?

Interestingly, when asked about agreement on their *definition*, 44% of the survey respondents thought that the entire CSM agrees on the definition they provided (see Chapter 3.3.1). Yet, they did not all list the same definition. This would indicate that in fact less people than assumed at first glance operate on the same definition. The question on agreement of the *ultimate long-term goal* provides similar results. The respondents who thought that the CSM or wider sector of higher education is in agreement on an ultimate long-term goal listed different goals, which implies that there is less agreement than perceived.

Again, the authors view definition of sustainability and long-term goal as synonymous with vision of success. Collins and Porras (1994) highlight the importance of a shared vision because it inspires direction and unity. In an organization, it makes work meaningful for employees, as well as interesting to potential customers and partners. With their research, they have established that the most successful organizations in the world all have a strong, shared vision as their guiding tool. The idea of a compelling vision seems especially pertinent for the topic of strategic sustainable development. The challenges ahead of us in our current unsustainable path are daunting. If we want to convince people to change their path, we need to provide a compelling picture of what a path towards a sustainable future might look like. Sustainability will only be possible if everyone works towards it together, which implies agreement in what we want to achieve.

4.3.5 A need for a goal?

Survey respondents indicated that what was most needed to support both their organization's and the CSM's efforts was a long-term, ultimate goal to work towards. At the same time, a very interesting discrepancy arose between the survey and interview/literature results regarding a long-term goal. Each interviewee was asked what they thought about creating a shared vision or ultimate goal for the CSM. The responses to this question ranged from intrigue mixed with subtle uncertainty, to outright dismissal that an end goal was possible or even desirable.

The author's believe that this contradiction is a result of the exposure and experience that the two different audiences have within the CSM. The survey respondents are mostly ground level practitioners, researchers, or teachers who may have strong roles within their campus communities, but

are not considered experts in the CSM at large. In the complex system, they seem somewhat lost amongst the many battles one can fight for sustainability. The interviewees and authors from the literature, however, represent some of the founders, strongest leaders, and deepest thinkers in the relatively young CSM. It is the authors' speculation that these experts are natural systems thinkers and that they quite easily manage to understand systems as a whole, while at the same time keeping a general direction in mind. Being experts, especially in a field related to higher education, they also strongly believe in individual critical thinking, which makes them resistant to a general framework and shared vision/definition for everyone. Survey respondents, however, seem to desire a clearer understanding of what they are trying to achieve.

4.3.6 Potential for Strengthening

The authors believe that the Strategic Sustainable Development Framework might be able to fill some of the gaps revealed by the research, particularly through a more concrete vision of success to guide strategy.

The definition of sustainability, and therefore success, in the SSD framework (described in Chapter 2.2.3) is based on four principles that, if not violated, provide the basic requirements for a sustainable society. The principles are part of an ongoing learning dialogue that builds on a well-structured and science-based worldview. They were originally derived in the 1990's through a scientific, consensus-building process lead by Karl-Henrik Robèrt in Sweden. As Ny (2006, 33) writes: "First, basic principles of socioecological non-sustainability were identified by clustering the myriad of downstream socioecological impacts into a few well-defined upstream mechanisms. Thereafter a "not" was inserted in each to direct focus to the underlying system errors of societal design." A similar consensus building process was convened in the United States in 1997 and its results are manifested in the Wingspread Declaration (Appendix F). The learning dialogue has since continued and the principles were revised to their current form in 2006 (ibid). The framework has been published in many peer-reviewed journals and used to assess how other sustainability tools relate to the framework and to each other (Holmberg et al. 1999; Rowland and Sheldon 1999; Holmberg and Robèrt 2000; Robèrt 2000; Robèrt et al. 2002; Korhonen 2004; MacDonald 2005; Byggeth and Horschorner 2006; Ny et al. 2006). However, the peer review process is an

open one. This provides an opportunity for the framework to continually evolve and be strengthened.

The unique characteristics of these principles are useful for planning. They were designed to be necessary and sufficient to achieve sustainability, general enough to be applied to all activities relevant to sustainability, concrete enough to inspire action and give direction, and mutually exclusive, so as to allow comprehension and make it possible to develop indicators. With that, they can help to elaborate the Brundtland definition into operational principles.

As mentioned above, sharing a vision is especially important for sustainability. However, sharing implies consensus, which is often difficult to achieve in a large group because it is often perceived that everyone must agree on the details. Additionally, committing to one vision, which may not work out in the end, undermines the ability to adapt quickly in a complex system. This is the case when a vision is based on a specific scenario. Establishing a vision of sustainability at a principle level can help overcome this difficulty. It has been shown possible to arrive at generic and scientifically verifiable basic principles. At this most basic level, complexity is at its lowest allowing for simplicity without being "simplistic" or reductionist. Agreement is reached more easily at this level, because of reduced complexity and avoidance of values and ideologies. Creating a vision at a principle level also allows for more flexibility, which is essential when planning for a future that will present unforeseen threats and opportunities. In complex systems, it is not wise to "lock onto the target" too early, because conditions such as cultural and technical developments will keep changing. This way of planning has been compared with the strategic game chess, where it is principles of the goal (principles of checkmate), not details of a specific scenario on the board, which guide the smartest moves (Ny, 2006). In addition, since the principles are non-prescriptive, in that they are phrased as restrictions in order to set boundaries for our actions, they allow for creativity in how to become sustainable (see Chapter 2.2.3). This powerfully combines an end-goal that everyone can work towards with the freedom to develop individual visions and still agree on smart early moves and paths within the basic constraints.

For example, agreeing on the idea of stopping our emissions of greenhouse gases, which is derived from the first principle, is not difficult. How we

achieve this goal, however, is not prescribed by the principle and can be adjusted according to how technology, policy and other factors develop.

As mentioned in Chapter 3.3.2, many authors use the language of principles or criteria. However, none of these possess all of the attributes mentioned above, and therefore do not effectively guide planning for sustainability. The authors argue that since the Sustainability Principles mentioned above have been derived through consensus work since 1988, they provide a well-validated set by which to scrutinize one's own definitions and goals.

4.4 Planning for Sustainability

Following the above discussion, it is not surprising that the survey results clearly indicate that strategy listed by respondents is not guided by vision of success. Without a clear definition of success one cannot create a vision. Therefore, efforts are focused on overcoming barriers to sustainability rather than following a strategy based on an ultimate end goal. Also, when the ultimate goal is defined by a single action, as 33% of survey respondents did, (Chapter 3.4.4), there is no need for an elaborate strategy.

It is the authors' contention that strategy guided by a vision of success or end goal is more inspiring and effective than strategy that simply flows from barriers. Barriers are important to understand at the system level and efforts to overcome them imply vision, albeit short-term. However, a long term goal or vision is what will ultimately inspire participation, commitment, and strategic action. Even of the respondents who listed general, or environmental sustainability, as an end-goal, only 50% and 25%, respectively, stated that they had a strategic plan. Considering their lofty goal, the small number of strategic plans reveals a shortcoming.

4.4.1 Backcasting

An essential aspect of the SSD Framework is backcasting (from the sustainability principles), thereby connecting strategy to success. Backcasting is a fairly new concept in the field of sustainability, and has yet to achieve widespread acknowledgement. Somewhat surprisingly, the authors did find references to this technique within the literature on SHE. However, the results of this project did not reveal an example of a campus sustainability strategy that utilized backcasting. In particular, none of the survey responses made a link between the long-term end goal and the

strategy, which would have indicated backcasting. The fact that the CSM does not have a (shared) vision of success undermines its capability to be strategic in achieving a sustainable society. Therefore, it is the authors' conclusion that the CSM's strategy could be improved by backcasting from a principled vision of success.

Backcasting from principles allows for a long-term view, in which one can strategically align one's actions at the (D) step of the ABCD process according to three prioritization questions 1) does this action fall in line with the principles for sustainability? 2) is it possible to develop this measure further in the direction of sustainability, so that it serves as a flexible platform and does not lead into a blind alley? and 3) what is the return on investment (socially, politically, financially)? This approach could strengthen the efforts of the CSM by reducing the potential for trade-offs and dead-ends. An example of a trade off would be switching light bulbs from inefficient incandescents to more efficient compact fluorescent lamps (CFL's). Although the CFL's conserve energy, they also contain mercury, a heavy metal that persists in the biosphere, violating Sustainability Principles I and III (see Figure 2.4). This example highlights the importance of constraints that can be applied to all options in order to discern one that is truly sustainable from a long-term perspective.[3]

4.4.2 Process Management

When questioned about the usefulness of a rigorous, scientific definition of sustainability, however, a few of our interviewees expressed concern. They felt that it was not an understanding of science that is holding back the sustainability movement. On the contrary, the general science of sustainability, they argued, has been well documented since the 1970's. General consensus is that we understand the flows and cycles of nature, and that human beings are operating outside the bounds of these natural limitations.

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[3] This exact situation was encountered by IKEA, an organization that used backcasting from sustainability principles to work with its supply chain to overcome this trade-off situation. This example is described in *The Natural Step for Business: Wealth, Ecology, and the Evolutionary Corporation* by Brian Nattrass and Mary Altomare (1998 New Society Publishers).

Two interviewees talked about the need to connect with people's hearts and hands, as well as their heads. In other words, extolling the realities of science and the need to follow basic scientific principles may connect with people's intellect, but will not automatically inspire them to act. The HE sector, and the CSM within, are no strangers to science and the development of intellect. However, strengthening the CSM will require participation in the movement (hands) and passion for why the movement is important (heart), thus balancing an active approach with the more difficult abstract aspects such as ethics, morals, and purpose.

With that, the experts, as well as some of the literature, put more of an emphasis on the process of working towards sustainability, than the end goal. Cross campus collaboration is one component of process, that involves bringing together people from every level and sector of campus life to share ideas, build momentum, and create champions who can take sustainability back to their campus sector. This collaboration will ideally include students, alumni, local community members, operations staff, administrative staff, faculty, administration, and anyone else who has a stake in the long-term functioning, reputation, and societal impact of a college or university.

Cross campus collaboration has two primary benefits. One, it allows efforts to be focused not only on achieving goals and objectives, but also on ensuring an inclusive, transparent process. This approach assumes that if you bring together the right people around the right questions with the right information, progress can be made even without a rigid goal in mind. Two, cross campus collaboration ensures that a diversity of campus community members can participate in creating the shared vision of what their institution wants to achieve.

The authors concur with the experts' opinion on the importance of process and that science is not enough. Neither scientific principles nor process management alone will lead to a sustainable society. Collaborative vision creation is essential to SSD because it empowers people, and can help to break down the isolated and fragmented structure of the university. The ABCD tool was created to guide the collaborative processes necessary to plan for and work towards sustainability. Since there is already a focus on process management within the CSM, the authors suggest combining this strength with scientifically-based principles in order to be more effective.

4.5 Towards a Needs-based Vision

The visioning session that the authors conducted with SSD experts highlighted an emphasis on social sustainability. The assessment of the current reality of HE focused on the human health concerns, diversity issues, and exorbitant expense of HE. Their vision for a sustainable sector of HE focused on experimental curriculum, fostering self-understanding, and meeting individual and collective needs. The authors' first vision also focused on social sustainability. The CSM's focus on environmental impacts unfortunately neglects this crucial aspect, even though the HE sector is generally aware and relatively active on aspects of social sustainability. As efforts to stop climate change, and tighten material flows, mature, it is the authors' belief that social sustainability must be addressed more rigorously by the CSM. The authors propose that a human needs-based vision could be one way of connecting to people's hearts, and beginning the necessary discussion on social sustainability.

The authors believe it is possible to build on the widespread acceptance and popularity of the Brundtland definition, while strengthening its ability to inspire efforts, particularly towards social sustainability and meeting human needs. The definition uses the terms "meet" and "needs" twice to describe development for a sustainable society. Higher education has a unique opportunity to go beyond the minimum requirement of not contributing to undermining people's capacity to meet their needs, by actively helping people satisfy their needs. Manfred Max-Neef's Nine Fundamental Human Needs help to bring life to the undefined language of Brundtland. The HE Human Needs Matrix and the needs-based vision for sustainability in HE listed in Chapter 3.7.3 are the authors' attempt at drawing on the popularity of Brundtland. The vision is intended to incite a conversation on social sustainability by creating a more concrete, vivid picture of what sustainability in higher education could look like.

4.6 Validity

The research conducted bears both weaknesses and strengths. The authors employed a conceptual framework focused on strategic planning, which may have unintentionally excluded certain aspects of the CSM not related to planning. However, since the CSM's objective is to move HE towards sustainability, this conceptual lens seems appropriate.

One weakness in the results is that the number of responses diminished from the beginning to the end of the survey. Therefore, the authors found a low response rate on the questions asking participants to rank their efforts relative to the Framework for Strategic Planning (See appendix B questions 14-16). The low response rate, and the resulting high percentage weight on each respondent, are recognized as a limitation to the results. Some participants explicitly expressed confusion in trying to answer these questions and the authors realized that more context and background was needed to clarify the framework.

This was seen as an opportunity for the authors to begin a dialogue with the members of the CSM about the Framework for Strategic Planning. A web blog was created to provide the context and background that was absent from the survey, while also inviting discussion on how the framework may or may not benefit the current efforts of the CSM. Unfortunately the invitation has not resulted in any dialogue, which may be attributed to the lack of time respondents listed as a barrier to their efforts.

The high number of survey respondents, experts interviewed and literature sources analyzed strengthen the validity of the results. In addition, using all of these methods allowed the authors to gain a wide perspective from different angles. Therefore, they are confident in their discussion and in offering a human needs based vision that provides a starting point for conversation around social sustainability in higher education. The authors would like to reiterate that this is not a prescriptive vision, because each institution will have their own unique methods of satisfying the nine needs.

5 Conclusion

The authors would like to acknowledge all of the great work that is currently taking place in the name of campus sustainability. The networking and sharing of ideas, strategies, and successes is especially encouraging and exciting. One illustration of such cooperation is the "American College and University Presidents' Climate Commitment"; over the three month course of researching and writing this report, the number of signatories to the commitment has grown from 29 to 202 institutions of higher education!

This initiative is one example of a strategic effort, and demonstrates the rapid momentum of the sustainability movement within the higher education sector. It also illustrates the importance of higher education as a leverage point in order to move society in a sustainable direction. Higher education can mobilize millions of young people, bring together multiple generations, have wide-reaching impact on societal attitudes, and use its intellectual capacity to conduct research and develop innovation. It is because of the sector's potential for bringing forth a sustainable society that the authors propose the Strategic Sustainable Development Framework to aid the actions of the CSM.

The analysis of the CSM against its own objective(s) revealed a number of inconsistencies that the authors feel could be remedied by incorporating the SSD Framework. The greatest inconsistency, and thus key finding, was the discrepancy between what the movement wants to ultimately achieve (its long-term goal), and how it planned to achieve it. This was demonstrated by the various definitions of sustainability, and lack of agreement on these definitions, within the CSM. If a movement is working to achieve sustainability, it is the authors contention that its strategy should be guided by a shared understanding of what that aim entails.

Our research indicates two things. One, that the Strategic Sustainable Development Framework could aid the movement by providing a concrete definition of success by which strategy can be guided. More specifically, the SSD framework may increase the effectiveness of the CSM by:

- providing a concrete, scientific, principled definition of sustainability which is based on current consensus amongst scientists, but open for evaluation;

- aligning its current actions, which are mostly focused on environmental impacts, with a concrete definition of environmental sustainability (Sustainability Principles I-III).
- backcasting from a principled vision of success that allows for creative freedom within constraints and emphasizes a long-term view that reduces the potential for tradeoffs or dead ends;
- providing the context and opportunity to begin a conversation about understanding social sustainability.

Second, the CSM could continually use the SSD Framework as an analytical tool to assess its progress, as well as a planning *tool* to foster *actions* to be *strategic* to arrive at *success* in the *system.*

The practitioners on the ground consistently cited the Brundtland definition of sustainability; at the same time, they expressed a need for a concrete and sufficient ultimate long-term goal. The authors offer the following suggestion to fill this gap: the CSM could continue utilizing the human needs-based, intergenerational approach of Brundtland in combination with the scientifically rigorous vision of success or ultimate goal offered by the SSD Framework. In addition, the definition could be strengthened by considering more concrete conceptions of human needs, such as the one proposed by Manfred Max-Neef. The combination of rigorous, scientific principles for sustainability and a detailed definition of needs could significantly enhance the overall efforts of the CSM.

During our research, many themes and questions arose that may be worth future investigation:

The American College and University President's Climate Commitment was a significant development during the course of the research. It clearly plays off the growing public awareness around climate change. Therefore we recommend the following questions for further research:

- How can climate change be further developed into a strategic approach to overall sustainability in higher education, without oversimplifying the system?

- The above-mentioned commitment is the most recent declaration to

be ratified by institutions of higher education. A project could compare past commitments (i.e. Talloires Declaration 1990) to the SSD framework for an analysis as to why they have not produced effective results and how future declarations can be more effective?

Other areas of future research include:

- Being that a systems perspective is required for sustainable development, how can higher education begin bridging its research and specialization with an integrated, collective purpose?

- What *processes* could be utilized by individual institutions of higher education, and the CSM in general, to arrive at a shared vision of success? How can process be fully inclusive?

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Associate Director, University Leaders for a Sustainable Future

Cortese, Tony. Interviewed March 30, 2007 at 2 pm (GMT+1)
President, Second Nature

Dautremont-Smith, Julian. Interviewed March 15, 2007 at 5 pm (GMT+1)
Associate Director, Association for the Advancement of Sustainability in Higher Education

Dyer, Georges. Interviewed March 19, 2007 at 5 pm (GMT+1)
Senior Fellow, Second Nature

McKay, Michelle. Interviewed March 19, 2007 at 5 pm (GMT+1)
Senior Fellow, Second Nature

Newman, Julie. Interviewed March 26, 2007 at 5 pm (GMT+1)
Director, Yale Office of Sustainability, Yale University

Orr, David. Interviewed March 26, 2007 at 5 pm (GMT+1)
Paul Sears Distinguished Professor of Environmental Studies and Politics, Chair of the Environmental Studies Program, Oberlin College

Sharp, Leith. Interviewed March 23, 2007 at 5:30 pm (GMT+1)
Director, Harvard Green Campus Initiative, Harvard University

Shriberg, Mike. Interviewed March 26, 2007 at 5 pm (GMT+1)
Director, Environment Michigan

Thomashow, Mitchell. Interviewed April 2, 2007 at 6 pm (GMT+1)
President, Unity College

Tonn, Sheri. Interviewed April 11, 2007 at 5 pm (GMT+1)
Vice President, Finance and Operations, Pacific Lutheran University

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Appendices

Appendix A: A brief history of Higher Education and the development of disciplines

The university is steeped in history and is one of humanities most prized and oldest institutions. Throughout its storied past, academia has held a core purpose, focused on a vision, and demonstrated adaptability to an evolving society.

What we have come to know as the present day western university grew out of the Roman Catholic Church and can be traced back to the Middle Ages. At this time its core and unifying teaching was focused on theology. The other areas of study included law, medicine, grammar, mathematics, music, logic, and astronomy. Early on the university fixed on specialization to inform disciplines. According to M'Gonigle and Starke (2006, 27) "the early university's goal for humankind was to serve God." The Renaissance period saw the university's purpose shift from that of fulfilling God's will, to a focus on serving human progress. Moving from a collective belief and shared purpose of serving God, science provided an opportunity for individuals to make their own meaning and thus build new beliefs based on logic. The University carried over from the church the method of discipline to train and produce a specific character, or pattern of behavior. The disciples were now being trained in logic and reason and moving away from the traditional discipline of fundamental religious principles. A clear distinction was being made between the institutions; the Church focused on the collective belief in a higher power, and the university began to "celebrate the power and intelligence of the rational individual"(M'Gonigle and Starke 2006, 27).

With this shift the university began to serve the nation state and aid governments in providing for the needs of its people. The scientific revolution began to form with the university acting as an incubator for the development of theories and laws that have produced numerous technologies that have led to our human progress and increased quality of life. The western university has produced the likes of Bacon (scientific method), Descartes (geometry, algebra), Galileo (modern physics), and Newton (laws of motion, calculus), as well as the theory for the philosophy of modern economics developed by Smith. The scientific method and

measuring of nature with mathematics provided us with new technologies allowing greater discovery, trade of commerce, and economic expansion.

As the colonization of North America took shape, the church still had influence within higher education, but with the further development of the nation state, higher education had a greater opportunity to develop independent of the church. The Morril Land Grant Act was created for the purpose of inciting economic development in the Western States. It fully established the mission of the modern university to serve the state, region, and nation of which it was a part of, by preparing individuals for employment in society. Section 4 (U.S. Statutes at Large 12 (1862): 503) of the act reads:

> "each State which may take and claim the benefits of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts, in such manner as the legislatures of the State may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life..."

Throughout all these changes, the disciplinary system remained. However, today it might provide more of a hindrance than an asset. Marcus Ford, a humanities professor at Northern Arizona State University, suggests that academic "discipline" has made understanding complexity more difficult. Academia builds knowledge by deepening and dividing research into more and more specialized fields of study. "Because academic disciplines function as independent units, free from the findings and operative assumptions of other disciplines and free from the facts of the real world, their "truths" cannot be contradicted or modified by the truths uncovered by other academic disciplines or by the events of the world itself" (Ford 2002, 40). The quest for self- knowledge or individual truth creates a reinforcing feedback loop as we continue to study and break apart the inner workings of complexity further and further. In other words, this "structure has fed upon expertise and that expertise upon complexity" (M'Gonigle and Starke 2006, 31). Within academia the quest for individual knowledge has rendered universal understanding infeasible.

Appendix B: Survey Questions and Quantitative Results

The questions followed the general strategic planning framework, but were structured so that respondents not familiar with it could easily navigate.

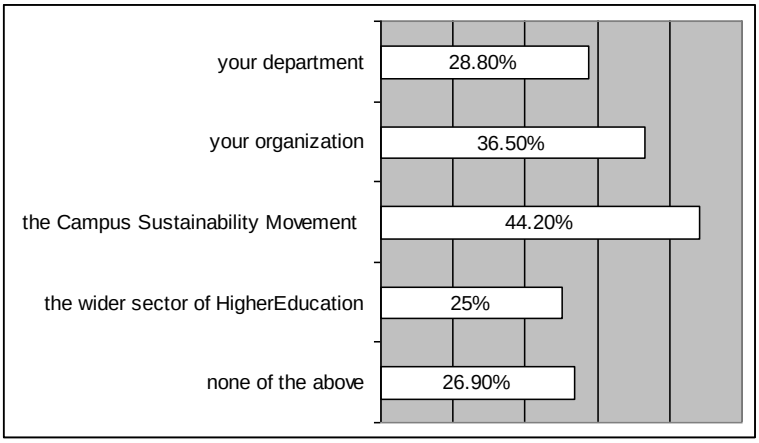
1. What organization (i.e. non-profit, institution, etc) are you affiliated with and what is your role within that organization (only intended to guide further investigation and frame data, not to identify individuals)?

Total Respondents 84
(skipped this question) 0

2. Sustainability can be defined in many ways. What definition of sustainability do you use?

Total Respondents 54
(skipped this question) 30

3. Is this definition agreed upon throughout (check all that apply):



	Response Total
your department	15
your organization	19
the Campus Sustainability Movement	23
the wider sector of HigherEducation	13
none of the above	14

Total Respondents 52
(skipped this question) 32

4. What is the biggest (1) challenge to your organization's sustainability efforts?

Total Respondents 55
(skipped this question) 29

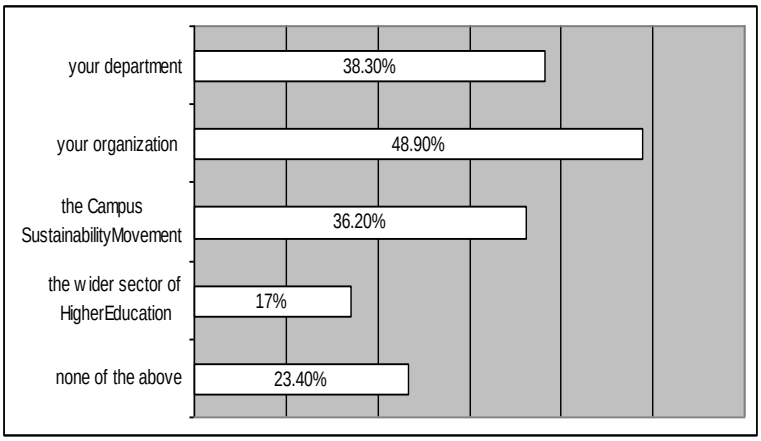
5. How are you addressing this challenge?

Total Respondents 53
(skipped this question) 31

6. What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?

Total Respondents 49
(skipped this question) 35

7. Is this ultimate long-term goal(s) agreed upon throughout (check all that apply)



	Response Total
your department	18
your organization	23
the Campus SustainabilityMovement	17
the wider sector of HigherEducation	8
none of the above	11

Total Respondents 47
(skipped this question) 37

8. What is the strategy/plan of action for achieving this goal(s)?

Total Respondents 48
(skipped this question) 36

9. Please list THREE (3) specific actions your organization is currently taking towards sustainability and your rationale for choosing these actions:

Total Respondents 44
(skipped this question) 40

10. Briefly describe ONE (1) tool you have found most effective in supporting your actions towards sustainability?

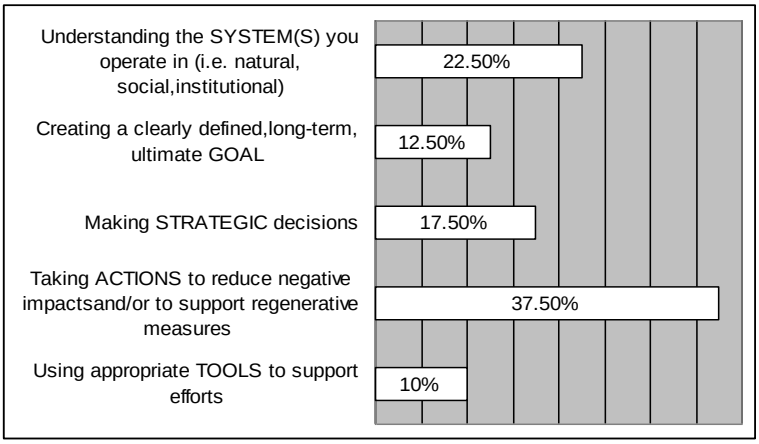
Total Respondents 44
(skipped this question) 40

11. Please rank the focus of your organization's efforts relative to the following five (5) categories (1 being most focused, 5 being least focused; each number can only be used once)

	1	2	3	4	5	Response Average
Using appropriate TOOLS to support efforts	8% (3)	**30% (11)**	14% (5)	22% (8)	27% (10)	3.3
Taking ACTIONS to reduce negative impactsand/or to support regenerative measures	**31% (12)**	18% (7)	10% (4)	26% (10)	15% (6)	2.77
Making STRATEGIC decisions	16% (6)	30% (11)	**41% (15)**	11% (4)	3% (1)	2.54
Creating a clearly defined,long-term, ultimate GOAL	18% (7)	16% (6)	16% (6)	24% (9)	**26% (10)**	3.24
Understanding the SYSTEM(S) you operate in (i.e. natural, social,institutional)	22% (8)	11% (4)	**25% (9)**	19% (7)	22% (8)	3.08

Total Respondents 41
(skipped this question) 43

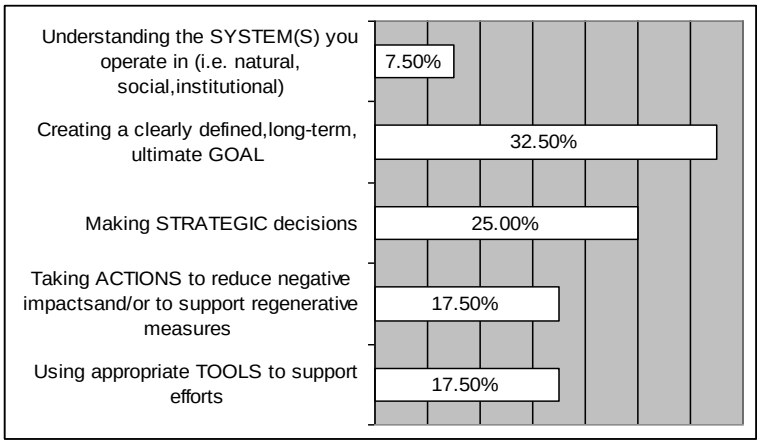
12. In which of the following five (5) categories do you feel your organization's efforts are most effective? (choose ONE):



Response Total
9
5
7
15
4

Total Respondents 40
(skipped this question) 44

13. In which of the following five (5) categories do you feel your organization needs the most support? (choose ONE)



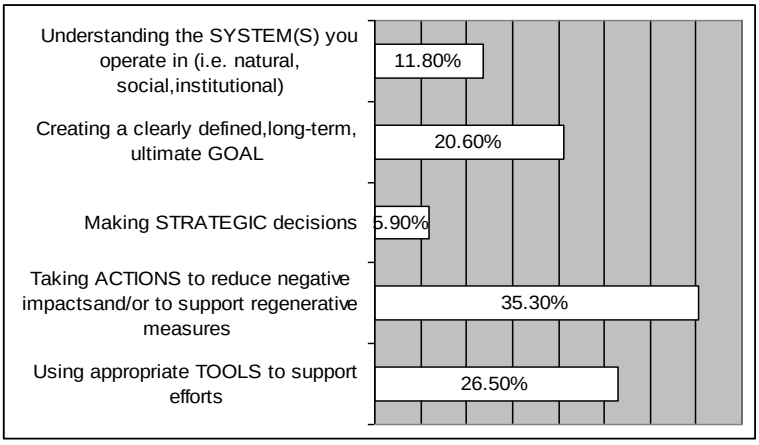
Total Respondents 40
(skipped this question) 44

14. Please rank what you feel the focus of the CSM's efforts is relative to the following five (5)categories (1 being most focused, 5 being least focused; each number can only be used once)

	1	2	3	4	5	Response Average
Using appropriate TOOLS to support efforts	16% (5)	**47% (15)**	6% (2)	12% (4)	19% (6)	2.72
Taking ACTIONS to reduce negative impactsand/or to support regenerative measures	**39% (12)**	26% (8)	10% (3)	19% (6)	6% (2)	2.29
Making STRATEGIC decisions	6% (2)	19% (6)	**47% (15)**	22% (7)	6% (2)	3.03
Creating a clearly defined,long-term, ultimate GOAL	19% (6)	6% (2)	16% (5)	**31% (10)**	28% (9)	3.44
Understanding the SYSTEM(S) you operate in (i.e. natural, social,institutional)	23% (7)	0% (0)	23% (7)	16% (5)	**39% (12)**	3.48

Total Respondents 33
(skipped this question) 51

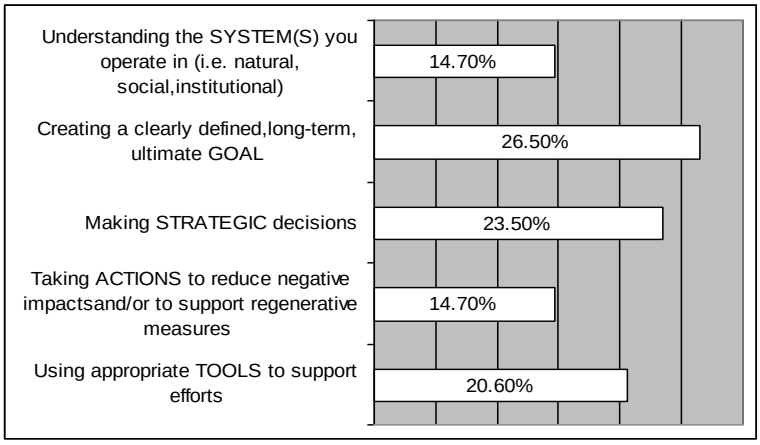
15. In which of the following five (5) categories do you feel the CSM's efforts are most effective?(choose ONE)



	Response Total
Understanding the SYSTEM(S) you operate in (i.e. natural, social,institutional)	4
Creating a clearly defined,long-term, ultimate GOAL	7
Making STRATEGIC decisions	2
Taking ACTIONS to reduce negative impactsand/or to support regenerative measures	12
Using appropriate TOOLS to support efforts	9

Total Respondents 34
(skipped this question) 50

16. In which of the following five (5) categories do you feel the CSM needs the most support?(choose ONE)



	Response Total
Understanding the SYSTEM(S) you operate in (i.e. natural, social,institutional)	5
Creating a clearly defined,long-term, ultimate GOAL	9
Making STRATEGIC decisions	8
Taking ACTIONS to reduce negative impactsand/or to support regenerative measures	5
Using appropriate TOOLS to support efforts	7

Total Respondents 34
(skipped this question) 50

17. If you are willing to be interviewed and provide us with more in-depth information, please leave your name and e-mail address here:

Total Respondents 26
(skipped this question) 58

Appendix C: Grouped Results

The following are questions that the authors grouped into categories for the presentation of information:

Q1: Affiliation

The 55 individuals (or individuals on behalf of groups) listed their affiliations as follows:

89 % (49) with a College or University:

Within the College or University category 11 individuals gave no specification, 10 identified as faculty, 3 as students, 4 as administrators, and 21 as staff members, with 9 of the latter specifically working on sustainability initiatives only, ie. sustainability coordinators.[10]

7 % (4) with Non-profit

2 % (1) with a Boarding school

2 % (1) was Unclear

Q9: Actions and number of times listed

Recycling 13
Energy efficiency/savings 12
Building LEED buildings 10
Educational Activities 9
Academic activities – research, offer courses 8
Green Power 6
Carbon Neutrality 5
Marketing 5
Water - Stormwater management, water efficiency 4
Networking 4
Local Food 3

[10] Sustainability Managers were automatically counted as staff; all employees were counted as staff unless they specifically stated that they were administrators

Plan/Annual report/ Indicators 3
Committee/ Staff development 2
Transport - Bike Share/ Ride share 2
Assessment 2
Environemental Fee 2
Purchasing environmentally friendly 2
Composting 2
Signing commitments 2
Working with authorities 1
Include in mission 1
Energy policy 1
Compassionate Communication 1

Q10: Tools and number of times listed

Networking/Asking for advice/Bringing people together 6
Involving Students 5
LEED 3
Listerservs 3
Clean Air, Cool Planet 2
AASHE 2
Involving important people 2
Establishing emotional connection (invite victim) 1
Provide central place to keep issues visible 1
Media 1
Writing proposal for full-time position 1
Audits 1
Reflection and quiet time 1
Commissioning (buildings) 1
Incorporate sustainability in strategic plan 1
Good planning 1
Regular meetings 1
Mobilizing support from all stakeholders 1
Recognizing achievements 1
Cost-Benefit analysis 1
Recycling 1
Wind-turbine 1
Website 1
Sust. Coordinator programs 1

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Time	Working long hours	Global sustainability	Help higher education to educate about sustainability and model sustainability in its operations.
My organization is completely alien to this idea. Of the more than 700 professors, only 5 participated in an Energy Awareness movement I began two years ago. They completed a new building this year, and nothing sustainable was done with it. Really ashamed of them, and wanting to move on!	As i mentioned earllier I have created an Energy awareness movement, and teach about sustainable and environmental issues within my geography classes. I have also written the first sustainable/environmental regionalgeography of US/Canada.	I would like to be at a school that recognizes the importance og sustainabiity (or that it even exists!) and then continue in my writing and movie making.	As you see by checking 'none of the above' in the preceding boxes, I am alone in my department, and with only a few lost souls at my school. I am completing the book, and making movies to bring these issues to light, and then hope upon hope to move to a more eco oriented university.
Lack of commitment from senior administrators of the University.	By encouraging discussion about sustainability with top leadership from every possible angle: from students, faculty, staff, and external stakeholder groups.	To get an institutional commitment to sustainability. We would like sustainability to be part of our policy, not just a guideline or expectation.	See #5.
staffing & organization	cooperative relationships between faculty, staff, and administration to advance sustainabilty intiatives		
Old, stiff, unwilling leaders in state institutions -- they don't want to change, except perhaps for energy efficiency, but only because it will save them money	Trying to make sustainability sound more appealing to them, reminding them that it's US -- the youth of today -- that will be stuck with THEIR problems, and out of intergenerational fairness, they should cooperate with us to fix it NOW	100% clean energy at all universities in Tennessee	School-by-school student referenda to raise tuition to pay for sustainability projects, until we can eventually implement a system-wide policy
Coordination of effort Getting administration to see beyond short terms costs and begin planning strategically for long-term Slowness of progress in sustainability initiative	Formed a faculty group incorporate sust teaching into courses oferring credit-based projects for undergrads	Convince administration that we need a campus sustianability office and a coordinator Make sustainability 'second nature' among colleagues, students	Show how our faculty group can model a campus sustainability office Provide an idea of how a sustainability office might be organized Increase the visibility of sustainability on campus Show that there is a broad base of faculty who care about this idea

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Misunderstanding about what sustainability means - that it includes the social elements as well as the ecological, and that it is not only important to address sustainability on an operational level at universities, but also to teach sustainability and incorporate it into research	Diligent educational efforts, outreach to decision-makers and all stakeholders on campuses, 100s of conversations.	Integrate sustainability into higher education, to the extent that it is the driving motivation behind what is taught, learned, and researched at colleges and universities. Promote a transdisciplinary approach to higher education.	In order to help higher education move from simple good intentions to strategic transformative action, Second Nature focuses its energy on initiating, advising, and supporting select high-leverage national and regional education for sustainability (EFS) activities for which there is a clear need and committed support.
Active fundraising for sustainability initiatives cannot be done in my division, on an official level, until it sustainability is handed down as an academic (or operations) priority from the president and the provost.	The issues are being worked on at higher levels- i.e. through the president's agreeing to sign the Climate Commitment. At my level, I meet regularly with the campus sustainability coordinator and work to keep my colleagues informed of his work. I also scan the press for relevant articles such as the recent announcement that a bank was offering donations to non-profits working on sustainability issues. I sent the article to our corporate relations rep and the sustainability coordinator. If enough people keep hearing from enough directions about sustainability, a shift will occur. The other tactic we are taking is to put together an alumni for sustainability network. This will put additional pressure on the powers that be.	To create a position/job for fundraising for sustainability research, education and operations in the university. Funding would strengthen these efforts and hopefully create new opportunities.	Same as the other plan. Additionally to continue to research things such as the requirements of such a position, how the fundraising cycle would look, who would account for the $ raised, how would stewardship be taken care of.
corporate structure	We are trying to work around it.	Implementation of as many sustaibable systems as possible.	We have not developed a planning strategy.
Student apathy and communication to a variety of groups on campus, and FUNDING for initiatives!	Looking for grants, always increasing our means of communication, and attempting to provide personal and global motivation in each program.		

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
A) continuity (among students involved) B) coordination and staff time (among staff/admin)	A) developing student training programs and hiring staff for student orgs B) campus sustainability assessment to figure out where we are; development of a sustainability committee and discussion of creating staff positions	incorporate sustainability into all aspects of campus life and operations	Are you serious? How many pages do you want? It includes education, fundraising, developing infrastructure, assessing and setting goals, planning and implementing actions...
Our campus has a 'country club' culture with a large population of 'entitled' staff members who are resistent to change. The faculty are highly receptive to these efforts but our biggest challenge is getting past the 20+ year staff members and the 'this is the way we've always done it' attitude.	We are forging forward as a department regardless of there thoughts on this topic.	to do anything and everything within our resources.	Developed a sustainability team and are currently developing a 5 year plan.
Upper administration buy-in	Slowly... Working on the PR aspect (upper administration likes the fact that we win awards) along with cost effectiveness	This isn't something I've thought about too much. Right now we're working on 'low hanging fruit.' Eventually I would like to see us go carbon neutral.	The Chancellor has recently signed the Presidents Climate Committment. I'm hoping that in working with AASHE on the implementation of this document we can work towards carbon neutrality
Funding. Widespread engaged support and activism.	We are applying for funding from the outside for various projects. We are doing everything we can to raise the profile of sustainability issues and move students to commit to action which matches their values.	Critical thinking skills as applied to sustainability.	Stimulate dialogue, discussion and reflection around sustainability issues.
Communication between the myriad of sustainability groups, educating the various audiences: faculty (outside of natural science and architecture), staff and students.	We developed a presentation for staff to communicate what is already available on campus to participate in. Student body has a Campus Environmental Centre which is very active in many roles.	Ccampus wide sustainability in everything we do. Green building (already has taken hold), food choices on campus, energy efficiency, resource conservation, waste management	There is none right now - no coordination of efforts, alas.

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Overcoming preception of added cost.	Education, specifically getting people thinking of life cycle costs.	Create the most sustainable university in the world. Be carbon neutral. Send out fully participating ecological citezens	Education. Cajolery. Humor. Relentless pursuit, endlessly.
Limited and 'interestingly appropriated' budgets.	Expanding budgets in worthy places. Making the point that many aspects of sustainability reduce operating costs. Expanding policies and requirements to mandate a level of conservation. Looking for funding in other places (grants, rebates, awards, donations, etc).	Reduce global warming emissions. Long term to zero, shorter term reductions. Reduce and recycle nearly all waste.	Green building program/implementation, utilizing LEED for new construction and existing buildings, countless energy conservation projects, sustainability education, revamping recycling program on a per building basis.
Getting stakeholders to buy in and invest	wth frequent contact and invitation to board and admin to events/meetings centered on the topic. Personally I am devoting 2 of my courses to having students complete campus and community audits of sustainability the outcome of which is a campus wide presentation for which the entire college and community members are invited	Social, economic and environmental manifestations that reflect our college's commitment to sustainability	Getting the sustainablity language folded into our 15 year strategic plan (is happening) and mission statement. Have sust. reflected in our liberal arts requirements courses
Top down leadership.	Bottom up leadership.	Systems, processes and policies that will make sustainability happen and are not dependent upon passionate people.	Implementing an environmental purchasing policy, a waste prevention and recycling policy, having the president sign an environmental declaration, documenting processes and posting them on line; for capital construction - writing design standards and specifications that reflect sustainable building practices.
bottom lime - financial payback; narrowmindedness; shortsightedness	persistence, education.	buy-in/ mandate from board of trustees.	education
Resources - we have a small team and small budget.	By gradually adding student staff and pleading for support for efforts.	a sustainable campus; - 60% diversion from landfill; - 25% reduction in greenhouse gases.	#NAME?

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
cheap energy available in the south	working to expand green energy alternatives	culture change	We have an ambitious reduction goal, committees at various levels, individual efforts and group efforts within multiple sectors of the U, and are starting to coordinate all these. Also, we seek to inform about climate change,health consequences of energy use, etc. as well as build engagement with the natural world to shift identity and increase the joyful side of cultural change toward sustainability
Understanding of benefits	Educating administrators and staff.	Resource efficiency; zero net GHG emissions	Lots of actions. Too much to get into here.
Changing attitudes and old ways of doing business.	By showing that a new approach, based on our definition of sustainability, is a better long-term approach from a business perspective.	To reduce our non-renewable energy consumption to zero, our water consumption consistent with annual recharge levels, and to improve the natural beauty of the campus so that is reflects our values.	Agressively adopt energy efficiency measures, install renewable resources on campus, explore the use of new energy and water saving technologies, remove impervious surfaces, reduce and elliminate, where possible, the use of chemicals for cleaning or horticulture, and increase the percentage of tree canapy coverage.
Integrating multiple efforts across departments	Getting top level administration buy-in (after all the student and staff initiatives)	Natural Step guidelines for sustainability	Broad University policy backing, merging academics and operations
everyone agrees it's a good idea but no one wants to actually write the checks to pay for initiatives. Also, most people think 'sustainability' is simply some sort of 'environmentalism on steroids' and never ever factor in social issues nor local economic development, it is just focused on something like 'recycling' or 'energy conservation' which is passed off as 'sustaiinability'	constantly trying to 'sell'	always trying to hit the 'triple bottom line' of social, economic and environmental.	everyone else thinks we should just focus on energy conservation, recycling, green architecture and stop worrying about not hitting the other 'sustainability' issues

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
lack of student involvement and demand for sustainable actions	trying to get students involved in the campus sustainability committee; next year's campus theme is 'Global Challenges and Personal Responsibilities: Environmental Sustainability' -- we hope that this will generate more student involvement and concern	to institutionalize environmentally sustainable practices throughout the universities operations	(this is MY strategy, not that of the university) incoporation of sustainability goals in our university's strategic plan; signing on to various sustainability pledges (Talloires, state pledges created by the Lt. Governor's office); getting the campus-wide theme devoted to sustainability one year; creating a permanent sustainability committee; joining AASHE; (all the preceding have occurred - the following have not) hiring a sustainability coordinator; signing on to the College & University President's Climate Pledge; creating a Midwest Center for Sustainability demonstration facility; creating a sustainability concentration within the MBA program; creating several general education courses that will introduce students to the environmental studies program; turning the current environmental studies minor into a major and then creating a master's degree program;
Taking the time necessary to develop an effective, sustainable plan.	Training staff and educating clients; demonstrating to the administration that good planning is preferred over poor planning.	Help the campus survive in an era of shrinking resources (all - money, energy, water, space, etc.)	Improved facilities through improved planning and thinking about what is needed to address academic priorities and goals.
awareness of higher administration of relevance of sustainability to institutional missions	working to increase awareness and working with higher university-wide efforts		
Developing a plan for benchmarking, incorporating academics, laying out specific steps for how to proceed.	Had an energy audit conducted. Meeting with various consulting companies, having them put together proposals, discussing as part of our Sustainability Task Force meetings.	Reduce waste (i.e. cut unecessary costs) and improve environmental practices, while involving the University community in this learning experience.	Established Sutainability Task Force of students, faculty, and staff. Working on developing strategy.

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Dollars to go green	Trying to raise funds from Alumni, convince administration to spend the extra dollars.		
Initiating a University-wide Sustainability Initiative that encompasses all aspects of campus - Education, Research, Student Organizations, and Campus Operations	President Michael Crow launched the initiative May 8, inviting deans, directors and faculty members from all campuses to a presentation outlining his his vision for an integrated, cohesive program with an emphasis on interdisciplinary education and research programs. Attendees were encouraged to rethink their department's role in the university structure and to find ways to incorporate sustainability-oriented, interdisciplinary initiatives into their curriculum. He asked those attending to take an active role in developing programs within their departments. He then invited them back for a retreat Sept. 13 to present an overview of their units 1) ongoing sustainability-related programs; 2) plans and aspirations in sustainability over the next 5 years; and 3) ways their units will link with others to accomplish their goals. In addition, ASU has organized two boards - The ASU Sustainability Leadership Council (ASLC), compromised of ASU deans, directors, and key staff; and the Global Institute of Sustainability (GIOS) International Board of Trustees, compromised of leading international corporate, NGO, and community leaders and co-chaired by Julie Wrigley, philanthropist, member of the ASU Foundation board of directors, and co-director of the Foundation's Women and Philanthropy program and Rob Walton, Chairman, Wal-Mart. These boards are responsible for advising and overseeing the University-wide Sustainability Initiative.		

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Time (all the members of the task force are volunteers) Resources (we sponsor a used paperback book sale each semester to gain funds to support our projects--but we have more ideas that money or people Student commitment (we work in a major urban area that has no recycling and no environmental education in K-12; 'throwing away' is the norm	Persistent educational effort about what we can recycle on campus Sending students to the Bioneers conference	We haven't articulated this.	We haven't articulated a long term plan
budget for staff time	We have recommended a sustainability coordinator, but the administration has yet to commit funds.	We would like our college to be climate neutral and minimize our environmental impact. We would also like to educate our students to have the ability to understand sustainability and use the concepts to improve the environment in their lifetime.	Education through our environmental studies program and working with our facilties personnell
Lack of consciousness and concern	Those of us who are concerned have formed an Environmental Task Force. We provide education, do projects, have special programs, etc.	Reduced energy use, increased use of alternative energy sources, increased recycling.	Education, projects and special programs. Inviting participation of college administrators and maintenance people.
Our biggest problem is convincing authorities to use money to promote sustainability efforts.	We are addressing this challenge by researching alternative methods of energy and hopefully start to write up a plan.	Our ultimate goal is for our college to use wind energy.	Our plan is to convince the president of our college how beneficial wind energy will be in the long run.
Brand new at my institution, efforts uncoordinated and not well communicated, no critical mass among students or faculty, both groups are cynical	WE have created a focus the nation committee, a sustainability planning committee, and a group organizing a showing of An Inconvenient Truth during Earth Week; next year likely to have an 'environment' theme in campus activities and events.	Carbon neutrality for the institution; ecological literacy for the graduates; integration of social justice thinking in 'environmental' initiatives	See #5

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Getting the administration to make a commitment to pursue sustainable practices and to have a vision for the future, i.e., lifecycle costs, etc.	Educating the students about sustainability and doing project-based service-learning for the University. Also, by being a member of various University committees that oversee design and construction of University buildings and landscape.	Having informed students who graduate and practice sustainability in all that they do. Creating a University that is resource-efficient in all its practices. Creating a learning environment where the buildings and landscapes are healthy and inform students about healthful design and construction practices.	Having all courses emphasize sustainability Getting students, faculty, administration, staff, and surrounding community to interact to create a sustainability environment.
Competing for time Communication Funding	Raising funds for full time staff	Change student and insitution behavior toward resource use	Multiple opportunities on the facilities management and teaching staff.
Funding	Awareness-building Persistence	A Green campus in facilities and also in curriculum	New buildings will be LEED-certified; Existing buildings will be brought to LEED specifications as closely as possible; Sustainability will be incorporated into as many courses as possible
Organizational buy-in, leadership, and strategic direction		Principles of sustainability integrated into operations and academics	In development
Acquiring sufficient funding the pursuit of research opportunities and project implementation	Collaboration with faculty, staff, and students	Reduce our environmental impact and lead our campus towards a more economically and socially responsible future.	Cross curricular research, student involvement, and a campus-wide network to discuss issues important to our campus spread information about sustainable practices.
changing culture of 50,000 people	various programs, see website, www.sustain.ubc.ca	culture change	get support from top and bottom, move by small steps
Lack of coordination and oversight.	I've taken on the de facto role of sustainability coordinator, since there is no one else doing it.	Analyze the campus' ecological footprint and implement more sustainable alternatives throughout our operations and curriculum	Integrate considerations of sustainability into our new strategic plan
lack of consistent strong student leadership	trying to train underclassmen to become leaders	educating student body, making our university very very sustainable	none

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
getting the university administration that is in financial trouble to realize sustainable effort will not in the end cost more money. Related to that are the challenges associated with defining what effort really is more sustainable because some programs turn out to be less sustainable.	Research into alternative fuels and education outreach and curricular change.	SFI wants to discover best practices that can be used throughout the globe to achieve a resource sustainable earth. Our goal is also to recover water sources and distribute them fairly and to disperse educated graduates throughout the country adn globe.	We are currently researching biomass, solar energy, fuel cells, water issues, all from a multidisciplinary approach. Our IGERT program partners our MTU students with those from a Historicaly Black University (Southern U at Baton Roughe) so they can leam from different perspectives in order to tackle environmental issues from engineering and social science approaches. We are only just embarking on a program to make the campus more sustainable as well.
Getting established, since it is a relatively new program (my start date, and hence that of the program, was 10/09/06).	Working very hard (hence submitting this survey from my desk at work after 7:30 on a Friday evening).	Still defining. But contributing to world peace and the health of the planet (people, plants, animals, ecosystems, and more included) is my personal motivation that I hope to incorporate more formally into the ultiamte long-term goals of the program. My answer to #7: 'I don't know.'	I can share my current 6-month plan if that would be useful. In the short run, I am exploring my ecosystem and networking like crazy, both with the University and the greater Chico community and beyond. I am also starting a bunch of feel-good projects (mostly educational) and getting the foundation of the program established.
Outreaching to the community and going through institutional rules on campus.	We outreach throughout campus through permanent information boards and the media. We also use our Sustainability Coordinator to bypass institutional rules or drawbacks.	We are trying to make Cornell's environmental impact the lowest it can be.	Addressing sustainability throughout the campus by including it in the campus' Master Plan.
Developing a collective understanding of how the decisions we make and actions we take are affecting the climate. We fundamentally have to change the way we think and act to make significant changes in our consumption of resources and energy and hence the production of greenhouse gases.	We have adopted greenhouse gas emissions goals and are beginning to put plans in place to raise awareness, change our building practises and improve our built environment.	Teach our students to live sustainably and to take an active role in improving our environment in their professional and personal lives after they leave here. Significantly reduce our greenhouse gas emissions on campus.	

What is the biggest (1) challenge to your organization's sustainability efforts?	How are you addressing this challenge?	What is the ultimate long-term goal(s) of your efforts (what are you trying to achieve)?	What is the strategy/plan of action for achieving this goal(s)?
Funding Converting existing buildings to LEED certification standards Establishing 'green' standards	Funding - sustainability has become a goal for the campus Conversion - Working with USGBC on their pilot program for existing buildings Standards - reviewing all standards and products for green methods	Sustainability for all new projects Conversion of existing buildings to be as susstainable as possible	looking at every project from the LEED perspective, whether or not we pursue certification
competing with other priorities (leading research organization, funding goals etc)	Embedding sustainability in the university's vision document, integrating it into all areas of the university	smaller ecological footprint	working on goal to become climate neutral, developing plans to reduce waste and to green the supply chain, making the university a more compassionate place
getting people, especially students involved	reaching out, finding out how other universities are doing it, having events,	adoption of sustainable practices and a way to measure progress	administration support identify and increase curriculum high performance buildings
Currently, financial support for sustainability activities (conference travel, campus speakers, campus events, staff support, publications) is diverted primarily from one divisional area, that of the most visible champion. While others are making sustainable decisions, there isn't the flow of resource support from those areas to help further support the effort.	We're having active discussions with those other areas about pooling resources, diverting some set amounts (i.e. savings derived from energy and resource management activities the sustainability initiative has actively helped to encourage), but this is a difficult 'sell' as there are already myriad demands on scarce resources.	Creating a 'living learning' environment that models and reinforces for our campus community the principles and philosophy of sustainable development that we teach in our classrooms and communicate through our educational programming and outreach efforts. Create a model for other communities to replicate. Support and encourage sustainable development activity within our local region, and increase collaboration with partners from other educational institutions and other sectors in the community.	Support and encourage campus sustainability and develop strong linkages between academics and operations, and provide numerous educational opportunities for our campus community. Communicate actively within our campus community about opportunities and promote successful case studies within and outside the institution. Invite the local community to participate in educational activities and actively support regional sustainable development efforts locally.
Coordinating efforts Gathering baseline data			

Appendix E: SSD Expert Visioning Results

B- Current Reality	C – Vision
Social • Social segregation (e.g. rich males in engineering) • Encourages competitiveness • Cultural expectations of HE reflect societal tendencies of individualism and elitism • Doesn't facilitate personal development anymore (prescribed, external point of reference) • Often about individual, rather than communal gain	**Social** • Free • Available to all people who want it, no matter where they live on the planet • Male/female balance • Bridges gaps between haves and have-nots • Intercultural/intergenerational/interdisciplinary/interlingual • Meet needs of individuals within the institution • HE teaches individuals how to meet the needs of society • Teaches value of everyone, even those who don't have HE degree • Foster self understanding and self confidence (as opposed to arrogance)
Curriculum • Drillholes • Not holistic • Non-interactive (theoretical) • One way communication • Removed from real world experience • No magic/mystery/fun	**Curriculum** • Bring out the magic • Engender creativity/fun • Experimental • People are stimulated to participate by the fun and magic (and grandma is there!) • Introducing subjects holistically, cross faculty • Sustainability literacy requirements • Cooperative learning (internships, service learning, break from school to work) • Ensure people understand the connection between the biosphere and society
Operations • Building design not good for	**Operations** • Access to nature

creativity • Not much outside /Learning about nature while inside • Lack of spaces for interaction **Financial** • Prohibitive costs create exclusion, less variety of attendees • Funding based and focused on technical sciences • Growing reliance on corporate funding • Money and power have become the ends **Other** • University reflective of status quo - self perpetuating • There is a sense of doing something good • Bad food=bad energy=bad learning	• Buildings of light (no artificial), comfort and stimulation for growth, reflection, collective experience • Accessible public transport • Life-cycle assessment **Financial** • No funding from biased sources • Sustainable investing of univ. wealth • US HE wealth invested in ed. institutions around the world • One option among many for people to contribute to society **Other** • Promote individual health through good food • Learning organizations

Appendix F: Wingspread Declaration

U.S. Scientists Sign On to Principles

Twenty scientists from the United States and Canada gathered at Wingspread recently to review the science behind The Natural Step. Meeting with Karl-Henrik Robèrt, founder of The Natural Step in Sweden, Paul Hawken, chairman, and Molly Harriss Olson, president, of The Natural Step, U.S.A., the scientists signed the following declaration:

Paul Hawken, chairman of The Natural Step, U.S.A., left, in conversation with David Suzuki, professor of biology at the Sustainable Development Research Institute at The David Suzuki Foundation in Vancouver, Canada.

"We believe that without solutions to the problems addressed by The Natural Step, both human civilization and biological diversity are seriously threatened. The development of appropriate solutions to these problems requires the support and contributions of the global community of scientists and engineers.

Mark Everard, director of science for The Natural Step, United Kingdom, shares the ideas of the Four System Conditions with scientists from across North America who gathered at Wingspread recently.

"We further believe that the application of The Natural Step's Four System Conditions is a valid approach for addressing these problems, and is especially useful for organizing information regarding sustainability. To be effective the Conditions must also be augmented by the evaluation of the environmental impacts of specific substances and practices.

"We urge The Natural Step to continue to engage scientists and engineers fully in the application, testing, and improvement of the System Conditions and all other aspects of it: program."

Reprinted from the Spring 1997 issue of the *Wingspread Journal*, The Johnson Foundation, Inc.

Appendix G: Statement of Contribution

This thesis research was undertaken in a collaborative fashion:

Topic Selection: Our research was enriched by each member's prior experiences with sustainability in higher education. Collaboration was supported by both a shared purpose and shared expectations, with an overarching commitment to the process of learning.

Research Design and Methodology: The literature review was broken into themes, with each member conducting their own review. The creation of the survey developed into an arduous process of ensuring clear and concise language, to which all members equally contributed. Interviews were also conducted in a shared manner.

Results, Discussion and Conclusion: The collected data was divided into three components and rotated between all members. Merlina took the lead in organizing the results. The discussion points were initially developed by Michael, followed by long hours with three brains focused on one computer. Stephen drafted the conclusion, after which the final document editing was performed by all members.

The Big Picture: As he developed the introduction and background information, Stephen provided constant reminders on the importance of a historical context and upholding a whole systems perspective.

Logical Flow: Merlina and Michael had a knack for assuring logical consistency in the writing.

The Minutia: M + M took pleasure in formatting and making the paper a visual pleasure to peruse. Michael, especially enjoyed playing with language to find "just the right wording".

Despite the extra time and effort required, we truly believe the group process was an overwhelmingly fun, fruitful, and learningful endeavor.

Michael Henson
Merlina Missimer
Stephen Muzzy
Karlskrona Sweden May 2007