Green campuses: the road from little victories to systemic transformation

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Abstract *This article contributes to an emerging dialogue about how we can accelerate progress towards institutionalizing a commitment to campus environmental sustainability throughout the university sector. It seeks to utilize progress made to date, in the field of "greening" universities, looking deeply into these experiences, to learn from them and to start revealing how they may inform us to move into the realm of widespread institutional transformation. It presents a range of insights, lessons learned and preferred approaches emerging from seven years of implementing campus environmental programs in universities both in Australia and the USA. Many of these ideas have been further informed during a Churchill Fellowship, spent investigating campus environment initiatives in over 30 universities in Europe and the USA. To assist in giving further weight to the material presented, it draws upon the work of a various authors of organizational change, leadership and management publications. The subject-matter is wide-ranging as it is intended as a starting-point for the reader to pick and choose ideas that may warrant further investigation in their own university context. Even though many of the ideas presented need further exploration and development, in their current state they may prove of some value to the reader as a catalyst for a different level of institutional analysis.*

Introduction

The purpose of this paper is to contribute to an emerging dialogue about how we can accelerate progress towards institutionalizing a commitment to campus environmental sustainability throughout the university sector. This paper seeks to utilize progress made to date, in the field of "greening" universities, looking deeply into these experiences, to learn from them and to start revealing how they may inform us to move into the realm of wide-spread institutional transformation.

A range of insights, lessons learnt and preferred approaches is presented, emerging from seven years of implementing campus environmental programs in universities both in Australia and the USA. Many of these ideas have been further informed during a Churchill Fellowship, spent investigating campus environment initiatives in over 30 universities in Europe and the USA. To assist in giving further weight to the material presented, this paper draws upon the work of a various authors of organizational change, leadership and management publications.

This paper is wide ranging in its subject matter as it is intended as a starting point for the reader to pick and choose ideas that may warrant further investigation in their own university context. Even though many of the ideas presented need further exploration and development, in their current state they

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The environmental imperative

The force of change now acting upon the university sector, with increasing pressure, is a global environmental crisis of profound significance to both current and future generations. The nature of this crisis is complex and wide reaching. Climate disturbance, acid rain, deforestation, species extinction, fisheries depletion, soil erosion, toxic buildup in ecosystems, water, land and air pollution and ozone depletion are amongst the menu of environmental problems that are forming a web of destruction around the world. In short, every natural life support system is in long term systemic decline and every human contributes directly or indirectly to the escalation of this decline. If universities are going to survive into the next century, they must not only respond to this new force which, for the duration of this essay, will be termed the environmental imperative, but they must also provide leadership for broader society.

There are two key aspects of the environmental imperative that reveal the nature of the challenge ahead for universities. The first aspect is that an effective solution in addressing the environmental imperative will change all areas of university campus operations. The second aspect is that an effective solution will be a moving target, in that new information will continuously become available that will reveal new environmental requirements and opportunities. Given everything said so far, the challenge for the university sector is to become skillful at the process of change itself. This requires the university sector to expand its core mission of teaching and research to include learning. Universities must become learning organizations, as well as teaching and research institutions.

The response of universities

Many universities have responded to the pressures of students, alumni, government, administration or faculty, to make some attempt at addressing the environmental imperative in the way campuses are operated. The common response of universities has been to establish an environment committee to undertake a series of decision-making tasks, employing one individual to implement and control chosen solution programs. This structural and human resource framework assumes a level of organizational rationality similar to that discussed by George P. Huber (1980) in his publication *Managerial Decision Making*. The framework assumes that a committee and staff operating within the university will be able to effectively:

- define clear organizational goals and objectives;
- maintain goal and objective focus;
- explore the nature arising problems;
- generate alternative solutions to problems;

- properly evaluate available information to choose among the alternative solutions;
- implement chosen alternative; and
- control the solution programs.

The internal reality of the university does not support this type of organizational practice. The complexity of the organization itself, compounded with the complexity of the environmental imperative thwart most attempts to gain organizational agreement on goals, alternatives and solution programs. As Simon and March identify, organizations are severely limited in their capacity to behave rationally due to inherent characteristics such as: complexity, limited capacities to calculate all parameters, the tendency towards "satisfycing", fragmentation of problem and solution elements, limited organizational repertoires, shifting coalitions, shortages of time and attention, quasi resolutions to conflict and uncertainty avoidance (Weiss, 2001).

All of these traits exist within universities. As a result of these rationality-limiting characteristics of universities, environmental committees and staff are quickly forced to shift their focus from broad reaching systemic transformation to well-bounded projects with lower levels of participation, losing significant momentum and breadth in their organizational impact. Consequently, in a small percentage of universities across the world we now have many examples of how the different initiatives such as recycling, energy efficient lighting, water conserving fittings, composting toilets, passive solar design, green building design, carpooling programs, public transportation initiatives, environmental procurement programs etc. may work. However, we have very few examples of universities that have actually institutionalized a systemic commitment to environmentally sustainable campus operations, realizing the enormous efficiencies and opportunities that can be gained in adopting systems based integrated design of new resource flows and infrastructure developments.

It is critical to differentiate between project success and institution transformation. The journey to succeed in building a showcase green building at your university is a very different journey to successfully institutionalizing a university-wide commitment to have all future buildings built green, even though each journey can support the other. The former is a project success, the latter a systemic transformation. Once we set our sights upon the goal of systemic transformation we can learn many lessons from our past efforts to "green" universities. Beyond the many useful project case studies of new designs, technologies and management strategies that we have created there are at least two other significant legacies of our efforts at greening universities. The first is an experiential understanding of what approaches are effective in ensuring the survival and expansion of campus environmental initiatives. The second is a deepening understanding of the nature of universities. The time is right to utilize this experiential knowledge in exploring new ways of transcending the organizational constraints characteristic of universities so

that we may enter new potentials of systemic transformation towards campus environmental sustainability.

Successful approaches of leading green campus initiatives

It is no secret that some green campus initiatives have been more successful in surviving and expanding their effectiveness than others. In analyzing why this is the case it appears that regardless of the organizational structure or the political positioning of any green campus initiative there are a number of approaches that evidently maximize the survival and expansion of pioneering initiatives. These approaches include:

- *Management support* – secure a commitment in principle that can be gradually substantiated with action.
- *Effective coordination* – dedicated, respectfully persistent, skilled communicator, creative and personable.
- *Maximize face to face communication* – dialogue is the most effective means of progressing with the change process, learn the language of other people, active listening skills are essential.
- *Build both informal and formal support* – ensure there is informal support and general understanding before formalizing systems.
- *Partnerships* – seek a range of partnerships to support projects, optimize synergies, maximize broad relevance and flow on effects.
- *Ideas and the path of least resistance* – run with the ideas that attract the most support and utilize these as a means of generating the foundation for gradually more challenging ideas.
- *Integrated planning and integrated design* – utilize systems thinking to understand interrelationships and to perceive beneficial design solutions.
- *Trial, review, expand* – remove risk and generate organizational support by running pilot projects.
- *Continuous improvement, conscious development of a learning organization* – where the educational potential of experience and process is optimized.
- *The right management framework* – the coordinator of environment programs must have freedom to engage all levels of the university community, access to generate and strategically draw upon the highest levels of management.
- *Risk tolerant management staff* – that are willing to support low risk innovation and mentor staff working to forward the organizational vision for change.
- *Student partnerships* – tapping into talented, committed students and involving them and mentoring them through paid positions and/or

research projects, ensuring that their work is relevant and integrated into university systems.

- *Continuity* – allow two to three years to establish foundation of trust, relationships, organizational familiarity and skill base to be effective in medium to long term projects.
- *Forums* – for broad community involvement, discussion and consideration.
- *Profile* – share the learning experience with everyone who has any interest, maintain a profile within and beyond the university for the efforts being undertaken.
- *Information systems* – a means of capturing and presenting information in digestible formats for all levels of management.

Successful application of these approaches requires a high competency in listening, communication, relationship building, vision development, responsiveness and continuous strategic adaptation.

The nature of universities

The second important legacy of our green campus efforts to be discussed in this paper is an expanding understanding of how universities work and how they respond to change. There are many characteristics of universities that must be understood and addressed before we can hope to transform them into environmentally sustainable institutions. What follows it a discussion of some of the more significant characteristics of universities that are best understood by anyone who seeks to work at building institutional commitment to environmental sustainability. This discussion does not attempt to describe every relevant characteristic of universities but rather to begin this journey and hopefully inspire a type of institutional analysis that can be further developed by the reader in the context of their own institution.

Complexity

Universities are multi-structured, complex organization that exists without any single observation point or any single control center from which university wide changes can be programmed and implemented. Further to this there are numerous subcultures of decision-making styles, time constraints, priorities and experiences that exist within the university organization and varying degrees of differentiation between schools and also between students, administration and faculty within schools. On top of this, universities are generally:

> . . . plagued with goal ambiguity and conflict, with poorly understood problems that wander in and out of the system, with a variable environment and decision-makers with other things on their minds (Cohen and March, 1989).

The challenge of systemic change in universities is often further compounded by the fact that many universities are engaged in extensive growth. For example, Harvard University is preparing to invest almost $1 billion in capital

development within the next five years, resulting in a 12 percent increase in available square feet for teaching, research and operations. This is an increase of 50 percent from the previous five years. Needless to say, this is a significant environmental and organizational challenge considering that globally, buildings use:

- 25 percent of the global wood harvest;
- 40 percent of materials entering the global economy;
- 35 percent of the total energy;
- 25 percent of landfill space;
- 3 billion tonnes of raw materials; and
- generate half the global output of greenhouse gases and agents of acid rain (Source: Green Building Design workshop at University of Michigan).

Another challenging growth trend in universities is the rapid and unprecedented rise in energy consumption due to the proliferation of computers and associated technologies. At Harvard University, electricity consumption, a core source of greenhouse gases, has risen by over 18 percent during the last six years, or at a rate of 3 percent per annum (pa). Universities need to be reducing their greenhouse gas emissions by 3 percent pa if they are to take any level of leadership in addressing the enormous problem of climate disturbance. The magnitude of these trends provides us with the most concentrated and challenging opportunity to change the current patterns of development towards environmental sustainability.

Growth trends at many universities have resulted in many university administrators, faculty and perhaps even students experiencing the greatest workloads they ever have. This increase in the "energy load on the system" is resulting in greater inefficiency in dealing with current problems as well as inhibiting the capacity to address new problems – such as the environmental imperative. If we do manage to get the environmental imperative on the agenda of university decision makers it is often seen as a late arriving competing priority that will have to wait its turn to be addressed – and who knows when this will be.

Due to the inherent nature of universities, it is not appropriate to conceive of organizational change as the outcome of a comprehensive and rationally executed strategy, even though such an approach may play some part. It is evident that transformation will only come about when a large number of people set up different priorities in both the large and the small arenas of the university, establishing new routines and structures despite local conflicts and set-backs. This is a critical understanding to have when launching into the challenge of catalyzing systemic change to support in pursuit of campus environmental sustainability. The following sections of this paper will address why we don't yet have this wide-scale involvement and how we may achieve it in the near future.

Mental models
As Peter Senge (1990) states, in his publication *The Fifth Discipline*:

> The unhealthiness of the world today is in direct proportion to our inability to see it as a whole.

Clearly, the university sector has failed to perceive itself as part of the whole planetary life support system. Developing this understanding of place within the whole is a critical mental shift that must be undertaken by a critical mass of individuals throughout every university:

- seeing their place in the whole of the planet's life support systems;
- seeing their place in the whole of the campus system; and
- seeing the campus system's place within society.

People within universities, like people everywhere in society, have a number of mental models that inform their behavior towards our natural life support systems. In general, these mental models include subconscious and unspoken assumptions that:

- the Earth is infinite;
- that there is an "away" where you can throw things;
- materials from the Earth's crust can be removed and re-emitted almost anywhere without a problem (e.g. metals, burnt fossil fuels, arsenic, asbestos etc.).
- the individual is powerless to effect change within large and complex systems.

In order to engage the university sector in the process of addressing the environmental imperative, we must replace these unspoken mental models with new understandings that reflect greater truths like:

- the Earth is finite and we are already living beyond its carrying capacity;
- there is no "away" because everything in interconnected;
- nature locked away a range of materials in the Earth's crust because they are poisonous to life; and
- the individual is the source of significant systemic change within large and complex environments.

The absurd consensus
One of the other challenges we face in generating wide-scale participation across the university is the susceptibility of people to allow themselves to be manipulated or controlled in order to achieve security in the short term. Consider the work of Somoan Asch in the 1940s and 1950s, when he conducted a range of tests to assess people's capacity for independent judgment.

Asch bought an unsuspecting subject into a room containing a group of people instructed to falsify their answers in response to a simple perceptual test. In the test, the group was asked to assert which of three lines in varying lengths on one graph most closely corresponded to a single line on an adjacent graph. Unknown to the subjects of the experiments, Asch was pitting them against a pre-arranged unanimous, yet entirely irrational consensus. Initially the group matched lines that were reasonably similar. Gradually, however, Asch introduced widening discrepancies so that eventually, the group consensus matched the lines of extremely different lengths, also mixing in a few disagreements amongst the group for the sake of realism. The results were extraordinary: only 20 percent of Asch's subjects proved capable of independent judgement in the face of an absurd consensus. Of these, many found the experiment highly stressful (Edwards, 1995, p. 202).

This research indicates that people are conditioned to conform to group perceptions and to doubt and withhold their individual perceptions if they are in conflict with the shared reality of those around them. This has enormous significance when considering how people are currently responding to the demise of the planetary systems that support human life. The degree of inaction around this profoundly life threatening situation can perhaps best be explained by viewing our state as a massive "absurd consensus" that is the product of our social conditioning which has enforced our subservience to, and blind confidence in, shared societal constructs of reality.

The university sector is certainly engaged in this absurd consensus (or perhaps it is a convenient consensus) and it is likely that until a critical mass of individuals actively change their mental models, we will be unable to break through the group denial agreement that appears to be in action. Given this susceptibility to conformity, the pursuit of systemic transformation fundamentally requires an unerring and open exploration of truth, beyond any socialized framework.

System archetypes – the myth of the rational university
According to Senge, system archetypes are the simple stories that get told over and over again within an organization. They are the system patterns that underscore many organizational responses and activities. Failure to understand the system archetypes will often lead to fixing the problem but not the thinking that produced the problem in the first place. It is possible that the inaction of the university sector is largely connected to some powerful system archetypes. One such archetype to be explored here is what will be termed the myth of rationality.

Fundamentally, the survival of the university sector depends upon holding the prized place within the market, as the premier provider and regulator of higher education and research. To maintain this position within society, a position secured by a deep and assumed trust in the nature of the institution, the university sector must appear to be institutions of supreme rationality. After all, who would agree to pay tuition for a degree or fund research from anything less than a rational institution?

Universities have developed a deep cultural assumption that it is necessary to preserve the image of rationality, at all costs, as a means of ensuring

organizational survival. It is worth noting that universities are one of the oldest types of institutions in the world. During hundreds of years of organizational evolution the image of rationality has been such a successful strategy that it was taken for granted until it has even "dropped out of awareness". This makes it extremely difficult and potentially dangerous to address.

As a result of this cultural assumption, universities in general, persist in designing processes and structures that are based on assumptions of rationality, despite the inevitable dysfunction of such approaches, because it supports the greater goal of appearing rational. From personal experience, it appears that one of the most significant and prevalent forms of stress experienced by staff within universities is the stress of having to sustain the myth of organizational rationality while facing the reality of organizational irrationality.

Regardless of the damage it does, the need to protect the myth of rationality is a cultural assumption within universities. It is one of the core:

> . . . basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define in a basic 'taken for granted' fashion, an organizations view of itself and its environment (Schein, 1987).

The myth of rationality greatly inhibits systemic transformation in a number of ways. It is one of the greatest barriers to the development of a learning organization since it propagates the assumption that universities have attained the highest possible levels of functionality and that whatever is lacking must be accepted as an inevitable limitation of the system. The myth prevents institutional analysis and reform as a response to dysfunction since the political payoff for accepting dysfunction is much greater than the payoff for dealing with root causes.

It is possible that our approach to greening universities has suffered the containment of abiding to the myth of organizational rationality. If we could approach greening universities with an understanding of the true nature of the university, rather than the perceived nature of the organization, then we may achieve a breakthrough in the depth and breadth of institutional transformation within the university sector. Such a breakthrough would involve accessing new levels of institutional openness, learning and collaboration that is intrinsic to organizational transformation. At the very least, considering the nature of organizational culture within universities can deepen understanding and inform strategy for achieving new levels of institutional engagement in environmental sustainability.

It is no accident that the most successful green campus initiatives are the ones that have been able to adapt to the low levels of rationality that exist within the university organization. Instead of operating only to a strategic plan these initiatives stand ever ready to embrace emerging opportunities, constantly shifting priorities and resources. Instead of depending only on business models and structured growth, these initiatives are highly organic in their growth patterns, with growth rates reflecting opportunities of the day.

Instead of relying upon operational structures and fixed staffing levels, these initiatives remain adaptive in their structure and staffing. Rather than relying upon formal links to decision makers and formal decision-making forums these initiatives are extremely adept at building networks of trusting and diverse relationships with a wide range of individuals. In essence, the most successful green campus initiatives are able to thrive in the dynamic complexity of the university because they strike a pragmatic balance between appearing rational (strategic plans, business models, operational structures, and formal decision-making forums) and operating irrationally (organic, adaptive, chaotic growth, networks of trust).

Achieving broad participation by engaging subcultures within universities

It is possible that any effort to bring about wide-scale participation must be responsive to the existence of three predominant subcultures that exist within universities – faculty, administration and students organizational cultures. These subcultures are the product of different group histories associated with decision-making practices, time constraints, priorities, opportunities, threats and experiences that each group has had within the university organization. There exists an inherent tension within the power structure of the university organization as a result of the delegation of and struggle for power between these three subcultures. Evidence suggests that the greatest leverage in achieving institutional change occurs when all three subcultures or groups have a shared vision and a sense of organizational alignment in their respective actions. What follows is a brief summary of some of the key group characteristics of students, faculty and administrative staff and some ideas for how these groups can effectively increase their impact in generating an institutional commitment to environmental sustainability. This includes some direction for how they can be moved closer towards a shared vision and organizational alignment.

Students

The first subculture to consider is the students. Students, for many years have been organizing to address the issue of environmental sustainability. Now, almost every school has its own student environment group. These groups depend on the emergence of passionate, committed students who come together with other students, who they have often not previously met, to decide upon which activities they can undertake with the precious time they have available. The students usually have no resources, limited understanding of how the university itself is managed and no immediate access to decision-making processes that they could directly influence. Despite these obstacles, an increasing number of students are turning their attention to getting the university to become environmentally responsible in campus operations, curriculum and research. The tendency is for students to engage in short term activities that aim to raise the profile of certain issues and sometimes to embarrass the university into responding to popular demand.

Some common experiences of students that have shaped the student culture include:

- a shared sense that older generations and powerful institutions are failing to take action to address environmental and social issues that are of significant concern to their generation;
- a lack of access to timely information about the way the organization works;
- little guidance on how students can most effectively influence organizational decisions; and
- no effective means of ensuring a continuum of organizational learning between multiple student generations.

This collective experience has resulted in a student culture that limits itself to focusing on short-term project victories rather than longer-term systemic transformation. In reality, students have much more potential power to catalyze and drive organizational transformation than they believe is possible. Given the cultural characteristics of students, the greatest leverage in working with students is to engage them in developing the five disciplines outlined by Peter Senge in the context of a chosen project. Primary activities include:

- a shift of mind to understand their actual capacity to influence systemic change;
- introducing systems thinking concepts to deepen understandings of organizational irrationality and how the university actually functions;
- developing a shared vision by providing enough information and training and facilitating dialogue; and
- building team learning capabilities by organizing and facilitating regular meetings, building personal mastery by establishing a context for personal learning and openness.

Working with students to develop these skills has been extremely fruitful at Harvard University. In the last 12 months the Harvard Green Campus Initiative (HGCI) has undertaken this type of work with students from a number of schools. This work led one student group to successfully deliver a set of highly informed, strategic recommendations for greenhouse gas reductions to the deans of the largest school at Harvard University. The recommendations have already catalyzed some significant action. Another student partnership of this nature resulted in a student run forum that has been highly successful in engaging faculty, administration staff and students from three schools to consider campus environmental sustainability. The political power of students, when combined with the skill set listed above, forms an extremely effective catalyst for institutional transformation. Without these skills, students are like the match that cannot find the fuel.

Faculty
Many faculty are actively expanding the environmental content in teaching and research. However it appears that far fewer faculty are attempting to influence decisions made around campus operations. At Harvard University we have been able to identify only six faculty who are willing to invest time in this issue. The involvement of even these committed individuals is highly sporadic, lacking the necessary continuity and development to be successful.

Some of the common experiences of faculty include:

- intense and ongoing pressures to compete for research funding, space and recognition;
- association, partnership and rivalry with a global community of research peers;
- rigorous and long term requirements to secure tenure; and
- concern with success and quality of students.

Perhaps the most significant organizational trait that limits faculty engagement in pursuing campus environmental sustainability is the fact that historically, the demands of academic life resulted in the structural removal of faculty from managing the operation of the campus. Instead, the faculty employ and control administration staff to manage the campus, freeing the faculty to pursue the real mission of the organization – teaching and research. Throughout the university sector this structure has served to imbed the assumption, amongst the faculty, that focusing on the campus is a distraction from the core mission of teaching and research. Consequently, the few faculty who do attempt to take action on campus environmental concerns tend to do it out of a commitment to voluntary public service. While this is commendable, it is not a sustainable approach to the problem of securing faculty engagement.

One of the more evident problems with this structure now is that administration staff who wish to address the environmental imperative often find themselves blocked by faculty who wish to maintain control, but have little understanding of the campus operations and associated environmental implications. Throughout the university sector this structure has served to alienate the faculty from a practice of self-study within the campus, while also inhibiting the capacity of administrative staff to innovate.

The type of fundamental cultural shift that is necessary within the faculty is to value placing themselves within the system of study. They must, as Senge states, perceive themselves "as part of the feedback process, not standing apart from it." In this case the campus system could be viewed as the feedback process for the activities of teaching and research. This shift would allow faculty to perceive opportunities for alignment of their teaching and research efforts through practical experimentation and application within the campus system. In this way the organization could achieve mission alignment between teaching, research and campus operations, harnessing the vast collective

learning process that is currently underway within its walls, to benefit its own systems. At the very least this shift would cause faculty to deal with the inherent irrationality of the organization to a new and challenging degree.

Senge believes that "the bottom line of systems thinking is leverage – seeing where actions and changes in structures can lead to significant, enduring improvements." It is possible that working with faculty to remove perceived mission conflicts between teaching, research and campus operations will provide the greatest leverage in freeing universities to become learning organizations of the highest caliber.

One approach currently under development in the HGCI is to establish a visionary, visible project that articulates the environmental, social and political future for Harvard University in the context of the Cambridge-Boston community, considering organizational and individual behavior, materials and energy, infrastructure and transportation. This project would bring together faculty from many different schools to engage in a rigorous academic research project that would effectively raise the profile and legitimacy of the campus as a living laboratory for teaching and research.

Administration

In general, administrative staff are expected to service the operational needs of faculty and students, freeing these groups up to go about the core mission of the organization – teaching and research. Administrative staff are considered to have no direct role in the core mission of the organization and as such they tend to be viewed as a relatively expendable resource. Politically and structurally, administrative staff have much less in the way of formal organizational power. However, due to their consistency, relationship building and access to organizational information, they are able to significantly influence decisions, through the establishment of informal channels of influence and the provision of information.

Administrative staff sit closest to the pressure point between the myth of rationality and the reality of organizational irrationality. As a result, the leadership and engagement of administration staff is profoundly tempered by the uncertainty and risk they feel in being associated with getting caught in between organizational irrationality and the sacred myth of rationality. Administrative staff are also very wary of the power of faculty and students to not only block initiatives but to embarrass and isolate administration staff.

Some effective ways to engage administrative staff include:

- The provision of centrally administered, interest free loan money to fund conservation projects with reasonable payback periods.

- Partnership with students – such as student internship programs or part-time student employees dedicated to campus environmental projects.

- Partnerships with faculty to support campus environmental research opportunities.

· High profile signals from the highest levels of the university affirming
the importance of campus environmental efforts.

The HGCI has established a number of projects, listed in Table I, targeted at
engaging administration staff in the above listed activities.

The core approach of the HGCI is to establish an engine for expanding
participation and learning throughout the university. This engine has two key
elements as identified in Figure 1. The first of these elements is the interest free
environmental loan fund. This is a revolving loan fund, in the order of $3-5
million, made available to any university member who has identified a
conservation project with a payback period of not more than five years. This
mechanism was first trialed in 1993-1998 and proved itself to be highly
successful. During this trial period, some $2.4 million was invested in 32
conservation projects, through the interest free, revolving loan fund structure.
The average rate of return on this investment was 34 percent, resulting in

Projects	Description
Environmental Loan Fund	University-wide financial incentive for cost effective conservation projects
Best Practice Exchange	A forum for university staff and students to present and share their innovative projects that exemplify environmental best practice in Harvard University operations
High Performance Building Initiative	An initiative to develop Harvard University's capabilities in the area of high performance building design. High performance building design achieves optimal financial, human health, environment, aesthetic and building function performance
Harvard Alternative Fuel Vehicle Program	A program to research, evaluate and introduce environmentally preferred vehicles into Harvard fleet
HGCI Web site	A tool for building communities of participation throughout Harvard University and for providing relevant resources to further best practice in campus environmental sustainability
Greenhouse gas inventory	An inventory of greenhouse gas emissions resulting from Harvard University fossil fuel dependent utilities
UOS EnergyStar and Environmental Procurement Program	A program to position UOS as an EnergyStar and environmental procurement service provider
FAS Computer Energy Conservation Initiative	An initiative to allow the Faculty of Arts and Sciences to achieve considerable and cost effective energy savings associated with a shift in computer purchasing and operations
Student Internship Program	A program to involve students in project specific research and innovation. Students are co-supervised by the HGCI and various university departments

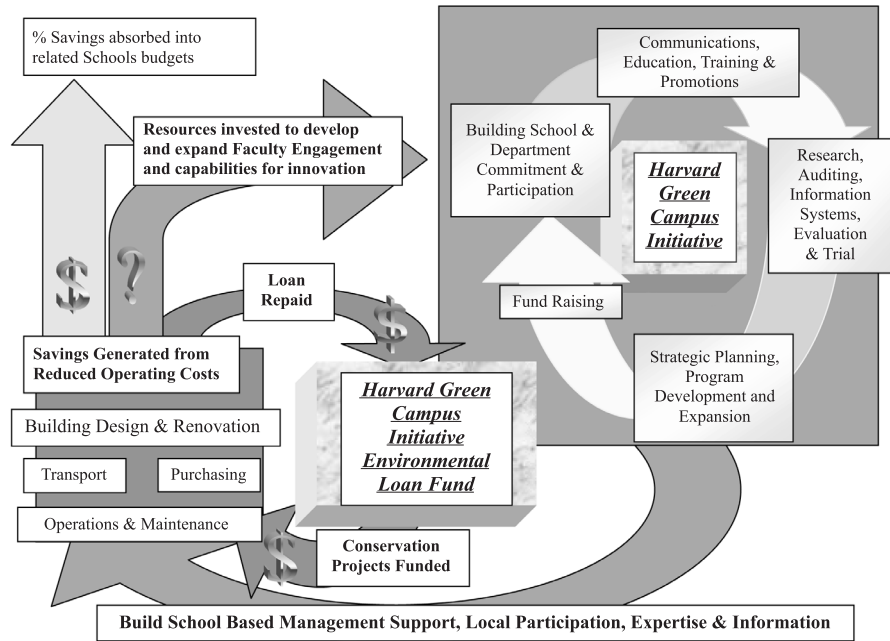Table I.
Harvard Green Campus
Initiative projects

Figure 1.
The Harvard Green
Campus Initiative –
engine for expansion

annual savings of over $880,000. The environmental benefits were significant, including an annual reduction in greenhouse gases of 8.8 million pounds. (A review of this trial was published in the *International Journal of Sustainability in Higher Education*, Volume 1, Number 3, 2000, entitled, "Economic incentives for sustainable resource consumption at a large university").

The second key element of the HGCI is to do the missionary work of building school partnerships, undertaking strategic communications, education, training and promotional activities, implementing a wide range of research, auditing, trial and evaluations, environmental information system development, strategic planning for program expansion and fund raising. To date, this approach has been highly successful, achieving a rapid expansion of participation within less than 18 months. In essence, this success has been due to sustaining a pragmatic balance between appearing rational (strategic plans, business models, operational structures, and formal decision-making forums) and operating irrationally (organic, adaptive, chaotic growth, networks of trust).

The challenge of being the change agent
So far this paper has presented a number of ideas, insights and experiences associated with the nature of universities, the challenge of systemic transformation and the types of approaches that can be utilized in this effort. The final area of discussion to be addressed is a foundation piece to all of this – the challenge of being the change agent.

For anyone who is actively engaged in catalyzing and managing change, it is critical to develop a level of what Senge describes as personal mastery. Senge defines this as:

> ... the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively.

Working within any university to generate a change in the way decisions are currently made requires a combination of all of these qualities, especially a high competency in experiential learning. The immense dynamic complexity within universities requires a skillful approach to learning through experience and reflection, when inside decision-making arenas, outside them or in transition. The learning must involve a deep and bold self-honesty, where one is prepared to acknowledge and work with one's experiences – especially the most difficult ones. This is a critical requirement for undertaking the task of institutionalizing environmental sustainability within universities, since no amount of experience can protect one from the inherent complex, diverse and dynamic nature of this organization. Further to this, the practice of reflection, humility and reciprocity are essential in maintaining positive relationships with the numerous participants.

One key aspect of personal mastery, explored by Senge, is the process of developing a person vision and sustaining the creative tension that results from the difference between reality and the vision. Senge suggests that a common process for individuals who confront this difference between their personal vision and their daily reality, is that they experience a negative emotional response. This in turn causes them to downgrade the vision to the point at which the tension between reality and their vision is not emotionally demanding.

This insight is particularly relevant in the situation of the university sector. It is hard to imagine a larger gap between a reality and a vision than the gap that exists between universities today and a personal vision of an environmentally sustainable university sector. To sustain this vision requires the individual to engage in action towards meeting their vision in order to feed a sense of hope and engagement. It also requires a practice of deep and personal reflection to help the individual process the effects of dealing with the inertia, resistance, occasional political backlashing, or territorialism that may be provoked along the way.

On a more personal note, at times the complexity and urgency of the environmental imperative coupled with the complexity and inertia of the organizations we seek to change can overwhelm us. We must all deal with the heartbreaking role of bearing witness to the spreading destruction of our world and the ominous denial of our organizations and broader society. We are left alone to process what this means for our own life journey as best we can. In these times it is important to be conscious that despite the enormity of the situation, the fundamental power to create positive and wide reaching change is within reach of all of us. Take any environmental challenge or organizational

barrier and it is possible to trace its fundamental creation and relief back to a change inside the human heart. As Ram Daas (1987), states in his book, *How Can I Help*:

> The basic social institution is the individual human heart. It is the source of the energy from which all social action derives its power and purpose. The more we honor the integrity of that source, the more chance our actions have of reaching and stirring others. But we must first be whole hearted, fully integrated as we set out.

The work of institutional transformation is a calling to undertake a parallel journey within ourselves. As we seek to change what is around us we must seek to change what is within us also. If we seek a world that is aware, kind, fair and sustainable then, as Mohandas K. Gandhi said, "We must be the change we seek". This truth can be taken into the deepest realms of spiritual practice where our own human potential may be unfolded and exercised beyond our current conditioning to effectively expand our energy, resilience, connection, vision and influence. Expanding our awareness of our inner being and the way our inner world connects to the world around us is an essential requirement to creating an environmental sustainable institution and society. While this may never be written into our position descriptions, it is a truth that offers us salvation in so many ways that we can't afford to put it aside. We need to make the time for the journey within.

Conclusion

The environmental imperative requires a rapid and wide-reaching response from the university sector far beyond the kind of response we have seen to date. The ultimate vision of the environmentally sustainable campus is a vision of a learning organization and a living laboratory for the practice and development of environmental sustainability. The breadth and longevity of organizational change that is needed for this to occur can only be achieved if the true nature of the university organization is revealed and transformed. Mental models must be revealed, questioned and expanded, and the absurd group consensus that is at play must be undone. The fundamental cultures of separation that exist between faculty, administration staff and students must be transcended and perceived mission conflicts between teaching, research and campus operations must be overcome. Ideally, campus environmental initiatives must be protected and respected for the success of their irrationality, freeing them from the onerous and self-defeating task of investing precious resources into appearing rational. This would free all precious energy for the real and organic work of building wide-ranging participation in the large and small arena's throughout the university. And finally, change agents must expand their understanding of the university organization and of themselves so that they can expand and sustain their positive energy, vision and creativity in the face of all obstacles.

References

Cohen, M. and March, J. (1989), *Leadership and Ambiguity – The American College President*, 2nd ed., Harvard Business School Press, Boston, MA.

Daas, R. (1987), *How Can I Help*, Rider, Random House, London.

Edwards, D. (1995), *Free To Be Human – Intellectual Self-Defense in an Age of Illusions*, Green Books Ltd, Dartington.

Huber, G. (1980), *Managerial Decision Making*, Scott, Foreman & Co, Out of print, Glenview, IL.

Schein, E. (1987), *Organizational Culture and Leadership*, Jossey-Bass Publishers, San Francisco, CA.

Senge, P. (1990), *The Fifth Discipline – The Art and Practice of the Learning Organization*, Currency Doubleday, New York, NY.

Weiss, C. (2001), *A665 Organizational Decision-Making Class Notes*, Harvard Graduate School of Education, Boston, MA.