Transforming Universities into Leaders in Designing a Sustainable and Desirable Future: a case study in envisioning at the University of Vermont

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Abstract

Purpose- Universities are increasingly aspiring to be both models and catalysts of change, leading the world to a more sustainable and desirable future. Yet ineffective governance, traditional disciplinary boundaries, and the lack of a shared vision often hinder progress toward this goal. This research describes an approach to envisioning and engagement used by the University of Vermont (UVM) to overcome these barriers and in the process, transform the university into a leader in systems thinking, service learning, and sustainable design.

Methodology- The envisioning and engagement process involved 1,500 participants from around the UVM campus and Burlington community. Participants’ visions of a sustainable and desirable university were gathered through two community events and three online surveys. Their responses were analyzed using a modified Q methodology, a survey method in which participant responses direct the formation of survey categories. The results of the analysis led to the formation of a Vision Narrative and Sustainability Charter, which then guided the creation of a range of initiatives.

Findings- The results of these efforts suggest that when provided ample and well-structured opportunities, university community members will become active participants in initiatives aimed at fostering institutional change. By focusing on shared values and long term goals, envisioning exercises can achieve a surprising amount of consensus while avoiding the divisiveness and polarization that often plague university governance.

Originality and value- While envisioning exercises are sometimes conducted by local governments, institutions of higher education still rely predominantly on more traditional and hierarchal methods of community planning. The innovative process outlined in this paper for adapting Q methodology for community envisioning appears to be an effective method of eliciting participant’s visions and establishing broad based support for actions that promote sustainability planning and education.
Introduction

As ecological and social crises deepen, colleges and universities are increasingly committed to fostering learning and service for the purpose of developing solutions for real world problems. Recognizing that social and environmental problems cross traditional disciplinary boundaries, there has also been a growth in inter and transdisciplinary programs and centers, (i.e. Columbia University’s Earth Institute, University of Michigan’s Erb Institute) aimed at developing holistic and integrated solutions. Around the world, college campuses are beginning to model through their campus operations designs for a sustainable and desirable world.

Yet myriad barriers hinder progress toward these ambitions. Disciplinary boundaries remain largely entrenched, and integrated programs often fall short of their goals (Patterson 2007). Ineffective and cumbersome governance, combined with competing university priorities, undermines innovative programs (Thomas 2004). And while it is increasingly recognized that isolated and piecemeal reforms will not form an adequate response to our current ecological plight, efforts aimed at campus sustainability rarely pervade through all university practices, remaining largely relegated to individual initiatives such as recycling or green buildings (Orr 2006, Rowe 2007).

In part, the disappointing pace of progress is due to a lack of a shared vision of the role of higher education in fostering a desirable and sustainable world. While university priorities are often established in a “top-down” manner, organizational change requires goals to be shared by members of the community, developed through face-to-face discourse and discussion (Senge 1990, Meadows 1994). And while international declarations of commitment have their place, appropriate strategies for fostering sustainability must be concurrently developed at the scale of the individual institution (Fien 2001).

Envisioning complements more traditional forms of planning, serving as a tool for determining community desires and beginning the process of organizational change. While its roots lie in local government and business planning, it is equally effective at the institutional level (Costanza 2000). Envisioning generally begins by eliciting a community’s goals and desires, established through public forums that provide valuable face-to-face discussion. Surveys are often employed to expand the visioning process to a larger group of participants (Sharp 2002, Scolop 2001).

In 2007, the University of Vermont initiated an envisioning process to develop a plan to transform the university into a leader in whole systems thinking and sustainable design. The effort was facilitated by the Leading by Design Task Force, a group of UVM faculty, staff, administrators, student representatives and Burlington community members (Appendix A). It was informed by broad participation of the UVM community and supported by a planning grant awarded by the Lewis Foundation.
Envisioning Approach

The task force used a modified version of Stephenson’s (1953) Q methodology, an approach useful for actively engaging participants in developing and assessing a diverse range of attitudes and values relating to a particular discourse. In Q methodology, structured interviews with participants are used to create a set of “quintessential” statements that capture the range of attitudes presented by participants. Participants are then asked to rank their agreement with the statements on a Likert Scale (Barry and Proops 1999).

To engage a broad range of university and community participants, several approaches established the set of statements. An online survey, posted from April 11th through June 6th, 2007, contained eleven open-ended questions designed to guide participants in crafting a vision for the “perfect university.” Respondents were asked to discuss curriculum and pedagogy, campus operations and management, and material and energy systems. 140 community members provided their vision through this online survey. Emails were also solicited and 77 community members sent letters to the task force describing their visions. In addition, an introductory-level course in Natural Resources tackled this question through a collaborative project. The 200 students in this course identified and refined a list of priorities for the university to address, and then offered campus-wide initiatives that would move the university towards sustainability.

On April 30th, 2007, the task force hosted an “Open Space” event. In Open Space events, participants create and self-organize into discussion groups (Owen 1997). Over 350 attendees worked in eleven break-out groups to craft vision statements relating to biodiversity planning, carbon neutrality, curriculum and pedagogy, diversity and social justice, energy, community integration, food systems, applied research, transportation, housing, and waste management.

Task Force members jointly reviewed and synthesized the results of the online survey, emails, Natural Resources course initiatives, and the Open Space event to establish a set of 60 distinct and comprehensive vision statements grouped under four categories: human, social, built, and natural capital. Human capital is mankind’s physical labor, skills, knowledge, and health. Social capital is the web of interpersonal connections and institutional arrangements that facilitate human interactions. Built capital is the infrastructure (buildings, roads, factories, etc.) that makes up the material structure of the human economy. Natural capital is the land and the resources it contains, including ecological systems and services (Costanza et al. 1997).

These 60 distinct vision statements were released as a second survey to the UVM community in late June and kept online through the end of October, 2007. Participants were asked to rank the vision statements on a five point Likert Scale (Table 1). Respondents also identified and ranked five statements in each category they felt should be the university’s highest priorities. 988 students, faculty, staff, and community members participated in this survey.

To encourage broad participation, the survey was available to the entire community. Therefore, while respondents represented the university’s eight colleges and schools, they were self-selecting, raising concerns about potential nonresponse biases. To address this issue, an electronic survey was distributed to a stratified, random sample of 1,200 students, faculty and staff to assess the validity of the survey results. Following a modified version of Dilman’s
(2000) methodology, two personalized reminder letters were sent to nonresponders. A total of 397 individuals participated in this survey. After accounting for individuals who could not be reached, the effective response rate was 33.5%. Univariate and bivariate analysis of survey results was conducted using the statistical analysis package SPSS, and a series of Chi Square tests identified significant differences between the self selected and randomly selected respondents, as well as between different types of respondents. Self-selection bias was assessed for both the Likert scale and prioritization rankings.

Results

Importance Rankings

The results demonstrate strong levels of support for all vision statements, with the median value for all responses either deemed “important” or “very important.” The strongest levels of support were shown for: ecologically designed, efficient buildings, policies and practices that foster quality of life, courses with strong emphasis on systems thinking and problem-based learning, maintaining abundant green spaces, developing functional landscaping to capture campus storm water runoff, and providing equitable employee compensation (Table 1).

Table 1: Highest ranked vision statements

<table>
<thead>
<tr>
<th>Capital category</th>
<th>Vision Statement</th>
<th>Percentage of respondents for whom the statement was extremely or somewhat important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Capital</td>
<td>Courses have a strong emphasis on critical systems thinking and applied, problem-based learning</td>
<td>92.4%</td>
</tr>
<tr>
<td></td>
<td>UVM is actively engaged in global research and education initiatives</td>
<td>89.7%</td>
</tr>
<tr>
<td></td>
<td>Service learning, internships, and work-based learning have become fundamental components of the educational process</td>
<td>88.6%</td>
</tr>
<tr>
<td></td>
<td>UVM rewards collaboration and partnerships in both research and education</td>
<td>83.7%</td>
</tr>
<tr>
<td>Social Capital</td>
<td>UVM has adopted policies and practices that foster quality of life for students, faculty, staff, and the broader community</td>
<td>94.8%</td>
</tr>
<tr>
<td></td>
<td>Employees are compensated equitably and competitively</td>
<td>91.8%</td>
</tr>
<tr>
<td></td>
<td>The university celebrates diversity and has rid itself of racism, sexism and other prejudices</td>
<td>90.9%</td>
</tr>
<tr>
<td></td>
<td>Tuition at UVM is accessible to a diverse student population</td>
<td>90.1%</td>
</tr>
<tr>
<td>Built Capital</td>
<td>Campus buildings are ecologically designed for efficiency and create healthy environments with access for all with differing abilities</td>
<td>95.5%</td>
</tr>
<tr>
<td></td>
<td>Bike and pedestrian paths link campus and community</td>
<td>91.8%</td>
</tr>
<tr>
<td></td>
<td>Campus vehicles are fueled by clean technologies</td>
<td>90.3%</td>
</tr>
<tr>
<td></td>
<td>Efficient use of building space minimizes the need for new construction</td>
<td>90.1%</td>
</tr>
<tr>
<td>Natural Capital</td>
<td>UVM has ample, well-maintained green spaces for recreation, social interaction, and aesthetic enjoyment</td>
<td>95.3%</td>
</tr>
</tbody>
</table>
**Functional landscaping captures all campus stormwater runoff, protecting Lake Champlain**  93.4%

**Campus vehicles are fueled by clean technologies**  90.3%

**Campus dining facilities utilize compostable containers and re-use dishes and utensils**  91.3%

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**Statement Priorities**

Respondents were then asked to indicate which visionary ideas were most important for the future of the university by ranking their top five priorities within each capital category. The top ranked vision statements, presented below, were determined by totaling the number of times each statement was ranked as a priority (1-5).

**Human Capital Priorities: (Figure 1)**

1. Courses have a strong emphasis on critical systems thinking and applied, problem-based learning
2. To graduate, all UVM students demonstrate eco-literacy and take required courses that integrate issues of sustainability
3. Degrees are flexible, allowing integration across disciplines
4. UVM is actively engaged in global research and education initiatives
5. Service learning, internships, and work-based learning have become fundamental components of the educational process
6. UVM is universally recognized as one of the nation’s premier small public research universities

![Figure 1: Human Capital Priorities](image)

**Social Capital Priorities: (Figure 2)**

1. UVM has adopted policies and practices that foster quality of life for students, faculty, staff, and the broader community
2. Employees are compensated competitively and equitably
3. The university celebrates diversity and has rid itself of racism, sexism and other prejudices
4. The cost of higher education is kept attainable for students of diverse backgrounds
Built Capital Priorities: (Figure 3)
1. Campus buildings are ecologically designed for efficiency and create healthy environments with access for all with differing abilities
2. Efficient use of building space minimizes the need for new construction
3. Bike and pedestrian paths link campus and community
4. Retrofitting and redevelopment of buildings takes priority over new construction

Natural Capital Priorities: (Figure 4)
1. UVM purchases a majority of its food from local and organic farmers and businesses
2. UVM has ample, well-maintained green spaces for recreation, social interaction, and aesthetic enjoyment
3. 100% of UVM’s energy needs are met with renewable technologies located either on campus or as close as possible to campus
4. The University of Vermont has become a carbon neutral campus by drastically reducing its emissions of carbon dioxide and offsetting any emissions through purchasing carbon credits.

5. As a campus, UVM produces zero net material waste.

![Figure 4: Natural Capital Priorities](image)

**Variations in rankings among students, faculty, and staff**

Students, faculty, staff, and community members ranked priorities differently. Undergraduates prioritized ecologically designed buildings, local and organic food systems, and ample green space. While ecologically designed buildings and food systems were also important to graduate students, they more strongly valued courses with an emphasis on systems thinking and problem based learning. Faculty and staff both cared strongly about policies and practices that foster quality of life and ecologically designed buildings. However, faculty were stronger supporters of integrated systems thinking while staff were more concerned with fair and equitable employee compensation. Lastly, community members were more likely to prioritize keeping the cost of higher education attainable for a diversity of students than other respondents.

Students, faculty, staff, and community members ranked several statements similarly, including the need for appropriately scaled construction projects ($\chi^2=.26$), engagement in global research and education ($\chi^2=.27$), and managing campus landscapes for native plants and animals ($\chi^2=.26$). There appears to be greater levels of consensus among the different university affiliations for the built and natural capital statements, where responses were not significantly different for seven out of the fifteen built capital and ten of the thirteen natural capital statements.

In general the weakest consensus occurred with statements in the human and social capital categories. Only three of the thirty-four statements had no significant variation among different respondent types:

- To graduate, all UVM students demonstrate eco-literacy and take required courses that integrate issues of sustainability
The University of Vermont has endorsed the goals of the Earth Charter, a global initiative outlining fundamental principles for creating a just, sustainable and peaceful global society in the 21st century.

The university celebrates diversity and has rid itself of racism, sexism and other prejudices.

**Self-selection bias**

Significant differences (p<.05) in Likert scale rankings were found for 13 of the 60 statements. However, most biases were weak (Kendall’s b-tau values ranged from .05-.09), and differences were not apparent for any of the top ranked statements reported in this paper. And while biases were apparent in 66% of the prioritization rankings, they did not affect the statement ranking order.

While the presence of these biases implies that the self-selected group is not completely representative of the university population as a whole, their responses did not differ dramatically from the nonresponse set. As biases did not contradict any of the top-ranked statements nor the statement ranking order, it appears that the general trends and values established through the envisioning process are reasonably accurate. Therefore, the responses of the self-selected 988 participants’ and those completed in the random sample were combined to form one data set for further analysis.

**Discussion and conclusions**

**Consensus building**

The combination of internet-based surveys with community forums appears to be an effective approach for engaging both broad participation and collaboration. Community surveys are useful as a tool for ensuring a cross section of voices are heard in the visioning process (Scolop 2001). However, community meetings are necessary to build the trust, understanding, and social networks critical for collaborative initiatives (Helling 1998).

A surprising amount of consensus emerged from the envisioning exercise, with a generally high level of support for the 60 vision statements generated by the community. By focusing on shared values and long term goals, envisioning avoids the polarization that often plagues academic planning and politics. Other researchers have reported similar levels of consensus as a result of envisioning exercises (Scolop 2001, Helling 1998), due in part to the commitment to collaboration inherent in community envisioning.

However, the results suggest that despite the generally high levels of support for the created vision, faculty, staff, students, and community members have different sets of priorities. These differences could create future implementation challenges. The use of ranking exercises may help administrators identify initiatives that have consistent levels of support for action.

As more consensus emerged among students, faculty, staff, and community members on natural and built capital priorities compared to the human and social capital statements, there appears to be more of a shared understanding on the ecological and built environment components of
sustainability compared to its socio-cultural aspects. While unified around shared notions of a built environment, respondents differed over social and human capital statements. Staff, for example, prioritized equitable compensation more than others, while students were more likely to prioritize a strong student voice in campus governance. Indeed, many measures of sustainability focus primarily on environmental considerations, and efforts to form unified measures are plagued with discrepancies, in part due to measurement and valuation challenges (Bohringer and Jochem 2008).

Towards implementation

Visioning is only the first step in organizational change. Implementation requires additional information and resources of labor, time, and capital (Meadows 1994). Visioning can often fail if the focus remains simply on processes rather than identifying specific outcomes (Helling 1998). Furthermore, effective implementation of new sustainability initiatives must also go beyond “low hanging fruit” to broad and comprehensive institutional changes (Thomas 2004, Rowe 2007).”

Therefore, the consensus that emerged through the UVM visioning process was summarized in two documents to guide implementation of new initiatives; a vision narrative and a sustainability charter. The vision narrative presents a glimpse of the UVM of the future: a university that has a holistic approach to its teaching, research, and campus operations, serving as a model for other organizations and developing solutions for local and global problems. The sustainability charter contains a set of principles and indicators to guide actions and investments.

To implement institutional changes, a new pan-University agency was proposed to facilitate initiatives generated by students, faculty, staff, and community members. This collaborative effort will be infused throughout the university through multiple partnerships operating to develop integrative solutions. New certificate programs will bridge different fields of study and allow students to pursue competencies in areas that may be outside of their home discipline. Additional solutions-focused and tools-based courses will be offered to students in all colleges, and a cadre of faculty, fellows, and graduate students will aid in these initiatives.

While creating a shared view of a sustainable and desirable future is an important step in catalyzing institutional change, the process is not without its challenges. Visioning is time and personnel intensive, and requires sufficient resources for an effective process. Extra effort is needed to ensure participation from the nonacademic community, whose engagement is essential to form partnerships and initiatives aimed at solving real world problems.

Moving beyond visioning to implementation also requires a culture where priority is given to research and education relating to sustainability, along with the commitment of organizational resources and staff training (Thomas 2004). Failure to maintain momentum can negate progress, creating cynism, distrust and a reluctance to participate in future efforts (Helling 1998, Moore 2006). Envisioning is often done concurrently with more traditional and hierarchal planning process, and is generally seen only as a guiding tool. This can limit its ability to effect change in the highly political arena of university governance and decisionmaking. Yet despite these challenges, the process of community engagement outlined in this paper has value as an effective method of establishing a shared vision, and developing broad based support for actions that
promote sustainability planning, education, and research.

Works Cited


Appendix A: Leading By Design Task Force Members

Lisa Aultman-Hall, UVM Transportation Center
Kenneth Bagstad, UVM Graduate Student
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Paul Bierman, College of Arts & Sciences, Department of Geology
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Salvatore Chiarelli, UVM Physical Plant
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