Sights and sounds: building a broader audience for environmental issues

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"...it is especially difficult to feature the positive within environmental reportage. The environment is simply not an area where positive news is to be found; almost in principle, it is a story of regression rather than advancement"
- Lowe & Morrison, sociologists

"Environmental stories don't break, they ooze."
- Frank Allen, Ex-Wall Street Journal writer

"Chill out – sometimes this stuff takes years."
- Bill Clinton, former US President

Abstract

Current messaging techniques make it easy to consider issues of sustainability and environmentalism the sole dominion of 'the environmentalists'. To practice combating this mentality, we developed two projects designed to give environmental issues the societal and political attention they deserve. We worked with student artists to create a campus-wide photo installation that raises awareness of College sustainability initiatives, and we produced two short radio stories to determine the effect of narrative in engaging and educating listeners.

Introduction

The current approaches to environmental messaging are ineffective at spreading the word and converting new supporters, and the environmental movement is paying the price for it. While the scope of environmental issues theoretically encompasses all peoples, only a select few are responding with pro-environmental actions, votes and purchases. Environmental messaging - the conventions, tone, vocabulary, and goals – often relies on highlighting the negative effects of necessary human activities, like generating electricity and producing food. The general public is then blamed for the involvement in perpetuating these activities (Dauvergne & Neville, 2011). After years of shame and fear-based messaging, people feel justified in ignoring environmental messages and the accompanying issues entirely, or else "leaving it to the environmentalists". Environmentalism itself has become a dirty word, and the movement is seen as just another "special interests group" (Nordhaus & Shellenberger, 2004). While those of us in the movement believe it to be on the same moral plane as the civil rights movement, we haven't done a good job at communicating that critical aspect of environmentalism to the public.

While environmental messaging is dominated by fear and loss-based messages, research has shown that positive, gain-based messages are more effective at generating persuasive responses (O'Keefe & Jensen, 2008). Our message of 'stop using fossil fuels', 'preserve wildlife' and 'consume less' can be viewed as a demand for the public to dramatically alter their lifestyle choices; moreover, sustainability efforts are often misinterpreted as something designed to smother growth. The environmental movement must therefore take complete control of the framing of environmental issues - and the framing of the movement itself - in order to turn a loss-based, denial-based campaign into one of positive alternatives, choices and solutions. And for those issues that are not yet being fully contextualized (i.e. with connections drawn between the environment, human health, equity, and more), the environmental movement has to make the jump and frame those issues properly (Good, 2008). Inherent to environmentalism and sustainability is a redefinition of progress and expectations, and core tenets like "less is more" can be hard to accept - we must spin it so that people perceive the sustainable alternatives as steps forward, not back.

The emphasis on providing solutions can serve to generate hope for the future. People feel helpless when presented with an enormous problem that appears to have no feasible solution, which is

why we must be proactive in providing solutions that assure the public that change is possible. The need to identify issues and acknowledge crises is still important, but dwelling on it will only hamper the efforts of the environmental movement (Mckinley, 2008). Knowledge of an issue is critical for successfully initiating environmental action, but the emphasis must be on the content of the knowledge as well its perception (Barr, 2003).

Some environmentalists believe that an increase in environmental messaging and transmission of environmental science will let the facts "speak for themselves", when in actuality facts tend to speak to citizens that are already informed (Nisbet, 2009). Global and local environmental crises must be more effectively contextualized in order for these issues to resonate with the public, or put another way: we need to connect the dots better (Dunaway, 2009). More likely than not, those connections will have to be crafted 'in house' by the movement and exported to the public, as the news media has not yet demonstrated that they can tell that type of story on their own. For example, the news is not pursuing an 'energy crisis' narrative, despite the dangerous practices of deep water drilling, hydrofracking, tar sands oil and mountaintop removal coal mining all being highly related industries that stem from the same environmental limits. Linking these separate stories into national and global narratives could bring increased visibility, communicative ability and urgency to the movement, but not enough reporters are telling it that way. (While authoring this paper, 350.org announced a new initiative called "Connect the Dots", which revisits their successful photodocumentary model to link forest fires, drought, glacial melting and other extreme weather to climate change. More information is available at www.climatedots.org.)

One of the benefits of tying local issues into national and global issues is that people can start to see connections between their situation and the experiences of others. Broad coalitions are extremely valuable in increasing the salience of environmental issues venues and exposing the issues to a broader audience (Liu et al., 2011). Progressive environmental action groups in particular are recognizing the value of coalition building for increasing awareness of environmental issues and breaking into the national consciousness. We are starting to see evidence of this broad coalition building, the most recent example being the protest led by 350.org against the Keystone XL tar sands pipeline. The campaign is bringing together Canadians, Americans, ranchers, labor unions, indigenous peoples and the youth to fight for what is ultimately an environmental issue, although many within that coalition may have different motivations for being involved.

But even with coalitions, there is still a significant bottleneck to successful environmental messaging. While diverse groups of people may rally around environmental issues, those issues are incredibly complex and multilayered, and are therefore particularly susceptible to cycling out of public attention when simpler, more clear-cut stories come along. Environmental stories are particularly susceptible to what Anthony Downs describes as the issue attention cycle, in which "alarmed discovery" and "euphoric enthusiasm" for solving the problem give way to pessimism and eventual disinterest (Downs, 1972). With stories turning over so frequently, the news media is ill equipped to convey the intricacies of scientific discourse, as well as the social and economic implications of current environmental issues. Traditional news coverage of climate change has confused the public by maintaining the illusion of a scientific debate, when in fact the science of global warming and climate destabilization is indisputable, and possible solutions exist (Ladle et al., 2005).

The news media also has a preference for covering certain types of social movements; formal groups with routine advocacy and a slant toward economic development are favored, while confrontational groups working on novel issues are less publicized (Andrews & Caren, 2010). While the reality is that novel environmental issues are a part of a larger environmental narrative, that kind of story does not lend itself to nightly reports. The environmental movement may be able to appeal to journalists who are keen on serving democracy through journalism and reporting. The scientific and news communities have worked with each other in the past to better communicate the science as a team, but the fact remains that traditional media outlets and formats, intentions aside, may not be adequate for environmental storytelling.

Current environmental messaging strategies are developed with the end goal of having the viewer walk away as an environmentalist. If we abandon this high standard and instead work with alternative framing and a clear communication of science to turn environmental issues into human issues with solutions, we will create a broadly inclusive coalition of non-environmentalists that will, even in their part-time roles, make huge contributions to the environmental cause. Environmental action has to be structured around people's everyday lifestyle (Barr & Gilg, 2007). Through new framings, we will have to turn the conventional source of environmental problems - mankind's evolutionary propensity to pass costs on to others and be self-serving - into the source of pro-environmental behavior, or at least preservationist behavior (De Young, 2000).

Growth of the environmental movement will require the participation of these auxiliary members that specialize in supporting small-scale economic reform, media reform, social justice issues, and more (Taylor, 2000). The presentation and framing of these issues is crucial for the movement's ability to overcome the popular response of disinterest, complacency and pessimism (Dunaway, 2009). In the words of a Harvard environmental research librarian who studies these issues: "People who care about the environment should care about the news," (Clark, 2010). Given all that, we were interested in exploring ways to engage the non-environmentalist in a discussion about environmental issues.

Our project manifested as two separate projects, the first being a pair of audio segments, or podcasts, inspired by a previous ES capstone report, and the second being photography project. Podcasts are a relatively new form of media, similar to a short radio segment, that allow for a more conversational approach to storytelling that is often absent in current reporting styles. They have the tremendous benefit of being inherently more accessible to the average citizen than lengthy academic reports. The two podcasts differ in the use of narrative and authority, in that one is modeled after a 'five o'clock news report' and the other is co-hosted in a conversational manner. We hoped to see if the use of narrative could draw listeners into what is a patently scientific story.

For our purposes, narrative can be loosely defined as good storytelling. Both intuition and emerging social research show that people are more likely to connect with and remember stories than facts presented without context. The Nieman Foundation for Journalism at Harvard has a program devoted to the innovative approach to storytelling that they call narrative journalism. They define narrative journalism as a form of reporting that can "engage an audience in the news via the compelling structure of story" ("Nieman Foundation").

While there are many elements to narrative storytelling, including strong characters and describing the atmosphere with music or visuals, we chose to emphasize two: the conversational tone and the focus on the 'bigger picture'. Our narrative podcast was co-hosted by two anchors, and so the conversational approach and choice of casual language was more apparent. But a conversational tone can be achieved in pieces with one author as well, so long as the language is inclusive and the listener is compelled to follow the story. In fact, it is more about making the listener feel as if they are a part of the conversation than it is being; it will keep them invested in the story.

Successfully contextualizing a story within the bigger picture is perhaps the most important concept being tested in this project. The topic of the podcast, cultural eutrophication and biological

solutions, is admittedly a science-heavy topic. Our task was to hold a listener's attention through the description of the problem and then have them consider the broader implications of the 'slice of life' story they just heard. We were not particularly concerned if individuals knew about the details of cultural eutrophication, so long as they were able to conceptualize the connection between the application of fertilizers on lawns and farms to the downstream effects on the health of fisheries. Having studied the ecosystem effects of various environmental issues for the better part of four years, we are trained at following the upstream disturbance through to the downstream effects; others have not practiced this kind of conceptualization as frequently. It was therefore our goal to use narrative to help convey the immensity and causality of this particular environmental issue, and to first ground the story in the listener's own backyard.

The second implementation project, wholly separate from the podcasts and study of narrative, consists of a campus-wide photo installation that has been designed to raise awareness about environmental initiatives at Skidmore. The photos match campus 'celebrities', i.e. recognizable professors and staff, with a sustainability initiative, and communicate the value of each initiative through a witty slogan and informational text. The advertising industry has long worked with humor to "increase the recall of advertising messages [and] raise the level of favorability toward the ad;" we will apply the same concepts to College sustainability initiatives and "sell" these ideas (Oakner 2002). In creating these photos, we effectively created an opportunity for students to engage with a professor in a discussion about sustainability. What follows is a description of how we developed these two projects, what our preliminary findings suggest about new ways to approach environmental messaging, and our recommendations for those interested in furthering our work.

Methods

The Use of Narrative in Audio

We recognize the importance of creative media, being avid media consumers ourselves. However, it is quite another thing to create the media that we wish to consume: there are issues of style, basic journalistic rules and broadcasting standards that we were, at the outset of the project, largely unfamiliar with. At the same time, more and more resources are becoming available to the general public that empowers media consumers to become producers. We therefore tried to create the media that people of our generation are accustomed to and enjoy consuming, and in doing so, produced

two radio segments adapted from a previous capstone project. One radio segment was modeled after a traditional “five o’clock news report”, where one narrator reads a formal account of the events. The other segment was modeled after a more conversational podcast, and two co-hosts presented the material in a more casual manner. The two hosts switch roles throughout the story, so that one is the ‘expert’ and the other played the part of the inquisitive listener. We then shared these two versions with high school and college students, both in the classroom and online. We then collected feedback on listener preferences and how well the scientific information was communicated.

We thought it necessary to produce and record the two versions of the same story. It would be unfair to compare a short podcast to a lengthy academic report, and it is also unlikely that the average person would stumble across the academic paper in the first place. We therefore had to produce a second audio piece that was both comparable and traditional; we chose to model it after a short news segment.

In order to determine how the presentation method affected how the listener was engaged and informed, as well as create a level playing field for both pieces, we had to standardize the information that was included in each version. That way, participants could theoretically learn the same amount of information about the topic regardless of what version they listened to. We also wanted to be confident that both stories were produced with equal care and attention to detail, so that both were quality, competitive representations of the styles. In keeping with our mission of producing two competitive products, we chose to forgo theme music and sound effects for the narrative piece; we were not testing the effect of music and distractions on dazzling the listener.

In preparation for producing these radio segments, we analyzed examples of short, engaging radio segments and podcasts to better understand how the radio medium can be used to convey information, the level of detail and complexity that is often attempted, and techniques for keeping the audience engaged (e.g. having multiple hosts conversing, as opposed to one host giving a monologue). We used these observations and others in writing the scripts for the audio pieces.

We also familiarized ourselves with the editorial and technical aspects of writing and recording for the radio. The website community Transom.org has a sizable library of community-generated media production instructables and tips that range from advice on editing decisions to technical and equipment-based queries. The site is endorsed by the veritable heavyweight of story-based radio broadcasting, This American Life, and has informational articles penned by notable radio broadcasters

and journalists. These sorts of online resources, coupled with guidance from local radio broadcasters, media specialists and production suggestions from journalism schools and media production, enabled us to deal with many of the obstacles that we encountered during the production of our podcasts. This collection of resources will be available to ES students interested in the mechanics of making professional-sounding audio segments and the challenge of writing clear and informative scripts for radio.

These sources also informed our purchase of the Zoom H4-n, a high quality, durable stereo field recorder, which we used for interviews and voiceovers. The Zoom belongs to the ES department and is available upon request for students interested in journalism, reporting, documenting special events and other such activities. Audio editing was done in Audacity, a free audio editing program available online. Interviews with NGO sources and journalists took place between February and March, with the majority of editing taking place over spring break. The main interview featured in the podcasts was recorded in one afternoon in an empty classroom on campus. The production schedule was necessarily front-heavy, so that we could produce the podcasts and have enough time to conduct the survey assessments.

We chose to reinterpret the capstone project of Jakob Schenker '10 and Dawn Harfmann '10, entitled 'Phytoremediation of nutrient-controlled water using duckweed and water fern'. The project was the easy choice among the other capstone projects for a variety of reasons. For one, the concept of phytoremediation is both scientific and has practical applications, making it ideal for a short radio segment that needs an obvious "so what?" element. The concept of eutrophication also provided an opportunity to connect a local issue to a global issue, and to provide a solution to a problem. Furthermore, both authors were relatively local and therefore available for interviews, and they were interesting characters in their own right, making them suitable for a more narrative-based approach to storytelling.

Arriving at the New Art Project

The art portion of our capstone underwent a series of changes since the outset of the project. Throughout its development the project adhered to the same fundamental goal: present sustainability through the use of a visual medium, in order to celebrate the success of sustainability at Skidmore College. This challenges the traditional presentation of information while reframing the issue to emphasize the importance of solutions. Our initial project focused on geothermal energy, one of the

larger sustainability initiatives at Skidmore College. Its effectiveness as a sustainable heating & cooling source has dramatically decreased campus energy consumption making it one of Skidmore's most prominent initiatives.

We had initially envisioned an artist collaboration that involved our team taking on the role of environmental educators. We would provide a link between student artists and geothermal energy, ensuring that the artist's understood the technology and its value as a sustainability initiative. Student artists were charged with the responsibility of submitting project proposals for a permanent installation on campus to visualize the initiative for the larger campus community. The installation would serve as a valuable tool for raising awareness about geothermal energy and Skidmore's efforts to address campus sustainability. Our interest in the use of art to present the technology is grounded in the need to employ alternative methods when explaining science to individuals who typically have no association with these topics. Lastly, geothermal energy remains completely hidden underground so it is crucial to identify a way to foster awareness of one of Skidmore's largest sustainability initiatives.

The original structure of the artist collaboration focused on student initiative. Artists would be responsible for writing a project proposal, recruiting a faculty advisor and institutionalizing the project as an independent study. Our capstone team would maintain a role of providing information and insight about the sustainability initiative, while undertaking the task of establishing a review committee to select the projects that would receive funding. By and large the artists' role in the project and our team's role in the project would overlap only to ensure that the project fulfilled the fundamental goals of the initiative (e.g. producing a high-quality piece to visualize geothermal).

After publicizing the project to the artistic community of Skidmore we received a very underwhelming response. No project proposals had been submitted by the scheduled deadlines and there seemed to be some concerns about our motives in "commissioning" an art piece. At this point we had become fully aware of the complexities involved in an interdepartmental project. The dramatically different roles of our team and the student artists became a source of concern, particularly our position as "gatekeepers" of the project's funding and our role in facilitating oversight of project's design. Drawing from our knowledge and academic experiences in the area of sustainability, we hoped to inform the artists about geothermal energy while giving them the liberty to design and produce the project. However, the narrow focus of the project on geothermal energy seemed to be in conflict with the level of flexibility we hoped to provide participating artists. The coordination involved in a project

that relied on such a diverse group of individuals became a complicating factor fostering skepticism, concern, and a general sense of confusion. The project we had presented the artistic community was unlike any project proposed in recent years, and fear of the unfamiliar only served to exacerbate skepticism amongst the art community. Our first art project served the valuable role of informing a more refined and focused project entitled *The Green Visualization Initiative*.

Drawing from our experiences with the "artist collaboration" the Green Visualization Initiative was structured as a true collaborative effort between students of different academic disciplines. Despite the project's restructuring, the objective did not change. The goal was to celebrate the progress and breadth of sustainability initiatives at Skidmore while heightening campus awareness/understanding of efforts to reduce the College's environmental impact. We took on the arduous task of informing and educating the Skidmore community by expanding the project to reflect the wide range of sustainability initiatives. Working with Robert ParkeHarrison, associate professor of photography, his wife and creative partner, Shana ParkeHarrison, and a select group of graphic design and photography students, we designed a semi-permanent portraiture installation to visualize seventeen of Skidmore's most successful sustainability initiatives.

We designed twenty-one black and white portraits (dimensions 40''x 65''), each pairing a member of Skidmore's faculty, staff, or administration with a particular sustainability initiative. The portraits included a witty quip and an informative statement to reflect the scale and success of individual initiatives. The presentation of the portraits was guided by a need to produce an aesthetically pleasing image that would stand out in a campus environment often cluttered with temporary visuals. The artistic choice for the photographs to be in black and white was done in order to focus on the subject (body language and facial expression) and allow the accompanying text to inform the viewer. Our aim was to give the installation a striking presentation that secured its informative value while showcasing its artistic beauty. By visualizing sustainability through humor and the use of prominent Skidmore faces, we intend to expand the conversation of sustainability to the greater Skidmore community.

Assessment

This capstone is operating on the presumption that environmental messaging is flawed. While it is our experiences in the environmental movement that have led us to experiment with these new means of messaging, we needed to provide a formal assessment of the impact of our methods to help us determine if our assumptions are grounded in reality. We therefore developed surveys for both the art project and the podcasting project.

For the art project, a baseline survey was administered to assess the level of environmental awareness of students and staff/faculty. Four questions were asked in the survey. The first question was used in order to identify the participant's relation to Skidmore (e.g. staff, faculty or student). The second question included a list of 14 current sustainability initiatives and the participant was asked to identify all of the initiatives that Skidmore has implemented. The list of initiatives consisted of efforts that the school had already taken however this information was not provided in the survey. The third survey question asked the respondent to detail the specific ways Skidmore's sustainability initiatives have reduced the college's environmental impact. The final question allowed respondents to list any sustainability initiatives Skidmore has implemented but were absent from the survey.

Question #2 utilized a quantitative approach in order gauge the broader sense of campus awareness. Question #3 was presented in a qualitative manner allowing respondents to comment on the impact sustainability initiatives have on the campus' environmental impact. These responses allowed us to assess the quality of the respondents' knowledge and awareness of initiatives. Question #4 takes this qualitative assessment a step further by offering respondents the opportunity to list initiatives we had not addressed in question #2. The qualitative assessment was included in order to contextualize our findings from question #2.

Following the installation of the portraiture project, this survey will be administered in subsequent semesters in order to ascertain the impact of the Green Visualization Initiative on campus awareness. The survey will be managed through Sustainable Skidmore and will provide the basis for a long-term project to assess environmental understanding at Skidmore.

Assessing the effectiveness of the audio segments proved to be more difficult. We first had to determine if we had created quality scripts and production, and then test the ability of the two different audio pieces to effectively educate and engage the audience. We achieved this using a 'before and after' survey model, coupled with an opportunity for 'focus group' responses. Survey participants took an

entry survey to assess their baseline understanding of the scientific issue and gather basic information about news consumption. Participants were then randomly assigned to one of the two audio pieces without knowing which version they were listening to. After listening to the audio piece, the participants took an exit survey that contained the same three questions as the first survey; by repeating these questions, we could separate what individuals had learned from what they might have known coming into the experience. The third and final part of the survey provided the participants an opportunity to comment on how the information was presented, what was successful and what needed work.

The first and second surveys were paired for every participant so that we could see how the audio piece affected each individual. We analyzed the survey results by awarding points for every keyword used in a response. For example: Question 1 asked "What is eutrophication - what causes it?" and we would accept 'accelerate', 'dissolved oxygen', 'nitrogen', 'runoff', 'contaminant', and several other words. For compound phrases, like 'drinking water', we would count each word once (e.g. "drinking water" and "water treatment" would count as three points). The keyword bank changed for each of the three questions related to content, and were limited to words and concepts that listeners could have acquired from the audio segment. The other questions are as follows: Question 2: "How does runoff affect humans and the environment?" Question 3: "What are some ways that water pollution can be managed?"

Results & Discussion

Narrative in Audio

We asked three questions in each survey, which were designed to have the reader first define the problem, then recognize how it could impact humans, and finally consider potential solutions. Therefore, the first and third questions were relatively concrete, while the second question was more abstract. We were curious to see how the conversational narrative and the traditional news report affected listeners' ability to fully answer these questions.

An initial tallying of the results counted each keyword in each response and assigned a total score for the question. This caused a few problems, in that we could not accurately distinguish between what listeners might have learned from the audio segment and what they knew before they began. Some participants only wrote down new vocabulary or concepts in the second survey, which others

amended their answers from the first survey. This falsely inflated the scores of some participants, especially compared to those who came into the first survey with a good understanding of the topic.

It was here that we decided we had to look at 'unique answers', so that we could more accurately judge the progress of each participant. In looking for 'unique answers', we awarded points for only the first appearance of a word, so that if a participant wrote 'nutrients' in both the first and second survey, the keyword would only go toward their first survey score. In this way, we were able to screen for new vocabulary and concepts that participants might have gained from the audio segment.

With 'unique answers' converted into keyword scores, we were then ready to look at how the narrative podcast compared to the news report in terms of communicating key words, and by extension the most critical concepts, to our listeners. While the sample set was too small to produce useful or definitive statistics, we were able to draw out some basic trends by comparing the scores based on which version of the podcast was played, as well as by the education level of the listener. These observations are the result of comparing the average keyword score for each group (all narrative, narrative-college, narrative-high school, etc.).

Both college and high school students who listened to the narrative were, by chance, more educated on the subject of eutrophication prior to the podcast than were those who listened to the news report (Figure 1). This is a result of the small sample size, and while it is an unfortunate outcome, we can still learn from how these cohorts progressed in response to the podcasts.

BEFORE AUDIO		Question 1	Question 2	Question 3
	Average	2.46	2.50	1.88
NARRATIVE	High School	1.45	1.45	1.36
	College	3.82	3.18	2.36
	Average	1.39	1.89	1.61
NEWS REPORT	High School	0.8	0.7	0.9
	College	2.43	3.86	2.86

AFTER AUDIO		Question 1	Question 2	Question 3
	Average	3.45	2.23	1.32
NARRATIVE	High School	3.18	2.18	1.09
	College	3.73	2.27	1.55
	Average	3.82	2.12	1.59
NEWS REPORT	High School	3.30	2.30	1.40
	College	4.57	1.86	1.86

Figure 1. Average keyword scores for survey participants before and after the audio segments. Green highlights indicate which cohort had the highest score.

The three questions follow a 'concrete-abstract-concrete' layout, such that Questions 1 & 3 are more factual while Question 2 involves conceptualizing a distant and large-scale phenomena. It is interesting, then, that the 'after audio' news report scores are higher for Questions 1 & 3, and the 'after audio' narrative scores are slightly higher among college students for Question 2. It may be a function of the narrative approach, with an emphasis on the "big picture" that improved scores for the most abstract question. And even while those who listened to the narrative started with a stronger score, they could still improve their scores for Question 2 after listening to the podcast. Among high school students: while the news report group improved by an average of 1.60 points, the narrative group still climbed 0.73 points.

Perhaps unsurprisingly, college students rely on a much more diverse network of news sources than do high school students

(Figure 2a & 2b). College students read both print and online newspapers much more than high school students, and utilize Facebook, Twitter and other social media outlets almost as frequently as newspapers. It is another reminder that college and high schools students do indeed have different levels of background knowledge about local and national issues.

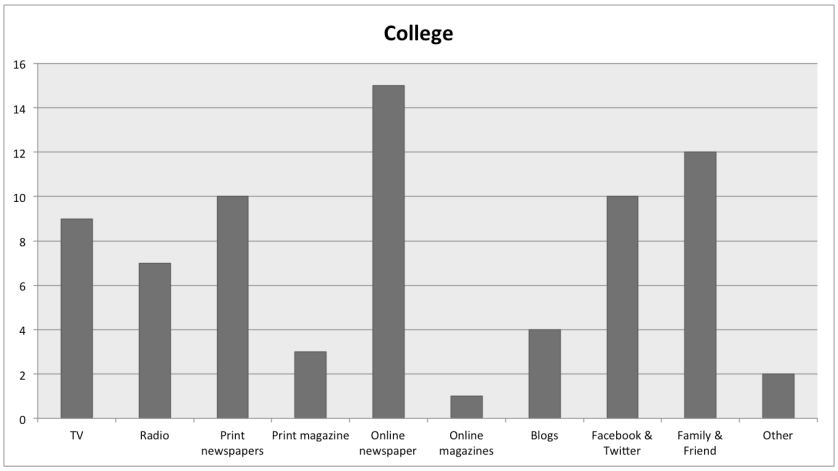

Figure 2a.

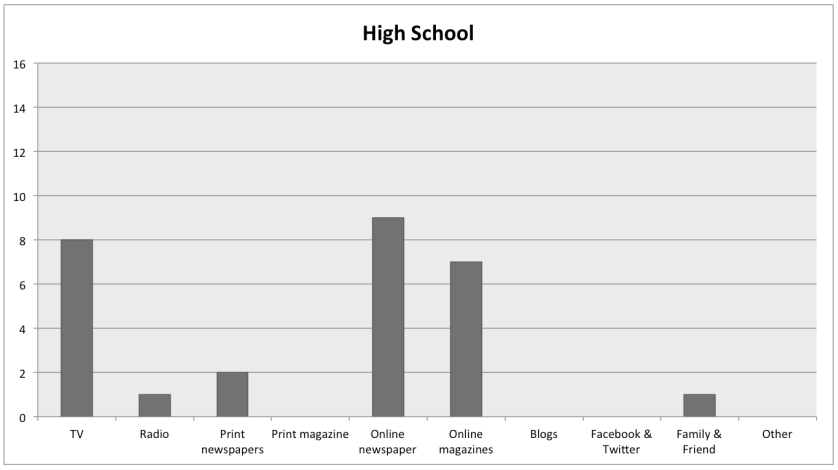

Figure 2b.

Figure 2a & 2b. Where survey participants get their news

It is tempting to interpret the sums of 'unique answers' - the total number of keywords used by the average participant in both surveys - as suggesting that the narrative podcast worked better in conveying the big concepts (Figure 3). The average score for the narrative podcast group in Question 1 was 5.91, or 0.70 more than the average score for the news report group. Likewise, the score for the narrative group in Question 2 was 4.73, or 0.72 more than the news report. Scores for Question 3 were almost equal at 3.19 and 3.20. When looking only at high school students, the total keyword scores were higher for those who listened to the narrative for all three questions.

TOTAL POINTS		**Question 1**	**Question 2**	**Question 3**
	Average	5.91	4.73	3.19
NARRATIVE	High School	4.64	3.64	2.45
	College	7.55	5.45	3.91
	Average	5.21	4.01	3.20
NEWS REPORT	High School	4.10	3.00	2.30
	College	7.00	5.71	4.71

Figure 3. Sum of average keyword points for survey participants (i.e. sum of 'before' and 'after' scores)

But regardless of what the averages might suggest, we simply did not have a large enough sample size from which to draw firm conclusions. Because the survey questions did not demand exhaustive answers, it would be unwise to say that one type of audio story outperformed the other, based solely on quantitative data. Surveys can be effective for small sample sizes, but they compensate for the small size by being more thorough. Our surveys were not compulsory, nor did we have specific instructions asking participants to list every concept and keyword that they learned; in most cases, participants wrote about the 'moral of the story' as they saw it, whether it were an ecological issue or an economic issue, leaving some facets undescribed. We therefore had to incorporate the qualitative data in the "focus group" responses.

The focus group responses were perhaps the most useful data we collected, in that they allowed participants to explain why they might have scored the way they did. We were only able to collect focus

group data from the online version of the survey, and even then, not all participants completed the survey through to the end. The online survey was completed almost exclusively by college students (the three responses from community members have been omitted, as the sample size was too small). By chance, the narrative podcast had more extensive survey responses, and so was perhaps better described than the news report.

In looking at the responses as a whole, we can find some basic themes. The first is that the interviews were recorded at too low a level, and many reported having to strain to hear the audio. This is a purely technical issue, but regrettable nonetheless, and may have distracted the listener from the content.

The second is that the audio pieces were very long compared to the average radio story. One participant wrote: “Anything over 5 minutes is almost intolerable to most people...I hope you are successful in getting participants for your survey!” This is consistent with many studies on the decreasing attention span of media consumers (which is not to say that responsible journalists should cater to the demand for shorter, less contextualized news). It is also possible that we attempted to cover too much in one story, and that the focus on ‘lo-tech biotech’ was too far a stretch from the gateway issue of eutrophication; a listener commented that, “you guys were talking about a lot of things … and I wasn’t sure what the point was except that there were problems in the environment”.

The third is that some people are visual learners, while other are happy with audio. There were requests in both the news report and narrative for visuals, either animated or video, to better describe the process. It is perhaps to be expected that college students of today expect some sort of visual accompaniment with didactic material, but the goal of our project was not to find the most popular form of media; it was to see how variations within one medium, radio, affected the listener’s ability to understand and connect with the material. Putting this particular criticism aside, we looked for other trends in focus group responses.

The responses to the news report show that while some enjoyed the approach, others were concerned that it did not accurately describe how eutrophication affects humans. Participants wrote that, “listing how it affects us directly would make it more appealing. Not everyone is as gung-ho [sic] about the environment as you guys”, and that it “could have used some reinforcements as to why I should care”. Other listeners did enjoy the traditional approach to storytelling and were more likely to mention ‘solutions’ as the take-home message.

The responses to the narrative podcast show were more complimentary and showed that participants had come away with, on some dimensions, a better understanding of the far-reaching environmental impacts. Participants mentioned the dead zone in the Gulf of Mexico more frequently as a take-home message, as opposed to the news report participants, who focused on the solutions but did not mention the dead zone.

Some listeners enjoyed the co-hosts bantering back and forth; they wrote, "the conversational tone keeps it from being boring or sounding like a textbook", and "the narrators ...kept my interest and asked good questions that I would have asked were I there". One went as far as to say that, "I wish I was taught everything through dialogue". In contrast, others found the tone and language to be too casual to be broadcast as 'news'.

While we only have eleven responses to the narrative and seven responses to the news report, we can still learn a lot about how people assessed their experiences in listening to these pieces. The responses by and large support our hypothesis that presenting scientific information in a more accessible way, and putting the issue in the context of how it affects humans, makes the learning experience more enjoyable. Both groups may have come away learning the same information, but those who listened to the podcast seemed to not resent the fact that they were taught something.

Environmental Portraiture

Four questions were asked in the baseline survey in order to determine the survey respondent's relation to Skidmore, their understanding of implemented sustainability initiatives, and to what degree members of the Skidmore community understand the purpose and benefit of sustainability initiatives. The survey had a total of 269 responses, 75 of the respondents identified themselves as students and 194 identified themselves as faculty/staff. Question #2 (identify Skidmore sustainability initiatives) received a similar response from both groups. The most recognized initiatives received 75% recognition or greater. These initiatives include: the student garden, expanded campus recycling, tray-less dining, geothermal energy, and local food sourcing (Figure 4). The least recognized initiatives received less than 70% respondent recognition: building occupancy sensors, and building efficiency and design composting food waste, LED lighting, rideshare for students, cold water use in clothing washers, low-flow water fixtures, greenhouse gas inventory, and decentralized water boilers (Figure 4).

Initiatives	Number of Respondents	Percentage of Total Respondents
Student Garden	215	80.8%
Expanded Campus Recycling	208	78.2%
Tray-less	205	77.1%
Geothermal Energy	204	76.7%
Local Food Sourcing	204	76.7%
Building Occupancy Sensors	179	67.3%
Building Efficiency and Design	146	54.9%
Composting Food Waste	137	51.5%
LED Lighting	135	50.8%
Rideshare for Students	116	43.6%
Cold Water Use in Clothing Washers	96	36.1%
Low-Flow Water Fixtures	95	35.7%
Greenhouse Gas Inventory	85	32.0%
Decentralized Water Boilers	71	26.7%
Total	270	

Figure 4. Respondent's recognition of Skidmore sustainability initiatives

Separate analysis of the two respondent group's answers for question #2 yielded slightly different results. The seven most recognized initiatives by students included the student rideshare

program but did not include building efficiency and design. The opposite was true in the case of faculty/staff respondents. The difference can be attributed to the rideshare program being a student initiative, while building design and efficiency has been a long-term campus initiative more likely observed by a non-student member of the campus community. For question #2 five of the student respondents (total 75) identified less than five initiatives and a total of 15 faculty/staff respondents (total 194) identified less than 5 initiatives.

The answers to question #3 ranged from concise and descriptive responses detailing the effect of individual initiatives to generalized responses such as "energy consumption is decreased" and "I don't know." There were a total of 75 student respondents and 34 students were unable to answer question #3 (45% of student respondents). We assumed that the absence of an answer indicated that the respondent was unable to answer the question. There were a total of 194 staff and faculty respondents and 103 (53% of faculty/staff respondents) did not respond to question 3 or indicated their inability to do so.

The final question (question #4) asked respondents to identify any sustainability initiatives (not included in question 2) they are aware that Skidmore has implemented. Twenty-nine faculty/staff and student responses identified 12 initiatives. The initiatives are represented by four general themes: transportation, recycling, energy, and student initiatives. The transportation initiatives included a faculty carpooling program as well as the free CDTA bus system. Recycling initiatives consisted of paper products and the Give & Go outreach program. Student initiatives included the Northwood's stewards, sustainability representatives in dormitories, and the environmental action club. Sustainable energy initiatives included a 2:00 a.m. shutoff timer for all public computers and the purchasing of renewable energy credits.

Assuming that the 269 respondents are representative of Skidmore's community, data suggests that students, faculty, and staff are aware of sustainability initiatives that have been implemented. At least half of the respondents were able to identify nine initiatives in question #2, some of which are not very accessible or visible to the greater campus community (e.g. the composting program in the Northwood's apartments). While there appears to be a strong baseline awareness level, the degree to which people understand the initiatives brings into question the legitimacy of this "awareness."

It is very easy to assume that an institution of higher learning is committed to sustainability and efficiency. The quantitative structure of question #2 allows respondents to click all of the initiatives they

believe Skidmore has already implemented. There is no way to know if respondents carelessly selected all possible answers or if they approached the question as guessing game. We are not assuming our respondents were dishonest in their answers, but simply recognizing the possibility for a quantitative question to fall short of providing sound data. While responses seem to indicate that a fair percentage of the campus community knows quite a bit about Skidmore's commitment to sustainability, the results of question #3 showed that 49% of respondents (34 students & 103 faculty/staff) were unable to provide any information about how the initiatives decrease Skidmore's environmental impact.

Nearly half of all respondents can identify the existence of an initiative, but were totally unaware of the initiative's positive effect. While this does not dismiss the results of question #2, it is symbolic of people's level of awareness of the initiatives. There is a clear difference between knowing and understanding and half of the respondents seem to lack the knowledge to articulate what a sustainability initiative entails. This finding does not necessarily belittle campus awareness but it does reflect the type of exposure and dialogue that has facilitated the process of educating the campus community on the topic of sustainability.

An informational void exists between the members of the community and the initiatives Skidmore has heavily invested in. The disconnect stems from the fairly non-existent educational and publicity efforts Skidmore has employed for the task of informing the campus community about sustainability. We consider this disconnect the product of an incomplete investment. The school is allocating a substantial portion of funding for sustainability efforts; however its investment seems to be approached largely in financial terms. There have been few efforts to provide detailed and accessible information about campus sustainability. As an institution of higher learning, this approach does not seem to be consistent with the College's broader educational goals.

While financial returns are a very legitimate reason to employ efficient technologies and sustainable practices, it is a missed opportunity to not educate the Skidmore community about the various avenues the college has taken to address the global issue of sustainability. The College's mission statement includes a vision for producing lifelong learners: "…the College seeks to prepare liberally educated graduates to continue their quest for knowledge and to make the choices required of informed, responsible citizens." The emphasis on providing an undergraduate education that will prepare students to become informed and responsible citizens reflects the importance of broad

knowledge. Sustainability transcends the scope of one particular academic discipline by connecting decisions with their environmental and economic implications.

The campus is a learning tool and lessons of sustainability are increasingly become more prevalent in academic buildings, dormitories, and the day-to-day lives of Skidmore community members. However, our survey indicates two worrisome realities that characterize the current state of campus awareness. Illustrated in the responses to question #2, many significant sustainability initiatives are not recognized by the broader campus community. Respondents were aware of nearly half of the initiative but these initiatives all shared the characteristic of being inherently visual (e.g. student garden, recycling efforts, tray-less dining). There is a need to heighten the presence of initiatives that exist outside of plain sight (e.g. LED lighting, decentralized water boilers, cold water use in clothing washers), especially due to the fact that many of these initiatives provide some the largest contributions to campus sustainability.

The second issue that must be addressed is the absence of accessible information to educate the Skidmore community about sustainability efforts. Sustainability is scientific at its core but it does not take a scientific background to understand the initiatives and the progress we have achieved in reducing the campus' environmental impact. It is key that these initiatives are presented in a manner that both educates and informs the campus community without confining 'sustainability' to an interest of environmentalism.

Critique of Methods

In taking on two capstone projects, we effectively divided our resources and time for the semester. As such, we have visions for both projects that will extend beyond our time at Skidmore. We hope that this project can act as a model for future researchers who see improved media coverage of the environment critical to improved environmental education, and who wish to actively challenge their assumptions about how to tell better stories. We would also like to leave behind recommendations for the management of the portraiture project and document the rationale behind our suggestions.

At the beginning of the research experience, we had high expectations for the comparison between narrative-based stories and traditional news reporting. For a variety of reasons, of which the biggest was the sudden additional responsibility of the art project, we were limited in terms of the kind of audio we could produce. The surveys were not as exhaustive as they could have been, either.

Students interested in revisiting a comparison of storytelling strategies would do well to start developing the scripts as early in the academic year as possible. We had planned on producing a small collection of podcasts, but the amount of preparation, writing and editing that goes into just one audio segment can be quite extensive.

A fair compromise might be to shorten the length of each podcast, which would considerably reduce the amount of time spent producing each podcast. This has the added benefit of making listeners more likely to complete the survey. We think that having multiple stories (each with both the narrative and non-narrative versions) would provide a more balanced view of how the storytelling methods contribute to listener response. If listeners are not particularly enthused by a topic, then it will certainly affect how they listen to the story. It would also be wise to choose a topic that is not strictly science, but perhaps a complex legal or economic angle on an environmental issue (the economics of sustainable fisheries comes to mind). We suspect that narrative will be equally as useful and engaging when used to communicate other types of stories that rely on an in-depth understanding of cause-and-effect (as most environmental stories do!).

Limited access to a 'captive audience', i.e. high school and college classes, forced us to digitize and decentralize our original survey and focus group experience. We reformatted the survey questions for the online survey tool Surveymonkey.com and automated the software so that online participants would be split between the narrative and the news report. While similar to the hard copy of the survey in almost every way, the online version was a vastly different experience in that online participants were more likely to leave surveys incomplete. In a large group, like a classroom, all participants can take the survey together, and the 15 to 20 minutes that our survey required felt like a manageable amount of time. In contrast, the online survey was completed in isolation and felt, according to personal communications with participants, "too long" and "oppressive". We therefore reaffirm the common sense conclusion that online surveys must be kept on the short side, that face-to-face interactions are more useful when conducting 'focus group' interviews, and that small rewards, like snacks for high school students, are cheap and effective means of increasing survey participation.

The survey administered to assess campus awareness of sustainability initiatives must undergo a series of changes before it is used again. The clarity of the wording as well as length of the survey may have influenced the quality of the data we collected. Terms should be defined in the description of the survey (e.g. sustainability and environmental impact) in order to avoid any confusion or

misinterpretation of survey questions. Question #2 asked the participant to read through a list of sustainability initiatives and select the initiatives they knew Skidmore had implemented. The fact that all of the initiatives included in the list had been implemented by Skidmore left no way to gauge the honesty of participant's responses. Some respondents may have been carelessly choosing all of the initiatives and others may have actually been aware of all 14 options. The question should be posed in two separate lists at different points during the survey, and a number of initiatives that Skidmore has not implemented should be included in these lists.

While the data from question #1 indicated that a large number of the respondents were "aware" of sustainability initiatives, this term is fairly simplistic. The simple checking of a box can be considered a display of awareness. More qualitative questions should be included in the survey in order to properly assess the level of awareness and understanding of the respondent. It may be worthwhile to structure the quantitative questions with a qualitative component in order to force the respondent to elaborate on their response. These questions should also be mandatory with a specification that respondents must write a particular phrase in order to "skip" a question in the case they are unable to respond. This will help minimize the number of respondents who simply choose not to complete the survey.

Lastly, the number and diversity of respondents is crucial for collecting data representative of the campus community. The survey should be extremely accessible and well circulated over a long period of time in order to ensure that your data is truly reflective of such groups as "students" and "faculty." We did not know if very specific cohorts or a variety of persons had taken our survey. In order to obtain sound survey results in the future it is extremely important that all of these recommendations are taken seriously.

Conclusion

This research experience has both affirmed and modified our original position on the value of narrative-based storytelling. Our data suggest that a more personal analysis of how an environmental story will affect the listener will result in a more successful and informative exchange. Put another way: people enjoy being along for the discovery more than they do sitting through a lecture.

But our understanding of approaches to messaging was modified in that traditional reporting is still effective at conveying facts. According to our preliminary data, it seems like the news report conveyed more keywords to listeners than did the narrative, although this may be a function of the narrative group having come in with a better initial understanding of the topic. Alternately, we just did not create as clear a story in the narrative podcast as we did in the news report podcast. We were not able to test for the longevity of the knowledge that participants gained during the survey, as we could not follow up in later weeks, but further research into information retention would help uncover any other lasting benefits of using narrative.

There is a simple middle ground to be found here. Media creators need only ensure that factual clarity is joined with the empathetic, connecting powers of narrative. Of course, while it is a simple solution conceptually, it is incredibly difficult to do successfully and consistently, and therefore isn't likely to be broadly applied by news media outlets. These organizations are so entrenched in a particular way of telling stories, and are focused on providing a specific kind of coverage to their audience, that a change to narrative reporting will not occur overnight. The news media apparently consider an in-depth, engaging narrative a novelty, for when it is used, it tends to be one dimensional and overly emotional. Even NPR has moved away from producing its famed 'driveway moments', wherein an emotional hook and expert sources enabled a logical breakdown of the issue. In order to build the broad coalition necessary to demand pro-environmental change in business and in government, we need to get back to our roots as storytellers. We can think like advertising executives, think like speechwriters, and make it simple for people to see how they are intertwined with the concept of sustainability.

Results from our baseline sustainability survey indicate that there is need to heighten campus awareness while strengthening knowledge and understanding of campus sustainability initiatives. The Green Visualization Initiative aims to address these campus specific issues as well as problems that have undermined the effectiveness of environmental messaging. Portrait design was crafted to present sustainability in non-polarizing terms in order to facilitate interest and engagement with the subject of sustainability. The language and aesthetic qualities of the prints contextualized initiatives to further bridge the disconnection between sustainability and the broader Skidmore community.

The most important aspect of environmental messaging is speaking to the viewer. An approach that aims to dramatize an issue will only further distance the party of interest. Messaging must relate to the viewer on a personal level in order to truly gain an individual's support and investment. The

approach that ignores the importance of the human connection will fail time and time again to speak to the general public. Our hope is that the Green Visualization Initiative will effectively integrate sustainability into campus life. The project aims to raise awareness but most importantly, foster a strong connection between all members of the campus community and the issue of sustainability.

We want to stress one final time that a narrative-based radio story is not the only or best way to spread environmental awareness. Nor do we think that a portrait installation with educational statements will turn the student body into treehuggers. Rather, we consider each project an experiment in talking about environmental issues in a way that doesn't immediately polarize the story being told, and we did so by using interesting characters. We hope that the photo installation will help increase the breadth and depth of environmental awareness on campus, and that it may contribute to the school's mission of educating 'engaged responsible citizens'.

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