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Strategic Climate Change Communication: A Creative Effort Toward Mitigation and Adaptation



Changing the Current

Page Atcheson
UVM Environmental Studies Thesis
In Collaboration with 350 Vermont

Advisors: Amy Seidl, Brian Tokar, and David Stember
Submitted April 30, 2012

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Abstract

As our planet undergoes radical change as a result of the buildup of greenhouse gases in the atmosphere, it is clear that action to mitigate the effects of climate change and adapt to its impacts is critical. Yet mobilizing the public around this global phenomenon has proven to be challenging. My undergraduate thesis translates the research around strategic climate change communication and successful community engagement into a creative project: a game.

Changing the Current is a non-competitive, visual game, communicating the local impacts of a warming planet in Vermont, global ramifications, and the myriad of actions to take toward mitigation – from personal behavior change to community building to political involvement. In addition to allowing for this information to be communicated, the game serves as a brainstorming tool to posit the question to the players: how can we collectively adapt to this changing world?

The game was launched on Town Meeting Day, 2012, an annual event known for its truly democratic nature, in four Vermont towns. Each copy was hosted by a “Climate Ambassador,” who was a community member involved with local climate activism. This approach of implementation was based around concepts such as adaptive capacity and social diffusion, capitalizing on what is known on the strength of community-based knowledge and civic participation. In this way, *Changing the Current* was able to go beyond traditional methods of disseminating information that applies to the public realm. This project thesis was intended to further action around climate change in Vermont, a phenomenon that promises to affect us all.

Keywords

Adaptation

Adaptive Capacity

Civic Participation

Climate Change

Communication

Fossil Fuels

Group Affiliation

Mitigation

Social Diffusion

Preamble

The days leading up to the completion of this thesis have broken record high temperatures, with forecasts around the country expecting tornados, thunderstorms, and flash floods. The Weather Channel's headline is currently "Over Six Thousand Heat Records," with their number one read story titled "Top Ways This March is Strange." In many ways, I have begun to feel that my work on climate change is now presenting itself in the starkest way. As I write of "Changing the Current," a title meant to reflect our society's proactive response to our reliance on fossil fuel use, it is impossible not to observe what's unfolding: the current (in my metaphorical use of the word) is changing, and here we are, along for the ride wearing sun dresses and flip-flops.

My study and interest in climate change these past few years at the University of Vermont has frequently felt anticipatory and distant. It has often been presented as a phenomenon that impacts communities in faraway places and alters natural ecosystems we do not directly depend on. But, increasingly so, it is apparent this cannot serve as a justification not to respond. This is both because to do so would mean ignoring the largely preventable suffering of others, and because the impacts from climate change are increasingly encroaching on the places and the systems that we are dependent on in the developed world, such as agriculture and water supplies.

The anthropogenic climate change we are experiencing today is, at the most basic level, caused by the burning of fossil fuels. The fact that our Western culture has benefited so greatly from these immense stores of energy – and that the less developed parts of the world are disproportionately impacted by the consequences – forces me to acknowledge we have a cultural and ethical imperative to address it. In many ways I have

come to the subject of global climate change – and clung to it – because it is so illustrative of injustice, an incomprehensibly complex phenomenon that necessitates our utmost attention. This belief remains at the core of the work I have chosen to be involved with, but as they say, “you pull one thread and it unravels.”

My introduction to the 350.org campaign, which aims to further global activism on climate change, came the fall of my freshman year at the University. There was an event at Burlington’s Battery Park that was meant to raise awareness of the issue, and I went as an unfamiliar, albeit supportive, observer and watched the humbly sized crowd enact a choreographed dance with streamers between the park’s trees. Bill McKibben, who is now one of the world’s most recognized and respected leaders of the climate movement, sat on one of the benches overlooking Lake Champlain. His expression was solemn and serious, his focus removed from the happenings behind him. Now, I think, I can relate to the feeling I imagine he had then; needing to look outward into the changing world, while hoping humanity will take notice of the changes we are provoking.

The next two years, I was more intimately involved with 350.org’s “Days of Action.” These events brought people together to embrace the global challenge facing us, calling on others to do the same. In effect, they seemed to provide an outlet for all of the dismal projections I’d learn in my classes focused around international development and environmental studies. In 2009, we lay on wet pavement to spell “350” with our bodies, and walked silently through a downtown neighborhood in Burlington with church bells ringing 350 times. We organized work parties in 2010 to show the immediate need of getting started on projects to wean ourselves off of fossil fuels; planting trees, clearing

community gardens, insulating a freezer with recycled materials. Politicians spoke to the crowd on this transition, and we submitted our group photograph – in which we huddled alongside a solar energy-generating bus – as one of thousands streaming in from around the world.

Greenhouse gas emissions continued to rise. The United Nations Framework Convention on Climate Change produced results that were inconsequential at best. The United States Congress voted against the American Clean Energy and Security Act. Teenagers still were enthusiastic to get their driving permits, and the phrase “pain at the pump” came forward with rising gas prices simply because of the effect on our bank statements. More striking to me than the lack of global and national climate leadership was the extent to which our society did not seem to understand or embrace the changes toward which we are heading. While, in the academic and scholarly world, scientists were unpacking the implications of these societal choices, our mainstream culture cruised on ahead. It was hard not to feel as if these two seemingly divergent realities would eventually be united, based simply on the reality of biophysical restraints and complex atmospheric systems.

The way in which I understand this possible unfolding – of the inevitable collapse of our industrialized society if we choose not to act proactively and equitably – would mean the inevitable suffering of many people, primarily people of color in less developed areas of the world. It would mean the extinction of species (many of which we have not discovered yet) and the radical altering of life systems as we know them. The resolve to prevent this potential scenario was coupled with a sense of optimism: rather than collapse, we could have a sense of community, healthy food, adequate jobs, a co-

beneficial relationship with nature. It was largely this enthusiasm that drew me to the group of five with whom I had planned the 2010 day of action, which gradually evolved into what is now a local chapter of 350.org, appropriately named 350 Vermont.

The formative stages of this state-specific climate change campaign challenged me to focus away from event planning (with which I'd become quite familiar by this point), and towards a more tactical, grounded approach to dealing with climate change. What were citizens of Vermont already doing in response to these expected changes? How could their efforts become more coordinated, to weave together a message that could become political and heard beyond our borders? In what ways were we – a state widely acclaimed for being “green” and forward-thinking – leading the nation, and in what ways were we still embedded within a fossil-fuel economy? These questions were among the many that the 350 Vermont group asked ourselves, at weekly meetings hosted in our homes over vegetarian pizza. It was evident that calling for global action was a much neater, clear-cut task than familiarizing oneself with the everyday initiatives, non-profits, and small-scale changes that were ongoing.

Two experiences clarified and added depth to this painting of climate change activism in Vermont. The first was during the winter of my junior year, when our core group traveled around the state to meet with individuals that had organized a 350.org event in their area, and were – similarly to us – overcome by a sense that climate change, and shifting away from fossil fuels, needed to be a higher priority in Vermont. The five of us, through meeting these inspiring individuals (ranging from homesteaders to entrepreneurs to concerned mothers to progressive doctors) began to weave together a more coordinated, statewide network that spoke explicitly of the need for action around

climate change. The results from this winter road trip were lasting, and in many ways set the stage for how 350 Vermont runs today: based on shared commitment, positivity, and cohesion that allows for a much stronger climate movement in the state. It also highlighted the fact that there are a myriad of tactics to address climate change, as these individuals were all involved with. Yet what largely guided their choices was a consciousness of climate change, a deep understanding of the long-term implications of our culture's addiction to fossil fuels. I therefore became increasingly determined to find some way to communicate this to others, in a way that would spur similarly inspiring action.

The summer before my senior year, I received a grant to explore how to do this in Vermont, in conjunction with the 350 Vermont group. Building on the connections I had made through organizing previous events and the winter road trip, I was able to engage in discussions on community involvement, motivating factors, experiences with reducing energy use, obstacles to speaking about climate change...the list goes on. The knowledge I acquired throughout the summer illustrated again the breadth of possibilities that exist for people to get involved, the ongoing challenges associated with furthering sustainability, and – most important – the need for the public to gain an appreciation for the changes we have already begun to endure. In a state so poised to lead the way, with many programs and initiatives in place to lower our carbon emissions while building resilient communities, what we needed most was what cannot be bought or even quantified: a committed public.

This thesis, *Changing the Current*, is the result of my academic path, my involvement outside the classroom (primarily connected to 350 Vermont), and a personal dedication to furthering dialogue around climate change. It has been largely influenced by a few individuals I have been so fortunate to have worked with, namely Amy Seidl, David Stember, Brian Tokar, and Cami Davis. Each of these individuals has had a huge influence on this project, including the way I have begun to unpack and construct ideas that relate to it.

Literature Review

For all of modern human history, until about 200 years ago, the planet's ratio of carbon dioxide molecules to all other molecules in the atmosphere has been 275 parts per million (ppm). With the onset of the industrial revolution, carbon dioxide began to rise as humans turned to fossil fuels for energy; we now have a level of about 392 ppm. Climate scientists, most famously the National Aeronautics and Space Administration's James Hansen, have told us that the safe upper level of carbon dioxide we can have in our atmosphere is 350 parts per million. Given that we are very seriously risking passing irreversible tipping points and seeing drastic impacts that threaten, as Hansen famously has stated, "a planet similar to that which civilization developed and to which life on Earth is adapted," we know that reducing emissions is a critical task (McKibben, 2011).

Additionally, we must begin to adapt to a changing climate. The consequences of our emissions have a time-lag of decades, and it's unavoidable that greenhouse gas emissions will continue to rise, regardless of any mitigation that occurs now (Pielke et al., 2007; Solomon et al., 2009). We can expect more variable weather as temperatures rise and the climate stability we depend on is threatened. Building resilience to these climatic changes is critical.

The magnitude of the changes we can expect to see and will be required to adapt to is largely in our hands. The Intergovernmental Panel on Climate Change (IPCC), an international body of scientists who contribute to a collective understanding of climate change, has produced a series of assessment reports on the causes, impacts, and potential response strategies for the public. These reports offer various scenarios in which climate

change might unfold, based upon emission trends. Although the models themselves are complex and ridden with uncertainties (such as population growth and socio-economic development), the message they convey is clear: the amount of fossil fuels we burn today will have profound impacts on the future (IPCC, 2007). On one hand, what the strong correlation between greenhouse gas emissions and planetary degrees of warming demonstrates is frightening, in that we have already witnessed warming and are locked into more even if we were to stabilize emissions today (Solomon et al., 2009). On the other hand, it is encouraging to realize that by engaging in strong mitigation efforts now, we can make the difference between three degrees and eight degrees Celsius of warming, and it's imperative that we realize the vast differences between the scale of the consequences of each scenario (Henson, 2011).

Given the magnitude of the issue, and the urgency with which it must be addressed, we need to respond rapidly and thoughtfully. It is largely up to us now, the public immersed within a fossil-fuel based economy, to react accordingly. Communicating the science clearly is critical, and we must do so in a way that actively engages people and motivates them to act. There is much work to be done to adequately address this global phenomenon, given both the aforementioned necessity that we mitigate emissions immediately as well as the fact that adaptation is inevitable. The question is simply whether this work will be proactive and precautionary, or whether it will be reactionary, occurring out of sheer necessity as conditions change. There is plenty of work to be done: to mobilize politically, show widespread support for initiatives to cut emissions, encourage innovative technologies and clean energy development, and guide

our communities away from our fossil-fuel intensive lifestyles towards sustainability and resiliency.

Essentially what this transition is asking of us is to evolve our culture to adapt proactively to the global phenomenon of climate change. This involves building resiliency to the climatic changes we are already experiencing, as well as learning to anticipate changes and respond accordingly. The context we work within is an important precursor to any conversation intended to motivate action on climate change.

A basic evolutionary perspective demonstrates how organisms adapt and co-evolve with their environment (Holling et al., 1998), and humans are in no way exempt from this process. Termed a “social-ecological” system, this understanding appreciates the dependence and co-beneficial relationship we have to the natural world. These systems, in certain ways, are analogous to patterns and properties that exist within ecosystems. An understanding of the complexity of these systems allows us to draw on certain traits of adaptive capacity, which we can use to our benefit while developing effective communication.

Building adaptive capacity necessitates an ability to absorb disturbances, to self-organize, and to build learning capacity (Foxon et al., 2009). Given the unpredictability of how systems respond to change (which we are certain to experience in this warming climate), there is a need for experimentation, research, and diversified knowledge if we wish to provoke change from within society (Berkes & Folke, 1998; Foxon et al., 2009).

The ability of humans to alter their behavior based on what we know of prevailing conditions through learning, reasoning, and communication is what differentiates our adaptive capacity from that of ecosystems, which generally respond to external forces through genetic transfers and storage (Norberg & Cumming, 2008; Holling et al., 2002).

This uniquely human trait of foresight is one that can enable us to take what we learn and alter course accordingly. But as culture and governance are at the root of adaptation, there is a need to understand the psychological and cultural pressures that define this adaptive capacity more concretely (Pelling, 2011). What we are able to tease apart from this understanding of society as a complex system can benefit us when faced with unpredictable, new conditions.

There is uncertainty in how events will play out (in planetary changes, as well as human response), as there are so many interacting, self-organizing components that define the functioning of a system as a whole (Levin, 2008; Olsson et al., 2004; Norberg & Cumming, 2008). That said, though, a recognition of the way in which patterns and properties emerge from localized interactions to affect higher order processes is important (Levin, 2008; Olsson, 2004). In addition, diversity within a system is crucial for maintaining resiliency, and indeed the human capacity to experiment and anticipate the future also strengthens our stability, and our ability to bounce back from disturbances (Foxon et al., 2009; Folke, 2009).

All of these abstract considerations demonstrate that localized action can affect a larger system and that humans have an advantageous ability to act proactively to change. The potential of communication to contribute to this process is surely encouraging, and allows us to move towards a more grounded approach.

Given the ability of humans to respond and adapt according to anticipated changes, it is important to ask how ideas can be spread throughout society in a way that enables this capacity to be realized. The diffusion of ideas within a culture – to the point they become widely accepted – can occur through social networks. “Tipping point theory,” a term coined in 1957 by Mortin Grodzins, refers to what happens when new ideas take off and spread rapidly (Marten, 2005). This can be seen in behavior changes that prove to be contagious, as well as the ability of a few influential people to spread a message or act as role models that exert a significant influence within a social network (Gladwell, 2002; Russill, 2008; Deroian, 2002; Valente, 1996). Therefore, targeting influential members of a strong social network will greatly increase the success of an idea reaching critical mass, able to diffuse throughout society more broadly (Nisbet, 2009; Deroian, 2002). This is dependent, however, upon interpersonal influences among individuals, as people tend to wait for others they trust to adopt before adopting something new themselves. As shared opinions grow, the intensity of links is strengthened and a collective, widespread adoption of an innovation can occur (Deroian, 2002). The role of normative behavior illustrates how much the comparisons we make to others within our social circles impact our own behavior choices. For example, people are more likely to reduce home energy use if told their neighbors are doing so (Rosenthal, 2011; Benson, 2008).

The approach, then, of relying on personal networks to allow for a cultural transformation, is promising. It tells us that communication should be a two-way process of exchanging information, so that a mutual understanding can be reached. When these

social links are strong and trusted, the change is more likely to be permanent (Rogers, 1995). Interestingly, this opens up an entirely new discussion on how to communicate climate change, as it depends less on single sources of media, and more towards a community-based model.

In addition to disseminating knowledge on a community level, making decisions as groups can be beneficial in numerous ways. Often, it is through collaboration that problems considered part of the “tragedy of the commons” are able to be solved, as affiliating with a group allows for common goals to be realized and worked towards collectively. Identifying with the group in which one is working can impact how an individual cooperates within a group; feeling a belonging to the group one is working with can activate social goals and allow for group norms to exert influence, resulting in a greater sense of intrinsic rewards when group goals are achieved (Shome & Marx, 2009). It is not surprising, then, that the Center for Research on Environmental Decisions found that as a sense of affiliation to a group increased, so did cooperation, with social goals becoming more of a priority. Furthermore, those with this sense of alliance were more likely to join efforts to reduce greenhouse gas emissions (Shome & Marx, 2009). The report writes:

“People are more likely to take action when they feel a strong sense of affiliation with the individual or institution making the request. Communicators from ‘out of town’ may want to enlist someone locally known to help create a connection with their audience.” (Shome & Marx, 2009, pp. 31)

This reiterates the importance of communication coming not from the outside, but the inside, as it aligns with the role of group identity in realizing greater goals. Additionally,

engaging communities with the problem at hand from the beginning increases the probability for long-term success, as when people feel as if they are part of a decision-making process, they are more likely to support any outcome that follows. They are also more likely to help identify the existing problems, whereas an outsider could not, and recognizing what needs to be changed is a precursor for any action. Therefore, allowing for a group-centered process, starting within the community that desires change, and encouraging early participation is all key to garnering collective action (Shome & Marx, 2009).

The realization that there is power in self-initiated, community-based projects appears to be growing. Scholars of public participation argue that “the modern administrative state is too big and complex to facilitate the kind of face-to-face relationships upon which a participatory democracy depends,” due to the increasingly risk that private interests will exploit public resources (Shandas & Messer, 2008). Citing a community watershed stewardship program in Portland, Oregon, Shandas and Messer (2008) argue that the key to finding collaborative solutions comes from involving multiple stakeholders in an issue that has diverse interests, where each participant can define his or her own goals in undertaking local projects. A co-benefit of becoming actively involved in local environmental stewardship is that lost connections between people and place are often reestablished, as is the link between personal action and environmental health (Shandas & Messer, 2008). The empowerment that springs from participation, thus combating the feeling of incompetency to change anything, is also an extremely powerful case for group learning and collaborative projects. Shandas and Messer (2008) write:

“When community groups are given an opportunity to lead and own an environmental stewardship project, everyone wins...an engaged and environmentally literate public can produce tangible results that improve local communities and ecologies.” (Shandas & Messer, 2008, pp. 416)

For one example of this, we can look to a study by anthropologist Davis Ben Orlove of University of California Davis on southern Uganda farmers, exploring the differences in responses to radio broadcasts on the rainy season. He found that the farmers who heard the broadcasts in groups and engaged in discussions made better use of the forecast (i.e., altered their planting date) than those individuals who heard the broadcast outside of a group setting. This is just one example of how group-centered decision making not only is likely to be more successful than individualistic changes, but also points to the ability of groups to see the benefits gained by a long-term perspective (Gertner, 2009). This recognition ought to be integrated into any strategy that seeks to shift society toward a more sustainable place in the long-term.

This new paradigm of collaborative work and engagement also prompts us to reevaluate how communication itself should be conducted. Shifting into a new mode of communication, it should also be noted, relieves us of any reliance on the mainstream media to shape our knowledge of climate change and what we should do about it.

Often the public is seen as “empty vessels” that are capable of being filled with information, with an expectation that this will lead to rational responses (Nerlich et al., 2010). But this “deficit model” is not conducive to the dialogue and engagement that

initiates group problem solving, and therefore should be reassessed, given the clear nonlinearity of message transmission (Nerlich et al., 2010). Nerlich and others write:

“There often exists an implicit model of the audience which may not be subject to empirical scrutiny and which may assume from the outset a degree of ignorance or deficit which is itself not a good perspective from which to begin dialogue.” (Nerlich et al., 2010, pp. 106)

Therefore, given this and the power of group affiliation discussed previously, it can be concluded that engaging with people around climate change should be done from the bottom-up, with knowledge and perceptions on the issue coming from people who are not necessarily experts (Nerlich et al., 2010). When communication is a two-way street between local actors, this allows for more open dialogue that can result in a feeling of empowerment and local control. Facilitating these dynamic conversations allows people to challenge assumptions, power structures, and interests, and can allow for solutions to emerge that are separate from simple government intervention, enabling a publicly engaged debate that is coupled with scientific authenticity. This allows for voices within a community to be developed (Nerlich et al., 2010), and is especially important when one considers that although research has shown people view governments as being responsible for addressing environmental problems, they have little faith governments will actually do it (Nerlich et al., 2010). Nerlich and others write:

“Once people become collectively engaged with a task that they have a realistic chance of solving, they can...acquire knowledge and technologies themselves. This process has been theorized through the notion of discursive or deliberate democracy and through the notion that technologies change social relationships and that these in turn modify the technologies.” (Nerlich et al., 2010, pp. 107)

Encouragingly, there has been increased interest in citizen groups based around carbon reduction in recent years, which are themselves local (though many rely on modern communication technologies). These local groups are able to integrate what they know of their place with the popular discourse and everyday life, as well as explore creative and artistic means of spreading their message (Nerlich et al., 2010). All of this can give us immense hope in facilitating change on a very grounded, manageable scale.

The mode in which information is shared and how decisions are made on a community level are certainly critical, but we must not ignore the information itself. Climate change has proven itself to be immensely difficult to communicate, for a variety of reasons: its inherent complexity, the list of other global concerns it competes with for attention, and its political divisiveness, among others.

The general outlook on climate change in the United States does appear to be shifting, not from any intentional work but rather from the erratic weather that has begun unfurling. The Yale Project on Climate Communication has been analyzing the American public's attitudes towards climate change since 2008, with the most recently released report in 2012 finding that the majority of Americans believe that climate change is driving more extreme weather events, with an astonishing 82% reporting they have been personally effected by this. Interestingly, the report just one year prior illustrated that the uncertainty surrounding the issue was high, and it was still viewed as impacting distant

people and places (Leiserowitz et al., 2012; Leiserowitz et al., 2011). This is illustrative of how rapidly the conversation around climate change is shifting.

What especially stands out from the Yale reports, which ask questions to the public ranging from beliefs to actions relating to climate change, is the lack of correlation between the belief of human-caused climate change and doing anything about it. For example, just 28% of the group the study named “alarmed” had contacted an elected official to encourage mitigation. And indeed, saliency of climate change in the United States has remained remarkably low. Not only is it a political divisive issue, with a belief in its anthropogenic origins a defining characteristic between the two U.S. political parties, it also is not seen as a priority by even those who do believe it is a problem. Less than a third of the country sees climate change as a political priority, with just one percent citing it as a top priority in a 2009 poll (Pew Research Center, 2010; Nisbet, 2009). The “opinion intensity” of the issue is low; most people are not discussing climate change with friends and family, writing their elected officials, or participating in rallies and demonstrations (Nisbet, 2009).

Certainly at least some of the uncertainty surrounding climate change and whether it deserves attention can be attributed to journalism’s commitment to give equal weight to both sides of the climate change “debate”, and there has been research done to explore the mainstream media’s role in portraying climate change as a scientifically debatable issue, which inevitably skews people’s perceptions (Antilla, 2008; Nisbet, 2009; Revkin, 2011). But as important as the mainstream media’s representations of climate change are, these messages are interpreted differently by varying audiences, it is not this alone to which we can attribute the lack of a strong public response (Nerlich et al., 2010). The

climate change dialogue needs to shift. Certainly, we need to continue to persuade people of its anthropogenic nature, especially given the recent surge in unusual weather events; but we must also lead the public into a realm that prompts adopting measures that genuinely tackle the problem at hand (Nerlich et al., 2010). For this, we must explore the role of human psychology.

As mentioned previously when discussing the “deficit model,” the intuitive response to encourage engagement on climate change issues is to simply provide the public with accurate information; certainly, on a rational level, it is imperative that we address it at the scale that science informs us is essential to maintain a livable planet. To assume a linear response, though, would be to underestimate the complexity of human behavior, not to mention our increasingly globalized, interconnected world. Nerlich and others write:

“Many studies have shown that for communication to be effective in terms of raising awareness and promoting active engagement, providing more or better information is not enough. The conduit model of communication does not work.”
(Nerlich et al., 2010, pp. 100)

This is to say that relying on an overly simplistic view of human nature will be ineffective, as it is not pure reason, but emotion, that allows us to assign value (Brooks, 2011). The view that simple communication is analogous to transmission (in other words,

that facts will speak for themselves) has been proven wrong, with the public able to reinterpret or ignore what they are being told (Nisbet, 2009).

This fact has been acknowledged by even those most immersed in the science of climate change. The 2007 Intergovernmental Panel on Climate Change (IPCC) recognized that human behavior is one of the least well understood components of the climate system (Kazdin, 2008; Benson, 2008), yet of all federal funds going towards climate-change research, just 2% is being spent on social science research (Gertner, 2009). Given that anthropogenic causes are at the heart of the issue, surely this deserves more funding and attention than it has received.

What we do know about climate change communication is that to partake in it effectively, we must think in an interdisciplinary way. It is crucial to consider elements of risk, health, and science, which are all issues that bridge social and cognitive psychology, behavior change barriers, and predispositions. Furthermore, effective communication enters into the myriad of interactions between scientists, the media, policy makers, and stakeholders (Nerlich et al., 2010). Therefore, it is vital to aim for an integrated approach not just for the theoretical and pragmatic solutions we seek, but also the way in which we go about educating the public that is capable of generating these solutions.

Often this integrated approach means framing climate change in ways that are most relevant to people, and putting it within this context. The fact that climate change is so broad and all-encompassing means there are many opportunities to engage people in moving away from fossil fuels without resorting to the politically-divisive terminology. For although “climate change” alone might be debatable, polarizing, or emotionally inert,

other issues are not: for example, the health of our bodies and the pollution in our neighborhoods. Emphasizing freedom, independence, self-sufficiency, personal responsibility, religious morality, human health, national security and economic prosperity have all shown to be successful forms of messaging, so that “the environment” is not within a trade-off context: it presents the issue in such a way that addressing the planet’s health is a win-win scenario (Climate and Energy Truths, 2009; Nisbet, 2009). This strategy of reaching a desired outcome is capitalizing on what already is important to people, selectively framing and adapting messages to fit within pre-existing attitudes and ideologies of an audience. By focusing on a specific issue with the intent of serving a certain purpose, we are able to make the issue understandable and personally important to people (Manzo, 2010; Nisbet, 2009).

This approach – of framing climate change through various lenses – has two key intrinsic components that should be considered. The first is personal identity and values, as this is at the center of what selective framing is seeking to cater to. The second is risk assessment and management, as many of the decisions around climate change – even the very basic decision to work to do *something* about it – relates to the risks that come with letting it go unchecked.

Anthropologist Erving Goffman notes that individuals negotiate meaning through the preexisting lens of cultural beliefs and worldviews (Nisbet, 2009). People’s care for nature has proven to be a powerful influence in driving climate change concern (S. Clayton, quoted in Benson, 2008), which tells us it is essential that this concern for the natural world ought to be fostered throughout our society. The director of the U.S. National Research Council’s Committee on Human Dimensions of Climate Change, Paul

Stern, reiterates this point by demonstrating that environmental behavior results from both altruistic values and an ecological worldview, and this creates a sense of moral obligation to act (Benson, 2008).

This point was further illustrated in an Alaska study that demonstrated the differences between citizens connected to their land base and those who are not. In a place adapting to melting permafrost, tree mortality from insects, and loss of sea ice, there were noticeable differences between urban and rural Alaskans. As urban areas were not directly threatened, the concern of those living closer to the land was understandably greater (Gertner, 2009). So while there is certainly further research to be done in terms of clarifying how people feel morally responsible for those outside of their own families and communities, as well as an understanding of environmental justice and distant impacts (Benson, 2008), the takeaway from these insights is simple and should be applied to a more long-term strategy of climate change communication: fostering care for the environment and a sense of place should be integral to any approach that addresses climate change.

Looking at how humans analyze risk and decision science helps tease apart the systems that allow us to respond. The two distinctive modes in which we make decisions are analytical, which considers costs and benefits in making a decision, and experiential, which is based on emotions and intuition (Shome & Marx, 2009). Both of these modes have seriously debilitating traits when it comes to promoting engagement around climate change, and must be balanced. The analytic mode, which is reached through the use of hard data (i.e. maps, graphics, and statistics), tends to undervalue future outcomes (i.e., underestimating the danger of rising sea levels, droughts, etc.). Appealing to the

experiential mode, through images and stories that are emotionally charged, can allow any response to be more instinctual than rational, or lead to emotional numbing from over exposure to threatening issues (Shome & Marx, 2009). The Center for Research on Environmental Decisions writes in their report on climate change:

“Analytic products (such as trend analysis, forecast probabilities, and ranges of uncertainty) help people absorb facts and can be valuable tools when people need to make big decisions, but they alone will not compel people to take effective steps to address the climate change challenge.” (Shome & Marx, 2009, pp. 18)

Therefore, it is important to reach both the analytic and experimental reasoning modes when crafting an effective message – otherwise the response will either lack motivation, or will be driven primarily by feelings (Shome & Marx, 2009), neither of which are likely to lead to desirable outcomes.

Additionally, there is a delicate balance between the long-term and short-term concerns people have. It is important to recognize that people have what Elke Weber of Columbia University has defined as a “finite pool of worry,” referring to the limited capacity we have to worry about issues. Not surprisingly, it is the threats we consider more imminent that we tend to focus our attention on, and in wanting to ameliorate a concern, we assure ourselves that one action will address the problem at hand. This “single action bias,” such as insulating an attack or writing to a politician, lacks the more rational reasoning, which understands the scope and magnitude of climate change (Shome & Marx, 2009; Gertner, 2009). An example of this in regards to climate adaptation is when Argentinean farmers, aware of the threat of drought, chose to store their grain if they had the capacity to do so. The farmers with storage capacity were more

likely to forgo the opportunity to invest in crop insurance or efficient irrigation to increase their protection, since their sense of vulnerability was decreased by storing the grain alone (Shome & Marx, 2009). It is crucial to be able to assess the situation we find ourselves in holistically when deciding in which actions to partake. Framing climate change within a global context, then, is challenging but essential.

The global nature of climate change has inevitably allowed it to become seen as distant and beyond anybody's control; it has often been framed by the physical and natural sciences as a phenomenon that is both "spatially and temporally distant," seen as a threat to the whole planet or our collective future (Benson, 2008). While experts might be tasked with tackling long-term, global problems, individuals tend to concern themselves with what is local and immediate – e.g., hazardous waste (M. Slimak & T. Dietz, cited in Benson, 2008). Slocum (2004) writes:

"People tend to act when an environmental problem comes close to home as research on the Endangered Species Act, NIMBY, and environmental justice among others has shown. Climate change is not so close....Unlike threats to personal health that galvanize the public, the effects of climate change are first felt by species more sensitive to biosphere changes than are humans (IPCC, 2001) and those effects are currently invisible to most people." (Slocum, 2004, pp. 420-421)

This alludes to the dilemma that inhibits a sense of urgency around climate change, as the sense that one's own life is at risk is often not felt. And if no risk is felt, what incentive is there for one to change his or her behavior (Gertner, 2009)? For this reason, any effective communication on climate change should show clear relevancy to

daily, local life, as this relevance “makes practicing facts real” (Slocum, 2004, pp. 430). An example of this is when a group of climate scientists, economists, and agricultural experts attempted to provide guidance for Michigan cherry farmers in the face of climate change. The farmers did not care just about future projections of temperature: rather, they cared about frost protection, which variety of cherry to plant, and whether they should get out of farming altogether (Shome & Marx, 2009). It is clear that within the complexity of climate change science, we must stick with what is concrete and noticeable when communicating to a busy (if not skeptical) public. Emphasizing near-term, local consequences, like cherry blossom rot, alongside powerful images can raise public concern (Kazdin, 2008; Benson, 2008) .

It is worth mentioning the potential consequences of framing issues in ways that either drive climate change out of the conversation, or that focus solely on the local effects. Local framing can oversimplify what is arguably the most pressing, complex issue of our time, and in doing so can perhaps nullify the significance of what is at stake. While these specific framings might lead to quantifiable desired outcomes (by focusing on heat efficiency or air pollution, for example), it also presents climate change as a manageable object, with energy as a commodity and people as consumers (Slocum, 2004). Slocum writes:

“US citizens and Canadians have local-global problems. The climate and its associated locally relevant objects such as bike riding and Saguaro cacti, asthma, and maple trees need to be acknowledged in their articulated local-global complexity because climate change may be more long-term, more dangerous to less adaptive species, and more damaging to some people than society can imagine, let alone forecast. Reasons to care locally should not be reduced to cost-saving energy-efficient light bulbs and other retrofits” (Slocum, 2004, pp. 433).

Revkin furthers this argument, reminding us that “populations generating the most heat-trapping emissions are mostly separated in space and time from the communities or ecosystems most exposed to potentially heightened risks of flooding, drought, and other climate-related hazards” (Revkin, 2011, pp. 143). Therefore, the local and global should not be bifurcated; rather, we should draw on what is personally meaningful while situating it within relationships to the global and nonhuman realm. This should allow for a broader perspective that does not aim too narrowly on our fixing our Western energy habits for just our own benefit (Slocum, 2004).

The takeaway from all of this is that we must accept the need to speak explicitly and directly about climate change, demonstrating its local, daily relevance, while also appealing to the values and identities of people. This approach is the surest way to spark motivation and acknowledge our role within a global context while also grounding the issue in reality.

A further conundrum within climate change communication stems from the potentially apocalyptic nature of the subject, and the impulsive, understandable reaction to retract from it. Media attempts such as Al Gore’s “An Inconvenient Truth” and Time Magazine’s 2006 cover titled “Global Warming: Be Worried, Be VERY Worried” have been widely criticized, as they enunciate dramatic effects and promote a fatalistic outlook, while neglecting to provide tangible recommendations on how one can begin to respond to such an overwhelming threat (Nisbet, 2009). And while it is true that sharing the potentially devastating consequences of climate change can sometimes serve as a

driver of action, this is the case only in specific conditions. An audience must feel they have the ability to *do* something about the risks they face, otherwise the potential for emotional numbing is all the more real (Nerlich et al., 2010; Shome & Marx, 2009).

For this reason, any messaging that invokes fear on the possibilities arising out of climate change should be coupled with a sense of opportunity to engage (Nerlich et al., 2010; Manzo, 2010). The case for this approach is strengthened by a recent study by Berkeley psychologists Robb Willer and Matthew Fienberg, who highlight the fact that many Americans believe in a “just-world.” This outlook translates into denial or dismissal of an issue with dire circumstances when no solutions are offered alongside it. What this means is that more knowledge can actually lead to increased feelings of apathy. Any message should be presented gracefully and strategically, introduced alongside a means of changing an undesirable outcome. This will result in a higher likelihood of participation (Walsh, 2010).

This research emphasizes – as does the previously discussed research regarding reasoning modes – the challenge of balancing visceral reactions with real risk calculation (Benson, 2010). Risk management can be used in an advantageous way if done strategically, and if the risk is presented alongside a solution to avoid it (Nerlich et al., 2010). It is worth reiterating that community engagement around climate change will likely stem from demonstrating the relevancy to one’s life (Larson, 2010), as well as sharing possibilities to address the risks associated with it. These two components of climate change communication and behavior change are critical to understand.

Appreciating the ability of people to respond and adapt to climate change, the importance of group affiliation and decision-making, and the complexity behind how climate change messages are presented, allows for a strong basis in which to implement this knowledge. It is exciting to move from a more contextual, theoretical understanding of how to foster engagement around climate change and into the more pragmatic possibilities of seeing this play out.

Visualizing climate change is inherently difficult, whether one is trying to show the symptoms (which often are what's not present, i.e., rainfall), effects of symptoms (which are often emotional, i.e., a starving polar bear), or sources of mitigation (i.e., renewable energy, which itself can spark controversial issues) (Manzo, 2010). The use of visuals to communicate climate change must take into consideration many different aspects of the previous discussion, i.e., the use of fear, risk calculation, personal relevance, and global context. But there are some additional lessons to be learned from research into the effectiveness of particular representations and icons. Many of these lessons reinforce previous points.

The use of climate change visuals face two challenges that directly oppose each other, leading to a lose-lose scenario. On one hand, the complex nature of climate change means that there will be no single photograph that will enrage the public enough to catalyze attention and spark involvement (as toxic disasters and the ozone hole could, for example) (Nisbet, 2009). On the other hand, any visual that does aim to serve this role could backlash and lead to disengagement and feelings of fatalism (Manzo, 2010).

Just as information itself does not lead to engagement, simply showing statistics and numbers do not spark emotions that motivate action. Identifying a “victim” (often, a polar bear) can certainly bring in an emotional element, but at a certain point leads to “psychic numbing” (Manzo, 2010). This use of imagery – of showing suffering in an attempt to alleviate it – has merit in that market research has shown that these images lead to the biggest donations, but is limited in that the personal images appeal to affect rather than cognition (feeling over rational response) (Manzo, 2010). Again, as discussed previously, this can be a positive thing only when dealt with carefully.

Imagery around climate change will ideally avoid a sense of fatalism and connect to everyday relevance, used in creative ways to spark meaningful engagement (Manzo, 2010). Attempting to spark feelings of inspiration is perhaps most easily doable through visual means of communication, as we can paint beautiful pictures of windmills or solar projects and idyllic farm land. These pictures are able to alter the frame of reference from an apocalyptic path or business as usual to one that shows the desirable outcome of moving ahead with mitigation strategies. The messaging in this can be read as simple and doable; “we’ve done it once and we can do it again” (Manzo, 2010).

However, this approach of sharing positive photographs or drawings associated with climate change necessitates some sort of further explanation, as it risks romanticizing the impacts. For example, a photograph of early spring cherry blossoms should be accompanied by text that explains how earlier springs can create significant ecological problems. This is especially true in the United States, where it could switch into a realm of glorifying the onset of “early springs and glorious summers” (Manzo, 2010). Additionally, as discussed previously, finding a balance between the analytic and

experiential reasoning modes is important. Matching imagery with text, then, coincides nicely – presenting scientific information alongside a more personal, colorful visual.

Considering the potential role of visual arts in communicating climate change, and the importance of engaging community members, there is a clear place for interactive games. Games are able to turn what could be seen as dull and boring into something exciting, and in this way could spark interest in world issues, politics, and news that people might not engage with otherwise. The American Association of School Librarians provides materials that encourage the use of games as teaching tools, veering away from more traditional methods to reach students (Petsche, 2011).

Guidelines for the design and creation of educational games include adding discussion so players can learn from one another, as well as giving players a chance to come up with initial answers. Furthermore, it is generally best to keep learning games simple, as the intent should be more focused on exploring the game's content than remembering exceptions to the rules. Any game should seek feedback from players towards improvement; indeed, testing and revising the game – and being sure that learning outcomes are met – ought to be a significant part of the design process (Nicholson, 2011). All of this is helpful knowledge when designing an interactive, visual tool for communicating climate change. The question then becomes how exactly it should be used to have the most far-reaching impact.

The research done on social action – which can consist of political involvement, volunteerism, community service, lobbying and advocacy, and other forms – strongly emphasizes the role that motivations play. Unsurprisingly, people are more likely to vote or get involved if doing so will serve their own interests, although there are also considerations such as personality types and dispositions when assuming who is more likely to become involved with a cause. As might be expected, it is those that tend to be more empathetic that are most likely to initially volunteer (Omoto et al., 2010).

It's been shown that while somebody's initial reason for becoming involved might be small, specific acts, this involvement is capable of becoming longer-term commitment, particularly if the work is found to be fulfilling. Omoto and others write:

“...volunteering, political behavior, and civic engagement are not discrete and isolated acts. Rather, they reflect a range of actions that unfold in sequence, and as in the examples above, cascade to create change within individuals, in their social relationships, in the organizations in which they work, and in their communities and in society at large.” (Omoto et al., 2010, pp. 1727)

This quote reiterates the importance of groups once again, as the relationships within communities are in many ways what enable and encourage involvement. The fact that the simple act of voting can set the stage for further forms of civic engagement (Omoto et al., 2010) is an indication of the potential that exists for widespread action – just think of how many people vote!

Understanding this, as well as the importance of personal motivation (which we can infer applies, at least partially, to issues that are local), signifies the potential leverage to be found on Town Meeting Day. An act unique to New England that dates in Vermont back to 1762 (before the state itself was recognized), it is a time when citizens become

“automatically a legislator” (Bryan, 2008). It is a chance to demonstrate the efficacy that citizens have within their own town, engaging in collective problem-solving, as well as serve as a point of reflection that brings people together and strengthens social bonds (Condos, 2008; Townsend, 2009). The epitome of authentic democratic government, there is no intervention between citizen and government action as policies are devised (Clark, 2005). This is particularly important today, as special interest groups have begun to affect public policy and the gap between the public and where decision-making occurs is widening (Lukensmeyer & Bringham, 2009). In addition, there is evidence that town meeting strengthens social capital in a place, which – not surprisingly – leads to a healthier populous, a more vibrant economy, and a stronger democracy (Clark, 2005). In 2008, about 230 towns in the state of Vermont held town meeting (Condos, 2008) – in school gyms, fire halls, and town halls (Clark, 2005).

Although town meeting does tend to be focused on area-specific issues, such as electing officials, approving local budgets, and conducting other business, there are examples of town meeting being used as a statement to the broader national and global community. The first such instance of this was in 1982, when 70% of Vermont’s towns went on the record supporting nuclear disarmament. This, along with other nation-wide efforts, led to 12 state legislatures (including Vermont) to endorse a nuclear freeze with the Soviet Union. As Randolph Holhut of *The American Reporter* (2012) put it, “It was a perfect example of how little towns in a little state can make a big difference in global affairs.”

Additionally, in 2005 more than 50 Vermont towns called for a study of the impact of the Iraq war. Although seemingly not a local issue, the argument of the

grassroots activists that put the resolution on the meeting's agenda was that given the recruitment of community members, it was indeed a local issue. The acknowledgment that broader national and global issues do have an impact on towns was crucial in this case, and although resolutions are not legally binding, there is certainly the potential for a symbolic statement to be made (Holhut, 2012; Miller, 2005). In this way, town meeting can play an influential role in the broader discourse of certain global issues.

Prompting action around climate change through communication is, as evidenced in this literature review, no simple endeavor. There are many levels of complexity to it, from how systems are able to evolve, to the psychology of human behavior. The scope of this literature review has provided a contextual understanding for the ability to react proactively to foreseen changes; argued for the utility and effectiveness of social networks, group affiliation, and community decision-making in seeking cultural change; shared insights on strategic climate change communication; and explored very concrete methods in which these concepts can come to fruition.

What is clear is that there is so much potential, not just for tactically aligning these concepts with steps of implementation for a project, but also for creativity. It is in our best interest to take the existing research, which I have outlined here, and use it not as a source of constraints but rather as an enabler to shape a project. Experimentation is, after all, a key element of adaptive capacity. This literature review has set the stage for a

project, an attempt to use what we know, and explore how it manifests itself in the real world.

Methods

The decision to make a game was a result of the realization that if the desired outcome is to engage people around climate change, the process of sharing why this is essential ought to be engaging as well. Games are fun, an opportunity to remove oneself from everyday life and enter another world, through imagination and movement. Board games in particular are *physical*; they invite players to engage with real materials and other players on a face-to-face, multi-sensory level, whereas our increased reliance on the Internet to spread ideas or generate action cannot do this. Furthermore, games are aesthetically inviting, able to integrate artwork with valuable scientific insights.

The games, of which there were five copies, were presented in an ideal setting for civic engagement: during town meeting on March 6, 2012, in four geographic regions around the state of Vermont. Each game was hosted by a local community member already involved with climate change organizing, and these individuals were designated “Climate Ambassadors.” These methods allowed for a strategic, innovative, creative approach to communicating climate change.

Role of Climate Ambassadors



Because each Climate Ambassador was already involved with organizing efforts in their area, conversations relevant to the specific area were able to unfold. This approach also realized the importance of any action coming from within the community. The findings in my literature review highlight the need for this two-way conversation, moving away from the conduit model of communication in which one person is filled with knowledge. Climate Ambassadors could *discuss*, rather than inform.

I consider this model to be a very pragmatic illustration of bottom-up organizing, two-way dialogue, and social diffusion. The fact that Climate Ambassadors were speaking to people within their own community meant that they were not outsiders, or experts, trying to inject knowledge into foreign communities. Their intentions were clearly beyond an abstract desire to “mitigate and adapt to global climate change” – rather, they aimed to better their own communities within the face of changing

conditions. Furthermore, each of them had the ability to share – from personal, firsthand experience – what initiatives were happening locally, challenges of organizing, personal motivation for their commitment, etc. Each Climate Ambassador was someone that I had been introduced to or met through working with the 350 Vermont campaign, hence they were each already actively involved in climate-related work, albeit on varying levels. I’ve given a brief description of each Climate Ambassador below:

Waitsfield: Anne Dillon

Anne is the publicity coordinator for 350 Vermont, and works in book publishing. I was first introduced to her over a 350 Vermont conference call, and she was immediately interested in *Changing the Current*. We met while I was in the process of designing the game, since she had created a board game years ago.

Bellows Falls: Gary Fox

I met Gary during the 350 Vermont road trip in January 2011, when he and his business partner gave us a tour of their sustainability initiative, Green Island, which is focused on job creation in the renewable energy sector. Gary works at the Amtrak train station in town and has been very involved with 350, particularly the day of action in the fall of 2011, Moving Planet.

Putney: Paulina Essunger

Paulina is a science editor originally from Sweden, and is very involved with Transition Putney, part of an international network of communities working on re-skilling

and localizing in response to peak oil and climate change, and 350 Vermont. I also met her on the road trip, at a meeting that focused on public transportation in Brattleboro. I was lucky enough to stay with Paulina and her son during my summer research, and see firsthand the extent to which she is building her life around principles of sustainability.

Charlotte: Nancy Severance

I was introduced to Nancy through Kathryn Blume, a climate activist from Charlotte. I did not know Nancy before this project, and she served more as a host than a Climate Ambassador (she arranged the table at town meeting, but I attended the meeting with the game). She, like Paulina, is very involved with the Transition Initiative.

Montgomery Center: David DeShazo

Hoping to have *Changing the Current* displayed in the Northeast Kingdom (a place known for its conservatism), a woman I met on the 350 road trip recommended reaching out to David. New to the area, he was committed to climate change activism and wanted to learn more about the work 350 Vermont was doing.

Venue of Town Meeting

The decision to use town meetings as the initial “launching” venue was significant for several reasons. First, it is a place of uniquely participatory democracy, a system I believe needs to be revitalized as we begin to face difficult, unexpected issues stemming from a warming climate. Appealing to the values of citizens who, for Town Meeting Day,

were playing the role of legislators, afforded us an opportune moment to inject the climate change discourse into the political system.

Second, town meeting is a place that, by its very nature, attracts people who are civically engaged. Even if somebody has come just to cast a ballot, it is clear they already feel at least some investment in their community and its betterment. In considering the potential for social diffusion and how ideas typically spread throughout society, it seemed as if the influential citizens we would want to engage with to spur action around climate change would likely be present at town meeting. The fact those who vote are more likely to volunteer and become involved in social endeavors meant anybody who played *Changing the Current* at town meeting would be more apt to become involved than somebody we might engage with in another venue.

Last, the historical examples of town meeting making symbolic statements heard across the country was certainly a reason to include it within this project. Although my intent in launching *Changing the Current* was to engage people on a personal level, rather than writing any sort of resolution (as happened in regards to the nuclear freeze and Iraq war), the potential in the future to use town meeting as a sort of community-level voice certainly exists. Beginning the conversation around mitigation and adaptation at town meeting seemed not just practical, but also influential.

The Game

The decision to make a game came out of a long process of trying to create something that was genuinely engaging. I wanted it to be fun and beautiful, demonstrative of the potential of a fulfilling life within the constraints of what is

sustainable, while also communicating serious issues. There were certain elements I knew must be embodied in the work; some of these criteria were based upon what I found in my research, and others were more intuitive, or in some cases ethical, considerations (for example: deciding to explicitly reference climate change, and to share issues of global justice).

The local impacts of climate change were highlighted – to make what could easily seem like a complex, faraway phenomenon more grounded. For this reason, most of the game cards are centered around changes that communities in Vermont are experiencing or should expect to experience. To collect this information, and ensure its scientific credibility and accuracy, I relied on reports from state agencies and New England scientists to share the impacts in the following categories: Agriculture/Gardens, Birds and Wildlife, and Forests. Each of these categories aimed to incorporate elements of Vermont’s economy, identity, and culture – impacts that would affect not just the work of ecologists, but the life of the average Vermonter.

Additionally, optimism had to be embedded in the project. I wanted a range of possibilities presented, rather than doomsday scenarios. The artwork on the board – renewable energy, train tracks, carbon neutral recreation, diverse gardens – painted a picture for a brighter future, illustrating a smooth transition to a lifestyle free of fossil fuels. Opportunities to get involved and learn more information on one’s own initiative were shared, through a handout titled “Resources”, as well as the “Personal Action” cards. Without sharing an overwhelming amount of information, the resources provided included non-profits and grassroots campaigns working on climate change, as well as state agency programs and reports. The cards demonstrated that there is a diversity of

ways in which to begin to address climate change, from personal lifestyle changes to increased involvement in the political process to community building.

Finally, the visual appeal of the project had to be strong. This element was more common sense than based in academic research, but its importance could not be undervalued. In the same vein as making things appear opportunistic and positive, there needed to be an initial draw that would spark people’s interest in the first place. For this reason, finding an artist that could draw and use colors beautifully was important, and I cannot express my gratitude for the opportunity to hire my friend, Jessie Mazar, for her artwork.

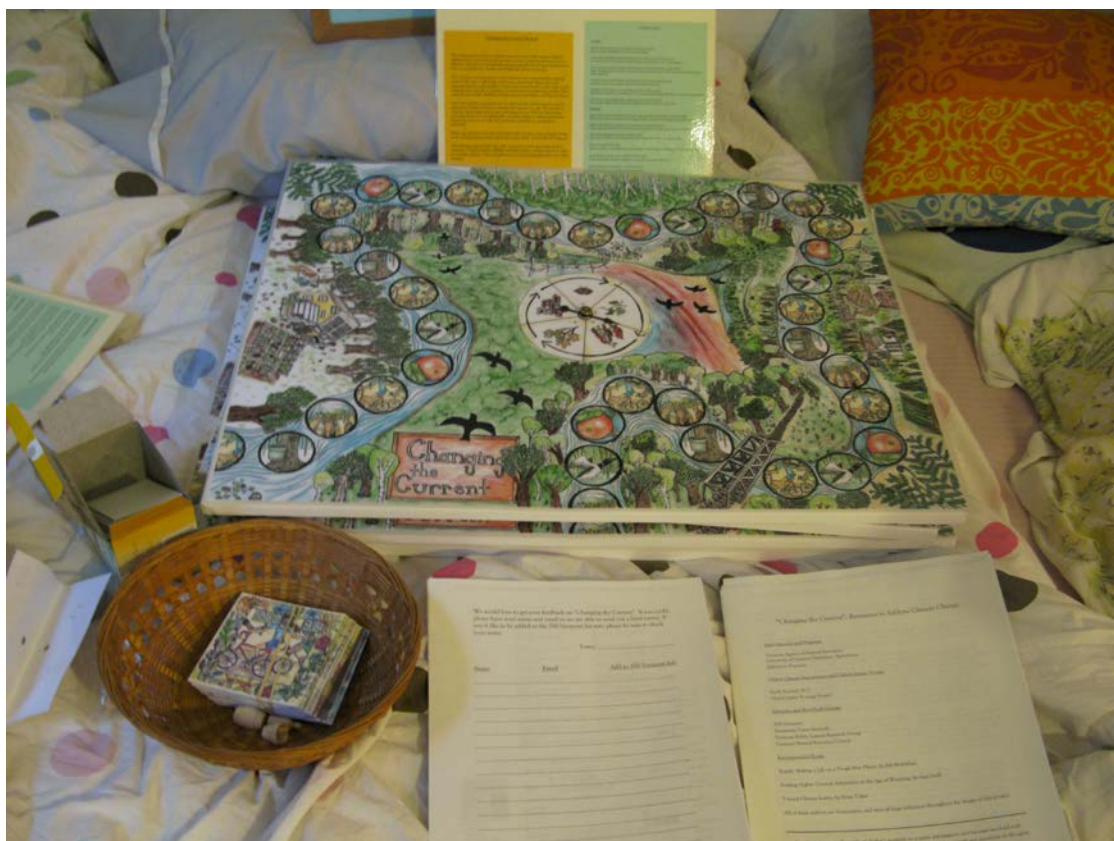
Timeline of Relevant Events

June 2010	Began working with 350 Vermont
January 2011	Statewide 350 Vermont Road Trip
June 2011 – August 2011	Public Research and Creative Endeavors Grant for summer research
November 2011	Brainstorming Meeting with Amy Seidl, David Stember, and Cami Davis
January 2012 – March 2012	Design and construction of <i>Changing the Current</i>
March 2012	Games Launched at Town Meeting Day

Results

The information presented within *Changing the Current* was finalized after a much-deliberated process – of deciding what local and global impacts to share, how to word them, what illustrations would be best, and how to highlight ways of getting involved.

The documents in this section were provided to each of the Climate Ambassadors. After the explanation (“manual”) for playing the game, there is a list of impacts (printed on the cards) with possible responses for the Climate Ambassadors (in italics), to contribute to the conversation around adaptation. The “Resources” document was a handout available for any individual that played the game and was interested in learning more. The “Personal Action” statements were not given to the Ambassadors, but rather each action was written on a card. See the section of Appendices for more photographs of the game.



“Changing the Current” Manual

This communication project intends to raise awareness of the impacts of global climate change we are seeing and can expect to see in Vermont; share resources to allow for Vermonters to thoughtfully respond; and allow for an open brainstorm of how we can prepare for changes and mitigate the effects of warming.

There are three wooden pieces to move around on the board, along the stepping stones in the river: a milk bottle, a flower pot, and a barrel. Players take turns spinning and moving the number of spaces they're instructed to. Each image on the stepping stone responds to a category, for which there are cards that correlate. These categories are: Global, Wildlife and Birds, Forests, Agriculture, and Personal Action.

Upon choosing the appropriate card, the player should read the impact or action, and develop creative solutions or insights into what they've read. The breadth of responses can be large, and as open as the player desires. They can aim towards increasing Vermont's ecological health, economic vitality, or cultural preservation. Players can focus on any scale, from national to statewide to community to individual.

Players can choose to write their ideas down and leave them in the provided baskets, as the solutions generated throughout this project will be shared with 350 Vermont.

The following pages provide a list of the statements on each card within the four categories of impacts (Global, Wildlife and Birds, Forests, and Agriculture). In italics are a possible response. These examples are to be used as a springboard for more ideas to follow.

Possible Responses

GLOBAL

Glacier melt in Asia leaves many without access to fresh water.

Support research for desalination and water-saving technologies.

Coastal and small island communities experience sea level rise and must re-locate.

Encourage legislators in areas that can afford to increase their population to host “climate refugees”.

Africa experiences extreme water stress and cannot produce an adequate supply of food.

Support thoughtful adaptation policies, such as drip irrigation implementation, through international funds designated for climate adaptation.

Tropical Amazon forests become savannas and lose their fertile agricultural soils.

Participate in boycott of monoculture crops that lead to further deforestation.

Mudslides and flooding occur around the world from intense storms.

Allow disaster relief funds to go straight towards recovery and re-building stronger infrastructure, with reduced overhead costs.

Arctic sea ice and permafrost thaw, experiencing accelerated warming.

Petition against off-shore drilling that promotes further ecological destruction in sensitive areas.

FORESTS

Maple, birch, and beech forests become more oaks and hickory, losing foliage colors in the fall.

Boost tourism through demonstration sites of ecological machines, bio-mimicry technologies, and innovation forums.

Higher fossil fuel prices spark interest in biomass for electricity and heat.

Strict standards are enforced to ensure maximum carbon sequestration potential, species diversity, and soil health.

Ticks and mosquitoes proliferate in warmer weather.

Ensure access to health care services that provide tests to diagnose and treat diseases, such as Lyme’s.

Heavy rain erodes forest soils.

Educate both hikers on respectful practices, and landowners on responsible forest management, to reduce further erosion.

Strong winds and pests create openings in forest canopy.

Commit to statewide re-forestation programs to ensure carbon sequestration and clean air.

Drought leaves trees vulnerable to insects and disease.

Reduce further stresses by carefully monitoring forest health.

WILDLIFE AND BIRDS

Storm-water runoff carries fertilizers and sewage overflow into rivers and lakes.

Improve road culverts and vegetated buffers to protect aquatic ecosystems and community drinking water.

Mammals moving north to more suitable climates are blocked by state highways.

Design public transportation systems that include wildlife corridors.

Birds begin to overwinter in-state.

Preserve healthy wildlife habitat that is conducive to breeding and nesting.

Local trout populations decline due to warming rivers.

Educate fisher men and women on changing habitats and regulate fishing at a rate that can be replenished, while creating a local market for more heat tolerant species, such as bass.

Lake gets warmer, and has increased blue-green algae blooms.

Work with lake shore farmers and residents to reduce phosphorus inputs (which increase algae blooms).

Animal species compositions shift with warmer, changing conditions.

Limit further human influences, such as habitat destruction and air and water pollutants.

AGRICULTURE

Higher summer temperatures reduce milk production.

Improve barn design to promote better ventilation.

Time for maple sugar production is increasingly shorter.

Encourage Vermont sugarers to invest in crops and economic activities that will thrive in warmer temperatures, such as hardy grapes, plums, and other fruits.

On-Farm energy costs rise.

Build anaerobic digesters to create electricity from cow manure, and sell produce locally to reduce storage and transportation energy needs.

Heavy rains lead to soil erosion and flooding.

Work parties install strategic drainage systems on farms.

Summer drought reduces yields of local farms.

Invest in drip irrigation techniques and find creative ways to store water.

Vermont growing season gets warmer and longer.

Encourage biodiversity on farmland, integrated pest management, and support research into what crops will do especially well.

“Changing the Current”: Resources to Address Climate Change

State Agencies and Programs

Vermont Agency of Natural Resources
University of Vermont Extension: Agriculture
Efficiency Vermont

Global Climate Negotiations and Climate Justice Groups

Earth Summit 2012
Global Justice Ecology Project

Advocacy and Non-Profit Groups

350 Vermont
Transition Town Network
Vermont Public Interest Research Group
Vermont Natural Resource Council

Recommended Books:

Eaarth: Making a Life on a Tough New Planet, by Bill McKibben

Finding Higher Ground: Adaptation in the Age of Warming, by Amy Seidl

Toward Climate Justice, by Brian Tokar

All of these authors are Vermonters, and were all large influences throughout the design of this project.

This list is a very small sample of all that's available to acquire information and become involved with efforts to mitigate and adapt to climate change. Please email Page Atcheson with any questions or thoughts related to “Changing the Current” at atcheso@uvm.edu.

PERSONAL ACTION

Host a Transition Town potluck

Join a CSA and community garden

Insulate your home for the winter and invest in solar panels

Organize grassroots activism within your community

Use public transportation and push for further mass transit infrastructure and smart growth

Talk to friends and family about climate change and write op-eds in the local paper

Meet with elected officials and follow bills relating to energy and climate change

Switch to LED light bulbs, hang your clothes to dry, monitor energy use

Join your local energy committee or town planning commission

Become a climate ambassador by writing, speaking, and using other creative arts to help people understand

Commit to educating yourself on climate change and to learning the skills needed to inspire positive change

Lobby your congressperson to enact carbon-reducing legislation.

Analysis and Reflection

Each town meeting, as would be expected given their unique nature, had a different experience. The hopeful outcome was that *Changing the Current* would evoke community responses and start conversations around climate change that would lead to action. Although it is too soon to know precisely where the ideas that have been brainstormed will go, and to what extent they will translate into action, it seemed that the game accomplished the goal of beginning the process of generating community-based engagement around climate change. Gathering feedback on how the experience of playing *Changing the Current* went on Town Meeting Day has come primarily from the Climate Ambassadors. I have received their comments, suggestions, and stories primarily through emails, although personal contact and phone conversations have occurred as well.

(images deleted in digital version; available in hard copy version housed in the UVM Environmental Program office)

At the Bellows Falls town meeting, Gary Fox was able to engage with people on their way into meeting and those who were on a break. He found that because of time constraints, it was not an ideal setting for playing the game from start to finish, but rather it was a tool for starting conversations with people around the purpose of the game (including a state representative, the police chief, and the middle school principal). This opportunity opened the door for future uses of the game – for example, with the student leadership group to “educate and inspire action with the student body” that has not addressed climate change yet (Gary’s words).

This opportunity presented itself on Earth Day, when after using the game at a school event, Gary wrote to me saying that “1. It [the game] is fun. 2. It is good for the kids learning and thinking. 3. It is good for my learning.” The game is currently in the train station where Gary works, a public space that gets busier and busier as the spring and summer come. The station itself has plans for expansion to become more of a sustainability center (such as a local foods café), and so having *Changing the Current* there now is a nice precursor for the changes to come.

The Putney response was overwhelmingly positive. Because of time restraints and a snow storm, I was not able to deliver the game directly to Paulina and therefore received her initial reaction to the game via email. She wrote, “It’s so beautiful...What a fantastic resource this is going to be, and I really can’t wait to have it, and play it, at the

town meeting tomorrow. I think it will work great as a tool for all ages!...So glad the game is so very inviting, compelling, and beautiful!”

Paulina also commented about the difficulty of coming up with possible replies to the various impacts, as each impact has so many caveats. These caveats, she acknowledged, were important to omit so as to engage rather than repel people. She additionally appreciated the range of personal action cards, which she indirectly contributed to through her work with 350 Vermont and various brainstorming documents the two of us had been involved with a while back.

On Town Meeting Day, Paulina had community members ask whether there were copies of the game for sale and where the game would be after the meeting. The local sheriff was encouraged to contact Efficiency Vermont about her high electric bills, and kids discussed how the game could be won (one idea: “get the president to really understand things”). Paulina wrote, “Can’t tell you how many people are admiring your game! ... In terms of getting conversations started, I’d say it’s a big hit!”

Anne Dillon wrote me immediately after leaving her town meeting, exclaiming how the game was such a hit, and asked me to call her. We had an extended conversation on the phone about how well her experience as a Climate Ambassador had gone, and the questions the game had provoked. Anne expressed that “it was a blast to play it and I think you have a hit on your hands!” After our phone conversation, she sent me a written document of her notes, summarizing her insights after engaging with over twenty people during the two-hour slot of tabling (as town members finished voting, they would pause at the game on their way out – just two older women declined the opportunity to play,

while most “really entered into the spirit of it in a ‘well, why not, sure I’ll give it a spin!’ kind of reaction”).

Anne offered some insightful critiques, as well. One example of this was the language used on the cards, as there were certain cards that left even adults puzzled at the scenario depicted. Anne wrote that numerous times, a card would be read and the response from the player was that they didn’t know what it meant. “You might want to think about relaxing the language of the cards and keeping its stated concept simple – really boil it down...take out the technical eco-terms and the big words,” she wrote. Additionally, the text on the game board and the cards were too small, and certain people made comments about perhaps changing the board in various ways (for example, a section of the river could be drawn as flooded and washed out). Other feedback that Anne reported having received was that the impacts on the cards were too declarative; could they be posed as a question instead?

The response that Anne had from kids, particularly a group of Boy Scouts, invoked an array of possibilities. In their opinion, the game needed obstacles. Anne wrote, “This obviously gets into the larger discussion about ‘How do you win the game’ or even ‘Should you try and win the game?...It was interesting that the kids automatically saw it in this more competitive way.” They also toyed with the idea of whether spaces could have actions to do right away, for example, checking to make sure the faucet wasn’t dripping. Anne’s takeaway from her time with the Boy Scouts was exploring how the game could perhaps be used with organizations such as theirs, catered towards bringing children into the outdoors. She was also inspired by the Pledge of Allegiance the boys gave at town meeting after playing the game; what if, she wondered, there was a

pledge within the game to “work on behalf of the planet”? Anne was intrigued by the interest of an ex-executive at Ben and Jerry’s, who thought the game could potentially win a grant to be rolled out in schools, and this led to conversations with parents and teachers over what age group the game was ideally suited for. If kids were able to bring the game’s ideas home, one special education teacher told Anne, it could spark some climate-centered family discussions.

Overall, Anne was enthusiastic about the day’s experience, as well as the potential for future uses of *Changing the Current*. “What struck me in talking to the adults is that almost everyone who I spoke with entered into the conversation at the level they were at or personalized it to their situation...For example, I spoke for about ten minutes with a local farmer, who relayed to me how devastated their farm was by Irene...He was very informed and fun to speak with, and really got into our conversation, and I felt he got a lot out of it (as did I).” It was clear that the game had contributed a lot to Waitsfield, as had Climate Ambassador Anne!

Of the five locations where *Changing the Current* was sent, it is telling how each experience with the Climate Ambassador panned out. The ambassadors in Bellows Falls, Putney, and Waitsfield – in corresponding order, Gary Fox, Paulina Essunger, and Anne Dillon – had all been involved with 350 Vermont for a considerable amount of time. I had established personal relationships with each of them, and their commitment to climate organizing was apparent from the spectrum of activities they were involved with – from putting on school events, spearheading sustainability initiatives, traveling to

rallies, etc. I felt confident leaving the game with them, knowing their knowledge and experience of climate change activism in their area clearly superseded anything I would be able to share with people. As expected, each of them was able to provide me with insightful report-backs, clearly having genuinely engaged more with their community over *Changing the Current*.

The other two locations, Charlotte and Montgomery Center, seem to highlight what I found in my research: an outsider coming in to share knowledge is far less effective than when it comes from within the community. David DeShazo, the Climate Ambassador in Montgomery Center, had moved to the area recently and was also (at least to my understanding) relatively new to climate organizing. My experience working with him was quite different from the other Climate Ambassadors, both in his lack of reliability and confidence in being able to share what he knew of local organizing. In the end, he did attend his town meeting and gave a brief explanation on the science of 350 parts per million, and encouraged town members to get involved. But he did not follow through with using *Changing the Current*, and therefore the takeaway message from my experience in Montgomery Center is that there really is a need for trusting relationships and experienced organizers when identifying Climate Ambassadors (or anybody that's designated to share climate change information).

My time at the Charlotte town meeting, held at the elementary school, was certainly valuable, as I had never been to a town meeting prior to this year. The controversial topic that the town was discussing was whether to approve funding to build sidewalks downtown; this seemed to be a typical type of discussion for town meeting. It was clear that almost everybody in attendance – whether just to cast a vote, or to stay for

the meeting itself – was either friends or acquaintances with the others in attendance. For this reason, it was easy to quickly feel slightly like a fish out of water (or rather, an academic in the real world). As I interpret this, this again reiterates what I found in my literature review: an outsider attempting to disseminate knowledge is unlikely to be heard as in the same way as a local would. Comparing these two experiences with the successes in Waitsfield, Putney, and Bellows Falls provides insight into how valuable the personal connection and sense of group affiliation is.

Copies of *Changing the Current* are currently being displayed at the Elliot Street Café in Brattleboro and the historic train station in Bellows Falls. Since town meeting, it has been played at the Putney School for Earth Day, displayed in the Davis Center at the University of Vermont by the Eco-Rep program and at the UVM Research Conference. Numerous Transition Town groups have expressed interest in hosting events for playing the game in their communities, and many people have offered their advice to get the game copyrighted and shared with organizations that are able to provide grants, such as Ben and Jerry's, to roll it out on a larger scale. I am currently working with the 350 Vermont group to adapt *Changing the Current* into a life-sized version, with each board space the size of a hula hoop, where it will be played on the next 350 day of action, focused around "connecting the dots" between the natural disasters we are experiencing and climate change.

Looking ahead, there are a few ideas currently being explored in terms of where to take the game next. Given the excitement it generated among children, it is possible the language will be adapted for younger audiences, and *Changing the Current* could be used in the classroom as an educational (but fun!) tool. Another potential option is for the game to become an organizing tool for community members involved with the 350.org campaign, and perhaps we will even design versions specific to various geographical regions. Anne Dillon, who along with being a Climate Ambassador is also 350 Vermont's primary publicity coordinator, is very interested in seeing the game move forward and having a broader impact. Her commitment to *Changing the Current* is encouraging, and I am certainly excited to see what direction it goes in.

Conclusions

The information *Changing the Current* presents is in no way a complete illustration of the challenges we face with climate change, and I am curious as to how these omissions can be incorporated into a communication strategy that attempts to adequately present the magnitude of the issue. The first of these is the topic of climatic thresholds, the scientific notion that climate change does not occur in a linear progression of the world getting warmer, but rather works within a complex system which we do not fully understand, and which is capable of being pushed into a new equilibrium we cannot regress from. I think of this as an extremely strong case for applying the precautionary principle in our actions involving fossil-fuel use, as we cannot know exactly what effects our actions (or lack of action) will have. In many ways, I view this as the strongest argument for ceasing greenhouse gas emissions immediately.

Another element I believe necessitates a role in any conversation around climate change is that of our larger economic and political system, and the ways in which it encourages and allows for endless economic growth and corporate control. We live on a planet of finite natural resources, and the law of thermodynamics informs us that any system which focuses on continued depletion without regeneration is sure to eventually fall. A more cyclical, biomimetic approach towards how we run our economies is critical. Furthermore, given the time frame we are working within to prevent more extreme changes, the institutional inertia that exists is going to have to be challenged. This argues for less corporate control, and many grassroots campaigns – including 350.org – are beginning to incorporate this message into their work. These issues highlight the

difficulty in communicating a message that's as multifaceted as climate change, and I am interested to exploring how to share these concepts further.

My objective in creating *Changing the Current* was to contribute to the advocacy work being done on behalf of the natural ecosystems and the communities (however distant they might be) that are bearing the brunt of the impacts of climate change. This project is a gentle approach, focused on guiding the public towards solutions while presenting them with the science on how our world is changing.

The way in which climate change is communicated, as we are already finding, is shifting. I would posit that as its impacts become felt more strongly through increased natural disasters and strange weather patterns, communication around the issue will focus less on the information itself, and more on the immediate responses. As my advisor, Amy Seidl, has phrased it recently, we adapt *with* our changing world. Even in the past four years I have been at the University, the topic of climate change seems to have moved from a place of abstraction and distantly placed fear, into a realm of awareness that we are already beginning to confront the consequences of our reliance on fossil fuels.

This recognition holds an immense amount of weight if one is able to truly internalize the implications. To maintain a determination to navigate through these changes in a way that is equitable and centered around an appreciation for all of life is perhaps the greatest challenge we can ask of people, and goes beyond the scope of any

broad communication strategy. My hope is that *Changing the Current* has played and will continue to play a part in making this transition as thoughtful and proactive as it can be.

As we enter more deeply into the Age of Warming, we are sure to be confronted with questions whose answers go far beyond what science can tell us. How will we support the adaptation of international, developing communities, without exerting an inappropriate level of dominance? Who will make decisions regarding where we get our energy, how we grow our food, and how we manage our water? Will we move forward with a view that is inclusive of all life – from the flowers that are blooming earlier to the mammals that are moving north to the birds that are shifting migration patterns? These questions, I would argue, ought to be a part of the conversations we engage in around climate change.

Upon completing this project, *The Sun* came in my mailbox, a monthly literary magazine that I have subscribed to since high school. The April, 2012 issue had two pieces with which I would like to conclude this thesis. The first was an interview with Julia Butterfly, the young woman who participated in a tree-sit for 738 days, resisting the deforestation of the California Redwoods. The second was on the back page, a quote from Pema Chödrön, a Buddhist nun:

True compassion does not come from wanting to help out those less fortunate than ourselves, but from realizing our kinship with all beings.

I share these because I believe that to truly address the climate crisis, we need both sheer determination and absolute compassion. These are not characteristics that can be taught in any traditional sense, but rather, they emerge through understanding – through science, through stories, and through personal experiences. My sincere hope is that action around climate change comes from this place of understanding, openness, and a healthy sense of skepticism. For as daunting as the global phenomenon of climate change is, there are ample opportunities to creatively reinvent our society towards a place of resilience, fairness, and unpredictable beauty.

Appendices

Game Cards

Agriculture/Gardens



Global



Forests



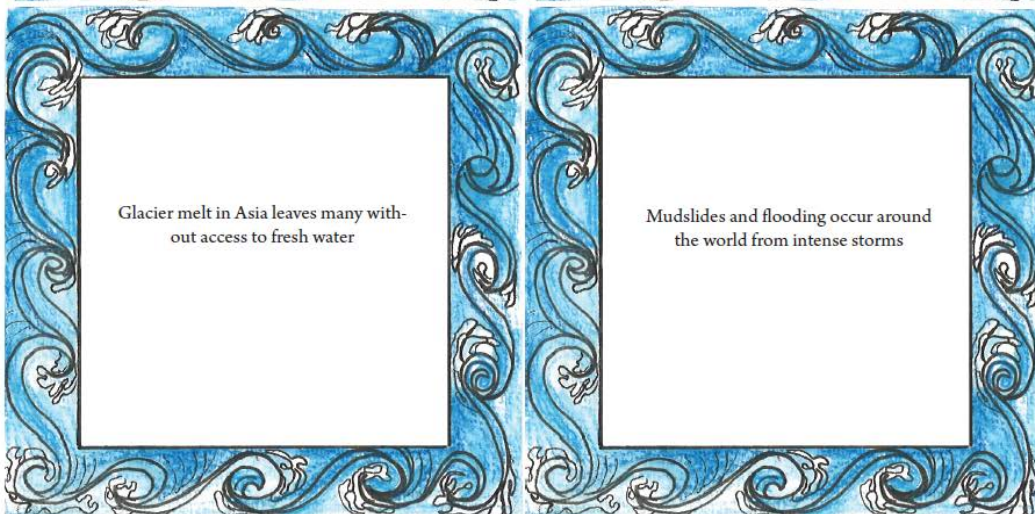
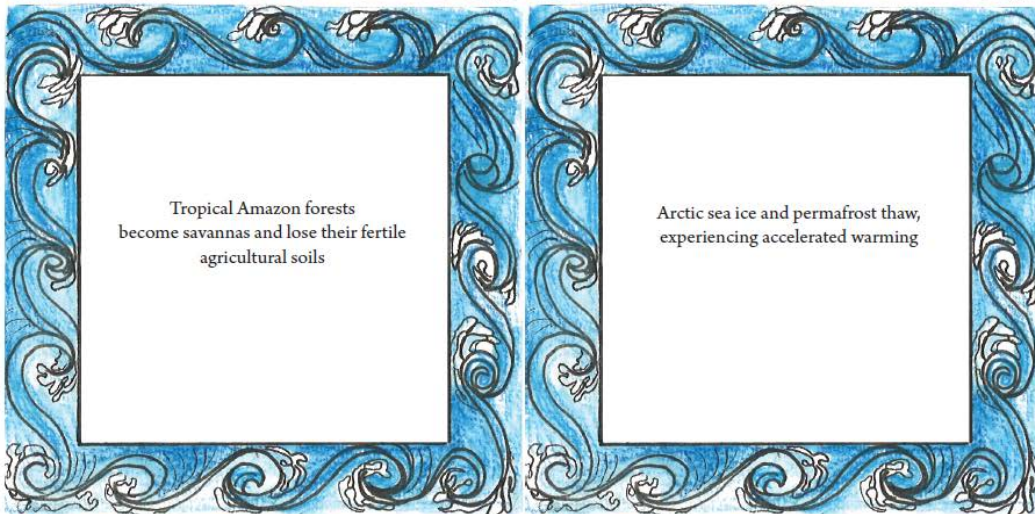
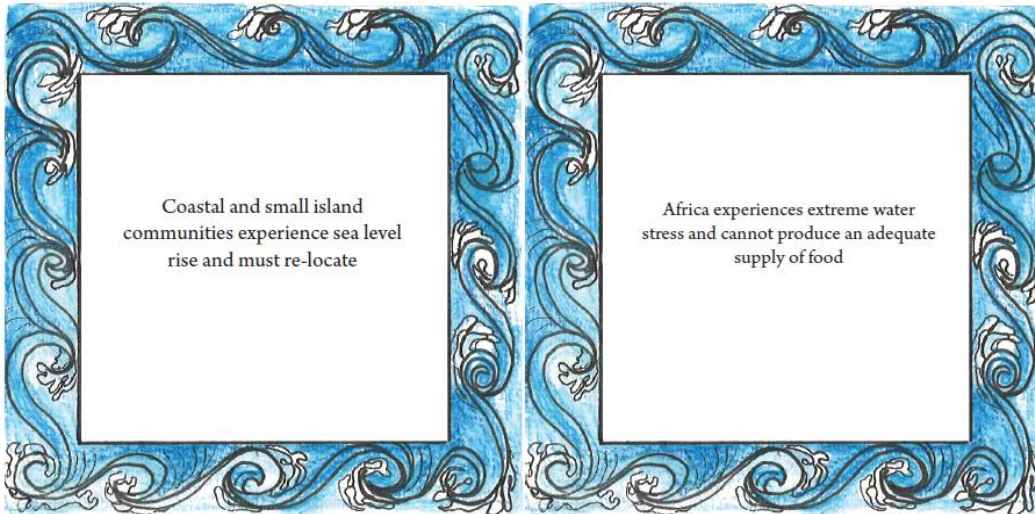
Wildlife and Birds




Agriculture/Gardens



Global



Forests



Drought leaves trees vulnerable to insects and disease

Maple, birch, and beech forests become more oaks and hickory, losing foliage colors in the fall

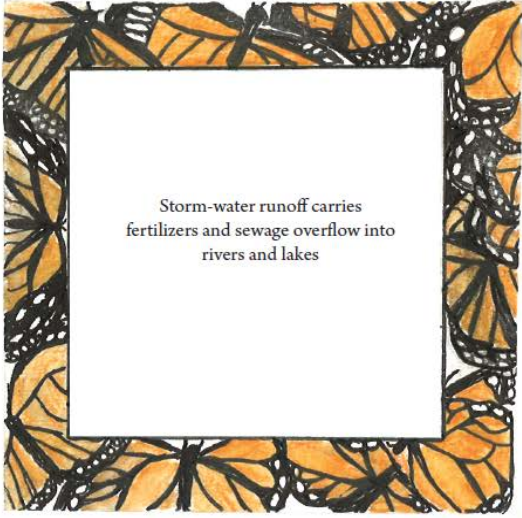
Heavy rain erodes forest soils

Strong winds and pests create openings in forest canopy

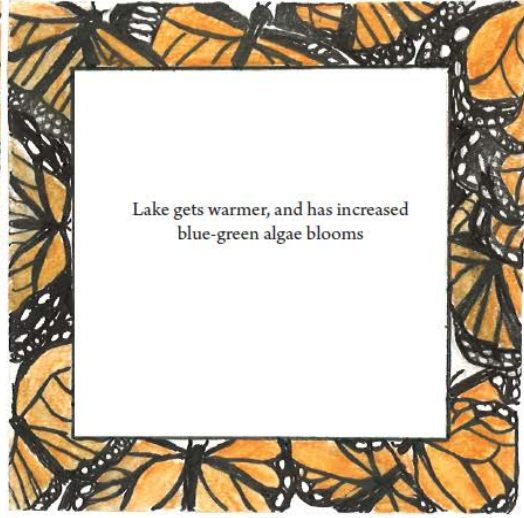
Higher fossil fuel prices spark interest in biomass for electricity and heat

Ticks and mosquitoes proliferate in warmer weather

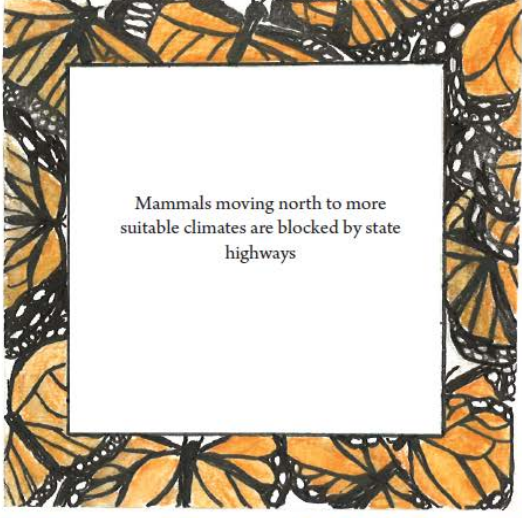
Wildlife and Birds



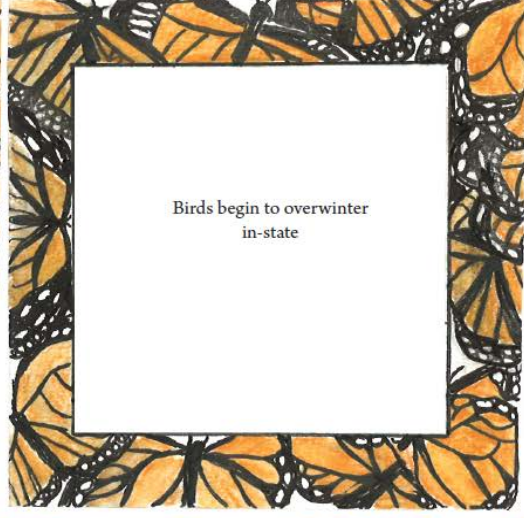
Storm-water runoff carries
fertilizers and sewage overflow into
rivers and lakes



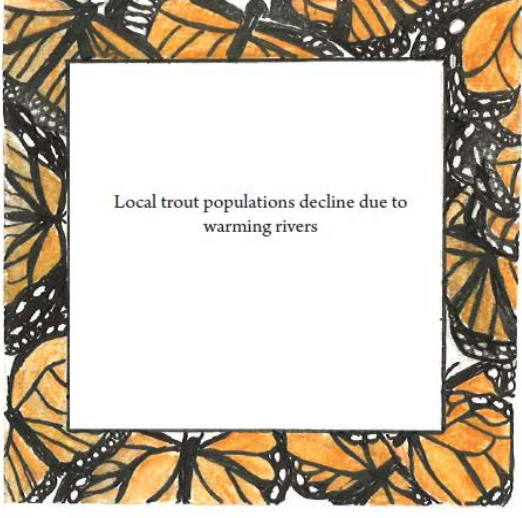
Lake gets warmer, and has increased
blue-green algae blooms



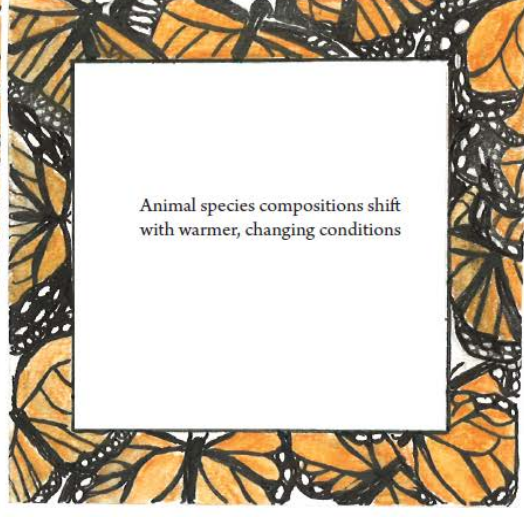
Mammals moving north to more
suitable climates are blocked by state
highways



Birds begin to overwinter
in-state



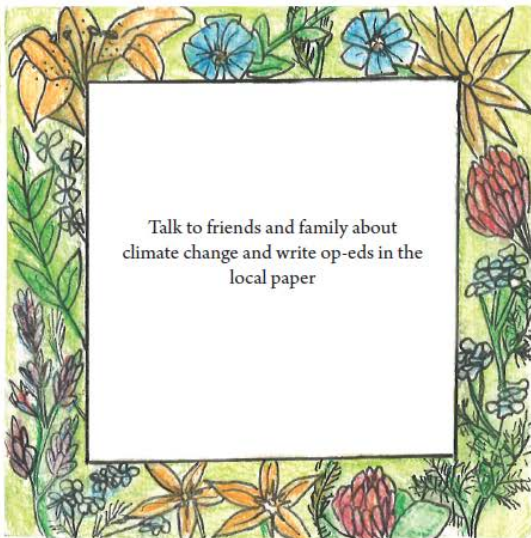
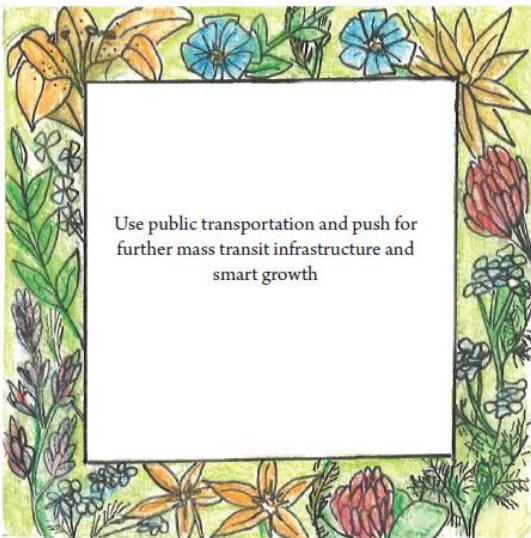
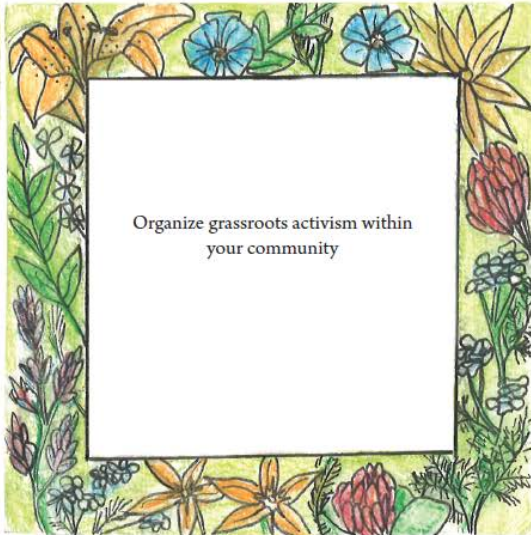
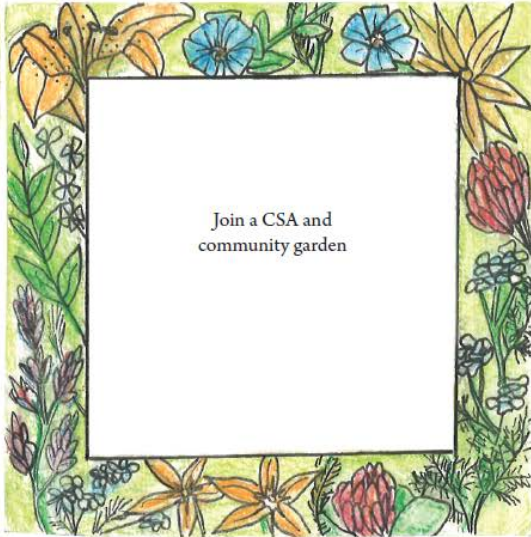
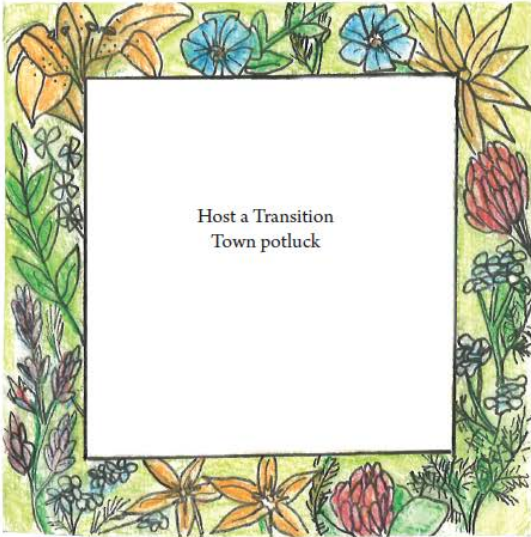
Local trout populations decline due to
warming rivers

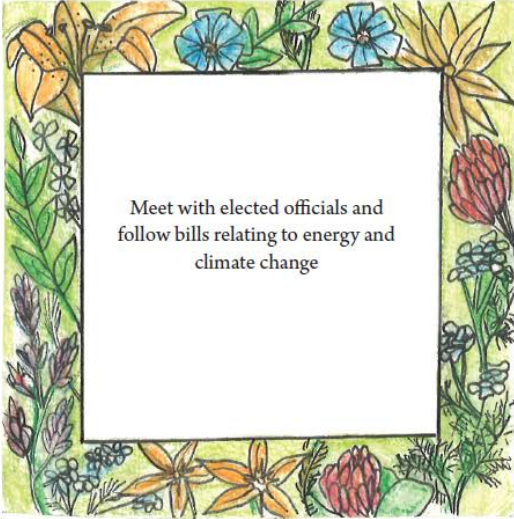


Animal species compositions shift
with warmer, changing conditions

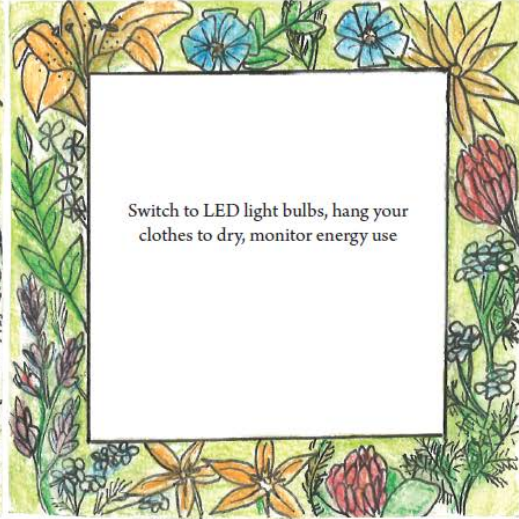
Personal Action



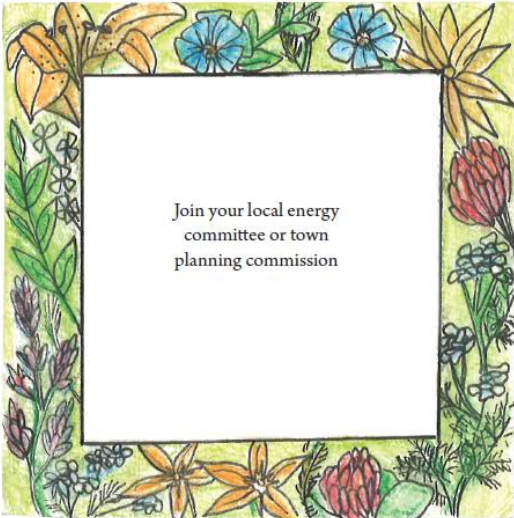




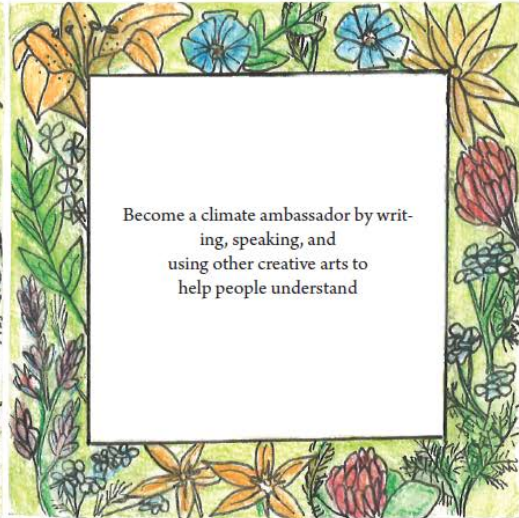
Meet with elected officials and follow bills relating to energy and climate change



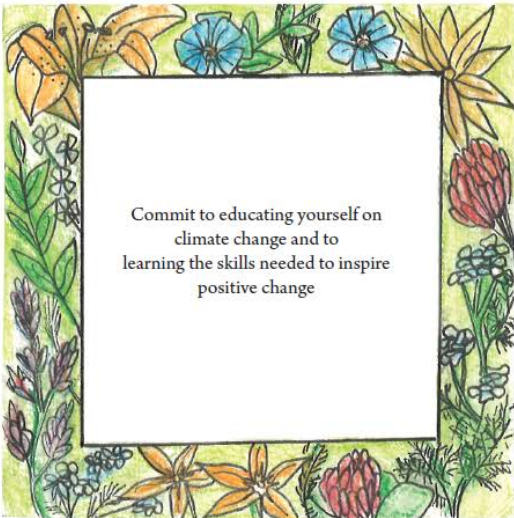
Switch to LED light bulbs, hang your clothes to dry, monitor energy use



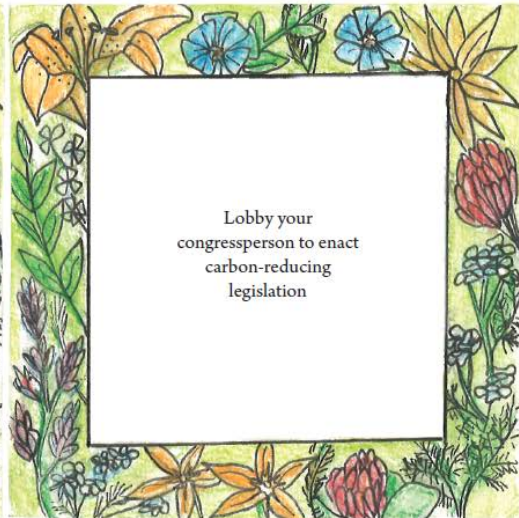
Join your local energy committee or town planning commission



Become a climate ambassador by writing, speaking, and using other creative arts to help people understand



Commit to educating yourself on climate change and to learning the skills needed to inspire positive change



Lobby your congressperson to enact carbon-reducing legislation

Game pieces

Barrel, flower pot, and milk bottle



Spinner

Monarch butterfly, grapes, red cardinals, oak leaves, lilacs



Board Creation

Board 18 x 24 inches (to fit over canvas)

I drew an outline of a bird's eye view of river with circles – this was the foundation

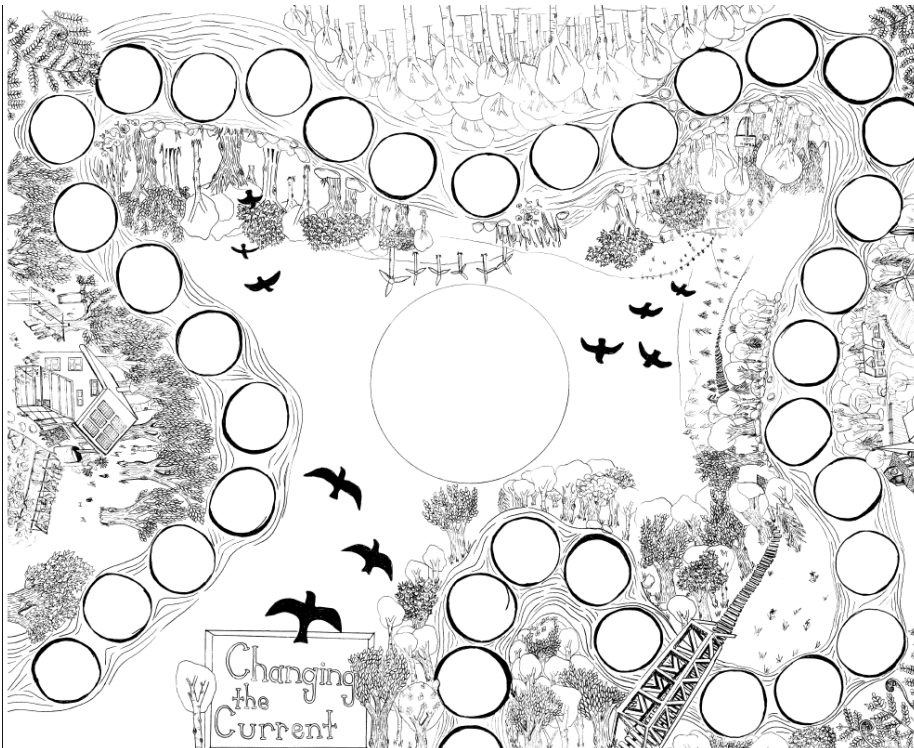
Elements I asked Jessie to include in drawing:

- Farm/gardens with diverse crops – pumpkins, squash, raspberries, grapes, livestock grazing
- Small wind turbine, solar panels, clothes line
- Oaks, hickory, ferns, birds
- Train tracks
- Lake with kayaker

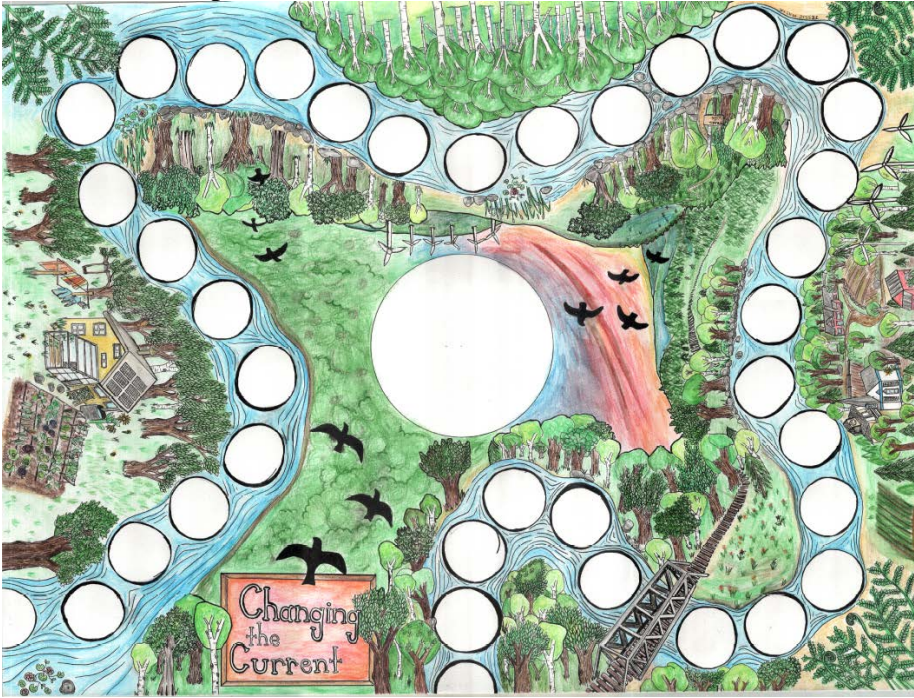
Elements I asked Jessie to put on spinner:

- Monarch butterfly
- Grapes
- Red cardinals
- Oak leaves
- Lilacs

Black and white



Color (without spaces filled in)



Close up of final product



**Public Research and Creative Endeavors: Qualitative Interviews for 350
Summer 2012**

Campaigns

350 Vermont

Vermont Energy Climate Action Network (VECAN) - Paul Markowitz

Transition Towns - Kathryn Blume

Hardwick Energy Action Resource Team - Paul Fixx

Transition Town Putney - Paulina Essunger

Centers

Peace and Justice Store - Anna Guyton

ECHO Center - Nate Joseph

Vermont Worker's Center - Sarah Weintraub

Flynn Center for Performing Arts - Leigh Chandler

Burlington Free Skool - Jens Pharr

Center for an Agricultural Economy - Monty Fischer

Businesses

Hardwick Buffalo Mountain Co-op - Barry Baldwin

Gagnon's Videos and More in Hardwick - Mary Gagnon

Upper River Valley Coop in White River Junction - Kye Cochran

USA Solar Stores - Dave Bonta

Elliot Street Cafe in Brattleboro - Rebecca Jones

Everyone's Books in Brattleboro - Nancy Braus

The Green Life - Mike Hassenberg

State/Agency

Burlington Legacy Project - Jennifer Green

Vermont Town Meeting - Frank Bryan

Vermont Agency of Human Services - Patrick Flood

Congressman Peter Welch's Office - Tricia Coats

Programs

Efficiency Vermont - George Twigg

Vermont Businesses for Social Responsibility - Amy Kirschner

Building for Social Responsibility - Hillary Hunter

Flashbulb Institute - Sara Mehalick

Burlington Permaculture - Mark Krawczyk

Green Island Initiative in Bellows Falls - Gary Fox

Vermont Energy Education Program - Seth Wolcott-MacCausland

UVM Arts Department - Cami Davis

Civil Society

United Church of Christ in Greensboro

Greensboro Free Library

Grassroots Art and Community Effort (GRACE) in Hardwick

Jeudevine Memorial Library in Hardwick

People's Barn in Greensboro

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Anne Dillon, Paulina Essunger, and Gary Fox – this project could not have happened without you, the Climate Ambassadors!

Thank you Nathaly Agosto-Fillion, Joe Solomon, Jenna Whitson, and David Stember (again) for serving as my climate change, 350 Vermont family ☺

Jessie Mazar, thank you for your beautiful, full-of-life artwork, and for being such a great friend.

Many thanks to Cami Davis, Ann Kroll Lerner of the UVM Office of Undergraduate Research, and all of the individuals I was able to interview and learn from in the summer of 2012. All of this support made this project what it was.

And of course, thank you to my family and friends. I definitely would not be where I am if it weren't for all of you, who all inspire me in so many ways.

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