

The Pennsylvania State University

The Graduate School

College of Education

THE UNSUSPECTED TEACHERS: ENVIRONMENTAL IDENTITY AND SUSTAINABILITY

EDUCATION IN THE ANTHROPOCENE

A Dissertation in

Educational Theory and Policy

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

May 2015

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Abstract

People in higher education institutions are designing, advocating, and implementing curricular changes for sustainability and ecological literacy. This study sought to understand the environmental identities of sustainability education advocates working in higher education. Do they have self-conscious environmental identities? If so, what do those identities entail for their actions, ethics, and professional lives? To answer these questions, I used two research methods. First, using memoir and poetry, I wrote an extended researcher identity piece to investigate the development and facets of my own environmental identity. Second, the study detailed the environmental identities of twelve sustainability education policy entrepreneurs working at two Pennsylvania universities. This information was obtained through semi-structured interviews. The presentation of this study concludes with modest but transformative recommendations to foment a culture that values strong environmental identification and creates positive feedback loops for faculty and staff who work for ecological literacy and sustainability.

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Acknowledgments

Over the last several years, thoughtful, insightful, and kind people nudged me long. I should especially like to thank Emily, Katie, Beth, Alex, John, Seth and Seth, Jared, Zach, Kachine, Garrett, Steve, Derek, Kelley, and all the kids from 3E-COE and Eco-Action; Gary from Sierra Club Moshannon, Ed from National Wildlife Federation, Adam at Penn Environment, Braden from Groundswell, Barb, Jenny, Steve, and all my anti-fracking compatriots; my Collapse bandmates who gave me a venue to bark about ecological devastation; the many men and women with whom I've shared rides on ridge trails in Penn's woods; the people at *Voices of Central Pennsylvania*; Mike my co-host on *Sustainability Now Radio*; the faculty and staff in the College of Education, the former Penn State Center for Sustainability and Office of Sustainability (now both folded into the Institute for Sustainability), Rock Ethics Institute, Office of Physical Plant, faculty members involved with Bucknell University's Greening Initiative, the many participants in the Pennsylvania Environmental Resource Consortium, my friends, colleagues, and students at the Darby School, and my coworkers at Tait Farm.

My committee supported me, too. Mindy Kornhaber and Christopher Uhl repeatedly encouraged me to find ways to be my most authentic self. Chris in particular confronted me as only a male elder can confront a younger man. I will never stop celebrating Jacqueline Edmondson's warmth, calm intelligence, sense of humor, and her openness to my desire for conversation. She moved me on with firm and kind hands each time frustration threatened to stop me and once seemed likely to drive me over the brink. I could not and would not have done this work had it not been for Madhu Suri Prakash. She shines a light on our ways of living and being. She also seeds hope in both spirit and

action. In “The Myth of Sisyphus,” Camus wrote, “The struggle itself for the heights is enough to fill a man’s heart.” My committee sends me there.

Finally, my partner and my family have supported me. My ex-wife Jessica did an enormous amount of work for our household and me. I do much of this work for my son Sacha for a beautiful world in which he too will know the beauty of the rhododendron and the hemlock. My sisters Catharine and Julie celebrate with me at every turn. My partner Meg has listened and nudged me to always be my best self. Finally, my mother and father have loved me more than words can say. My father did not live to see me earn this doctorate. His passion for teaching lives in and through me and I am proud to be his son. Like Telemachus to Ulysses, I meet adoration to his household gods. As he is gone, I work my work, his, his own. And now I strike the sounding furrows. This work is dedicated to my mother and father equally.

Even among ecologists and environmental activists, there's a tacit sense that we'd better not let our awareness come too close to our creaturely sensations, that we'd best keep our arguments girded with statistics and our thoughts buttressed with abstractions, lest we succumb to an overwhelming grief—a heartache born of our organism's instinctive empathy with the living land and its cascading losses. Lest we be bowled over and broken by our dismay at the relentless devastation of the biosphere.

David Abram, *Becoming Animal: An Earthly Cosmology*

* * *

I am prepared to grovel. To humiliate myself abjectly, because, in the circumstances, silence would be indefensible.

Arundhati Roy, *The End of Imagination*

* * *

People say that what we're all seeking is a meaning for life. I don't think that's what we're really seeking. I think that what we're seeking is an experience of being alive, so that our life experiences on the purely physical plane will have resonances with our own innermost being and reality, so that we actually feel the rapture of being alive.

Joseph Campbell, *The Power of Myth*

Chapter 1: Ecological Crises, Sustainability Education, Policy Entrepreneurship, and Environmental Identity

People in higher education institutions are banding together and implementing sustainability policies to ameliorate and adapt to ecological crises such as climate change, extinction, loss of ecosystem services, and declining human-environmental wellbeing. In so doing, they are also creating opportunities. People—not machines—are imagining these policy changes, advocating for them, and implementing them. Who are these people? This dissertation seeks to understand the environmental identities of sustainability education advocates who are working in higher education. Do they have self-conscious environmental identities, defined as “the meanings one attributes to the self as they relate to the environment” (Stets & Biga, 2003, p. 406), and, if so, what do those identities entail for their actions, ethics, and professional lives?

This chapter establishes the warrant for this investigation. First, it lays out the evidence for the ecological crises before us, especially regarding anthropogenic climate change and human-caused extinctions. Second, it reviews “sustainability,” looking at five ways in which the concept has been developed by the United Nations (UN), business leaders, engineers, a post-carbon activist economist, and sustainability education’s most prolific champion. Third, this chapter addresses the ways and depths in which sustainability has taken hold in higher education, especially in curriculum. Fourth, to understand the people who are developing these programs, this chapter presents the concept of policy entrepreneurs—people who have recognized problems and have developed policy solutions that they can propose and advocate. Fifth, because these people have participated in and/or devised policies that are meant to address ecological

crises, I investigate “environmental identity” as a way to understand them and their commitments. Sixth, and finally, I describe the methods and methodology that I used to complete this study.

*

I need only to stand in the midst of a clear-cut forest, a strip-mined hillside, a defoliated jungle, or a dammed canyon to feel uneasy with assumptions that could yield the conclusion that no human action can make any difference to the welfare of anything but sentient animals.

John Rodman, “The Liberation of Nature?”

Ecological Crises: Unraveling Nature’s Threads

The educated and developed humans of the world have transformed Earth’s physical systems and undermined the biosphere in a blink of geological time. Uneducated and undeveloped people did not. Barely checked growth in the globe’s human population and material economy is leading toward global ecological “overshoot” (Meadows, Randers, & Meadows, 2004, p. 2). From intensifying woolly adelgid infestations of Canada’s hemlock trees, clear cutting of Pennsylvania’s forests, and constructing natural gas drilling pads over the Marcellus and Utica Shale plays, to massive tropical deforestation for mineral extraction, new highways, and industrial agriculture, the effects of “progress” are causing ecocide—ecological suicide, but a suicide predicated on the murder and despoliation of other species (Diamond, 2005, pp. 6-7). We no longer live in the Holocene period—the whole period. Rather, now we live in the Anthropocene—the human period—a period marked by the transformation of nearly every aspect of the planet by industrial humans (McKibben, 2010). Should humans go extinct, the chemical

traces of our civilization will remain in ice cores and soil samples in tens of thousands of years. Some might say we have remade the earth in our image.

Since the early 1970s, international global reports provided more evidence of dangerous human-environmental incursions. As Princen (2010) states in *Treading Softly*, simply too many reports demonstrate that industrial humans are the cause for ecocide—so many that there is no real point in aggregating them in all their gory detail. And as McKibben (2010) makes plain in *Eaarth*, industrialized people have re-engineered the planet in ways that make it fundamentally different from the planet in which modern civilization emerged, and consequently the planet is much a more challenging place for us and for other species to inhabit (p. 38). Sadly, ours is an age marked by death at an inexplicable rate. Human-caused extinctions are so rapid that Leakey and Lewin (1995) call it “the sixth extinction.” (The fifth extinction occurred when an asteroid hit what is now the Yucatan and extinguished the dinosaurs.)

Two works produced by the UN made the existence of an ecological crisis painfully clear. In 1987, the World Commission on Environment and Development (WCED), led by former Norwegian Prime Minister Gro Harlem Brundtland, presented *Our Common Future*, in which the commissioners said warned that humanity had failed to fit its activities into nature’s patterns and was fundamentally changing planetary systems at its own peril. “This new reality, from which there is no escape,” they wrote, “must be recognized—and managed” (Brundtland & the WCED, 1987, p. 18) because our actions had lacked management in the light of our recognizing our environmental impacts. The commissioners concluded that human progress was linked to economic growth and technological expansion. Economic growth and technological expansion, they

found, are inextricably linked to ecological integrity in previously unrecognized ways (p. 21). Specifically, unsustainable management led to resource-base depletion and habitat disruption by deforestation, pollution, dryland degradation, acid rain, nuclear fallout (from Chernobyl), ozone depletion, and global warming (p. 22).

Five years later at the 1992 Rio Earth Summit, the UN Commission on Sustainable Development (UNCSD) stated that these same effects of human progress were still at work. Despite efforts in the previous two decades to prevent widespread ecological devastation, humans were still extinguishing species and undermining the integrity of ecosystems. Consequently, the UNCSD (1992) argued, “Urgent and decisive action is needed to conserve and maintain genes, species and ecosystems, with a view to the sustainable management and use of biological resources” (Chapter 15.3). Other sections present similarly upsetting observations about the atmosphere (Chapter 9), forests (Chapter 11), arid landscapes and deserts (Chapter 12), mountain ecosystems (Chapter 13), agricultural and rural land (Chapter 14), oceans and seas (Chapter 17), and freshwater systems (Chapter 18).

Since 1975, the World Watch Institute has published its annual *State of the World* report to track changes in agriculture, air quality, biodiversity, climate, conservation, consumption, energy, food, forests, governance, human health, marine systems, natural disasters, pollution, religion, security, toxics and hazardous materials, water, and wildlife (World Watch Institute, 2010, pp. xxi-xxvii). On nearly every indicator, the trend over the last four decades shows that human industrial development coupled to economic growth disrupts every ecosystem and precipitates or exacerbates human problems. Some areas show signs of promise, including the publication of *The Green Bible* in 2008 which

brings a message of “creation care” to its readers and the 17% rise in organic products in the U.S. market in the midst of a recession (World Watch Institute, 2010, pp. xxiv). But these good signs are overshadowed by accelerating crises in other areas including the human destruction massive soil erosion, human overextraction of fresh water, the destruction of habitat and the consequent extinction of species, and climate change. We will focus on the last two.

The International Union for the Conservation of Nature’s (IUCN) *Wildlife in a Changing World* (Vié, Hilton-Taylor, & Stuart, 2008) and the Millennium Ecosystem Assessment (MEA, 2005) report similar findings and conclusions on biodiversity. For example, the IUCN’s Red List indicates that “38% of all species in the world are likely to be threatened” (Vié et al., 2008, p. 16). The IUCN finds that 33% of amphibian species (p. 19), 12% of bird species (p. 21), and 21% of mammal species (p. 31) are threatened with extinction because logging, forest fires, conversion of forests to pasture, exploitation of conifers for non-timber resources, hunting, invasive species, large-scale industrial or extractive interference, and to a lesser extent accidental mortality and disease destroy their habitats (see pp. 19, 27, 32, & 35). Similarly, the Millennium Ecosystem Assessment (2005) states that humans have changed or disrupted ecosystems “more rapidly and extensively in the last 50 years than in any other comparable time in human history ... to meet growing demands for food, fresh water, timber, fiber, and fuel” (p. 1). Its findings are very similar to the IUCN report, corroborating estimates that the extinction rate is up to 1,000 times the natural background extinction rate. Many of us think of extinction and habitat deforestation as problems limited to the tropics. They are not.

We are damaging forests across North America, too. In *The Dying of the Trees*, Little (1995, pp. 165-191) takes readers across the contemporary United States, showing its deforestation. The dogwood is threatened by the spreading dogwood athracnose fungus, acid rain has perhaps irreversibly devastated forests from Vermont to North Carolina, forest fires are increasingly dangerous and difficult to control due to changing forest composition, bark beetle infestations, and climate change, gypsy moths have killed swaths of forests across Michigan, the old-growth forests of Oregon and Washington are dying because of changes in the microclimate, and the woods of West Virginia and Eastern Kentucky are simply falling down because of human excesses. The hemlock, the chestnut, and the sugar maple all sit under a sword of Damocles. Ponderosa pines in the U.S. Rocky Mountains are dying because of unprecedented bark beetle infestations (Bentz, 2008). Hemlock trees in eastern North American are dying because of the woolly adelgid that attacks their needles (Department of Conservation and Natural Resources, n.d.). Many of these changes have been and will continue to be exacerbated by potentially catastrophic anthropogenic climate change.

Dozens of scientific societies report that the Earth's atmosphere is warming and that human activities are the cause—a phenomenon called anthropogenic climate change. According to the World Meteorological Organization (WMO), 13 of the last 15 years up to 2011 were the warmest in recorded history: Near-surface sea and land-surface global temperatures have, on average, risen $0.74^{\circ}\text{C} \pm 0.20^{\circ}\text{C}$ above the 1961-1990 annual average of 57.2°F (WMO, 2011a). In 2011, parts of the Earth experienced radically intense heat compared to their averages over the last 200 years. In northern Europe, temperatures from January to October were roughly 4°C above average some stations

reporting more than 9°C above average in northern Russia and Helsinki, Finland having reporting its hottest summer in 200 years (WMO, 2011a). None of these findings appears to be abating. In 2013, the Intergovernmental Panel on Climate Change stated

Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased (IPCC, 2013b).

As of October of this year, the National Climatic Data Center (NCDC) predicted that 2014 is likely be the hottest year on record (Romm, 2014).

This rapid warming has been caused by a variety of human actions, including burning fossil fuels, felling forests, using chemically-intensive industrial agriculture, and the use of synthetic greenhouse gases leaked from refrigeration, propellants, and other uses. These activities have resulted in a drastic increase in the concentration of carbon dioxide (CO₂) in the atmosphere and the emergence of a greenhouse effect. In 1800, CO₂ was concentrated in the atmosphere at approximately 200 parts per million (ppm), and in 2012, the rate was approaching 400 ppm. In November 2011, WMO Secretary-General Michel Jarraud said, the most recent scientific research “*proves unequivocally* that the world is warming and that this warming is due to human activities” (WMO, 2011b). Global warming has caused and will cause a number of climatic disruptions including melting ice; rising sea levels; more extreme weather events such as heat waves, droughts, and tropical cyclones; and habitat changes. All these phenomena have and will continue to disrupt human society.

If we are going to do something about climate change, then what do we need to do? What do we need to change about our patterns of living? As we can see, these problems are not actually environmental. They are social problems—urgent social problems.

In *Ecological Literacy*, Orr (1992) argues that there could be five reasons why humans are causing ecological crises, or what he calls the “crisis of sustainability” (p. 4). According to Orr, these crises are caused by one or a combination of (a) social traps, (b) misunderstandings between material economies and Earth’s physical and biological systems, (c) an urge to dominate nature through scientific and technological progress, (d) an evolutionary wrong turn, and/or (e) an inherent problem in the human condition (pp. 4-5). Although *Ecological Literacy* is 20 years old, Orr’s arguments still hold and are worth discussion. Below I summarize Orr’s assertions and fill them out with other scholarship. As discrete as his individual points may seem, they are impossible to disconnect from one another.

First, Orr (1992) argues that “rational” people fall into *social traps* that serve them over short timescales but undermine them over longer timescales. Hardin’s (1968) classic essay, “The Tragedy of the Commons,” serves as Orr’s heuristic. Among these social traps Orr includes “arms races, traffic jams, cigarette smoking, population explosions, and overconsumption”—all of which involve achieving short-term rewards but often have unintended consequences that become dangerous over time, leading to other and perhaps more intractable problems (p. 5). Orr argues that many of our problems emerge when individuals, corporations, or other collections of people overuse a common source—forests or the atmosphere are examples—to meet their short-term desires.

Forests suffer when we cut wood for smelting iron, furniture, housing lumber, or oils from wood. The atmosphere and oceans suffer when we treat them as sinks into which we pour carbon pollution from power plants. As more people see comfortable furniture or balmy houses as “needs,” we trap ourselves in consumptive games to keep up. So-called “rational” people may not really be so rational, but rather able to “rationalize” their actions. They “rationally” aggrandize themselves in the near term to delay monetary and environmental costs (p. 6).

Second, *economic growth* leads people to overshoot natural systems’ limits. “Economic growth is commonly regarded as the best measure of government performance. It has come to be the central mission of all developed and developing societies” (Orr, 1992, p. 7). Growth economics, Orr argues, has been so abstracted that it does not consider certain fundamental physical truths, such as the laws of thermodynamics. The cult of growth operates on the equivalent of religious faith. For example, people’s general conception of the growth imperative fails to recognize the planet’s finite limits and capacities for regeneration.

Speth (2008) updates Orr’s economic growth argument. Like Orr, Speth sees economic growth as “modern capitalism’s principal and most prized product” (p. 107). Citing Hamilton (2004, pp. 10-11), Speth argues the growth economy’s costs for the most part fall outside of the market itself and never appear in national accounting. However, the costs to humans and the environment are everywhere and must be accounted for because rampant economic growth has caused, is causing, and will only make more extreme the collision between the neoliberal economy and nature.

Ehrlich and Holdren's $I=P*A*T$ equation is a convenient heuristic in this regard. Humanity's [I]mpact changes for the worse as growing [P]opulation becomes more [A]ffluent, thereby accessing more [T]echnologies with their own different ecological impacts (Ehrlich & Ehrlich, 1991, pp. 7-10). Speth (2008) calls the $I=P*A*T$ effect "the Great Collision" (p. 1). Additionally, the growth economy's promises to people seem to be, if not empty, less than full. Speth writes that modern growth economics appears to be oriented toward material well-being, but in the course of that pursuit, we have been manipulated by marketers to become obsessive, unhappy, and unhealthy consumers trapped in materialistic fetishism when we could have an economy that reinforces happy, engaged, and healthy citizenship (p. 117).

Third, Orr (1992) asserts that both Judaeo-Christian and European-American science traditions have both sought to *dominate nature*. As the King James Bible states in Genesis 1:26, Elohim states, "Then God said, 'Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth.'" Like all sacred scriptures, this dominion clause can and has been debated, but biologist and conservationist E. O. Wilson (2006) worries that such a doctrine results not in "hope and compassion" but in "cruelty and despair" (p. 6). However, environmental exploitation by Christians before the emergence of modern science pales in comparison to what has happened since.

Citing Mumford (1970, p. 82), Orr (1992) argues that the scientific revolution is responsible for this domination: "Bacon, Galileo, Newton, and Descartes, ... contributed to the destruction of an organic world view and to the development of a mechanical

worldview” that severed people’s worlds of experience (p. 12). Nature became an object to be investigated and abstracted about instead of revered, subjugated instead feared, seen as rationally understandable instead of infinitely mysterious, and guarded against simply because of its near omnipotence.

In practice it is difficult if not impossible to uncouple Christian dominionist thinking from scientific hubris. The notion of *progress*, born from the European-American Enlightenment, created the possibility for humans to dominate nature. As they burned whale oil and wood and then coal, engines began to roar, and men dominated the Earth so efficiently that they deforested Europe and huge swaths of North America (Alley, 2011, pp. 21-40). In the last 200 years, we have seen the rise of fossil fuels such as coal, oil, and natural gas, which have afforded human scientific progress the veneer of limitless power. This inappropriate technological progress locks us into behavioral patterns that impose long-term costs for short-term gains, thereby exacerbating the first and second problems of social traps and economic growth (Orr, 1992, p. 15). The problems, too, might be explained by human evolution.

Fourth, the crisis of sustainability comes from an *evolutionary wrong turn* (Orr, 1992). Civilization, as it stands, might be maladaptive in three ways. First, so-called “advanced” or “developed” societies have not cornered perfect solutions to the problems of life in ways that are universally “better” than so-called “primitive” societies. According to Orr, they create whole populations of developed “childish adults” (p. 16), transmogrified into people addicted to having their “basic needs”—from conditioning to advanced medicine to schooling—met by development institutions instead of through their evolved capacities for shared life (Illich, 1992, pp. 89-91). Second, Orr argues that

cultures throughout time have not manifested the levels of “aggressiveness, greed, violence, sexism, and alienation” that we experience in modern societies (p. 17). Third, modern culture is deliberately severed from nature and nature’s effects to a degree that no culture has previously experienced (p. 17). The Romans, masters of mighty engineering feats including the aqueducts, the flooded coliseum, and Rome itself, could not decouple themselves from the elements and creatures as modern Americans can. A world so overlaid with rapidly evolving technologies might well be a turn for the worse for humans. Perhaps it is really a problem of the human condition.

Fifth, and finally, Orr (1992) suggests that perhaps “we are a flawed, cantankerous, willful, perhaps fallen, but certainly not entirely planet-broken race” (p. 17). As we struggle “forward” in the Promethean attempt at progress and ever-longer lives, we trap ourselves in double-binds that have short-term profits and seemingly far-off consequences. Our restless and avaricious spirits simply want, and we are barely able to resist them. We are doomed to trap ourselves because we have overlaid the world with devices, systems of thought, economies, and social conditions that our capacities cannot use appropriately.

People in the developed world spend an enormous amount of time in school. There, we learn skills that support or counteract good personal, civic, economic, and ecological living. Some authors, including Fiala (2007) report that stated purposes of education tend to be toward benign ends like personal happiness, democratic engagement, economic mobility and security, health, and the like (p. 32). However, the hidden curriculum of consumption (Illich, 1978, p. 77; see also Kahn, 2010b) teaches standardization and corporatization at democracy’s (see Giroux, 1978, p. 138; 2002;

2010), communities', and cultures' expense (see Bowers, 1993,1994, 1997, 2010; Gruenewald, 2003a, 2003b; Gruenewald & Smith, 2008; Esteva & Prakash, 1998; Ilich, 1973; Prakash & Esteva 2005) and to the detriment of other-than-human life (see Kahn, 2006, 2010a, 2010b; Orr, 1992, 2011). The most formally educated people in history have created the environmental catastrophes before us. We are responsible for helping to steer us in better directions. Perhaps sustainability can guide us on better, ecologically literate, and sustainable paths.

Sustainability: An Orienting Concept

Sustainability is a complex concept, perhaps even an entire way of thinking.

James Elder and Georges Dyer, *Education for Sustainability Blueprint*

Martens (2006), citing physicist Richard Feynman, writes, “‘Whoever says that he understands quantum theory, in all probability, does not.’ The same is true of sustainable development. Whoever says he knows what ‘sustainability’ is, in all probability does not. In a certain sense, a sustainable world is a fiction” (p. 40). On a similar note, Heinberg (2010) writes that “sustainability” is so abused that some environmentalists believe it ought to be abandoned (p. 85). The question remains as Revkin (2011) writes, “Sustain what? Sustainability as a word is utterly vague until you apply it to a specific issue—sustainable ecosystem, sustainable energy system, sustainable transportation system, sustainable lifestyle. Then you can kind of get an answer.”

On one hand, we can define sustainability tritely as the ability to persist and carry on. At the least, sustainability must point away from things that cause the ecological crises enumerated above and their linked problems in and on human cultures. I will

briefly introduce some of these definitions. This discussion's goal is to present five versions of sustainability that are found in the literature: sustainable development (Brundtland & WCED, 1987), the triple bottom line or three pillars (Elkington, 1994), flourishing (Ehrenfeld, 2008), Heinberg's five axioms of sustainability (2010), and Orr's ecological sustainability (1992).

Sustainable Development

In 1987, the UN's WCED was charged with dealing with the impoverished destitution of at least a third of the world's people while recognizing the incredible ecosystem damage the world's developed economies had caused. The WCED proposed the idea of "sustainable development" as a form of development "that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland & WCED, 1987, p. 24). The basic goal of sustainable development is to balance a desire to reduce human suffering through economic and political development that depends on an integrated and healthy environment in a world with limitations though "not absolute limits" (p. 24). The modern economic order should be sustained in many ways and more people should be brought into it, but not at the expense of the other organisms with whom we cohabitate and the ecosystems on which all life depends.

The Triple Bottom Line

People may be able to achieve a high quality of life, but they may also reduce natural resource bases, leaving large ecological footprints through overconsumption. Therefore, some have moved to integrate social, economic, and environmental indicators

into the concept of human wellbeing and wealth, sometimes referred to as the three pillars of sustainability, the triple bottom line (3BL; Scott, 2012).

Status quo economic analyses have focused on monetary profit as the primary indicator of good. However, the effects of certain economic activities—particularly extractive, combusting, and effluent-producing industries—create risks and costs to society and ecosystems that are not accounted for in the traditional economic analysis. Those risks and costs become “negative externalities” because they create costs for other people, other organisms, usually somewhere else and at some other time. This approach attempts to explicate other values and place them into the accounting scheme so that concerns such as traditional cultural capital, social capital, human happiness, or ecosystem integrity and services are included. It can lead to comprehensive life cycle analysis (Elkington, 1994, p. 94) and be used to create “green” and socially just businesses, consumers, producers, tourists, and the like (Elkington, 1994, pp. 92-93). The 3BL version of sustainability is quite popular in large businesses, corporations, governments, and universities in part because as an accounting tool people can use quantified data (Slaper & Hall, 2012).

There are many institutionalized combinations of needs and TPL statements. For example, the U.S. Environmental Protection Agency (n.d.) defines sustainability this way:

Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which

humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.

The EPA's definition explicitly addresses "need," although it uses the word as a verb, not a plural noun, and fuses it with the overlapping spheres of economy, society, and environment.

Flourishing

Ehrenfeld (2008) writes, "Sustainability is the possibility that humans and all life will flourish on Earth forever" (p. 6). As an engineer, Ehrenfeld has watched as technological advancement and market consumption have consumed people and the more-than-human environment. He hopes that we can create and use more appropriate and sustaining technologies that enable all life to flourish.

Ehrenfeld's (2008) approach sets him apart from both sustainable development and the triple bottom line. First, Ehrenfeld is a designer, not a policy maker nor an analyst; his eye is on the creation of tools for better living. Lau¹ (2010) writes that these tools seek to create flourishing by replacing the current "commodified devices with tools designed to engage us as and build our skills of observation and reflection," to embed scripts in these tools so that we use them to "replace old unsustainable beliefs and norms with a new set," and to "substitute new collective processes (organization or institutional tools) in place of those that reinforce the current unsustainable societal set of beliefs and norms" (p. 257). Like Orr (1992,1994, 2002), Lau suggests that such a form of sustainability and design moves us toward reflection on consequences and the awareness

¹ Lau is a participant in this study.

of interaction instead of a positivistic, post-positivistic, or an economically-oriented utilitarian calculus coming from work on sustainable development or TPL.

Behind these new goals for tools lie the assumptions on which flourishing rests. Lau (2010) writes that Ehrenfeld's (2008) version of sustainability comes from the overlapping of ethical, natural, and human domains (p. 257). Sustainability must be the craft of moral life. First, this craft will emerge in design (and other human endeavors) when we develop an ethical sense, grounded in care for ourselves and care for more-than-human life. Second, nature is the measure of all things. Lau cites Commoner's Four Laws of Ecology, accepting them as true:

1. Everything is connected to everything else.
2. Everything must go somewhere.
3. Nature knows best.
4. There is no such thing as a free lunch. (p. 256)

Nature is complex, interconnected, interdependent, and displays emergent properties (pp. 257-258) including flourishing and beauty. Lau writes that we should be alive in "authentic relatedness to the world" (p. 257), experiencing and reflecting rather than falling into positivistic, rational, or techno-optimistic traps. Humans should express their wealth of endowed gifts and renew themselves in this web of relatedness (p. 257), realizing their interconnectedness, focused on the intrinsic good of relationships.

Heinberg's Five Axioms of Sustainability

In the essay "Five Axioms of Sustainability" (pp. 85-96), peak oil activist and Post Carbon Institute fellow Richard Heinberg (2010) distills principles, guidelines, and rules for sustainability. He uses four criteria to determine whether an assertion can be an

axiom (p. 88). First, it has to be scientifically testable. Second, the set of proposed axioms contains no redundancies. Third, the axioms must be sufficient, with no loopholes. Fourth and finally, the axioms should be understandable to a layperson. He intends the set of axioms to guide readers as they consider or create conditions that allow a society to be maintained over a long time.

Axiom 1/Tainter's Axiom: Any society that continues to use critical resources unsustainably will collapse.

Exception: A society can avoid collapse by finding replacement resources.

Limit to the exception: In a finite world, the number of possible replacements is also finite.

Heinberg (2010) named Axiom 1 after Joseph Tainter, who authored *The Collapse of Complex Societies*. Tainter argues that collapse occurs when a society becomes less complex because its population decreases, it loses technological capacities, its consumption shrinks, or the specialization of its role diminishes (p. 89). Humans need resource inputs, and complex societies need larger quantities and varieties of resources to maintain their status quo. If a society consumes critical resources in unsustainable ways, it will collapse unless it finds substitutes. But even substitutes are limited in a finite world (pp. 88-90).

Axiom 2/Bartlett's Axiom: Population growth and/or growth in the rates of consumption of resources cannot be sustained.

The second axiom, named after Albert Bartlett whose first law of sustainability is the same (1998), recognizes the growth problem (pp. 90-91). Using simple math, Heinberg vis-à-vis Bartlett shows that 1% growth in population would result in the

human population's doubling every 70 years: By 2082 there will be just over 14 billion people on the Earth if no limits exist. The same kind of arithmetic works with consumption of any finite resource. Growth cannot be perpetually sustained.

Axiom 3: To be sustainable, the use of renewable resources must proceed at a rate that is less than or equal to the rate of natural replenishment.

As Heinberg (2010) illustrates, "Renewable resources are exhaustible. Forests can be overcut, resulting in barren landscapes and shortages of wood" (p. 91). As I showed in the previous section, humans have indeed abused many renewable sources of fuel and food including forests, fish, and soil. To maintain a healthy and sustainable balance between human consumption and any resource's viability into the future, humans must avoid overshooting the rate of natural return and the potential extinction of the resource itself. The greatest level of renewable resource consumption should not exceed the maximum sustainable yield.

Axiom 4: To be sustainable, the rate of non-renewable resources must proceed at a rate that is declining, and the rate of decline must be greater than or equal to the rate of depletion.

As per Axiom 1, a society will inevitably exhaust any non-renewable resource and collapse if it is so dependent on that resource that it cannot phase out its use before the resource is no longer available. While we may not know the exact amount of non-renewable resources—from fossil fuels to water—we know that they are limited, and that we will eventually exhaust them. According to Heinberg (2010), "prudence dictates adhering to conservative estimates of 'the amount left to extract'" (p. 93), so that we phase out the use of non-renewable resources by either kicking the can down the road

with the exception to Axiom 1 or finding a renewable substitute treated according to Axiom 3. As a peak oil activist and educator, Heinberg warns against our addiction to oil, arguing the overwhelming likelihood that oil production has peaked, and suggesting that we should urgently switch to renewable resources so as to avoid economic collapse and resource wars (p. 93).

Axiom 5: Sustainability requires that substances introduced into the environment from human activities be minimized and rendered harmless to biosphere functions. In cases where pollution from the extraction and consumption of non-renewable resources that have proceeded at expanding rates for some time threatens the viability of ecosystems, reduction in the rates of extraction and consumption of those resources may need to occur at a rate greater than the rate of depletion.

Human industrial pollution from “extraction, processing, and consumption of non-renewable resources” threatens biosphere function (Heinberg, 2010, p. 94). Our use of fossil fuels typifies this phenomenon in numerous ways, not the least of which are increasing concentrations of greenhouse gases contributing to climate change and point and non-point source pollution from the petrochemical industry. Heinberg (2010) uses coal as an example:

Merely to reduce coal consumption by the global coal depletion rate will not suffice to avert a climatic catastrophe. The coal depletion rate is small, climate impacts from coal combustion emissions are building quickly, and annual reductions in those emissions must occur at high rates if ecosystem-threatening consequences are to be avoided. (p. 94)

To stave off pollution's worst effects, we need to take "heroic measures," many of which can be accomplished by reducing resource extraction, processing, and consumption if the second through fourth axioms are followed. Heinberg advises, "However, society should be extremely skeptical and careful regarding claims for untested technologies' abilities to safely sequester polluting substances for very long periods of time" (p. 95).

These axioms do not address the issues of justice, equality, or human happiness. As noted earlier, Heinberg (2010) intends for them to be guides for maintaining a society over time. "It is not clear," he says, "that perfect economic equality or a perfectly egalitarian society is necessary to avert social collapse" (p. 95). Gross inequality may make societies vulnerable to collapse. Perhaps a society that adopts the five axioms would also be more just, equitable, and happy (p. 95).

Ecological Sustainability

Unsatisfied with "technological sustainability," which he equates with sustainable development, Orr (2011) has proposed a need for "ecological sustainability" (pp. 99-109). Unlike technological sustainability, Orr believes that ecological sustainability will not let us off so easily. Ecological sustainability requires cultural transformation, not just tinkering with prices, redesigning gadgets, and fiddling with policies and procedures.

Orr (2011) explains, "sustainable development raises as many questions as it does answers. Its definition and its proponents show little evidence of respecting the Earth's carrying capacity, growing population, or the limits of the political and economic institutions we have built" (p. 94). Moreover, it implies an unlikely scale of social engineering and suggests that there is consensus about what sustainability means. To Orr, then, sustainable development constitutes a form of "total domination of nature with

population control” (p. 95), a population comprised of “economic men, who know no limits of sufficiency, satiation, or appropriateness” (p. 95). The economic and political institutions built on sustainable development are just “greenwashed” versions of an industrial economy that produces crisis as it prefabricates consumable identities (Kahn, 2010b, p. 53). But if the pricing is right, the material substitutions found, the maximized energy and resource efficiency realized, then we will escape limits in “a painless, rational process managed by economists and policy experts sitting in the control room of the fully modern, computerized society, coolly pulling levers and pushing buttons” (Orr, 2011, p. 99) while ignoring democratic processes, village economies of scale, or any potentially engaged citizenry. He argues us to see four characteristics of ecological sustainability.

First, humans are “limited, fallible creatures” (Orr, 2011, p. 100). Following Wendell Berry, whatever limitations humans have, our machines will express and extend. No matter our technological advancement, humans live with limited comprehension and coordination and are only capable of being so good. Even if we could escape the limits of our comprehension and coordination, our capacity for good would still affect our technologies and their deployment (Orr, 2011, p. 100).

Second, ecological sustainability can be realized through the thoughtful actions of ecologically aware citizens who work to decouple themselves from the global economy. Grassroots action that addresses local and community activities should transform the ever-growing corporate- and state-dominated economy. Such thoughtful work on the local and regional level can ameliorate the aggregated effects of social traps like Garrett Hardin’s “tragedy of the commons” (Orr, 2011, pp. 101-102). This second characteristic requires ecological literacy and citizenship and is particularly relevant to education. As I

will illustrate, ecological literacy occupies a central place in sustainability education policy talk and in the educational values of sustainability education policy entrepreneurs.

Third, ecologically sustainable practice should be grounded at least as much in past and indigenous practices and careful place-based adaptation as they are in the work of modern science and technology (Orr, 2011, pp. 102-104). Orr (2011) writes, “The crisis of sustainability has occurred when and where [the] union between knowledge, livelihood, and living has been broken and knowledge is used for the single purpose of increasing productivity” (p. 103). This rupture renders biodiversity, appropriate technologies, and ways of human living and being into quaint things best remembered in museums.

Fourth, ecological sustainability requires that nature be the benchmark for the design of “housing, cities, neighborhoods, farms, technologies, and regional economies” (Orr, 2011, p. 104). Citing Land Institute founder Wes Jackson, Orr (2011) argues that human endeavors should mimic the structure, function, resilience, and place-basedness of natural systems such as prairies (p. 105). Is there any assurance that in imitating nature the human penchant to dominate nature will not come through? Not necessarily. But if sustainability is understood as necessarily and authentically restorative, then sustainability advocates can act at appropriate scales and through decentralized action to avoid the enormous problems caused by global thinking and acting (Orr, 2011, pp. 106-108).

Summary: Five Versions of Sustainability

Differences exist between the five versions of sustainability presented here. These differences have some bearing on how individuals, communities, and institutions

coordinate their sustainability actions. Consider briefly the following critique rooted in some combination of Orr's (2011; see also Orr, 1992), Heinberg's (2010), and Lau's (2010) versions of sustainability. Bjorn Lomborg (2003), a self-proclaimed "skeptical environmentalist" who has written on sustainability, argues that technology is "the only game in town." That is, technological progress is the path. But as Wendell Berry asked in 1988 (1990), "Who can desire a future that is determined entirely by the purposes of the most wealthy and the most powerful, and the capacities of machines?" (p. 167).

Davison (2001) argues that people like Lomborg (2003) are smuggling "the interests of the technological society ... into ecological awareness," fundamentally contradicting ecological integrity (p. 38). Under the aegis of efficiency and the growing economy, the sustainable development discourse fundamentally fails to challenge the assumptions of growth, to recognize limits, and to question the moral dimensions of modern technology, instead couching ecological crises as vast territories of growing technological and economic opportunity and natural resource and biosphere management (Davison, 2001, pp. 38-42). This discourse skews meaningful talk and action toward the interests of the global North's core while exploiting, oppressing, or neglecting the "Two-Thirds World" of the global South (pp. 42-45) while also denying its inhabitants the right to develop. Davison sees sustainable development as sustaining technocracies and technological progress as does Ehrenfeld (2008, p. 21). Uhl (2013, p. xi) sees it as "profoundly problematic" because it does little to question the "if only" mentality that of the consuming economy (Uhl, 2013, p. xi). What does sustainability as a concept really do to protect and sustain our cultural commons (Esteva & Prakash, 1998, p. 199) or

bioregional systems (see Berry, 1993, p. 20)? This critique provides only a small glimpse of the tensions within the sustainability discourse.

Tensions aside, there is quite a bit in common between the visions described above. First, they all recognize consequences in the physically connected world. Second, they recognize that consequences occur over time. Third, the interconnection of consequences across space and time brings moral and ethical responsibility. Parkins et al. (2001) suggest that sustainability is a “bridging concept that recognizes the need to pursue human and ecological well-being together, therefore explicating, stating, and dealing with ... interdependence” (p. 46). It functions normatively like “justice” or “freedom” and guides thinking and action toward a better human state of affairs by encouraging robust and effective beliefs and actions that recognize the interdependence of systems (Wilson, 2006, p.5). Later, we will see that sustainability advocates’ views of sustainability and environmental ethics are as pluralistic as the discourse.

Sustainability in Higher Education

As an ideology... sustainability is on fire.

Peter Wood, *Chronicle of Higher Education*

Higher education institutions have addressed sustainability in multiple ways. This brief overview presents a number of initiatives, organizations, and policies that are illustrative of the efforts that colleges and universities have adopted over the past 25 years.

The preamble to the Talloires Declaration (University Leaders for a Sustainable Future, 1990) reads, “We, the presidents, rectors, and vice chancellors of universities from all regions of the world are deeply concerned about the unprecedented scale and

speed of environmental pollution and degradation, and the depletion of natural resources.” Its signatories, the University Leaders for a Sustainable Future (ULSF), urge for the “stabilization of human population, adoption of environmentally sound industrial and agricultural technologies, reforestation, and ecological restoration.” Most importantly, they argue that university leaders “must initiate and support mobilization of internal and external resources so that their institutions respond to this urgent challenge.”

The following year, 1991, leaders from Dalhousie University in Nova Scotia, the Association of Universities and Colleges of Canada, the International Association of Universities, and the United Nations University came together to follow up on the Talloires Declaration (ULSF, 1990). The Halifax Conference was meant to “dedicate the international university community firmly and effectively to the implementation of the wise outcomes of the [following year’s] Earth Summit” and solicit input from university leaders—students, faculty members, and administrators alike—on sustainable development (Head, 1992, pp. 1-2). The Halifax Declaration emerged at the conference’s end (Clark & McDonald, 1991).

Like the Talloires Declaration (ULSF, 1990), the Halifax Declaration asserts that the scale and scope of human demands on the planet threaten our wellbeing. Therefore, the convened leaders invited all universities to dedicate themselves to a six-point plan:

1. To commit to the practice and principle of sustainable development.
2. To use universities’ intellectual resources toward the three pillars of sustainability.
3. To emphasize an ethic that guards against overusing resources and human disparity.

4. To teach for sustainable development and environmental literacy.
5. To cooperate with all sectors of society to develop capacity and practical and effective policies across and between the global North and South.
6. To employ all available communication channels.

One year later, the UN Conference on Environment and Development brought together thousands of stakeholders. This Earth Summit in Rio de Janeiro merged environmental education and development work from previous UN framework agreements. Section 36 of *Agenda 21* (United Nations Commission on Sustainable Development, 1992, pp. 1-6), the product of this summit, called for broad and deep educational transformation to develop education, public awareness, and training toward sustainable development. Reinforcing other UN statements on the issue of sustainability, UNESCO (1997) has declared, “Education, in short, is humanity's best hope and most effective means in the quest to achieve sustainable development.” In addition, following the Rio Summit, the Earth Charter Commission (2000) called for “Integrat[ing] into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life” which would require “creative leadership” (p. 4).

In the years since these early calls for sustainability, higher education organizations, agreements, and policies have proliferated. The Higher Education Associations Sustainability Coalition (HEASC) coordinates 15 subgroups, some of which are listed below (Bardoglio & Putnam, 2009, Appendix 3). Interuniversity coalitions, such as the Association for the Advancement of Sustainability in Higher Education (AASHE) and Second Nature, facilitate institutional collaboration on sustainability issues. Institutions have also signed statements such as the American College and

University Presidents' Climate Commitment (ACUPCC, 2007) and joined the Association of University Leaders for a Sustainable Future. State organizations in the United States such as the Pennsylvania Environmental Resource Consortium (PERC) and the New Jersey Higher Education Partnership for Sustainability (NJHEPS) work to share knowledge, become models of sustainability, and generate momentum toward sustainability.

Centers, offices, and institutes for sustainability and the like are on the rise at schools in these consortia and at non-affiliated schools. These coalitions, agreements, and centers have led to waste-reducing operational transformations, “green” teams and councils, extension efforts on sustainable agriculture education, greenhouse gas inventories between colleges and municipalities, and curricular integrations or new academic programs (see Alabaster & Blair, 1996; Bardoglio & Putnam, 2009, pp. 29-45; Barlett & Chase, 2012; Blewitt, 2009).

Sustainability groups and initiatives consider several important foci within the context of education. Wright (2004) found that sustainability agreements among institutions of higher education emphasize several specific issues (pp. 13-17). They tend to characterize sustainability as a moral issue that obliges members to teach about and for healthy human-environmental interactions. This imperative mandates outreach to the public and the extra-university community. Most of these agreements demand research for sustainability and partnerships with governments, NGOs, and industry in sustainability-oriented actions. Importantly for this research, most of these agreements demand education for “ecological literacy,” something with which all of the people interviewed for this study agreed.

Reynolds (2010) writes that ecological literacy develops [a]n understanding of the environmental, social, and economic dimensions of human-environment interactions, and the skills and ethics to translate this understanding into life choices that promote the sustainable flourishing of diverse human communities and the ecological systems within which they are embedded. (p. 18)

Orr (1992) writes that ecologically literate people will ask the question, “What then?” in a world of consequences. Ecological literacy “calls for students to develop an awareness and understanding of the importance of the natural environment and the effects of human activities on it, as well as an appreciation for the complexity of the interactions” (Creighton & Cortese, 1992, p. 19). These definitions present a normative position: People *should* translate their understanding of interconnected systems into moral positions that guide actions to sustain life. Some thinkers and activists have extended ecological literacy into radical positions as well, including ecopedagogues such as Richard Kahn (2010a), critical place-based educators such as David Greenwood (Gruenwald, 2003a, 2003b), education for ecological justice advocates such as C.A. Bowers (1993, 1994, 1997), and Christopher Uhl (2013) who advocates for the personally and culturally transformative concept of “ecological consciousness.”

Higher education has historically graduated environmental illiterates who are ill-equipped to move society in more sustainable directions (Reynolds, Brondizio, Robinson, Karpa, & Gross, 2010, p. xiv). Orr (2010) questions higher education’s purpose in the contemporary world, arguing that the kind of education that civilization needs now recognizes ecological crises and their causes and asserting that we must recreate our

systems of education to adapt to these problems; ameliorate and reverse their effects; prevent them from recurring; and, most importantly, create a world where people and the biosphere are happier and healthier. Such a task could revolutionize higher education.

Sterling (2004) writes,

Sustainability ... implies a change of fundamental epistemology in our culture and hence also in our educational thinking and practice.... [Sustainability] is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, pedagogy, of organizational change, of policy and particularly ethos. (p. 50)

This ethos must integrate skills, methods, knowledge, attitudes, and more into a “complex intelligence” (Boyer & Levine, 1981, p. 4). A fundamental tension, with which institutions and advocates wrestle, exists between sustainability and ecological literacy on the one hand and the status quo on the other. No matter the tensions, we have seen that institutions have changed, and that one of their paths toward sustainability comes through modifying general education.

American higher education institutions have long used a general education curriculum to create liberally educated graduates (Rattcliff, Johnson, & Gaff, 2004, p. 1). The American Association of Colleges and Universities (AAC&U, 1998) says liberal education

requires that we understand the foundations of knowledge and inquiry about nature, culture and society; that we master core skills of perception, analysis, and expression; that we cultivate a respect for truth; that we recognize the importance

of historical and cultural context; and that we explore connections among formal learning, citizenship, and service to our communities.

The breadth of the concept of general education challenges curriculum policy advocates.

Former director of curriculum development at American University Jerry Gaff (1983) writes that general education possesses the following qualities: It is rooted in the liberal tradition and the study of arts and sciences; stresses breadth to introduce students to the varieties of human knowledge; strives to foster integration, synthesis, and connectedness of knowledge; encourages one's own and others' traditions; examines values in issues and disciplines; values some common educational experience; requires that students master linguistic, analytical, critical, and computational skills; and fosters personal qualities such as tolerance and empathy (pp. 7-8). Ideally, students whose skills and attitudes are so cultivated can continuously learn, think independently, and become responsible for their own intellectual development (Boyer & Levine, 1981, p. 3). Such a person should one day possess a "complex intelligence" (Boyer & Levine, 1981, p. 4). As students know only too well, general education can also end up being a no man's land, an "ill-defined portion of the undergraduate curriculum that belongs to nearly everyone and is the sole province of no one" (Ratcliff et al., 2004, p. 1). Such poorly conceptualized area could result in disintegrated curricula and a poorly educated person. Integrated or not, different stakeholders seek to remake general education for different purposes.

Since the late nineteenth century, the Carnegie Foundation for the Advancement of Teaching has identified 50 stated purposes for general education (Boyer & Levine, 1981, pp. 54-61). These purposes include: sharing humankind's common heritage, enhancing global perspectives, developing mutual responsibility, preserving a democratic

society, making commitment to moral and ethical behavior, integrating diverse groups of people, reconstructing society after war, overcoming anti-democratic behavior, eliminating educational practices catering to individual differences, avoiding unethical and immoral behavior, reducing asocial behavior, counteracting a “live for today” orientation, developing whole personhood, fostering the good life, overcoming cultural confusion, and helping institutions themselves to become more prestigious or reduce costs. As is the case in any sufficiently powerful and/or authoritative institution, stakeholders—including sustainability advocates—seek to mold higher education in an image that is advantageous for them.

As Dickinson College provost Neil Weissman (2012) says, “sustainability powerfully validates the liberal arts” because it “invariably emphasizes holistic systems thinking, the ability to make connections, and ‘lateral rigor’” (p. 8). In addition, Weissman (p. 10) argues that education for sustainability offers curriculum designers a way to meet the AAC&U’s Essential Learning Outcomes: knowledge of human cultures and the physical and natural world, intellectual and practical skills such as critical thinking and personal and social responsibility, and integrative and applied learning (AAC&U, 2007). As an “entire way of thinking,” sustainability can unify the traditional general education in the liberal tradition (Elder & Dyer, 2011, p. 4).

Four studies show that ecological literacy and sustainability education have made their ways into general education curricula at U.S. colleges and universities. In 2001, researchers found that 11.6% of chief academic officers these institutions (n=496) reported that their school required a general education course that promoted “environmental literacy” (Wolfe, 2001, p. 301). Among private institutions, 14% reported

such a requirement, which was double public institutions' 7% (Wolfe, 2001, p. 304). Also in 2001, the National Wildlife Federation published a report (McIntosh, Cacciola, Clermont, & Keniry, 2001) that indicated a smaller finding: 8% of surveyed two- and four-year institutions require a general education course for "environmental literacy." As of November 2010, the *Education for Sustainability Blueprint* (Elder & Dyer, 2011) reported that 113 academic sustainability programs and more than 1,100 interdisciplinary environmental programs were being offered at U.S. colleges and universities, and 240 institutions had participated in AASHE's Sustainability Tracking, Assessment, and Rating System (STARS). AASHE developed STARS to assist colleges and universities with the development of sustainability policies and programs across and between their institutions, including curricular development (AASHE, 2013). As of October 2014, 297 institutions had submitted STARS reports (AASHE, 2014). These numbers indicate a large shift toward institutionalized educational initiatives for sustainability over the last decade. These shifts can be attributed to sustainability education advocates who act as policy entrepreneurs on their campuses

Policy Entrepreneurs

I view sustainability education advocates as policy entrepreneurs as they are described in Kingdon's (1995) Multiple Streams or "revised garbage can framework" model (MS) (see also McLendon & Cohen-Vogel, 2008). I find this model useful because it situates individuals within the positions where they seek to take action. MS has been lauded for providing a generic frame for understanding processes, but in so doing, the model ignores or discounts details. This study purposefully fleshes out details from one of the streams—the policy entrepreneurs in the policy stream—to examine whether

people's identities matter for policy action and whether, in these instances, their environmental identities matter. Here I present the concept of the policy entrepreneur, after which I explore the idea of environmental identity.

Kingdon (1995) suggests that policies emerge when multiple streams converge to create policy windows. Kingdon's "streams" include the policy stream, the problem stream, and the political stream (p. 167), which can converge to create a policy window. Sometimes windows open predictably because a policy must be renewed or revised (e.g., annual budgets), because of a sudden and serious problem (e.g., Hurricane Katrina in 2005 raised enormous questions regarding government, economic security, and environmental integrity and protection), or because new political figures gain authority. When all three circumstances come together, a policy alternative is most likely to be adopted (p. 178). Whatever the reason that the policy window opens, someone must push for action. That person is a policy entrepreneur, even if he or she does not think of himself or herself as one.

A policy entrepreneur lies in wait (p. 165) with policy alternatives, proposals, or solutions ready to couple to "problems of political exigencies" (Kingdon, 1995, p. 173). As participants and advocates, policy entrepreneurs they try to adjust the window's environment to their advantage. They use their skills and/or positions to move policies up on the agenda (Kingdon, 1995, p. 180). They may have some claim or standing on the issue, have political connections, use negotiating skill affording them connections, or persist tenaciously to see their policy alternative implemented (Kingdon, 1995, pp. 180-181). "They hook solutions to problems, proposals to political momentum, and political events to policy problems" (Kingdon, 1995, p. 182) in an effort to achieve desired ends.

Kingdon (1995) makes four conclusions about policy entrepreneurs. First, they are the human nexus of the streams where forces converge and are formed into a policy, thus bridging individual-institutional or individual-greater problem divides, which means that personalities matter (p. 182). Second, their position means they must both advocate and broker, pushing their piece of the agenda forward but also negotiating its particulars. Sometimes, teams of policy entrepreneurs will handle these functions differently (p. 183). Third, because the policy process is not entirely predictable and policy entrepreneurs cannot know a priori what will be on the agenda, they must be creative and respond to unforeseen challenges (p. 183). Fourth, policy entrepreneurs are not “superhumanly clever.” They may just be supremely lucky that windows open, they may doggedly persist so that once a window opens they are prepared, or their success may be some combination thereof. To illustrate this point, Kingdon quotes an interviewee who said, “You keep your gun loaded and you look for opportunities along. *Have idea! Will shoot!*” (p. 183).

Environmental Identity

The MS model considers policy entrepreneurs to be integral to change processes. These individuals’ personalities—and, by extension, their beliefs, values, worldviews, and actions—play a role in the change processes in which they engage. I propose that sustainability policy entrepreneurs possess what they might call an “environmental identity,” including affective connections to the environment, behaviors that they and others would consider environmentally friendly, and affiliations with other people or organizations that are concerned with environmental issues. This theoretical proposition comes from vernacular, artistic, philosophical, and social science literature explored

below. Exploring it requires answering four questions: First, what is “the environment”? Second, what is identity? Third, what is environmental identity? Fourth, is there a warrant outside my subjective experience to believe that environmental identity matters on sustainability and environmental issues?

Before continuing, I have to recognize that *homo sapiens* have identified with the natural environment for thousands of years. We have anthropomorphized living and non-living nature and also animalized ourselves. According to Old Testament accounts, in the book of Genesis, humans were specially created in the image of Yahweh, who later in the book of Exodus spoke to Moses as a burning bush and later still in the book of Job castigated Job as a whirlwind. Israel is believed by many to be the Promised Land to which Jews are to be connected in perpetuity, demanding both affection and identification from the people because of its sacredness. Egyptian gods were humans with animals’ heads—Horus as a hawk, Thoth as an Ibis, and Bast as a cat. In the Americas, Quetzlcoatl, the king of the Aztec gods, is both man and serpent. The coyote, crow, owl, and wolf all embody some aspect of human beings in various Native American mythologies. Every month my son gets *Ranger Rick*, a magazine published by the National Wildlife Federation. Each month, animals talk in comic strips and relay stories meant to instill an environmental ethic in children and urge them to spend time outside in “the environment.” With no conservation message in sight, I remember fondly the battles Raphael, Leonardo, Donatello, and Michelangelo—the Teenage Mutant Ninja Turtles that were human-animal hybrids. For the last 150 years, American authors such as Henry David Thoreau, John Muir, Aldo Leopold, Edward Abbey, Wendell Berry, Wallace Stegner, Barbara Kingsolver, Julia Butterfly Hill, Gary Snyder, and too many others to

name have written about their connections to the wild, to the land, to place, to particular animals, or to animals in general. E.O. Wilson (1984) calls this affinity for the other-than-human environment “biophilia.” Wilson posits that human beings search for connections with other forms of life because of biological evolution. It has been to our advantage over evolutionary history’s fitness landscape for humans to feel connected to other creatures or in the places that have nurtured us, or at least afforded our survival. It makes sense to theorize that humans cannot help but identify with other living things.

As much as these examples suggest that many of us have environmental identities, none of the authors cited above formulated an empirically researchable construct. In this section, I present such a construct for qualitative inquiry.

First, “the environment” in this context assumes that the natural world is somehow distinct from human beings and their human work. The term seems to smuggle in artificial distinctions between humans; human cultures; the rest of the biosphere; and the geological, hydrological, atmospheric, and other physical systems with which humans interact and on which we rely. At no point do I mean to imply that human beings are *genuinely* separated from Earth’s (or the universe’s, for that matter) systems. But in the discussion that follows, I assume a division between how people see themselves and how they see the world in which they live.

This definitional quibble is important for construct validity. First, Clayton and Opatow (2003) note that some authors prefer the term “ecological identity” (see Thomashow, 1995) because “it better describes a sense of the self in relation to nature or as part of an ‘ecosystem’ versus ‘the environment,’” which could be confounded with built or social environments (p.12). However, Clayton and Opatow (2003) prefer

“environmental identity” because it has an “intuitive meaning for the average individual relating more clearly to what are known as ‘environmental issues’” (p. 12). These distinctions could be important in some research contexts. However, the construct of “environmental identity” has been sufficiently to conceive of it as our non-human surroundings.

Second, identity refers to one’s sense of self as an individual person within society, the roles one takes within society, and the meanings one takes from occupying those roles (Burke & Stets, 2009, p. 3). The self is an organized thing that recognizes itself as distinct and others as distinct from it, and it is able to act toward itself as it would toward others (Burke & Stets, 2009, p. 9) and to act purposefully to fulfill its desires and interests (Burke & Stets, 2009, p. 7). People’s identities vary depending on context. Their affective connection to different things in the world and their proximity to those things affect their attitudes and behaviors. For example, at one moment I may act forcefully as an agent for one thing and then a few moments later seem not to act from that identity at all by switching to another social role.

One can identify with ideas, beliefs, social structures, other human and non-human organisms, artificial material objects (e.g., works of art or tools), and places. From these relationships, laden with emotions and oriented by the quality of those emotions, people create roles for themselves in society, social structures, and environmental systems while they are also being enlisted into or ascribed roles created for them by others. We create these relationships and identifications through direct experiences and through mediated experiences through symbolic interaction (Burke & Stets, 2009, pp. 10-13) and the affective connections that result from them over time.

In day-to-day life, people use identity labels (Burke & Stets, 2009, p. 10). I have called myself a father, a college instructor, a bicyclist, a metal head, and an environmentalist. My labeling myself as one of these things indicates the character and role that I devise for myself as an occupant of a social position (McCall & Simmons, 1978, p.65). For any of these identity labels to hold, other people must agree with them and make me into a social object using the same terms, thereby assenting me that social position (Rose, 1963, p. 93). One need only look at my Facebook page to see that people whom I know (and do not know, for that matter) assent and identify me similarly.

Erikson (1968) wrote that identity forms from personal interactions between individuals and their communities over time. Over a person's life, the individual judges himself or herself "in light of what he [sic] perceives to be the way in which others judge him in comparison to themselves and to a typology [of others] significant to them" (p. 22). As individuals live longer and collect more experiences, they increasingly differentiate themselves from other people while also realizing "a widening circle of others significant to him" that includes "mankind" (Erikson, 1968, p. 23). Identity, by the nature of our being social animals, incorporates senses of the other in our sense of self. However, the degree or level of others' influence in an identity varies.

Jasper (1997) describes three identity levels (pp. 85-87). The first, *personal identity*, is a sense of oneself based on attributes and personal activities. The second, *collective identity*, comes from perceptions of group distinctness; boundaries; and interests such as class, educational level, or religion. Third, *movement identity* entails aligning oneself with forces for social change such as racial equality, women's rights, or environmentalism. In life these different identities overlap, all being part of one's sense

of self. In practice, people's identities are substantial influences on what they value and how they go about accomplishing what they want to achieve.

People's identities form and reform through a constant cycle of interaction. A person holds an *identity standard*, "a set of meanings which may be viewed as defining the character of the identity" (Burke & Stets, 2009, p. 63), for each identity. People believe that their identities have characteristics that move in a direction (or directions) and with force. For example, being an "environmentalist" might mean being morally ecocentric in one's views and thus creating or learning standards for ecocentric behavior. A person receives *inputs* from the external world that are perceptions laden with sensory, cognitive, and affective dimensions and meanings (Burke & Stets, 2009, pp. 64-66). The self then *compares* the inputs to the identity standard and evaluates them in some way (Burke & Stets, 2009, p. 66). In the example that I just used, the environmentalist perceives content from the input and then compares that input against an ecocentric standard. Then, he or she creates an *output* that seeks to make the external world consonant with his or her identity (Burke & Stets, 2009, pp. 66-67)—the environmentalist does something to modify other people's behaviors or the outside biophysical world so that it is more aligned with an ecocentric philosophy.

Broadly speaking, three kinds of outputs modify the external environment and, therefore, the inputs that a person perceives: signs and symbols, selective affiliation, and interpersonal prompts (Burke & Stets, 2009, pp. 74-75). People display signs and symbols to alert others about their identities to receive inputs from others confirming the identity. Fashion markers like hairstyle, makeup, body modification, jewelry, and clothing carry verbal and nonverbal messages as do works of art, books, vehicles, and

homes. A young woman with dreadlocks, loose jeans, and a shirt reading “Earth Crisis” who is riding a single-speed bicycle conveys a different identity message than a young woman with hair brushed into a tight pony tail and a black pant suit while driving a Subaru Outback with Sierra Club and NPR stickers on it. Both may be environmentalists, but the signs are different and the reactions from others will be different.

People also control inputs by selectively affiliating with others they perceive are like them. This is nothing more than to make plain the fact that people like to spend time with similarly-minded and similarly-behaved people. Humans create in-groups. The young women above may have similar environmental concerns, but one being of a more counter-cultural bent spends time with other people who look similarly and ride bikes while the young woman with the ponytail spends her time with similarly upwardly mobile or middle class people.

Additionally, we use interpersonal prompts to get others to recognize us in ways consistent with our own identity standards. Continuing with the two young women above, either one of them could directly state, “As an environmentalist, I have been doing X,” thereby directly eliciting inputs from others that reinforce her sense of self as environmentalist. But they could also verbally or non-verbally affirm, question, or deny the statements or behaviors of others that they believe affirm, question, or deny their role as an environmentalist. For example, both might furrow their brows and shake their heads if someone says to them, “You don’t really love the earth.”

As I have illustrated, people’s identities can relate to the environment. At a basic level, an environmental identity is “the meanings one attributes to the self as they relate to the environment” (Stets & Biga, 2003, p. 406). In the closely related concept of *place*

identity, Proshansky (1978) sees it as “the dimensions of self that define the individual’s personal identity in relation to the physical environment” (p. 155). Others have narrowed environmental identity into environmental self-identity, meaning only how individuals see themselves as people who take “environmentally friendly actions” (Van der Werff, Steg, & Keizer, p. 627). That construct, though, is too narrow for this study’s purposes. Therefore, I take a large vision of environmental identity that includes “a sense of connection to some part of the nonhuman natural environment, based on history, emotional attachment, and/or similarity that affects the ways we perceive and act towards the world; a belief that the environment is important to us and an important part of who we are” (Stets & Biga, 2003, pp. 45-46). Thomashow’s (1995) “ecological identity” is a closely related concept that “refers to all the different ways people construe themselves in relationship to the earth as manifested in personality, values, actions, and sense of self,” a relationship from which “nature becomes an object of identification” (p. 3).

Research on environmental identity indicates that environmental identity relates to different actions and moral or values positions. Some people view themselves as parts of social groups such as “recyclers” (Mannetti et al., 2004), environmental activists (Kempton & Holland, 2003), ranchers who view themselves as “good stewards” (Opatow & Brook, 2003), and “deep ecologists” (Zavetoski, 2003). Other research (Davis, Green, & Reed, 2009; Dutcher, Finley, & Luloff, 2007; Whitmarsh & O’Neill, 2010) has found that people take on pro-environmental affiliations such as working with local environmental organizations (Kempton & Holland, 2003), consuming “green” products and taking energy efficiency actions at home (Cook, Kerr, & Moore, 2002; Whitmarsh & O’Neill, 2010), and recycling (Mannetti et al., 2004). Some people identify with or

become attached to wilderness (Glassman, 1995), polar regions (Steel, 1995), and coastal regions (Linneweber, Hartmuth, & Fritsche, 2003). Children anthropomorphize and grant moral status to trees, the implication being that they identify with the tree (Gebhard, Nevers, & Billmann-Macheda, 2003). People with regular recreational and professional experiences with black bears develop understandings of bears as individuals and as a species, see human characteristics in bears, see bear characteristics in humans, and develop positive if sometimes complicated connections to them (Myers & Russell, 2003).

Two recent studies indicate that environmental identity and moral values are strong. First, Van der Werff, Steg, and Keizer (2013) report that people with “biospheric values” and strong self-reported environmental identities do and believe things with more commitment to the environment than do others. People with biospheric values judge whether and how they should act based on their actions’ consequences on nature (Van der Werff et al., 2013, p. 628). Such people take a number of environmentally friendly actions—ranging from common activities including recycling paper and glass bottles to uncommon behaviors such as actively searching for the most environmentally friendly products or rarely eating meat—more than their peers do (p. 642). Additionally, people with biospheric values believe that transgressing environmentally-responsible behaviors (putting glass in landfill waste streams instead of recycling) is worse than their peers who do not hold such values (Van der Werff et al., 2013, p. 645).

Second, the findings of Parris, Hegtvedt, Watson, and Johnson (2014) suggest that people with strong self-reported environmental identities are more likely to perceive justice infractions around environmental issues. They concern themselves with procedural environmental justice, distributive environmental justice, and ecological

justice and are more likely to find injustice in situations wherein people are adversely affected by environmental effects or the environment itself is harmed (Parris et al., 2014, p. 28). Procedural justice pertains to *how* decision-making processes around how people benefit or are burdened by environmentally-related consequences are made. People concerned with procedural justice often argue that marginalized groups are frequently excluded from or cursorily involved with deliberations with direct environmental health and profit effects (Parris et al., 2014, pp. 4-5). Those concerned with distributive justice deal with *who* pays and who gains, noting that marginalized people are more often placed at risk from adverse environmental consequences (Parris et al., 2014, p. 5). Ecological justice concerns the degree to which the more-than- or other-than-human environment, including fauna, flora, and physical systems are damaged by human actions (Parris et al., 2014, p. 5-6). Ecological justice can be seen to overlap with the biospheric values cited above.

These findings reinforce other recent research on environmental identity, perceived injustice, and political liberalism. Clayton, Koehn, and Grover (2013) report that people with strong environmental identities perceived greater levels of harm and experienced more negative effects than their peers regarding both the 2010 Deepwater Horizon oil spill and the effects of climate change (p. 315). These negative perceptions can be understood as the perception of injustice. A second strong predictor of injustice in Clayton, Koehn, and Grover's study was political liberalism, which resonates with the work of Kahan, Peteres, Wittlin, Slovic, Ouelette, Braman, and Mandel (2012; see also Kahan, Peters, Dawson, & Slovic, 2013) on identity, cultural cognition, and climate

change. I return to this topic in the conclusion (Chapter 4) because of its future research implications.

Research shows that environmental identity strongly influences beliefs and actions. I suggest that there is an unstated assumption that sustainability education advocates have self-conscious and strong environmental identities. But there is no research on to justify my assumption. Therefore, I pose the following research questions.

1. Do sustainability advocates consider themselves to have environmental identities?
2. How does their environmental identity affect their beliefs and actions?

The following section explains the two ways in which I sought to answer these questions.

Methods & Methodology

This dissertation study employed two kinds of research: memoir and arts-based personal inquiry to explore my environmental identity as a sustainability education policy entrepreneur, and naturalistic qualitative research based on interviews with 12 people at two quite different Pennsylvania universities.

Researchers often compose researcher identity statements. England (1994) writes, “[R]eflexivity is self-critical sympathetic introspection and the self-conscious *analytical* scrutiny of the self as researcher. Indeed reflexivity is critical to the conduct of fieldwork; it induces self-discovery and can lead to insights and new hypotheses about the research questions” (p. 244). Researchers need to work with and through their own identities to discover what drives the questions we ask, how we ask them, the ways in which we go about seeking answers to those questions, and how we use the answers that we discover (England, 1994, p. 251). We need to guard against dangerous biases and the possibility of

“asymmetrical or exploitative relationships” (England, 1994, p. 250) and conduct our work in a self-aware and reflective way. This dissertation’s second chapter will address this concern.

When I began this research project, I planned to focus solely on other sustainability advocates in higher education and not include myself. Though I had written extensively about my own sustainability work, teaching for ecological literacy, and environmental activism, I had not considered myself as a subject. However, it seemed appropriate that I investigate myself through writing memoir and poetry. This avenue of research has resulted in an arts-based investigation of my environmental identity and also shows my relationship to the people who have inspired me and spurred me on.

In his 1993 address to the American Educational Research Association, Elliott Eisner (1993) wondered about our many ways of understanding the world and how we might make sense of things if we used more kinds of sense-making in our research: “What we think about matters. What we try to do with what we think about matters” (Eisner, 1992, p. 5). As we shape our impressions into representations, we create a stable public form that can be “inspected, edited, and shared with others” (Eisner, 1995, p. 6). Different representations necessarily yield different experiences that lead to different meanings, meanings that lead not just to edification or “interesting conversation” (Eisner, 1995, p. 8) but to “significant cognitive contributions” (Eisner, 1995, p. 9). Eisner discussed research on “how different forms of representation foster understanding of history” (Eisner, 1995, p. 9). He observed that students regarded the textbook as the source of factual truth, but film, songs, and paintings generated the best class discussions. The artworks’ ambiguities invited students to interpret them, and interpret them they did.

“Ambiguity has a more significant cognitive contribution to make to students than the certain facticity of the text” (Eisner, 1993, p. 9). At the time, he saw great promise in different forms for research representations, including dissertations, but the field had not caught up. Over the following decade though, over 30 arts-based educational research dissertations were written at the University of British Columbia (Sinner, Leggo, Irwin, Gouzouasis, & Grauer, 2006). Those dissertations spanned literary, visual, and performance forms. “The value of this collection [of dissertations] resides *in the questions raised* [emphasis added] and the discussions these researchers provoke in the broader academic community as their research generates different perspectives on policies, practices, and experiences” (Sinner et al., p. 1254). Though not entirely arts-based, my dissertation expands the researcher identity statement into a full chapter, using memoir and poetry to investigate my environmental identity.

Kephart (2013) developed the memoir technique for dissertations: “Real memoirists open themselves to self-discovery and, in the process, make themselves vulnerable—not just to the world but to themselves. They yearn, and they are yearned with. They declare a want to know. They seek out loud. They quest. They lessen the distance” (p.8). In a sense, a memoir at its best brings the reader into a meaningful participatory relationship with the author (Kephart, 2013, p. 55), to engender empathy with its subjects (Kephart, 2013, p. 180), to bring people to reach beyond the person one already is (Kephart, 2013, p. 189), and to write life “knowingly, thoughtfully lived” (Kephart, 2013, p. 192). To accomplish this task, I include four vignettes from across my life and four poems reflecting on who I believe I am, or we are, relative to the “more-than-human community” (Abram, 2010, p. 4). This chapter invites the reader to ask

questions about themselves, me, us, and our relationships to and with people, places, and our cohabitants.

This dissertation has come about from beautiful, complex, sometimes despairing, and always rich relationships. As I wrote in the acknowledgments, people, places, non-human organisms, and much more have inspired me. This dissertation is not just about me. It is for and with others: my son, mother, ex-wife, mentors, and girlfriend; fellow environmental activists like Barb, Melody, Jenny, Braden, Mary Carol, and Gary; fellow climate activists Krystn, Toni, Jon, Dorothy, Janet, Don, and Michael; Hopey, Kim, Meg, and Tom at Tait Farm and the local organic farmers like Lyn, John, and Jen who work with the land instead of working over the land; the composers like Peteris Vasks and Jean Sibelius; the bands like Revocation, Testament, Animals as Leaders, Scale the Summit, or Sepultura; the poets like Louise Gluck, Sharon Olds, Adrienne Rich, Robinson Jeffers, and Mary Oliver; and the activist authors like Vandana Shiva, Bill McKibben, Wendell Berry, Ivan Illich, Michael Pollan, John McPhee, Dale Jamieson, and Arundhati Roy.

To address my research questions, I have also engaged in more standard, if quite simple, methods. I formed a research design to explore the research questions on environmental identity in other sustainability education policy entrepreneurs. Yin (2009) says that we should carefully develop “a logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about these questions” (p. 26). Using Whittenmore, Chase, and Mandle (2001, p. 533) and Maxwell (2005, pp. 5-13) as guides for research design, I developed a self-conscious research design from which I could adequately reach reasonably conclusive answers.

In order to meet potential participants, I had to first identify programs in which they had acted as sustainability policy advocates. This task was easily accomplished through my connections within the Pennsylvania Environmental Resource Consortium (PERC) and my time working on sustainability initiatives at Penn State.

My work led directly to two sample populations, both “purposefully selected” through email (Maxwell, 2005, pp. 88). That is, I selected people in particular places doing particular things who could “provide particular information that can’t be gotten as well from other choices” (Maxwell, 2005, p. 88). Maxwell (2005) warns against studying an overly convenient sample (pp. 88-89). My Penn State sample was geographically convenient, but the sample size of twelve (eight at Penn State and four at Bucknell), fit, and potential depth of responses to my research question were my primary motivations for including Penn State as one of my research sites (see also Patton, 2001, pp. 169-186).

The two universities where I conducted research are working to integrate sustainability into their general education curricula, and they are doing it in quite different ways. Bucknell has signed the ACUPCC, which requires the university to take “[a]ctions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students” (ACUPCC, 2014). As I will describe in more detail later, Bucknell has focused on ecological literacy through an Environmental Connections general education requirement. In contrast, Penn State has not signed the ACUPCC or any other agreement with curricular stipulations, but it has formulated a Sustainability Strategic Plan (2012) that calls for “sustainability literacy” for all future graduates. The key sustainability proponents at Penn State are using a Sustainability Leadership minor to build a general educational base and workshops for sustainability

curriculum based on Emory University's Piedmont Project and Northern Arizona University's Ponderosa Projects (Barlet & Chase, 2012).

I interviewed the people whom I did because they are sustainability policy advocates. At Penn State, interviewees all presented at a summer program called the Penn's Woods Project, a faculty development seminar for creating or revising curriculum toward sustainability with the hope of infusing sustainability into more course offerings across the university, thereby helping the Penn State Center for Sustainability's (now folded into the Sustainability Institute) mission and the development of courses to fulfill the requirements of their Sustainability Leadership minor.

Bucknell University participants all worked on the development of a new general education requirement called the Environmental Connections (EC) requirement. My first acquaintance with the Bucknell team came from Dina El-Mogazi, who heads the Bucknell Greening Initiative and was an officer in PERC. I first learned of the EC from her at a PERC meeting in 2009. The EC requirement was created in the context of Bucknell's Comprehensive Environmental Assessment, which followed former Bucknell President Brian C. Mitchell's signing of the American College and University Presidents' Climate Commitment (ACUPCC, 2007). The EC became a requirement for the incoming class of fall 2010.

I acquired information through two different avenues. My primary sources were semi-structured interviews with follow-up questions and member checks via e-mail. Interviews were digitally recorded and transcribed. In the transcription documents, I made analytical notes in the margins and also highlighted and compiled key terms or ideas regarding moral positions. I also used background data from documents that

informed context, some of which are included in the literature review (e.g., the 2007 ACUPCC agreement), and some of which are not (e.g., personal photographs of subjects, newspaper articles, and college and university websites).

How much data did I need? The received wisdom says one should reach “saturation.” Morse (1995) provides some guidelines: First, obtain a cohesive sample; second, use theoretical sampling (purposeful being synonymous with it) if you can; third, locate and test for all negative cases; fourth, obtain enough data that there are no gaps; fifth, if one has reached saturation then it is easy to develop comprehensive theoretical models. She warns that studies lacking saturation run the risk of being invalid (p. 149).

How did this study achieve saturation according to Morse’s (1995) criteria? To address Morse’s (1995) first and second points, the twelve participants were selected because of their participation as sustainability education policy entrepreneurs who were active in sustainability policy actions of their constituent universities. My participant sample is both cohesive and purposeful. Regarding Morse’s (1995) third guideline, I asked the simple “yes” or “no” question: “Do you think of yourself as having an environmental identity?” From participant responses, I was able to test for negative cases. My hunch from experience and the literature was that I would find strong environmental identities in the sample. Indeed, I did. But I also found one person who initially stated that he does not have an environmental identity and later called it “schizophrenic.” He is a negative case (in more than just this regard) and the participant with whom we will spend the most time in the following chapter. On Morse’s (1995) fourth point, the twelve interviews formed a cohesive whole that indicated the predictive theoretical power of environmental identity research and its application to sustainability education advocates

in higher education. Fifth, while there are many other closely related questions that one could ask (some of which could be interesting, compelling, or enriching), the amounts and kinds of responses I received suggest that I had devised a warranted and sufficient line of questioning on personal history, environmental identity, environmental ethics, actions informed by identity and ethics, ecological literacy in higher education, and sustainability and the status quo.

This chapter should have established the warrant for this study. First, it described current ecological crises. Second, it reviewed “sustainability” through multiple lenses and the ways the concept has taken hold in higher education, especially in curriculum. Next, it explained policy entrepreneurs—people who have recognized problems and have developed policy solutions that they can propose and advocate. Fifth, it explored “environmental identity” as a way to understand those entrepreneurs and their commitments. Finally, I described the methods and methodology that I used to complete this study.

Chapter 2: Awakening

The neighborhood friends paraded down cracked sidewalks in Pine Grove Mills past Klein's garage. In red shorts with white stripes or knee-worn grass-stained jeans we skipped. Maybe we rode our banana-seat Stingrays past the blinking yellow light. We looked left and right and up the mountain for cars and then dashed across the street to the Arco station. Arts's we called it.

Gas was cheap in 1983. You could still get leaded and unleaded. A sweet smell wafted from the pumps—merctapan, I guess. Sometimes we went inside Arts's for a fireball, popsicle, Pepsi in glass bottles, or a Nutty Buddy peanut-topped pre-wrapped ice cream cone. But our favored destination was behind the station, a spillway in Slab Cabin Run.

Slab Cabin Run is a mountain gap stream whose headwaters emerge from Tussey Mountain. A little less than a mile up the mountain from the gas station, a few different headwaters converge. One feeds the pond at the house at a switchback, and a couple others come from springs toward Kettle Road and the deer fences. They meet to tumble over rocks parallel to Route 26, past the water tower, an old pump house, behind the gas station, and then beyond. Beyond the places little boys know about.

Just behind Arts's a historic house's backyard had a small dam with a bridge over it. The little reservoir housed brook trout. We loved their muddy and mottled scales, camouflaging them against the pale mud, chunks of stone, and the maples' and oaks' dappling shadows. After we had our fill of trout spotting it was time to get under the bridge.

My best friend Elliott and I played balance games on the slick rocks. We did our best not to topple during our games of hopscotch from rock to rock, steep bank to steep bank. Then into the little two-foot “waterfall.”

I shrieked in the cold cascade. The water roared over my head, neck, and back, engulfing me and arresting my breath. Before you catch your breath there’s a moment of panic as the cold takes something from you. Your heart jumps, you gasp suddenly, and then you scream in glee. You are alive. Then it was Elliott’s turn. Then mine. We traded, emerging with great whoops.

Slab Cabin is one of hundreds of mountain gap streams in Pennsylvania. Over millions of years, water has flowed over and through the rock and soil in these northeastern American mountains. The result here is a stream that flows down Tussey Ridge and into Happy Valley where it becomes part of Spring Creek. To the north-northeast along the same ridge, Roaring Run starts at Sand Spring, just below Bald Knob in the Shingletown Gap amid pine, hemlock, laurel, and rhododendron. Roaring Run also starts in steep tumbles in a tight gap that descends from the Charcoal Flats below the Mid-State Trail and the Roman Tower. A few miles farther still, Galbraith Gap Run flows from a few different sources below Bear Meadows Natural Area, an 890-acre fen populated by black and red spruce, balsam firs, blueberries, raspberries, and rhododendron.

The three streams converge, first Slab Cabin with Roaring Run and then Slab Cabin with Galbraith Gap Run, before they spill into the Millbrook Marsh. From there, they meet Spring Creek past the marsh. Spring Creek winnows through a narrow limestone canyon famed for world-class fly-fishing. It eventually meets Bald Eagle Creek

in Milesburg and continues onward to the West Branch of the Susquehanna River which feeds into the Susquehanna River and then the Chesapeake Bay before flowing into the Atlantic Ocean. Today I imagine the cells of my seven-year-old body making a journey that my whole body never will.

Back and forth and back and forth Elliott and I dunked ourselves until it was time for something else. Maybe we walked the stream to play under the bridge at the intersection, cars rumbling above us. Or maybe it was time to get back on our bikes and ride up the ominously steep Deepwood Drive.

Too weak to power a short-cranked tall gear up the hill, we pushed the bikes to the top of Deepwood. I remember figuring out that we could go into the woods where a connector path went to Landis Path. It had a mogul in the middle. Down we flew, launched off the mogul, and then screamed down Deepwood's rough pavement with humid air in our faces. Just before we reached the bottom we stood on the coaster breaks before getting to Route 45, spraying gravel as we skidded to a stop.

Other days we played behind my house in a tract of woods between Cecil Irvin's cornfield, the lower cemetery, and two perpendicular gravel alleys. Several trees on the edge housed the Monkey Club—a group of us who fancied ourselves superior brachiators. We'd go up five, ten, twenty feet and play the hours away. From our perches we looked over miles of cornfields punctuated by rows of hardwoods. Humid Pennsylvania air clung to our bodies. A lot of that cornfield is gone now, extirpated for a housing development engulfing 50 or more acres. All that soil gone. Maybe it's become part of the nutrient problem in the Chesapeake. Maybe it's with my dad.

I still know that view. The land undulates gently northeast. The small differences in the rows of corn made a green sea to Nixon Road. If you were to stop at Nixon and turn right facing east, you would get back to the blinking yellow light. Beyond all of that breathes the 90,000-acre Rothrock State Forest.

*

HERONS

A heron stands in the gloaming's envelope
 reading rippling water's dusky script
 by the steep clay bank. It sees.

A poem in the palm sits like a worn wooden cup
 your uncle whittled from a Scarlet Oak
 that fell in an August gale.

You were an infant. Your mother and her sisters
 called it "the noble tree," declaring its death
 "sad, tragic even" even though its heartwood had rotted.

Draught the cup through the world.
 Sip or gulp, the cup won't mind,
 your lusty mouth spilling the world's wine

from stained lips' corners, down your chin and chest
 where your lover kissed with mischief in her eyes.

The heron, see, is a heron. Just ancestry and force.
 Bluegills and snails, accident and fortune,
 foxes and frostbite, and brine-driving wind over the marshes

crafted this bird who knows what it knows.
 To say it reads, to say it deciphers scripts
 or considers a rippling page for solemn intonation

at vespers or compline would make it an avian monk
 at the lake's cathedral pews or some such rubbish.
 That means nothing to the heron I watched across the lake.

That means nothing to any other heron. The heron, see, is a bird
 without our affections or pathological imaginations.

The heron does not care for a boy who thinks himself a man.
 He plays games with hope? He hopes in his forest play
 that roots will reach into the labyrinth,

crack the sandstone ceiling and show wild gods who play and care
 nothing for his plight that he has cared for roots full of hope.
 A poem, once drunk, made him question

while you rub your thumb on the black burn on the burl

that you still think smells like lightning when the oak fell.
The heat in your fingers

brings out divorce's bile, children playing in the glade,
reverie in lavender-scented flesh and hungry lips,
the ache of a bending string beneath your finger while you practice your life.

A heron comes in words as delicious as the smell of her musk
that can spoil or die as all things die.
When the heron stands at noon, with its knees skirted

in lilies by the reeds in the cove where the leopard frogs hide,
what will you see?

*

In 2011 and 2012, I lived three blocks from my childhood home and five hundred feet from Rothrock State Forest. I would pass the yellow gate to Landis Path in winter as a boy with my dog. Pileated woodpeckers cackled. Barred owls called from secret nooks. Carpets of emerald moss and scales of fungus ringed decaying pines. The fallen hemlocks' bark flaked, and their heartwood turns into something like soil. It is soil in the making as the springtails and termites chew through it, and woodlouse spiders eat them. The soil is thick with must—the musty scent and the moral must for preservation.

One day on a walk with my son, we saw a copper-coated buck. "Look, Sacha," I said, pointing to the trail's switchback. The buck lifted his head and sited us with giant obsidian orbs. He bounded downhill, his white tail hailing us. His coat melded into the leaf litter. On another day I might have found the pebbles of his dung, food for the teeming soil. Soil in the making. He must make soil. It will smell of must.

There's a ride I used to do a lot. I tracked my way on sandstone and shale up Landis Path, my wheels churning by the leaf-clogged mires along the deer fences toward Kepler Road. As I went along the road which is bench-cut into the ridge, I passed oaks,

maples, and hickories. A few miles on they gave way to a lane of tiny-needed hemlocks and fine-fingered pines. The shift from deciduous to coniferous, from twisting branches to straight, changes the summer light. Turkeys have run up the slope, feasting turkey vultures jacked themselves skyward on ponderous wings, a scarlet tanager disappeared in thick branches.

Then I turned left and surmounted Pennsylvania Furnace Road to gaze from the vista overlooking the Juniata Valley. I stopped there to cry after my father died, knowing I looked at the slopes where he cut firewood. I've stopped to catch my breath, to take a picture of clouds drifting over verdant waves of the mountains, or to sit with Meg feeling July permeate everything. Bees do their simple and meticulous work in roadside thistles. We have looked at the farms below, a green and brown flannel shirt of corn, wheat, and pasture, happy to see rural life.

We love farms. We worked on one together and she still does. And we grieve that these farms are wounds. Forests interspersed with prairie had spread as far as the eye could see 400 years ago. Actually, the canopy would have been so thick you would have to climb huge red oak to see that far. Now the forests are fragmented, patchworks instead of blankets.

This simple travel from my former house, along an old logging path, to a fire road put in by the Public Works Administration during the Great Depression, to the vista overlooking the Juniata Valley has become a panel on the quilt of my memory, a sewn emblem of memories I can cover myself in, fold, drape over a chair, or lie on.

*

DOMINION

On July 22nd I stood in the fallen fir's bow
 birthed centuries ago from a seed
 who entwined herself with knowledge-sewn soil
 high on the misted cliff

Falwell says something like,

Owls

don't need jobs.

Trees

don't need jobs.

Treehuggers

are deviants.

Creation's midwives and beloveds are
 deviants.

Read Matthew 6:24.

"No one can serve two
 masters, for either he will
 hate the one and
 love the other; or else he will
 be devoted to the one and
 despise the other.
 You cannot serve both
 God and Mammon."

The president of a coal company,
 flanked by miners – serfs each one – drawls,
God put the coal there for us to use.
It is a sin to not use it.
 Do the valleys have godliness written
 in resinous sap oozing from the dying trees and
 the blood of every
 blue-veined Leukemia boy
 made in God's image?

February 12th I emerged
 from the creaking oak-beamed cabin
 into the snow-laden stands of the pines
 where wind-flung crow calls
 flew into my lungs.
 I started to run.

My panting and grunting gave voice
to the pine's breath
fueling the fire in my legs
the light in my heart.

*That, my father said, is the divine.
The wild god of the world.*

*

On the morning of Wednesday, March 9, 2011, I rode my bike 120 miles from my house in Pine Grove Mills, Pennsylvania, to the capitol in Harrisburg. I hoped to confront Pennsylvania's newly elected governor. It would suffice, I guess, to talk to someone in his cabinet about the incredible growth of the natural gas drilling industry in Pennsylvania.

Governor Corbett had just rescinded a moratorium on new drilling leases in state forests. The moratorium was established by former governor Ed Rendell at the recommendation of the state's Department of Conservation and Natural Resources. New well pads would fragment the forests more. Roads, trucks, growling drills, and barking men—and they are men—were about to have more license to invade the communities that make Pennsylvania beautiful. Pipelines would surely follow. Fugitive emissions of methane would be spilling into the air.

Corbett said that we had the opportunity to make Pennsylvania into the Texas of the north. Did he stop to think that we are not Texas, that many do not want to be Texas, and that we *cannot* be Texas? Thank god.

I might be a fool, but I'm not a fool who thinks rural life is some easy-going idyllic existence, an Arcadia, some place and time where everyone is nice. I've ridden my bike in Reedsville, Salina, Home, Slate Run, Carrolton, Frenchville, and Renovo. I've

seen people smack their kids in the head and told them they better shut up if they know what's good for them. A guy punched a payphone repeatedly as he sworn red-faced into the receiver with chewing tobacco dipping from their lips. A guy at a bar in southwestern Pennsylvania said over and over again that so-and-so "is working like a nigger again." Big Jaimie from Howard worked in a plastic factory with me 20 years ago. He said something like, *I used to like black people. Now there's nothing I'd rather do than shoot a nigger.* While riding my bike I've been run off mountain roads by guys in trucks and vans because they thought it was funny. Rural life has problems I'd like to see changed. But the essential character of its deep woods should remain deep.

There is no Pennsylvania if you cannot see the shimmer of a scarlet tanager at noon flitting across the road, a red breasted grosbeak at three peeping for its mother, an indigo bunting calling from the black walnuts, a kestrel with a chipmunk in her claws threading her way through the white pines and oaks on Sand Mountain in the late summer sun, a flock of turkeys dashing through the mottled leaf cover, or hear the whip-poor-will before the sun rises.

The Mid-State Trail extends over 300 miles from Maryland to New York. A sizeable portion runs through Rothrock from the Little Juniata Natural Area to the south, all along the tops and sides of Tussey, Greenlee, Thickhead, and Broad Mountains. In the winter, I sometimes crossed the fallen log bridge to clamber up the southern face of the Shingletown Gap toward Charcoal Flats. Few people go there in winter. The headwaters of Roaring Run on that side spill over onto the path making it slick with ice. It's preternaturally quiet at dusk. I used to go up Deer Path, grabbing the hemlock's ruddy bark to pull myself up. Chickadees, downy woodpeckers, and cardinals tittered and

chirped. The wind hissed and chattered through hanging hickory leaflets left bleached on the branches. At the top of the ridge, I have sat at the Roman Tower with a branch-cluttered view of Mount Nittany and Bald Knob Ridge before me. My shadow would go long over the land. I held my hands high over my head, my shadow like a gnarl-limbed tree.

That site could be taken out by men with bulldozers and chainsaws in just a couple of days. My peace of mind would be destroyed. Or maybe I should say that it's the possibility of my peace of mind in that place that would be destroyed. Maybe I could find it elsewhere. Maybe I would find it over on John Wert on the southeast side of Bear Meadows, or along the Detweiller Run at the pool where Sacha and I dipped naked into the chill waters, or to the north in Tioga State Forest outside of Wellsboro or the Loyalsock, or Moshannon west of Rattlesnake Pike, or the Quehenna. Now the places in Rothrock don't have easily accessible natural gas—yet—because they aren't on the Marcellus Shale. But the others? They have already been put on the chopping block. Their trails have been and will continue to be fought over. With the fight has gone much peace of mind.

The value of the Roman Tower, the Rock Run Trails west of Rattlesnake Pike, or the trees lining Stinger outside of Wellsboro is not in their ability to give power to our machines. We are not Texas. We are the denizens of breathing woodlands and rolling farms whose character is being defined by how we live with our land. Their value is their suchness, their beauty, and their solitude.

Leopold (1970) wrote, "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts.... The land ethic

simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land” (p. 239). The land, our forests, our trails, and the myriad creatures free from the places we conceive as ours—the jumping spider’s shelter under a laurel leaf or a cross orb weaver whose made her purse of a house by folding an anchor strand of her web with a coneflower leaf—are owed our care, love, and respect enough to know to leave them alone. They are beautiful in ways wrapped in mystery. They are the homes of animals, plants, fungi, and microorganisms whose lives are worth something incalculable; their relationships are other than human and should be revered and left to be for themselves (Rolston, 2000). Who calculates the worth of the mycorrhizae feeding all the hemlocks in Bald Eagle? Certainly not the ecologically unconscious vandals running our state government.

When Governor Corbett opened our land to fracking, I had to do something. Some friends worried because I was setting out to do something audacious. Maybe crazy. Maybe stupid. But people wanted me to do it. I was offering something of myself for others.

A man said he wished he could join me, but his wife was sick. A woman bound to a wheelchair was imprisoned by disability and roaring gas truck traffic. Another woman recalled a plant near her childhood home where they reprocessed plutonium fuel rods. Her friend’s younger brother died an agonizing death from brain cancer. A grandmother sought justice.

There was press. Two women sent press releases for me. A blogger called it “The Attack on Harrisburg.” Stories appeared in a few Pennsylvania papers. I was interviewed

on *The Rick Smith Show*, a progressive pro-labor radio program. One of *Time* magazine's writers contacted me but didn't include me in a story on gas drilling.

Jenny, her husband, and two children have lived on Ladybug Farm in Jefferson County, an organic farm that supports them. Ringed by forests, she has recalled sitting on her porch swing in late spring with peepers singing their ancient euphony. When she breastfed her son, she swung back and forth with fireflies dancing in summer wildflower fields, wind lazily, the swing creaking, her son breathing and contentedly sighing.

That changed very fast. Trucks with Wyoming license plates were roaring down the road at the end of her lane.

Her neighbors, eager to see the windfalls of new profit, moved to lease their mineral rights. Near Jenny's blueberry patch, leathernecks would have brought in bulldozers for a well pad the size of a football field. A drill rig ringed by dozens of trucks would din for weeks. The leathernecks would drill down a mile and turn the drill bit horizontally on a southwest-to-northeast axis, aligning the well bore with the plane on which the Marcellus Shale fractures. For days, they would swarm around the drill like rapacious ants feasting on a carcass millions of years old. But these ants would have exhaled methane and benzene. The meadow would have become part of the concrete monoculture. The must of the soil would be denied.

Once the well is drilled, the steel and concrete is cased and the well is fracked. They inject a few million gallons of water laced with sand and a mixture of acids, biocides, breakers, clay stabilizers, corrosive inhibitors, cross linkers, friction reducers, gelling agents, iron controls, non-emulsifiers, pH adjusting agents, scale inhibitors, and surfactants (FracFocus, 2014). Some are used in tiny amounts, and others not. Some are

relatively harmless, while others are teratogenic and carcinogenic. The brew is toxic. It is injected at pressures upwards of 14,000 psi—pressure approaching that in the Marianas Trench, the deepest part of our oceans. Fracking is a seismic event that displaces millions of tons of rock enough to release millions of cubic feet of natural gas.

Will these chemicals get into the water table? In Pennsylvania, Wyoming, Texas, Colorado, and now aquifers in California, it seems so. Will gas migrate into wells and houses? Go to YouTube and enter “tapwater fire,” and you’ll see. Will wells blow out, sending frackwater into local streams, ponds, and rivers? Yes. It’s happened in Pennsylvania, Louisiana, and elsewhere. Will some wells or gaslines explode, leading to methane plumes or flames roaring louder than a formation of F-18s? There are videos all over the Internet.

As far as I am concerned, fracking is a symptom of a disease that Orr (1994) calls biophobia (pp. 132-137). Maybe I could and still can be part of its cure or an inoculant. I am part of the fever, the signal to the body that we are sick and need to change.

People said, “Give ‘em hell!” Another person referenced Aldo Leopold’s *Thinking Like a Mountain* to me (1970). She went on to say,

When our strategies are formed and informed by a larger context than our narrow ego selves, when we realize we are acting not just from our own opinions or beliefs, but on behalf of a larger Self—the Earth—with the authority of more than four billion years of our planet’s evolution behind us, then we are filled with new determination, courage, and perseverance.

Another person said I was taking the ultimate act of fatherhood in the ecological age.

These people expressed genuine hope because someone was doing something right. I wasn't just one man on his way to a rally and a meeting. I was carrying those people's stories to the capitol so they could be seen in the face of a 34-year-old father who loves his place and the places that millions more love.

Margaret Mead has been quoted as saying, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." (Institute for Intercultural Studies, n.d.). Well, never doubt that an organized group of committed rich people who have profited from polluting industries will change the world. They already have. They are thoughtful, too. Very. They just seem to think that the invasion and rape of land and water is acceptable collateral damage. Negligence is a sign of progress. Flip that Mead quotation over and it says, "Never doubt that a large group of inattentive, noncommittal automatons will let someone else change the world. Indeed, it already has."

I am not a noncommittal automaton. Every pedal stroke that day, the hundreds of thousands of them over the 120+ miles, were motions of strength, solidarity, and resistance.

Down the gravel driveway to West Chestnut, there babbles Slab Cabin Run, my sacred waterway, with some snow on its banks. At the blinking light at the gas station, I get onto Route 45, my road for a few hours to come. I headed away from my childhood stomping grounds. All around me, my childhood sang on the wind.

Just after sunrise I drank from Hickernell Spring in the Bald Eagle State Forest on the opposite side of Tussey Ridge from the little town of Woodward. Hickernell is our responsibility. When I see it gushing with the year's groundwater charge, listen to it

splashing on the rock below it, and feel its chill, I feel our elemental support system. I had drunk there before on long rides to R.B. Winter State Park and Mifflinburg. Often there are people filling jugs to take home. That is our responsibility.

As I rode with stories in my jersey pockets, I wished the governor and the gas CEOs had to live with Jenny on her organic farm in Jefferson County. I am reminded of Berry's (1990) essay, "Waste":

There are days when I would be delighted if certain corporation executives could somehow be obliged to eat their products. I know of no good reason why these containers and all other forms of manufactured 'waste'—solid, liquid, toxic, or whatever—should not be outlawed. (p. 127)

These corporate leper messiahs should have to drink the produced water that comes back from a fracked well. Maybe I shouldn't call them corporate leper messiahs. Will cursing them do any good? I am no angel. Corbett is not a demon. He is not Satan. That would make this easier.

Pointing the finger at the greedy takes no talent, no moral fortitude, and no introspective power. As Van Jones says, activists must "avoid becoming self-righteous other-blaming banshees" (Townsend, 2006). I knew that each pedal stroke was something that I believed I shared with hopeful people, and that what I was doing was not just about saying "No!" though it certainly was that.

It was yes. Yes!

Onward I went to the mighty Susquehanna River. Gulls soared overhead. At one point I flew below a flock of a few hundred and watched them wheel from the east shore over the islands. Miles downriver, I saw the ridges bend with the river. This river is

millions of years old and its winnowing way was surrounded by the mountains' wisdom. Trucks roar by, their wakes pulling me along.

Out of the blue, my ex-wife and son pulled alongside me in the car. Just shy of crossing the river south of Halifax, they pulled over, and we smile. It was a beautiful moment. I felt buoyed beyond measure. I felt believed in and supported. I practically touched the devotion when Jessica told me she had a cheese sandwich for me to eat when I got to Harrisburg. My son, just three years old, hugged and kissed me. We laughed.

“I am so proud of you,” Jessica said. “You look like yourself.”

Myself.

Just a few minutes later, I pushed off again feeling that ancient strength, a strength that comes from conviction. It was the truest realization of self, of realizing a good in me that escapes words. And I was not perfect. I was good.

*

WE

We have become mad. Crazed. Deluded.
For centuries we got drunker and drunker as

we drank the priests' and pastors' wine,
salvation's and special creation's blood from the vine.

We climbed it, we practitioners of scientism, believing that
we – the human animal – that we – the dominant animal – that

we are owed a shining ascension with the sun blazing
behind our heads with antiphonal brass announcing,

“We have been granted a right by God!”
Witness the waste...more than any other creature possibly wish for.

We are, I'm pleased to say, no more moral
than the scouring ant feeding larvae in a scavenged catalpa's husk.

We are, I'm honored to say, no more just
than hornets defending their nest in the bough of a locust tree.

We are – I bow humbly to them – no more kind or respectful
than the lioness smelling zebra musk, wishing for blood stains in the savanna's grass.

We all kill for a fucking percentage to feed our young.
We are slaves to what is, to our loins driving us to become progeny.

We, deserve the title of “it.”
Not “we.” Royal as

we believe
we are.

We birthed intelligent civilization, yet with such intelligence
we dance with ignorance and neglect as if they were our lovers.

We are so unlike those societies of ants, wasps, and lions for
we have birthed our own demise.

*

Richard, the headmaster at Darby, told me my full-time contract was not being renewed (I'll come back to this later). There is something special about the freedom you feel when you are forced to do something else. Perhaps you won't do something else. Perhaps you'll be ordinary. But I took a job as an intern at Tait Farm, an organic farm outside of Boalsburg, Pennsylvania, that borders Rothrock State Forest.

For several years I've been working on a Ph.D. My professors say quote-unquote "interesting things" about being professors. They can profess, some more eruditely than others. Run the gamut of personality, expressive, or intelligence-related traits regarding an ability to profess—passion, acumen, knowledge, devotion, care—and I've had close interactions with the different types. You know the self-effacing worrywarts and the would-be rock stars, the deferential small white women and the black woman who's a stirring force unto her own, and the archetypal balding white guy and the thick-accented Chinese woman whose statistics jokes hurt so much they make every statistics class better. Some of my professors candidly say that being an academic is miserable work that leads to research that's rarely useful, often irrelevant, and sometimes outright harmful to the breathing planet. Yes, of course there are all kinds and quite a few I admire and a handful I cannot help but love. But quite a few seem resigned to running the proverbial rat maze of academic accomplishment for nearly no social relevance. All that is to say that when I finished at Darby I was not interested in applying for an academic position, although it seems like the thing I am supposed to do. I will do it, and I won't rest in irrelevance.

For the summer of 2014 I gladly worked at Tait. It was kind of scary. For two years I had designed, constructed, planted, weeded, and cultivated a pretty sizeable

garden. Well, two gardens, but I'll come back to that. Farming is a whole other level. Nineteen 3' x 9' beds are chump change compared to almost eight acres worked full-time by four people during summer.

On the weekends when I visited Meg I worked for a few hours at Tait. Its southern fields bump up against the forest, against Rothrock. I have brought Sacha a few times to plant parsnips, basil, or weed long vegetable beds. It's satisfying because it's paced differently from the life of a school. It may sound odd, but the pace of a rural boarding school is fast in ways that are difficult to explain. It's still the industrial clock built around and for "the man." I'm with Bowles and Gintis (2002). Schools replicate the values and lessons needed for the capitalist to be equipped with workers who feed his pockets. Everything about a boys' boarding school—at least the one where I worked—mimicked the environment of the indoor *homo economicus*. A farm doesn't do that.

A farm moves... Wait. This farm moves with the seasons, seasons that technology can tinker with and extend some. This farm is swayed by what is available because of the interaction of the sun, water, soil, and the organic nutrients that can be added to it. Unlike the industrial and post-industrial "state's market's school" (Buckland,) the farm lives directly with and because of the seasons. I think that we are people of purpose on the farm, looking to synergize ourselves with the land as well as we can and live from it well. But I'm ahead of myself.

"Maybe I can work at the farm?" I ask Meg. She loves the idea. Now she's my boss, an education for both of us, perhaps worth a different story somewhere else.

Kjell is the head farmer is in his mid-20s, lean and able-bodied with dark scruff around his face. Despite his youth, he knows the common names of nearly every plant

around us and the scientific names of a great deal of others. He had taken classes in forestry and agriculture but never completed a degree. He also lived in a closet under the stairs at a friend's house where he lived for free, dumpster-dived food, roamed the woods, and worked in gardens and on farms.

His familiarity and mastery come from his time with plants, with things that he loves. When I say "love," I mean that I can palpably see him relating to plants in the way he holds a plant as a being he considers. Some people talk about their love and passion, and you know they are just playing. Hopey is not in a play on a stage; he is a man in soil. He is placed. His claim to botany fame was finding a native prairie grass thought to have been extirpated from Pennsylvania.

One day I came to pick Meg up. We were talking about the health of the tree lines. Like plenty of edges in Pennsylvania, Japanese honeysuckle chokes out and shrouds native saplings. Maybe when I get to the farm we can rip them out and plant a collection of ecologically beneficial and economically viable species ranging from existing black raspberries to winterberries.

Then I heard an ululating oriole song coming from high in one of the black walnut trees. I looked up trying to spot it. Kjell found it. We marveled at his beauty. I wish I knew more birds by song. I wish I knew more many things that sing out in the counterpoint of the farm's life over the year. I will.

Two days after moving from Darby back to State College I start working full time. I was in the fields, low and high tunnels, and the vegetable greenhouse. We sewed new crops, thinned the turnips and covered them and then uncover them, picked peas for hours with the work shares, and fed fish emulsion to all kinds of things. If you ever saw

the *Saturday Night Live* episode where Dan Aykroyd advertises the Bassomatic—blender that emulsifies a bass—you will have some idea of what I mean. Meg and I would laugh about how dreadful we smelled at the end of days when we worked with “fish.” I spray *Bacillus thurengensis* on the brassicas to prevent cabbage loopers; put organic anti-fungal agents on the basil, tomatoes, peppers, and eggplants; pull smart weed, galinsoga, and Canada thistle by the hundreds or thousands from rows of kale, sweet potatoes, and celeriac; cultivate head and salad mix lettuces; prune cucumber plants; and French trellis tomatoes.

For about a week in early July, I didn’t have to look at a watch of the sun to know it was just past 10 am. I knew it because the indigo bunting was calling from the oaks. Then he left for some other patch and perch for a few weeks only to return to the black walnuts again in August. By September, he had left and the sensations of the farm had changed too.

Yes. All things change. My favorite place on the farm was the asparagus field. It is a place where we are in a constant competition and cooperation with other creatures. We compete with the asparagus and Japanese beetles. I am, I think, in a constant tension with these other creatures. I want to honor them and be at work with them, but we are after the same things—the calories and nutrients from the asparagus—and there is a tendency toward competitive exclusion.

The asparagus bed was being damaged by a large and fertile population of both asparagus and Japanese beetles. We took various approaches, including hand-squishing larvae, one of the more repellent things I’ve had to do. Assassin beetles, dragon flies, robber flies, jumping spiders, garden spiders, and mantises prowled the field but simply

couldn't keep up. And they were barely touching the asparagus beetles, which are pretty small. So we decided to spray pyrethrin, a chystanthemum extract that would kill the herbivores. It could also kill the predators too if they received heavy doses of the spray. We wanted to keep them. So I went into the field with large buckets and collected 40 to 50 assassin bugs, some garden spiders, and mantises, and moved them to other parts of the farm where they would be able to live well and still provide us, the farmers, with a free service. That is harmony, the creative tension of an ecosystem minded by people seeking balances grounded in cycles and patterns. Where is that in the rest of our world?

*

RED BARN

Wheat grass and thickspike sprout
at the red barn's gnarled corners.

The prairie's sunflowers cluster and conspire.
Nearby creak the dried groaning timbers,

the remnants of old men's fingers.
"You are alone young man."

The dust-flung prairie whispers,
"You're never alone."

*

As the summer of 2011 neared its end, I looked at my son and my ex-wife and resolved to be employed full time the next year. That summer had drained me of a good deal of energy: we were pretty broke as a pair of graduate students, bumming money from our parents, splitting our child's care between us, and still trying to ride bikes and stay active. Sometimes, it was exhausting.

That fall I applied for a bunch of jobs—I honestly don't remember how many—in or near places we found palatable. No to the deep South, most of the Midwest, and desert Southwest—too pious of a type that was unwelcoming, too flat and too pious, and too dry and unsustainable. I wanted to live in a place where the words "climate change" and "evolution" weren't four-letter words. I wanted woods.

Rejections started coming in. I worried. I was despondent. Difficult to deal with. Though I didn't have a doctorate in hand, I was convinced of my own worth. Awards. I had awards—teaching, research, and service—and I was arranging events for faculty. My superiors were turning to me to lead. "Why can't I get a job? Why?" I asked myself. Then a job call was sent to me.

A small boys' boarding school, Darby, located in Loyalhanna Township across the Darbyminetas River from Saltsburg, Pennsylvania, was looking for a Director of Sustainability. The director would be responsible for developing and implementing programs focused on promoting conservancy, renewable energy systems, environmental farming, and hands-on learning experiences in the practice of sustainability for students and teachers on our campus and beyond. It looked like something I would be able to do and arrange to my strengths as a communicator, teacher, and burgeoning gardener, and as someone steeped in sustainability issues and initiatives at all scales.

I talked to Jessica, wrote a cover letter, spritzed up my CV, and sent it in.

When she and I lived in Indiana, Pennsylvania, a few years before that, my friends Rich, Tom, and I had taken century bike rides through Indiana, Apollo, and Westmoreland counties. The cost of human progress litters the landscape. A nuclear superfund site sits right along the Darbyminetas River in nearby Apollo. The Beaver Run Reservoir, which supplies Darby's water, is surrounded by a few dozen fracked natural gas wells. There are two coal-fired power plants within 20 miles, a Pennsylvania Department of Environmental Protection strip mine reclamation site less than two miles away, and a lifeless stream running orange with acid mine drainage. Trains laden with coal and crude oil from the Alberta tar sand can be heard every day.

At the same time, you can see nature's resilience. Right next to that railroad, Blacklegs Creek winnows its way by a field kept by an organic farmer. Thousands of mottle-barked sycamore trees over 80 feet tall stand out against the maples and oaks occupying the slopes above the banks. Black rat snakes creep along banks grabbing frogs. The stream is cold and healthy enough to be stocked with brook trout. Further down the

Darbyminetas, Roaring Run is lined by tulip poplars, sycamores, and red maples at its top. Nearer the bottom, before it meets the river, they mix with rhododendron and hemlocks along the steeper banks near the waterfalls.

I had seen all these things from my bike before I applied to Darby, although I didn't know all of them as intimately as I would later. But they were in me, and I was eager to protect them and possibly live among them. "When I lived in Indiana, Pennsylvania," I wrote to them, "I sped on my road bike from Indiana to Kittanning to Apollo to Saltsburg and back to Indiana, along the way passing well over 100 years of scarring natural resource use. In all of that, I have lived in the most beautiful place on Earth. Pennsylvania is my home and I would be honored to keep working here and doing my part so that we the living and future generations of people—and as many creatures as we can save—live well and tread more softly." Soon after, I was contacted for an in-person interview.

Darby was founded in 1888 by Andrew Wilson, brother to U.S. President Woodrow Wilson. He started the Darbyminetas Springs School on a piece of wooded land on the cliff across from Saltsburg, a canal town between Blairsville and the Allegheny River with a thriving salt mine in the nineteenth century. Originally, Darby was a finishing school for boys bound for Princeton. Over 125 years, it has ebbed and flowed in its academic rigor, prestige, and relationship with the local community, but it has remained a boys' school the whole time. At the time I applied it had a population of about 200 boys, 95% of whom lived at the school, with the remaining 5% coming as day students. Boys came from more than a dozen states and several other countries—Canada,

Mexico, Spain, Serbia, Kazakhstan, Japan, China, and South Korea among them. Two girls were students during my time there, children of staff.

The students were engaged in a fairly standard college preparatory course of study with mandatory sports participation. All school days they wear coats and ties, as do all faculty members. The clothes make the man, I suppose. Students perform some obligatory community service including activities such as trail work, recycling, helping at nursing homes, or with construction or destruction projects. They took weekend trips to local malls, movies, Pittsburgh sporting events, or went skiing at Seven Springs. For such a secluded school, about 25 miles from anything that most teenage boys find cool, the boys were offered a lot of options. It seemed to work. Their graduates included Olympian Bob Mathias; Congressman Jack Murtha; wildlife celebrity Jack Hanna; *Ghost Whisperer* and *Agents of SHIELD* star David Conrad; a federal judge and a former U.S. Assistant Secretary of Commerce for Trade Development; and two Penn State football offensive powerhouses in the last 15 years, running back Curtis Enis and quarterback Daryll Clark. Boys (and the occasional staff member's girl) make their ways into the best 50 colleges in the United States, ranging from tiny Grinnell College to massive research universities like Ohio State University and schools in the University of California system.

Within 72 hours of my application submission I was called for an interview. The next week I went. On my way I did the standard things you do for an interview—rehearsed answers to likely questions based on the job description. I talked for most of the two-hour car ride west, taking in the scenery all the while. I went up the Allegheny Plateau where wind turbines generate cleaner electricity within site of a co-generation coal-fired power plant outside of Ebensburg. I could see into the woods of the Rothrock,

Moshannon, Gallitzin, and Forbes state forests as dawn's sun peaked over the ridges behind me. Farm fields roll along the plateau, silos and barns dotting the landscape to the north between the exits for Cresson and Ebensburg.

“What does sustainability mean to me?” I kept asking myself. It is there in my statement, in honoring the living world. It is treating the living earth with dignity, respect, and reverence so that it is healthy, so that we are healthy.

Most of the particulars of my day-long interview and visit were unremarkable. “How would I handle life at a boarding school?” I was eager to be part of an integrated community. Surely living with the people with whom you work would challenge my family and me. But it would work. “What is sustainability and how can you bring it into the classroom?” I think I agreed to teach classes in any department but math. “How would I deal with people who don't agree with me?” Through patient and polite conversation. As someone dealing with environmental and human wellbeing issues, I was used to being in confrontations but found that I worked best in institutions when I approached the situations in the spirit of collaboration. I observed a basic chemistry class taught by the head of the science department. It was a pretty standard class.

Several things stuck out about the visit. Faculty members were all kind, some very friendly and engaged, one interested in place-based education, and most interested in sustainability and what I could bring to the table. The school had no recycling. The lights were almost all incandescent or old fluorescents. As I learned just days before, friends of mine at an energy and green design firm had performed energy audits on all the campus facilities. Several of the buildings were in less-than-ideal shape. The food was better than many school cafeterias, but there was a preponderance of fried food and not a whiff of

local or organic food. The school was about to undertake a major dorm renovation that would go for LEED Silver. They wanted a blog set up, teacher development programs, an energy plan, course development in sustainability, someone who would also be a dorm parent, an assistant coach, an organic agriculture program, and outreach to the community. It was a lot. So much.

If people use one word to describe me, it is usually “intense.” I’ve had people ask me if I sleep. Of course I do. I’ve had a student ask, “How do you have so much energy?” Maybe I was born with it. Coffee is great, but even without it I tend toward effusiveness and a kind of open-throttle way of doing things. Before I sat down for the last interview with the headmaster, he joked, “Do you want some coffee? I’ve heard you’re pretty low energy.” I laughed and may have actually taken him up on some. The day had been full, and I wanted to bring my best self to the table. I’m someone who likes to do a lot.

We talked mostly about the projects the school hoped to accomplish—that litany above. My background in radio and my breadth of contacts would come in handy. Being indomitably social was going to pay off. I was certain I could bring new life into this school and that’s what I believed I was being asked to do. And all of those other things—a garden, energy plan, teacher programs, a class or two, recycling and waste redirection, and ... and ... and—that the job description included were my means for bringing that life. At some point during the interview I said something like, “Some of this isn’t going to happen.” I may have even said some of it would fail. There were so many things to do.

Richard said, “You will have to put your stamp on it.”

Okay. I would.

I was hired about a week later.

Part of me wants to write some list of all the things I succeeded at doing, and part of me wants to complain about all the things that didn't happen. I'll do three from the first and one from the second. In this process, I hope that it's clear that I'm not boasting or passing blame. It's a complicated and messy business, navigating sustainability in a school that "hasn't done this before," as my boss Michael would say. I think there are possibilities for action, for refinement, and for hope in educational institutions. If a private boys' boarding school in rural western Pennsylvania can house, support, and encourage someone as environmentally progressive as I am and put those practices into policy and (I hope) perpetuity, then there is hope.

My first two successes are curricular. They are teacherly and work within the standard confines of school as a place with deliberate instruction. The third success deals with relationships and the truth that, as Parker Palmer (1998) says, "We teach who we are" (p. 1).

In my second year I taught Environmental Science, an upper-class science elective that is more challenging than rocks for jocks but less rigorous than honors or AP courses. My goal was to deepen each student's ability to be a good ecological citizen, a person who "recognizes the importance and interconnectivity of all living beings, human and non-human..., [who] understands that she or he is responsible to all beings and actively seeks sustainable futures for them" (Kissling & Calabrese Barton, 2013). Part of my way of doing this was to zero in on energy and climate change.

My students researched energy production, use, and conservation.² Two students ran a lab where they heated an alcohol and water mixture to separate the alcohol from the water. This, in principle, gave the other students a heuristic to understand the much larger process of fractionally distilling petroleum into its constituent hydrocarbons (fracking). Another group crafted an excellent video on the nuts and bolts and possibilities for an integrated wind and solar energy grid. Most, though, took the standard presentation route. I sent them to research lab sites, the International Energy Association, the Department of Energy, industry and environmental organizations. I encouraged them to contact experts or to make something useful for our shared lives at the school. Two groups genuinely excelled by building relationships.

One pair researched and gave a comprehensive presentation on solar energy: solar hot water for homes, concentrated solar towers, photovoltaic arrays (solar panels), and passive solar construction for houses. What is solar power's potential in the United States in the coming couple of decades? How does smart passive solar design prevent energy demand and thereby reduce waste? What amazed me—and the other students—the most was the journey that these boys took.

The boys read an interview with Zehner, a visiting researcher at UC Berkeley among other things. They took some notes. Then I told them to read the solar power chapter in Zehner's (2012) *Green Illusions*. They wrote up more notes and some questions. Then, with a little nudge from me, they contacted Zehner, and before they

² The two tales recounted here regarding energy projects and climate education are revisions of pieces submitted elsewhere. The first is a compressed excerpt from a piece submitted to and accepted for the American Education Research Association 2015 conference. The second is a revision of a blog post for Yale's Cultural Cognition Project.

knew it, they Skyped with him for an hour and walked away both more informed and with more questions. The students and I agreed that Zehner is a gadfly who worries we have developed a cultish faith in renewable energy (I agree!). So what's to be done when you have a tension in the mind? Explore it. Are there possibilities that solar could be other than Zehner asserts? We should learn more, explore, reach out.

I gave them the contact information of Penn State engineering professor Andrew Lau. As wrote earlier, Lau worked at the National Renewable Energy Labs in the late 1970s and early 1980s, has been a renewable energy consultant, was part of Penn State's 2007 Solar Decathlon team, and is a noted sustainability educator. Once again, the pair wrote up some notes, prepared an interview protocol, and called Lau. They talked on the phone for an hour. He e-mailed them files on solar power, environmental ethics, and sustainability. The world became wider and more applicable to their daily lives.

Another group of three students, led by the class's most detailed thinker, worked on a project on wind power. I told them that they had to create one of the best projects I had ever seen. How to do it? It was up to them.

They dug into many sources: How does a wind turbine generate power? What site problems are there because of topography, human habitation, endangered or threatened species, erosion, and more? How much power does a turbine generate? They read the executive summary of the U.S. Department of Energy's (2008) *20% Wind Energy by 2030* report and about Germany's wind market. Videos. Articles. Books. But what were they going to do to show us what they had learned? How could they *serve* our class and our school?

They wrote to someone working in the wind industry in Pennsylvania and asked if they could interview him via Skype. A week later they had an interview protocol that delved into wind power's economic, social, and ecological benefits; costs; risks; and uncertainties. Our class met during the evening to watch the interview. With nine well informed questions, they taught more to the class in 45 minutes than I could have in twice as much time lecturing. It took time, focus, care, and guidance. It was time well spent.

When I was hired, I told my interviewers that I was likely to encounter some resistance to scientifically based climate education. National politics and the personal convictions vociferous conservative Americans indicated as much. My middle- and upper-income white students were likely allied with factions doubting or denying anthropogenic global warming because they probably viewed it as a massive liberal, socialist, or UN-plotted conspiracy to undermine American sovereignty. I knew my audience and the potential resistance, and I also knew that I had administrators and a science department chair backing me up.

Personally, as an activist, my convictions required that I do something accurate, positive, and morally engaging on climate change. I would be lying to say that I didn't hope some of my students would grab onto the reality of climate change and some of them feel compelled to change things. I knew some of them would because some of them are deeply concerned and loving people who feel environmental threats. And of course I knew some of them would space out, thinking about a text message from a pretty girl (or boy), the next game of FIFA on the XBox 360, or sports that afternoon. And some, because of entrenched inherited ideologies would just listen, learn the answers, and flip the scientific consensus and climate worry a proverbial bird finger. I can deal with all of

those and did. At the end of the unit, we took the survey on which *Global Warming's Six Americas* is based (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Howe; 2012): A few were alarmed, several were concerned, and some were doubtful or dismissive.

As an environmental science teacher, I had to focus on the scientific consensus; how it has been achieved; and questions that we could ask or activities that we could do to understand the climate, how humans have changed it, and the avenues by which we can understand that change. We used radiative forcing data from NOAA and historical regional land and ocean temperature maps from the Australian Bureau of Meteorology to observe, by proxy, the amplified greenhouse effect. They read the most recent IPCC “Headline Statement” (2013a) and other current materials. One section got to Skype with Michael Mann, Director of Penn State’s Earth Systems Science Center and author of *The Hockey Stick and the Climate Wars* (Mann, 2012).

Then, at the end of the unit, I received an e-mail from a concerned parent. He was worried that I was tipping my teaching and courting climate alarmism. As a geologist, he had done some personal research and discerned that our climate was changing and that there was some anthropogenic forcing, but that climate change was not as bad as some people were making it out to be and that it certainly wasn’t a catastrophe. He offered to come to my class to balance the scales with a presentation of his own.

I admit, I felt insulted and started a keyboard barrage. I teach good science! I won’t use debunked garbage from... I could bludgeon him with scientific data and authoritative scientific organizational statements from the American Geophysical Union and the like. Of course I would pour in some self-righteous ire. After a few minutes though, I realized my strategy would backfire.

The e-mailing parent seemed to be in the “doubtful” or maybe “dismissive” camp of the *Six Americas* study (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Howe; 2012). Working from Cook and Lewandowsky’s (2011) *The Debunking Handbook*, I knew I should avoid emphasizing falsehoods, prevent an overkill backfire from a barrage of information, and do what I could to stop a worldview backfire. This e-mail was an opportunity to make connections. The educated mind is the connected mind. And through connections we can build relationships. We can build health.

When I wrote back, I thanked him for his interest in his son’s education and in the topic. Then, I briefly explained that I work to represent current science accurately. And more importantly, I said that I am not the arbiter of my students’ values. While I am very alarmed about climate change’s scale and pace, it is not my place to indoctrinate my students into a political or emotional faction but to invite them to reflect on the state of the world and their own lives and values and see if they comport with the situation at hand. Third, and most importantly, I would provide them with the opportunity to develop their own views.

I split my classes into small groups and had them take positions on the following proposition: “Climate change is not a crisis.” We followed the format of *Intelligence Squared* that airs on National Public Radio.³ I instructed them to incorporate well grounded and current scientific information to clearly argue what does or does not constitute a crisis and whether climate change is such a thing.

I chose this format for three reasons. First, the debate was not “Climate change is real: yes or no.” I will not deal in disproven or junk science. One group still pursued that

³ See <http://intelligencesquaredus.org/> for details.

avenue to my and their chagrin. The other students in the class knew it, and nervous glances went from student to student and to me. A teacher can't control everything. Second, by debating the proposition in the negative—"not a crisis"—I avoided my own alarmist's position. Third, equal numbers of students would have to be on one side or the other. This way I could put very concerned or alarmed students for the proposition—is *not* a crisis—and dismissive or doubtful students against it—*is* a crisis.

I worried about one insidious problem stemming from identity and worldview. When groups of people get together to deliberate, the very act of deliberation can further entrench people in their beliefs instead of opening them to new information, attitudes, or potential evaluations. At the Cultural Cognition blog, Kahan (2013) writes,

Far from counteracting this effect, deliberation among diverse groups is likely to accentuate polarization. By revealing the correlation between one or another position and one or another cultural style, public debate intensifies identity-protective pressure on individuals to conform to the views dominant within their group.

But because I had skirted the identity red flags of so much debate about climate change, I probably skirted some of the worst motivated reasoning. At least I did up front.

I had initially conceived of this project using a mock United Nations Framework Convention on Climate Change (UNFCCC, 2014) policy debate. I decided not to use that format to skirt worldview-threatening messages. As Kahan and Braman (2006) show, hierarchical individualists (who map fairly well onto American conservatives) doubt climate change science more if it's couched in terms of carbon regulations. Since the

UNFCCC deliberations focus so heavily on regulation of markets and perceived UN interference, I tried to dodge that landmine.

How did they debate? They crafted arguments around what constitutes a crisis. One group that agreed with the proposition—climate change is not a crisis—said that on the scale of crises there is only so much room for big crises; global poverty, AIDS, and wars held up that space. Climate change may be a problem, but it is so slow that right now it is not urgent. But another group argued it is a crisis because of the enormous costs to disaster-prone areas, the cost to insure them, and the costs of reinsurance. Using Munich Re (n.d.) and Swiss Re (2014) as sources, they made a powerful argument against the proposition. Yet another group used techno-optimism à la Ray Kurzweil (Feeney, 2011) to predict that solar power will eclipse fossil fuels in the next couple of decades, thereby eliminating the largest emissions sources. But those against the proposition showed that threats to the carbon cycle were so severe already that major disruptions in ecosystem services and extinction were real, present, and harming people. Sadly, one group did not follow directions and used thoroughly debunked and scientifically invalid arguments. Clearly, I agree much more with some of these arguments than I do with others. But that wasn't the point.

The e-mailing parent's son proves it. He was placed on a team that argued that climate change is a crisis, and he spoke for the group (each group had a designated speaker). During the question and answer session that followed each team's statement, he answered questions clearly and asked his opponents intelligent and pointed questions. At one point, after pointing out one of the denier groups' inaccuracies, their leader looked red in the face and asked, "Do you think it's a crisis?"

He said something to the effect of, “No. But that’s not the point. I’m arguing a position and doing it the best I can. But there are facts and we shouldn’t be afraid of facts. I don’t have to think this is a crisis to believe it’s real.”

I felt satisfied as a teacher at that moment, although I probably played a good poker face. He and his group had formulated an informed and sensible argument with which he did not agree. And in so doing, he showed that he could master scientific information that he might have rejected were it presented in a way that it would have threatened his and his family’s worldview. His father later told me that they appreciated the assignment.

By attending to who my students were, I created a better avenue to deal with reality. With the world’s climate changing as rapidly as it is, we need to use our desire for good relationships so that we can be better ecological citizens. That desire for healthy relationships led me to incorporate a whole body of research about our identities that facilitates relationships.

Before I state the last success, I want to address the challenges I faced. The outward struggles in this work came less frequently than I anticipated. At few points did I meet outright resistance to actions or policies that I wanted the school to implement. I did encounter intransigence, passivity, or inattention. Toward the end, I was trying to get the school to adopt a comprehensive energy policy. Sometimes it felt like it was going nowhere. It was hard to know if it is from the intention of the administration, or if it’s just because we are all too busy dealing with too many things. When you are in the maze, you don’t know where you are on the route at any one time until you start to know the markers. And even still, you can lose your way. Maybe it was a lack of initiative on my

part, a belief that those people over there (just across the quad) needed to do more when in fact I needed to do something else. Maybe in the juggling of priorities things fell under the avalanche of work. Maybe it's all of the above. Maybe none.

The headmaster and the board decided to sell a piece of land on which I put the first garden. It is the single biggest disappointment I have with the school. In a quest to create a comprehensive sustainability education center at Darby, I started to plan to put an acre of land into succession. Basically, I wanted the operations staff to stop mowing, and then we would plant native grasses and flowering plants to create an old field and a meadow, control invasive vegetation, and bring the forest's edge in. I called the regional forester and hosted him for the better part of the day. He created a plan that I reviewed and from which I could work with more confidence.

I began working out ways to bring the succession plan into the curriculum. We could design, cut materials for, and build an observation platform with students in our classes. The biology faculty and I could create curriculum that would use the site, as I also would for a sustainability leadership camp that I was planning and for which I had an intern. Art classes could come out to do nature paintings. Grants would help us, grants for which the forester assured me some help. The plan was ambitious, beautifying, cheap, pretty easy to maintain, and showed a commitment to ecological sustainability. Sure, the school had completed a major dorm renovation that was slated for LEED Silver certification. But we had also cut down somewhere on the order of fifty mature trees to make way for a track renovation and the LEED Silver dorm. The succession project, connected to the garden and the environmental education plan would further interconnect the institution's disparate parts.

At lunch one day, Michael said, “Hey. I need to tell you something. The land where the garden is. It’s being sold.”

In one fell swoop, I became a green wash. I almost quit. No one, I think, doubted my commitment to sustainability. Maybe they should have. Most of the faculty and staff would come to doubt the school’s resolve. Just a couple of weeks later, I was told my contract would not be renewed. My job was funded by a grant, and there was no guarantee of renewal. Richard, the headmaster, said the school was not going to internalize my cost.

He was conciliatory, congratulatory even: “This had nothing to do with your performance or anything to do with our disagreement about the sale of the land.” He even told me liked me. He had after all photoshopped pictures of my face onto Luke Skywalker as some kind of anti-tick Jedi based on a blog I’d written for the school. Technically, I would be a Jedi-to-be as depicted in *The Empire Strikes Back*. And the point was that, as silly or odd as it appeared, his way of showing someone he liked them was by spoofing them. “This decision,” he said, “has nothing to do with your performance, which has been great.” He promised glowing recommendations for any job prospects.

I accepted all of it with no dispute, with much thanks, and a combined feeling of liberation and the urgent need to show Darby hope. It was time to act before moving on.

My last and greatest success is a swath of experiences emerging from my simply being who I am and, in the process, teaching who I am. Every instance that I am leading, teaching, or collaborating—whether with students, the wood shop teacher, the assistant head of operations, the dining hall staff, or with my peer teachers—I am part of the

lesson. I was teaching who I was, who I had been, and who I was becoming. In the process, I'd be collaborating with people in creating the world we share and the world we want to be.

In the closing months, my way of moving through each moment with these people would come to define my legacy. I created opportunities for reflection in my classes, reflections on who my students believe they are relative to nature. At most turns, I sought out ways to create ecological learning environments, including the creation of an arboretum on the campus for the end of the school year.

The old garden, soon to be bulldozed and turned into a truck lot, was moved next to Old Main, professionally fenced, and built by students, faculty, and me. Over 40 students helped construct it. Bill now takes care of its denizens—feverfew, yarrow, foxglove, coneflowers, rudbeckia, hollyhocks, lupine, goldenrod, sage, dill, parsley, chives, oregano, thyme, rosemary, basil, radishes, kohlrabi, turnips, beets, chard, collards, spinach, lettuces, tomatoes, potatoes, squash, peppers, garlic, and onions, collards, lettuce, and radishes that have gone to the dining hall and into homes. Done well enough, it will be a lasting stamp of (limited) self-sufficiency, beauty, and ecological intelligence in the middle of our campus.

Close to 60 trees had been felled for construction projects and because of regular mortality over the last couple of years. Quite a few more would be cleared for a parking lot. Some of them were dear to the alumni and community—a couple dozen Norway spruces were cut because of a problem with a gas line during renovations to the track and field. White pines and Norway spruces were felled for the renovation and expansion of MacColl Hall, the dorm that we were submitting for LEED Silver certification. A huge

red oak, over four feet in diameter at breast height and probably over 100 feet tall had fallen the year before. So had several other maples, oaks, and hickories. I wanted to replant them and get students and faculty involved as well.

I called a local ecologist, Dave Hale, who owns two companies, Ecological Restoration and Wetland Supply. Knowing that I was just ignorant enough to misstep, I asked him to come to campus so that we could work out good species for five places that I'd selected on campus to create habitat, beautify the campus, sink a little bit of carbon, and make up for the many trees we had already cut down. Hale is a middle-aged guy sporting a mustache and dirt-worn jeans. He combines the qualities of an encyclopedically knowledgeable scientist with a laid back ranger used to working in dirt. At each site he guided my decisions, most of which were pretty good—sycamores in the wet—and expanded them in others—black gums, black willows, nannyberries, and ironwoods would work well, too. By mid-June, the campus would have over 100 trees and bushes to restore the lost ones and native pollinating flowers and bushes planted around MacColl. All these decisions would be ecologically sensible, and the experiences of planting them would bring the community closer to the land and provide opportunities to reflect on their relationship with it.

My friend Rob led the school's leadership initiative during my second year and will continue to do so. He was very receptive to my leading the boys on a day of conservation and restoration. About half the 100 trees and bushes would be planted on a weekend in May. The entire sophomore class planted native hardwood and flowering trees. They included ironwood, dogwood, silky dogwood, nannyberry, black gum, tulip trees, and sycamores. "These trees," I said to the class of 2016, "are our legacy to the

school. Some of you will come back in 10, 20, even 50 years and remember planting them.” It was a great day.

Three weeks later, my friends and some of their kids would plant more trees and shrubs. We have some wetlands along our golf course, so we planted wet-loving shrubs including winterberry, chokeberry, blueberry, spicebushes, arrowwood, silky dogwood, vibernum, sycamores, and black gums. In the last week I was there, we planted Ohio spiderwort, burgemot, common milkweed, ironweed, Joe-pye weed, New England aster, goldenrod, and more blueberry bushes.

“You have certainly left your mark on this campus,” Michael told me as I drove my truck away. I hope so. I expect that if I return to Darby’s campus in 20 years I will see a stand of flowering nannyberry and dogwood trees with robins, jays, cardinals, and sparrows alighting from their branches. Maybe a scarlet tanager will be there.

I say “hope” because hope lives in action. Every second that life keeps going is another second in which hope is latent. Every moment we are awake to the possibility of stewarding a healthy relationship is another moment pregnant with hope. Every interaction we foster for conviviality, for individual freedom realized in ecological interdependence, we actually create hope. And every time we broadcast these actions for conviviality—whether as seeds in a garden, as messages on the airwaves, as a well conceived classroom assignment or laughter with a student, or through acts of heroism (big or small)—we awaken others to hope.

Are you awake?

*

THE FAR SHORE (FOR SACHA)

No single motion can carry me across this river.

Each step I take through snow-fed waters
 on silt-slicked slate coated in grief,
 renews my stride toward the far shore.

I have faith I can reach the clay bank
 where the heron stood knowing the stones
 held his place, knowing the flood
 could wash us both like jetsam to the gulf.

My boy, my precious boy, I hear your breath,
 feel it enter me, gifting me life on the river
 that shimmers this night with the shattering
 jewels in Andromeda's crown.

I think how I

cross the river;

how each day

I meet you

again.

No single deed takes me across
 to the steep clay bank on the far shore.

No winged shoes carry me –
 just the loving sinews, stones, and waters
 on this impermanent earth.

Chapter 3: The Unsuspected Teachers

In this chapter, I turn to some of Bucknell University's and Penn State University's education for sustainability (EfS) advocates. In this chapter, I summarize the basis for this investigation and its main research questions. Next, I provide basic institutional profiles for the two research sites, including the scope of their EfS initiatives. Each institutional profile is followed by data write-ups on each actor. The next chapter will analyze the data presented in this chapter, noting commonalities, ranges of belief and action, and will point out a few distinctions among the participants themselves with an eye toward what these findings mean.

This investigation seeks to understand EfS policy entrepreneurs' environmental identities. Policy entrepreneurs—conscious of their entrepreneurship or not—wait with policy alternatives, proposals, or solutions that are ready to couple to “problems of political exigencies” (Kingdon, 1995, p. 173). If they are alert to an open policy window and motivated to act, they will adjust the policy environment to their advantage to place policies on the agenda, deliberated upon, and implemented (Kingdon, 1995, pp. 180-181). “They hook solutions to problems, proposals to political momentum, and political events to policy problems” (Kingdon, 1995, p. 182) in an effort to achieve a desired policy goal. I consider the people I interviewed at Bucknell and Penn State to be policy entrepreneurs who, having spotted an open policy window for EfS, reacted by forming a policy alternative for which they subsequently worked. All the people whom I interviewed saw windows of opportunity open before them and were eager to seize them.

Below I briefly discuss the Bucknell and Penn State EfS policy environments. At both institutions, high-level administrative decisions created the EfS policy window. The EfS advocates reacted to their particular windows opportunistically, with Bucknell creating a new general education requirement while Penn State created a Sustainability Leadership minor and set up faculty workshops so faculty members could develop coursework for that minor, coursework that would also create sustainability courses in the general education curriculum. I compiled the following descriptions of the initiatives from participant interviews.

Bucknell University

Bucknell University was founded in 1846 in Lewisburg, Pennsylvania, along the Susquehanna River. Today it is recognized as one of the nation's top liberal arts institutions (Bucknell University, 2014). It offers its 4,000 students a liberal arts education with opportunities for pre-professional programs in engineering, education, business, and music.

Over the last 40 years, Bucknell has developed initiatives for environmental literacy, including assessing tree stands and implementing recycling programs in the 1970s, creating environmental science and environmental studies programs in the late 1970s and early 1980s, and converting their coal-fired power plant into a natural gas co-generation power plant in late 1990s. In 2005, the university established an Environmental Center, in which its campus Greening Initiative, Marcellus Shale Initiative, Nature and Human Communities Initiative, and Susquehanna River Initiative are housed. A recent and important move for EfS at Bucknell took place shortly after the Environmental Center was established.

In 2007, Bucknell's President Mitchell signed the American College and University Presidents' Climate Commitment (ACUPCC, 2007; see Chapter 1). As part of the commitment, Bucknell had to mitigate its climate impact. People at Bucknell decided to perform a comprehensive environmental assessment. Dina El-Mogazi, Director of the Campus Greening Initiative, was appointed to head up the assessment. Dozens of Bucknell faculty members, staff members, and students assessed nine areas: administration and policy, education, energy, water, waste, purchasing, dining, built environment, and landscape. The assessment found that Bucknell was not ensuring that every student could become "environmentally aware and literate."

This finding led to a proposal for the curriculum. Specifically, the education chapter team crafted the Environmental Connections requirement, which was modeled on Furman College's Human and the Natural Environment policy, which mandates that all students take an ecological literacy course during their undergraduate studies. The Bucknell faculty recommended the same.

During the crafting of the Environmental Connections requirement, the assembled team discovered a convenient policy window: Bucknell's general education curriculum was coming up for renewal and revision. According to Dina, Peter, Duane, and Jamie, they organized a coalition from across the university—arts, humanities, physical, biological, and social sciences, and engineering—whose members believed that a general education requirement for sustainability and environmental literacy was a necessary addition to the curriculum. In the coming months, they formulated and reformulated their proposal in response to informal and institutional feedback. Their timeliness, responsiveness, organization, rhetorical strategy, and unity of message ensured the

requirement's passage. As of the Fall 2010 entering class, every Bucknell graduate must take a class to fulfill the Environmental Connections requirement.

Since the time interviews were conducted the Environmental Center has been renamed the Bucknell Center for Sustainability and the Environment (BCSE). The Center's mission is to support "faculty, staff and students and is dedicated to environmental and nature-related learning, teaching, scholarship, service and action at local, regional, national and international levels." (2014). They emphasize four areas: place, design, river, and the Marcellus Shale Initiative (2014).

Five Bucknell professors who worked on the Environmental Connections requirement participated in this study. Two are professors of Environmental Studies, one is in Geography, one is in Management, and one is the Director of the Greening Initiative who also teaches courses in design. One person's interview was destroyed before transcription. He never replied to member checks requests so that I could incorporate his responses into the study. I have not incorporated him in this study.

There are a few things that the Bucknell faculty members had in common besides their institutional affiliation and work on the Environmental Connections requirement. Each of them expressed a strong environmental identity, described his or her environmental ethics with some ease, and took actions that the literature discussed in the previous chapter predicts. They all teach courses for sustainability, believe that ecological literacy ought to be a higher education learning outcome, and think that sustainability runs counter to the status quo, understood as something like our current growing capitalist market system. They have been active in or donated money to environmental organizations in the past, although two of them are not engaged with such organizations

anymore. They also tend to buy vegetables and/or meat locally for moral reasons; recycle; and ride bicycles, canoe, and/or hike for pleasure. What follows are highlights of their interviews that illustrate unique and special aspects of their environmental identities and their moral positions.

Dina

Dina is Director of Bucknell University's Campus Greening Initiative and teaches courses on environmental design. She earned a bachelor's degree in chemistry with a minor in soil science from Louisiana State University, worked in lab at Cornell University in environmental biology, and went on to earn a master's degree in landscape architecture at the University of Georgia. Landscape architecture fulfilled her because it merged her scientific curiosity, her aesthetic appreciation of nature, and her love of the natural environment.

Since she was a child, Dina has had a powerful identification with the natural world. She loves the Olmsted parks in America's cities and our nation's national parks, particularly Zion in Utah. She recalled three stories that illustrate how the environment impacted her. First, she remembered lying on the ground at night, gazing up at the sky and being awed by the number of stars—an experience rendered impossible in “normal life” because of light pollution. Second, she recounted spending a week at a cabin with her family. During this time they chopped all their own wood, hauled all their water, and caught all their own fish. She said, “I always treasured the opportunity to have such a positive association with the natural world.” She continues to spend time in nature by camping and hiking. Third, she recalled flying with her family to Utah from Newark, New Jersey. Looking out the window, she saw miles of refineries and industry. That

landscape was almost foreign in a way. These experiences, rooted in childhood and her family, shaped her environmental ethic.

“The natural world is something worth protecting and needs protecting from people.” She called this stewardship. It may not be as simple as “shielding” the natural world from people. Rather, she needs to do something to create more give and take, emotional and aesthetic appreciation, and gratitude between people and nature. She thinks that the natural environment has both intrinsic and instrumental value—that people should respect and appreciate trees for their existence as trees themselves and as things providing oxygen or shade. People ought to recognize and understand their reliance on nature and develop a more gracious relationship with it. She—and all people—are not separate from the environment but of the environment. This ethic has moved her to be a pescetarian—the only meat she eats is fish—and to work on the Greening Initiative.

Dina believes that she can and should directly transmit a responsible environmental ethic to students. In the process of getting the Environmental Connections requirement passed, she had to become an activist and explain how and why ecological literacy and environmental issues ought to be “privileged” as part of Bucknell’s common core curriculum.

[T]here are all these other social problems like poverty for instance. Basically, it came from our management professor (Jamie) and she is a great lover of animals. And she said, “We have all these other requirements dealing with the human world, and this is the only one dealing with the non-human world and we need to address that as well.” That seemed to work really well. Because we have for instance a global studies requirement.... We have a U.S. diversity requirement

and we have a foreign language requirement and all these have to do with making students aware of their connections to other people, but we don't have anything that makes these students aware of their connection, their human connection to the non-human world which is also very important.

As far as Dina is concerned, individual people and societies need healthy environments to be healthy themselves. People need to understand that interdependency so they realize a more sustainable society and economy.

Duane

Duane is an associate professor of geography, teaching and researching physical geography and human-ecosystem interactions. His courses include introductory geography; human impacts on the environment; applied geographic information systems (GIS); global environmental change; and evolution, ecology, and human impacts. His research interests include fine-scale habitat structure and plant species diversity, vernal ponds and amphibian genetics and development, a global wildlands project “assess[ing] the degree of human impact on Earth's ecosystems at the global scale” by using GIS, and a fun backburner project on the “hollow Earth.”

As a boy in Oklahoma, Duane collected rocks, bugs, turtles and any non-venomous snakes he could get his hands on. He also hunted quail, doves, and jackrabbits for which his grandfather paid him a quarter, and he made them into pouches. Once he tried to make moccasins that did not hold up because “[r]abbit skin is pretty thin.” His predilection for nature and artistry continued into college at the University of New Mexico where he earned a BFA. His art frequently related to nature, especially local landscapes. After graduating, he traveled to Sudan in 1985 to shoot photographs that he

hoped to sell on the stock photo market from there and other places in Africa. However, he found more than landscapes.

In Sudan he saw the effects of the Ethiopian famine, which vividly illustrated what he recognizes today as the interconnection of sustainability and environmental justice. Deforestation, soil erosion, some degree of climate change, drought, political events, and warfare caused the famine. In Sudan, it resulted in a massive refugee problem. The crisis made the interconnectedness of human and ecological wellbeing tangible for him—something that remains with him today.

According to Duane, lives of people in the developed world are subsidized by people in the global South, by unborn people, and by the rest of nature. To illustrate this belief, Duane used carbon emissions from jet travel and river nutrification caused by fertilizer runoff. Jet travel at the current scale escalates climate change impacts, a phenomenon that harms people in the tropics now and will harm more people more gravely in the future. This knowledge troubles him. To help reduce suffering, he teaches about climate change issues by assigning personal carbon inventories. He intends these to raise awareness about our habits in the hope that people will make less CO₂-emitting decisions, something he does in his own life by not taking trips he would really like to take. Instead, he has developed a strong conscience about his part in ecological problems. Like CO₂ emissions, the way in which many of us tend our lawns causes river eutrophication because excess fertilizers pollute the Susquehanna River and Chesapeake Bay. He has decided to allow his lawn to go somewhat wild, affording other herbs to emerge that he and his wife can eat.

Despite his environmental awareness, Duane considers his identity and environmental ethics “very anthropocentric.” Unlike some other study participants, he does not believe that nature has rights just because it is nature. Extending chimpanzees legal moral status through the Great Ape Project (n.d.) sounds like a nice idea, but it does not make much sense to him. A chimpanzee would not extend us rights. Rather than view animals or plants as worthy of rights, he sees other species as real options for our survival. When we extinguish them, we cut off our own options and eliminate experience and survival systems from ours and our descendants’ world.

I think it’s important to be honest that really what we care about is, is us because again say we cut down every tree on earth it would do us in. You know we wouldn’t survive that. But 10 or 20,000,000 years from now trees would exist again, absolutely.

Since Duane talked about interconnected effects, I asked him if his ethic, though anthropocentric, was ecologically oriented. He affirmed this suggestion as a fair stance because the ethical focus is on humans but recognizes humans as both *part of* and *dependent upon* a larger web in the world.

Jamie

Jamie is an associate professor of management at Bucknell. Since her first job out of college working for Arthur Young accountancy, the natural environment has pervaded her work. Upon graduation, she worked on the EPA’s superfund⁴ documentation projects. When she returned to university to earn her MBA, her love of

⁴ The EPA defines a superfund site as an “uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people.” (U.S. EPA, 2013)

the outdoors combined with her shock at how “appalling” the sites were and how “stupid” people had been to allow such things to come into existence. She was one of the founding members of the environmental student association in the University of Virginia’s Darton School of Business. After a few years of consulting, she went to Virginia Tech for her Ph.D. in Management. She minored in Environmental Studies “against the advice of virtually every person in the College of Business because they couldn’t understand how I could possibly do any research in that field and who would possibly give me a job.” She recalls that a few years later the Academy of Management’s conference theme was Green Management Matters. “I guess I got the last laugh,” she said.

The environment is part of Jamie and she is part of it. She and her husband own 24 pets, 17 of them rescued, and she has been an equestrian since she was a girl. Additionally, has also been a forest hiker since childhood, so much so that she “can’t even count the number of miles I’ve put in on the Appalachian Trail.” She and her husband enjoy the Bald Eagle Forest and R.B. Winter State Park, the nearest state park to Lewisburg.

When she considers her ethic toward the environment, she thinks of it mostly in terms of caring. “I think about it in terms of a personal identification and a relationship with the environment. So as a care ethicist some aspects of that are closer to me than others and so those are the things that I prioritize.” Examples of this approach include her pets, as well as other creatures in the immediate vicinity. Unsurprisingly, Jamie is a vegetarian. She is a vegetarian primarily because of industrial meat production’s cruel and damaging effects. She would never want the animals she loves to be treated as they

are in concentrated animal feeding operations (CAFOs). The collateral environmental damage they do to ecosystems—vis-à-vis agricultural runoff, for example—is needless and stupid. Neither small-scale organic, free-range, pasture-raised meat production nor hunting particularly upset her, but she is not interested in eating meat anymore. Being a vegetarian is simply part of who she is. But she sees most such farmers and hunters as people who care for the environment and act responsibly for it.

Like Jim at Penn State and Peter at Bucknell, she recognizes the limitations of her environmental ethics and identity and the reality of her behavior. While she did say, “What is outside the window is more important than what is inside,” she knows that she damages the natural environment. During our interview, she drank two bottles of G2 Gatorade (one was open when I arrived, and she opened the second). She admonished herself for drinking it and also said that if she were “really serious,” she would ride her bike to work every day, but the 12-mile one-way trip precludes her from doing it. She still sees room for more development.

Peter

Peter is an associate professor of environmental studies who considers himself a part of the environment. Peter teaches a number of classes in the environmental studies program, some of which deal with sustainability (e.g., Sustainable Resource Management; Nature, Wealth, and Power, which is a seminar in political ecology; Environmental Problems-Sustainable Futures; and Environmental Planning). His father was Pennsylvania’s Associate State Geologist and an avid outdoorsman. They used to hike and camp together in the White Mountains of New Hampshire; walked the Appalachian Trail in Pennsylvania; and canoed and kayaked in several states, sometimes

with other families. Although he does not do these activities as much as he used to, he still canoes with his son. He also bicycles to work.

Peter seemed to have thought through and explored his own environmental identity a great deal because he was able to explain many of its facets in detail and in relationship to other things. He went to some length to explain that although he has a strong environmental identity, he is more interested in human systems as they relate to environmental justice. He is interested in governance and justice issues related to marginalized groups, whether those people are indigenous groups in the Amazon River basin or people whose water has been poisoned by shale gas development in Pennsylvania. As an example, he explained that Chevron's contamination of waters in Ecuador shows that environmental contamination harms people directly, especially marginalized people. This example exemplifies the "intextricability" of human health and wellbeing to environmental health and integrity. Additionally, because harmed people are often poor or otherwise marginalized, they are unable to adequately defend themselves from more powerful groups.

On political matters, his sustainability ethics influence him "where they are relevant." He was dismayed at the time of our interview that Republican primary candidates in the 2012 presidential election skirted or dismissed the issue of climate change, and he cited former Senator Rick Santorum as someone who advocated for shutting down the U.S. Environmental Protection Agency and denied human-caused climate change. He has voted for Democrats in part because their environmental agenda is more in line with his environmental justice beliefs.

Finally, while sustainability can push against the status quo, Peter does not believe that it has to. The term “sustainability” is nuanced and can be a “non-starter” for many people, especially those who may not identify as “progressives.” However, Peter, like David at Penn State, believes that sustainability need not be assumed to oppose the status quo. He used two examples to show this point. First, he explained an assignment he gives to his Sustainable Design class in which students assess their hometown or region according to a number of social, economic, and environmental indicators to provide them with a theoretical and practical handle on sustainability matters. By grounding sustainability in their lived experience, Peter believes students need not be stuck in large ideas with no practical application. Second, he believes sustainability can find some root through good discussions among constituents and stakeholders. If people are treated equitably, they can come to a shared understanding that avoids tribal mentalities and “endless bickering” that characterize politicized debates. Both of these examples represent thinking of sustainability as a process like democracy rather than as an end or goal unto itself.

The Pennsylvania State University

Penn State University is one of the largest public universities in the United States. It was founded in 1863 following President Abraham Lincoln’s signing of the Morrill Land-Grant Act. Originally called the Agricultural College of Pennsylvania, Penn State focused on agriculture and mechanical engineering while also teaching “scientific and classical studies” from its inception. By the early twentieth century, it had become a vital state institution for disseminating agricultural information through its cooperative extension programs and its system of Commonwealth campuses. It was, and remains,

Pennsylvania's only land grant university (Penn State, 2014). Though it maintains agriculture programs, Penn State has become a Research I university with a multi-billion-dollar annual operating budget.

The institutional story of sustainability at Penn State originated in the environmental movement in the 1970s, was continued by a group of fairly radical faculty members in the 1980s and 1990s, and was later granted institutional credibility through the hard sciences and engineering. Some Penn State programs, such as forestry, naturally dealt with environmental sustainability for decades. In the 1970s, as the environmental movement grew in influence and reached into higher education, Penn State founded the Shaver's Creek Environmental Center. Some programs, like the Conservation Leadership School (CLS), addressed sustainability principles from the 1980s to the early 2000s.⁵ From the late 1980s, faculty members in the now-defunct Science, Technology, and Society (STS) program dealt with sustainability issues directly and sometimes radically around topics like food and agriculture, economic development, appropriate technology, education, and more. In the 1990s, Ivan Illich held a position at Penn State, influencing numerous faculty members with his writing, public symposia, and friendship.⁶

In 1995, Barbara Anderson started the Penn State Center for Sustainability (CfS). Through the CfS, she provided nourishing meals grounded in sustainability, set up a library, and created programs with other faculty members, staff members, and students. Madhu Suri Prakash (personal communication, October 1, 2014) has said that if there is one person who could be said to have made sustainability happen at Penn State, it is

⁵ The CLS's founder, Jim Hamilton, is included in this study.

⁶ Some of those faculty members and former graduate students still work at Penn State and are included in this study.

Barbara Anderson. After several years of what seems to have been exhausting and institutionally marginalized work, she left.

In the early 2000s, the CfS underwent considerable changes. David Riley took over as Executive Director with, Andrew Lau and Laura Silver as associate and assistant directors, respectively.⁷ All three are engineers. The CfS has since grown in staff and scope, taking on projects more in line with mainstream education and energy concerns and being heavily involved in the success of the 2007 Solar Decathlon team's house project, the Morningstar. In fall 2011, then-provost Rodney Erickson charged CfS with coordinating and developing Penn State's curricula for sustainability. In the time since these interviews were finished, the CfS has been folded into the Sustainability Institute, which coordinates how Penn State will "teach, embody, and communicate a world view that allows the collective 'we' to prosper, both now and in the future" (Penn State Sustainability Institute, 2014a).

At the time of this study, CfS staff had been pursuing the Penn's Woods Project, an approach to integrating sustainability across the curriculum akin to Emory University's Piedmont Project and Northern Arizona University's Ponderosa Project. They held curricular development workshops to spread and deepen the university's education for sustainability offerings. All the people from Penn State interviewed for this study presented at these workshops. They include current and former faculty members in architectural engineering, communication arts and sciences, mechanical engineering,

⁷ David Riley and Andrew Lau are included in this study.

nutrition, parks and recreation; a graduate student in English; and staff members from the former Center for Sustainability.⁸

Like the Bucknell participants, the Penn State respondents have much in common. Seven of the eight said they have strong environmental identities. The exception, David, at first denied that he had one and then said it was “schizophrenic.” I will take some extra time with this notion, as he is this study’s outlier. All Penn State participants, including David, described and explained their environmental ethics and behaviors. All of them have been active in or donated money to environmental organization including the Pennsylvania Association for Sustainable Agriculture, the Union of Concerned Scientists, the Centre Region Bicycle Coalition, and professional organizations with an environmental focus. They also tended to buy vegetables and/or meat locally for moral reasons; recycle at home and at work; ride bicycles; garden; and bike, hike, or camp for pleasure. They expressed belief that ecological literacy should be a higher education learning outcome. Seven of them believe sustainability runs counter to the status quo, with David once again being the exception. What follows are highlights of the Penn State participants interviews that illustrate unique and special characteristics of their environmental identities and their moral positions.

⁸ I would be personally and professionally remiss not to recognize that behind Penn State’s institutional sustainability veneer, many faculty members committed their courses to sustainability or worked to get the university to change its operations, investments, and mission for decades. With little support, and sometimes in the face of administrative opposition, no external rewards, and accusations of radicalism or extreme idealism, they worked on sustainability. I was fortunate enough to interview some of them for this study, and I know several more of them personally. Their work, seemingly overshadowed by the new attention to sustainability as a buzzword, laid the groundwork for what is currently underway.

Andy

Andy is an associate professor of engineering and former associate director of Penn State's Center for Sustainability. Following his graduation, he worked on Carter administration Department of Energy manufactured solar homes projects. When Ronald Reagan took office, that position ended, and he entered the University of Wisconsin-Madison to earn a master's degree in mechanical engineering. While in Madison, he worked on modeling large-scale chilled water storage systems and extending Wisconsin's history of solar project simulation. In 1984, Andy joined the engineering faculty at Penn State-Harrisburg to teach in their bachelor's program in Energy Technology. In 1999, he moved to Penn State-University Park. From 2004 to 2009, Andy was the Associate Director of Penn State's Center for Sustainability. Andy spends much of his time at work, and in his free time, he seeks to work out more convivial human-environmental relationships, especially regarding energy, our tools, and our buildings.

Other people identify Andy as "an environmental engineer," a description that amuses him. In his opinion, "caring for the environment ought to be implicit in being an engineer or maybe in just being a human. But definitely in the professional responsibilities of being an engineer as well." He talked at length about how his environmental identity has formed over his life's course. As a boy, he grew up poor in Hanover, Pennsylvania. Relative poverty, he believes, made him engage the natural world. Often alone, he rode his bicycle, walked, fished, and played around the streams and ponds of the Pigeon Hills of southern Pennsylvania. During these adventures, he developed a "relationship of some sort of feeling of belonging to the larger world rather than the world of people."

Andy believes relationships are central to his environmental identity and his sense of self broadly speaking. He explained belief in this several ways. For example, he spoke about playing as a boy where sewage and fresh stream water intermingled after storms.

[W]hat was startling to me at the time was how life still seemed to thrive in that ... what seemed like kind of a disgusting environment. Life in the ... like in the creek with minnows and tadpoles and frogs and muskrats by the side of the creek and birds aplenty and all the trees bordering the creek. So it was kind of a green belt, kind of where the storm sewer creek flowed. And of course being a curious kid I followed that where it went and it led into a larger more natural creek of the area. So I actually knew the creeks of the area quite well because they seemed to ... I was drawn to them.

These feelings of being “drawn” and “belonging” created a desire to study forestry in college, which he described as “a calling.” While he entered engineering because of adult pressure, he continued to find ways to connect to the natural world.

While honeymooning in Yosemite National Park, he had an overwhelming experience. He and his wife were high and hiked to a vista overlooking Half-Dome Rock. He was so awestruck he had to sit down for fear he “was going to be taken away ... that I was being sucked into this place or this experience of the moment.... I had to gasp for breath and bring myself back to that sack of flesh of bones that I usually think of as myself.” For him, this was an example of how a part of the world we are, able to play in and with it, and how much we can learn from and appreciate it. It is a “relationship.” He also talked about Herman Hesse’s *Siddhartha* to show how he thinks about his relationship to “not just what we see as the animate world, but the whole world.” He

explained that when Siddhartha meets his friend Govinda by the river, he recognizes the stone's beauty and its "stoniness." "Even though we see the stone as inanimate, the scientist will say the molecules of that stone will someday be part of the bones of a creature's body maybe or be breathed in by a creature." Andy's body has been, is now, and will be in such relationships since before birth and after his death. Though he understands these relationships scientifically, he remains skeptical of science and technology's inherent good.

Several times, Andy disparaged "the scientific worldview" and/or "techno-optimism." Andy believes that our culture worships science. In his explanation, scientific idolatry commits one to fetishizing technology and efficiency so as to make it the *raison d'être* of society and economy. To illustrate this point, he cited climate scientist and host of PBS's *Earth: The Operator's Manual* host, Dr. Richard Alley, whose technological optimism in the face of climate change Andy finds somewhat dubious. He worries that abundant cheap energy could be "the worst thing that could happen to society because we would continue our gluttonous, unappreciative, unconnected way of life." This would create the real-life version of the animated movie *Wall-E* in which, he said, "fat blobs are floating in space" because they have screwed up the planet so much they need to go look for another one. With his background in solar energy, he worries that massive solar arrays the techno-optimists believe will solve our energy problems will waste sunlight. After all, he argued, the sun already nourishes life on Earth, and has for millennia. Why do we need to be so selfish with it?

Cole

Cole was the Center for Sustainability's media writer and producer, creating outreach and educational videos and other media. He graduated from Penn State with a bachelor's degree in general arts and sciences wherein he focused his studies on the arts and communication informed by coursework in indigenous cultures and Eastern religion. "I'm primarily a lover of the natural environment. And I mean that in an active sense," Cole says. He hugs, kisses, and greets trees and believes that he merges his toroidal energy field with them in an act of mystical and spiritual identification. It is an act of unity consciousness that "completely melts away ... ego into unity." Cole, more than any other respondent, explained his environmental identity as a transcendent metaphysical or spiritual identification. In all my communication with him, he affirmed that his environmental identity is also a spiritual identity.

Several people's work influences Cole's beliefs about his role in nature and how humans are situated within it. Musicians like Peter Gabriel, Bono, Bob Geldoff, and Sting shaped Cole's views about human rights and peace during the 1980s. Events like Live Aid and Peter Gabriel's collaboration with Amnesty International drew him in and shaped his views as a young man. Then, through continued personal and academic studies, he encountered Grandmother Agnes Baker Pilgrim (a.k.a. Grandma Agee), Don Miguel Ruiz, and Barbara Marx Hubbard. These three individuals' work shapes his belief that humans are part of nature and not separate from it; that our culture and its institutions wound us with a belief that we are separate from and can exploit nature (and therefore one another); and that humanity has the chance to realize a new way of being—something he calls "unity consciousness"—in the world and evolve toward greater peace,

abundance, synergy with one another and all of nature, and create a better global system for living. These beliefs inform his ethic considerably.

Cole believes very strongly in human rights and the rights of “the flora and fauna.” This ethic and his identification with nature lead him to identify himself as an “earthling,” thereby placing what he has in common with living things at the fore. He loves, cares, and feels compassion for himself, for his fellow humans, and for more-than-human nature—thus his literal affection for trees—and seeks to heal their collective wounds from domestication, domination, and exploitation. Feeling as he does, he believes all life should be granted rights akin to the United Nations’ Universal Declaration of Human Rights. This belief comes through in his habits and affiliations.

He described his work at the Center for Sustainability as a metaphorical trim tab, a device on a large ship’s rudder that, even though small, can significantly change its turn over time. By working with others at Penn State, he hoped to change the institutional approach sustainability in particular and living more broadly. By overtly or covertly inviting people to take the “14-inch journey ... from the head to the heart,” he can raise some people’s consciousness to bring them closer to unity consciousness and turn the ship. And he believes he has already used the trim tab to influence the Penn State planning committee for the Sustainability Strategic Plan to include happiness in their definition of sustainability instead of what he calls a “double helping of prosperity,” a kind of thinking embedded in the status quo.

David

David is an associate professor of architectural engineering and was the Director of the Penn State Center for Sustainability at the time of our interview. He has loved

buildings for most of his life and been involved with the green building movement since the 1990s. He earned bachelor's and doctoral degrees in architectural engineering and did post-doctoral work in architectural engineering at Penn State. As Director of the Center for Sustainability, he committed himself to leading Penn State toward becoming a more sustainable institution that would graduate more students who can lead others on more sustainable paths. He has collaborated with a number of people to design the Sustainability Leadership minor. He continues to teach courses and work on collaborative projects with business and government that increase building efficiency and use alternative construction methods and materials.

He described his trajectory into the field as one “from building blocks to Legos” to “representing architectural drawings in drafting class and how you went from that to a physical thing that got built.” One of the most formative experiences that he recalled was working on the Bell Atlantic Tower, a 55-story high rise building in downtown Philadelphia where he saw everything happen from “digging a hole to topping off the steel to high end finishes in a lobby to just meticulous planning that goes into building a building that big that fast.” His work as an architectural engineer brought him into contact with sustainability.

In the 1990s, David lived in Seattle where the green building culture grew up in the late 1980s. Before this time, he had not considered the material and energy costs and waste from buildings. Realizing those impacts in turn impacted him. He learned there were very simple things that people could do in the course of designing and building buildings that make large differences, differences he describes as “massive, very gratifying, and sometimes very cost-effective.” Current data show that commercial and

residential buildings account for 41% of all energy used in the United States (U.S. Department of Energy, 2012). With a view on changing buildings to increase their efficiency and reduce their wasteful aspects, he became interested in alternative materials such as straw bales.

His work with straw bales transformed him. From an initial project of building walls for a code manager, he went on to collaborate with a University of Washington colleague. They taught a design-build class using straw bale construction for people on an Indian reservation. He continued that work through the American Indian Housing Initiative (AIHI) when he came to Penn State. Through it, he came to see sustainability's power because of its positive impact on the community he served, on his students, and on himself. People on the reservation were, by and large, grateful for good housing. Their gratitude and openness with students changed them. He recalled a student who went from being a fuel cell lab physicist to wanting to become a physics teacher because he found great value in service that sustains and serves communities. David has also been transformed.

After years of visiting the reservation, David has internalized his experiences and come in part to a sense of sustainability through understanding the Cheyenne culture:

If you take more than you really need and you accumulate wealth and stuff, [the Cheyenne] kind of view it as a form of mental illness.... The Cheyenne would never say, you know, "Dave, you're sick in the head." They have a very gentle way of making a point. But if you open up and listen, the chance to learn a lot from them around the campfire or on the back of a horse is ... they show you and

share the meaning of this land that they have been holding onto. It was a very impactful thing.

Today, he continues to “engineer” these experiences for students, whether through his courses in architectural engineering, the AIHI, or the Solar Decathlon. By immersing oneself in a project that genuinely serves people, creates a more sustainable outcome, and proves a concept, David believes people can connect with sustainability. David’s interest and investment in sustainability, then, come through identification with buildings, from being a leader and educator, and as a servant. During our interview he used the triple bottom line (see Chapter 1) as a heuristic, finally stating that he believes the common ground for sustainability comes through the social dimension: If impacts are measured accurately around things that matter to people—community and human health, for example—then they can be motivated to incorporate sustainability into their beliefs, evaluations, and actions. Unlike most other participants, he is not intrinsically motivated by a strong environmental identification.

When I asked David whether he has an environmental identity, he initially responded, “No.” He then said it is “suppressed” and “schizophrenic.” He provided a few examples. Although he went camping and fishing with his grandparents, those activities never influenced him to choose a particular path. As an adult, he visited Crater Lake with friends. After marveling for a few moments, he wondered when they would return to town, eat a burger, and drink a beer. Despite living a few miles from the Rothrock State Forest, he has never gone there, although he said he plans to explore it in his truck. Finally, his cousin paints scenes from Acadia National Park. Though he and his cousin have hiked those places, he does not experience the connection to the natural place as his

cousin does. He appreciates his cousin's work and that people can develop strong environmental identities, but he has never had the opportunity to really engage with one.

While he does not strongly identify with the environment, he expressed an environmental ethic. He described it primarily in terms of “feel[ing] motivated to go the extra mile to make decisions and actions that reflect what I know to be better for the environment,” something he also takes time to explain to people. David declared a strong aversion to waste. When I questioned it in moral terms like good or bad, he emphasized that waste could be avoided, but at no point did he make avoiding waste into a categorical imperative or use moral terminology such as care or rights. He clearly admires people and companies who engineer waste out of their processes, like Toyota's founder. David discussed waste reduction, then, in technical terms couched in praise.

His self-reported actions appear consistent with his environmental concern. He donates money to the Northern Cheyenne community where he has worked, is a member of the Better World Auto Club, and donates to and votes for Democratic and pro-sustainability candidates—especially those who “are articulate about the need to take action to protect the environment especially through energy policies that reduce fossil fuel use and advance renewable energy.” Although David admits to really enjoying McDonald's French fries, he does support locally produced food and has also tried to learn about foods with high ecological footprints and avoid them.

Unlike all other respondents, David answered that sustainability is “not at all” against the status quo. He asserted that sustainability is demonstrable—what he calls “proof in concept”—palatable, and translatable to people who work outside the comfortable space of “people who think the same way.” Sustainability must not simply

be about a narrow environmental agenda. While he thinks that the environmental agenda is “vitally important, it will get you nowhere“ to change a major institution or a Fortune 500 company. “It’s a non-starter. You have to find language and use words that people are going to understand. That’s what a leader does. A leader understands who they are trying to change and packages who they’re trying to change in a way that has uptake.” For sustainability to become as impactful as it can be, “it needs to be very actionable.” As evidence, he cited the Sustainable Business Network as “the fastest growing market sector. I love that. I have hope for that.” David sees himself as a pragmatist who makes decisions in and for an institution that he believes can be better. His self-reported decisions regarding sustainability come from social, architectural, and institutional identifications, not from a relationship with the natural environment itself. In that regard, he is this study’s outlier. He also had the most administrative authority of anyone interviewed in this study.

Dorothy

Dorothy is a recently-retired assistant professor of nutrition. After she earned a bachelor’s degree in English literature from Rutgers University, she joined the Peace Corps and taught in the Philippines before pursuing her doctorate at Cornell. When she was hired at Penn State more than 30 years ago, she joined the STS program, teaching courses on food, policy, and the environment such as Global Food Strategies and Community Food Security. She has organized film series, brought in performance artists who deal with sustainability and environmental issues, published research on school gardens, and more. At least as important, she and her deceased husband started one of the first, if not the first, community supported agriculture farms in Centre County. Dorothy

was cited by other study participants as a stalwart sustainability teacher and advocate at the University Park campus.

Dorothy wove a lush tapestry of memories from many places. From childhood to today, her interactions with the more-than-human environment have played a prominent role in her life, and she strongly identifies with it. As a child, she watched her grandfather garden outside of Los Angeles, she rode bikes with the neighborhood boys and played in the washes, watched the Rio Hondo briefly come to life with turtles and tadpoles, and went camping with her father in the Sierra Nevadas. At Rutgers, she loved the garden of the Johnson and Johnson estate that the university had bought. The groundskeeper allowed her run of the gardens, and she made it into her refuge. In the spring, she relaxed among “Virginia Bluebells and daffodils in this forest area and roses in the front.” It was her “preserve.” When she lived in the Philippines, one of her houses was at a beach at San Fernando, La Union. She described it vividly:

No Filipino would go near because the waves were too high and it had this Spanish ... er, Portuguese watch tower on the edge of the beach. Nice waves. Beautiful sand dunes. Beach houses. And we shared it with a Japanese guy. He was a reparation payment for World War II. And he was a potter. He came from this potter family ... an amazing guy. And you could see the sunset over the beach. And over the back the mountains [gestures with hands to frame the beach with the mountains] and the kind of thing coming ... the palm trees coming down on the sides and the mountains in the background and oh, my God. It was pretty nice. [Laughs.]

She went on to find “preserves” in Ithaca and took occasional camping trips in the Catskills. Today, she regularly hikes in the Rothrock State Forest near her home in Boalsburg. She voluntarily self-identifies as an environmentalist who, through her teaching, tries to convert her students into becoming environmentalists themselves. She said, “I can’t imagine not being environmental.” She and I appear to the individuals in this study whom others would identify most as environmental activists. She is a member of the Sierra Club and has involved herself with local conservation organizations and movements including Pennsylvania Association for Sustainable Agriculture and Clearwater Conservancy, attends meetings with local conservation representatives from the National Wildlife Federation, and goes to environmental film screenings. She also participated in a bike ride to Washington, DC, to raise climate awareness after these interviews were completed.

Floyd

Floyd was a graduate assistant in Penn State’s English department, working on a doctorate focused on eco-criticism. Although the youngest in the entire study sample, he has a strong environmental identity formed through childhood experiences with his family on the farms and in the woods of his home in southwestern Virginia. Before beginning his doctoral program at Penn State, in 2007 Floyd earned his bachelor’s degree in English and minored in forestry at Virginia Tech. At Penn State, he taught a course called Eating Your Ecology, an English course that combined different kinds of writing about food and agriculture with hands-on experience on local organic farms.

Floyd told stories of his childhood and his schooling in forestry. For him, a sense of place came out most strongly through activities with the men in his extended family—

gardening; farming; driving the tractor since he was five or six; learning dendrology from his grandfather when they walked the wooded acres on the farm for leisure or for his grandfather's small sawmill; and hunting quail, groundhogs, pheasants, turkeys, and deer. His grandfather was a "man's man," and their activities were, according to him, gendered male. He attributes his male relatives' approach to these experiences to his growing up with a single mother who sought to have him develop a male identity and his grandfather's and uncles' desire to raise him as a man.

Floyd's experiences have instilled in him an ethic of stewardship, which he believes goes beyond the requirements of sustainability, a term he thinks "gets thrown around a lot" but lacks a truly strong conservationist impulse. Though he and his family would not use the term "land ethic," he affirmed that his family's farming, hunting, and timbering practices all engendered it. Stewardship requires a responsibility "to improve things one way or another or make life more possible for our own children or other species." He explained this ethic through both practice and a principled position. His grandfather ran a sawmill, but rather than cut the largest trees, he spared them and the healthiest young trees to ensure fit trees thrived and reproduced. He acted from transgenerational concern. On principle, Floyd believes non-human species should have rights, something he believes is coming as people become more aware of the cruelty in CAFOs or the possibility of medicines in old growth forests. While the relationships to farm animals and forests involve their instrumentality, their welfare in the context of stewardship demand they receive some form of rights and protection so they, too, can go on.

Jim

Jim is a recently retired assistant professor of communication arts and sciences. He earned his doctorate from Penn State in the 1970s and worked there for his entire adult life. In 1978, he founded the Conservation Leadership School (CLS), and he ran it for 24 years. Although it did not use the term “sustainability” at its inception, the CLS was “based firmly in the principles of sustainable resource management.” Jim has “taught thirty two courses in six different disciplines in five different colleges” at Penn State’s Mont Alto campus and at University Park. The courses that he taught were in communications arts and sciences; forestry; science education; recreation, parks, and tourism management; English; and science, technology, and society. Many of his courses addressed sustainability issues. Jim has become an evangelist for integrating sustainability higher education. For years, he said, he was “beating people up on campus and strong-arming them into doing sustainability in their classes with some success.” Even in retirement, he continues to work with Penn State faculty members who are seeking to develop sustainability-oriented curricula.

Jim’s environmental identity emerged from childhood experiences with his family. They went “into the woods” or “into nature.” He liked being there because “that always made me feel good. It was kind of an emotional thing for me.” Jim still goes outdoors a good deal, gardens extensively, makes maple syrup, looks for reptiles and amphibians, chooses trees from which to make guitars and other instruments, and rides his bicycle. His emotional experiences in nature are only one part of the picture, however.

An informed sense of his evolutionary relatedness to all life on Earth grounds him in an ethical orientation that lacks what he calls “a right to ascendancy.” The first thing he said when I asked him about his environmental identity was:

I am one tiny bud ... growth bud ... at the end of one tiny twig of an at least three-and-a-half billion year old evolutionary bush—not tree—bush. And essentially I share an evolutionary ancestry with every other living organism on this planet. Because I share that history, I have no right of ascendancy. I am not better adapted. I'm just a currently living organism, and that is ... umm ... awe-inspiring.

He brings together a conception of relationship to the environment, an affective connection to it in some way, and moral responsibility. He talked about each of these components.

Interest in evolution is rooted in Jim's childhood. As a boy, he found dinosaurs fascinating. Growing up, he found animals and studying animals fascinating, particularly reptiles. With some pride, he told me he has been bitten by every species of non-venomous snake in Pennsylvania. But his appreciation of snakes and reptiles has come about not just from picking them up or identifying them, but from his understanding of how he is related to them through shared ancestry. I asked Jim if he sees himself in other creatures and he said, "Oh, my, yes." This recognition entails ethical concerns, primarily respect.

Jim decries what he calls "the right to ascendancy." That alleged right would entail placing himself "as better than the other organisms that are alive." He believes such notions come about, in part, because people believe in their special creation in the image of a Christian God. Jim is an atheist. He illustrated what he believes to be the relation between the right to ascendancy and Christianity with a story about the president of a coal company and a coal miner whom he heard speak. He recalled their saying, "God put

the coal there for us to use. It is a sin against God not to tear the top of this mountain off and not use this coal.” He called such beliefs “dangerous” because they assume both a right of ascendancy and isolation from the planet’s physical, chemical, and biological systems. This kind of orientation results in ecological ruin. He believes that to respect himself, he must respect the other creatures on the planet and the integrated material and energetic systems fueling them.

In his day-to-day life, Jim behaves or tries to behave in ways consistent with his beliefs about nature. “It’s everything. It’s everything. It rules my worldview. It’s my DOS program running in the background. It really reflects on everything I do.” Like Jamie at Bucknell, Jim recognizes that his environmental ethic sets a bar he sometimes cannot jump over:

[It works] for good and sometimes for ill. You know it’s difficult to live in this modern world without constantly being aware of the fact that you ought to be guilty about some of the things that you are doing to the planet, try though you might. Also, it enables me to see my own hypocrisy.

For example, when he is on vacation in Maine, he might find himself eating lobster bisque and wondering whether the lobster came from a sustainable fishery and realizing the answer was probably no. His body language and regular sighs when he discussed his environmental identity and ethic indicate a kind of resignation to this hypocrisy and the state of humans on the planet today. However, he believes that the physical limits of living on a finite planet will force humanity into a state of sustainability.

Finally, Jim thinks sustainability counters the status quo in a way that set him apart from others in this study. He is quite particular about his use of the term

sustainability, calling it “pure sustainability” or “biological sustainability,” and he is much more in line with Heinberg’s (2010) axioms or Orr’s (1992; 2011) ecological sustainability (see Chapter 1). He recognizes that these notions rub against the larger culture in general and against Penn State in particular. Jim said, “[M]oney, image, power, and growth are what I have viewed as Penn State’s institutional values for a long time. And those are corporate priorities. And the institution operates like a corporation in many ways because it sorta has to.” Those priorities are not sustainable to Jim’s mind. One can thus imagine the potential tensions between Jim and David in crafting sustainability messages or curriculum.

Jude

Jude was the program coordinator at the Penn State Center for Sustainability. She referred to herself as a “worker bee,” supporting faculty to develop curricula, seminars, programs, and supporting materials for sustainability education. She also worked on programs such as the AIHI and a course that takes students to Honduras to work on renewable energy projects. She considered her work at the Center for Sustainability more “a job” than an expression of her environmental identity. She also considers herself “a person of the environment or with the environment.” Since she was a child, her life has been informed by experiences with domesticated and undomesticated places. Her father painted and gardened, often painting the flowers he grew in their garden. The two of them worked on the garden together. “You know he I always liked doing the things with him. He would take me to get the seeds. We planted the seedlings. We transplanted the plants. We dug the holes in the ground. We got the mulch from the forest for the garden.”

Jude cites her early identification with the environment as an expression of her relationship with her father and a place.

To this day, she sees herself as a placed person. After completing a two-year degree in a radiology program in the 1970s, she traveled to St. Louis, then attended school in Alaska, moved to California, then Texas, and finally back to Pennsylvania. In retrospect, she views her life away from Pennsylvania as lacking a grounding in a place. In Pennsylvania, she finds herself grounded by the expression of the seasons. Like her father did for her, she has raised her own daughters and spends time with her husband on bicycles and walking in the forest. In fact, one of the first times I spoke to Jude was on John Wert Trail in Rothrock State Forest where I was riding my bike, and she was hiking with her husband and daughter Larissa. Jude, then, takes care of her environmental identity and has cultivated it in her own family,

Jude believes that people need to have their experiences in a place cultivated with others to deeply understand and love it. She came to this realization of her own sense of Pennsylvania by leaving for college and then returning. In her work of facilitating immersive student experiences in other cultures—whether on a reservation in Montana or in a coastal community in Honduras—attempts to do something similar. Culturally immersive and sustainability-focused work can draw students' attention to places, the people who live in and with those places, and their practices and limits. She seeks out community elders for students so they can see these things. Through reflection and her facilitation, she can cultivate their appreciation for another's place and transfer that appreciation to their home community and environment.

Jude cited other influences on her environmental ethics and identity as well. Technology, for example, presents positive opportunities and negative impacts. On one hand, she believes that advanced digital technologies and fossil-fuel-powered industry have “taken us away from the land where we come from.” As an example, she pointed to my iPhone and explained that she believes that smart phones interfere with people’s ability to form solid relationships with one another and separate them from their home environments. But on the other hand, she holds great hope for renewable energy, appreciates the space program, and has an abiding appreciation for advanced modern science.

Sue

Sue was an associate director of Penn State’s Center for Sustainability at the time of our interviews and continues today at the Sustainability Institute, where she works on curricular matters. Sue has been tasked with developing the Sustainability Leadership minor and also teaches the minor’s capstone course, Sustainability 200. She has used the AASHE STARS survey (see AASHE, 2013) and other means to identify courses that are related to, focused on, or immersive in sustainability, many of which she can use to feed the minor’s requirements and also indicate how far the university needs to go to ensure sustainability and ecological literacy as an educational outcome. She facilitates faculty development for embedding sustainability across the university, including the workshops from which this study’s Penn State participants came; brings guest speakers to campus; and organizes and hosts events for students such as job fairs and business panels for sustainability. I served on the Metrics Team for Penn State’s Sustainability Strategic Plan with her. She headed that team.

Sue described her environmental identity as an organic and evolving thing. Although she could consciously engage it, she does so only occasionally, "because as soon as you nail it down it and say, 'This is the kind of environmental person I am,' I've moved on, I've had new insights.... It is amorphous and ephemeral." She spoke with great pleasure of feeling that there have been times when she was on her bike gliding through the fluid air as if it were water. "It pulls me in. Being there. Being in the planet."

It is possible, Sue believes, to over-identify with nature. She cited Timothy Treadwell (she did not know his name), the man about whom the film *Grizzly Man* was made. Sue believes that Treadwell over-empathized and over-identified with grizzly bears, ultimately leading to his and his girlfriend's deaths. Though leery, she expressed one way in which she might see herself in the environment. To some extent her empathy with animals might be a form of environmental identification. To illustrate this, she told a story about seeing a rabid raccoon on a bike ride. Clearly rabid, it was walking in circles in a farmer's field on a very hot day in the Penn's Valley. "When we see these things and we feel that way, we are seeing something of ourselves and that's why we respond that way ... that's why it would make me cry to see that."

This sense of empathy seems to have merged with the Catholic teaching with which she was raised and formed a nuanced version of Christ's Golden Rule.

It is doing unto others, and "others" does not just include human beings. And not to say that includes everything in the same way and at the same level. Even if it did just include human beings it wouldn't be just the people you can see around today. It would be your great grandchildren and I'd be doing unto them by messing up the planet now.

This simple statement expands the standard moral circle across species, cultures, and through time.

Sue discussed a difficult balance—or imbalance—between human communities, economies, and natural resource extraction. Using fracking and mountain top removal as examples, she mused about the problems that communities face. On one hand, she recognizes that people need to feed their families, and there are places where the only jobs seem to be in these polluting industries that defile land and water and proliferate negative health effects. She also said she had never been in a position where such employment would be her only choice. On the other hand, she has trouble seeing how these decisions are good for the communities where extraction occurs, can be justified when they cause such negative environmental effects, and disproportionately benefit already wealthy people. This balance can exist, though, in good communities.

Finally, Sue used the word “community” over a dozen times during our interview. She believes that people in close relationships with one another will care for one another and for their place. To illustrate, she spoke of one Penn’s Woods Project presenter who runs a training program and community garden in an economically disadvantaged neighborhood in Pittsburgh. Sue said,

It’s having a community that’s alive where people are connected to each other and care about each other and care about where they live and care about your neighbor’s kid and just having community. And I don’t know. Sometimes it just sort of happens but mostly people try to maintain community.... You don’t maintain human beings without community.

She wonders if mountain top removal communities had been stronger, maybe they would not be so polluted. Sue's expanded circle places human communities in relationship with one another, exists in relationship with the community of nature, and is in a relationship with the greater community that is yet to be.

Summary

The twelve participants and I have much in common. Twelve of the thirteen said they have strong environmental identities. David, the "schizophrenic," stands as the study's outlier. However, his lacking or psychologically challenged environmental identity did not prevent him from articulating an environmental ethic, just a lack of personal identification with nature or a reflexive vision of nature in himself. Every participant could and did articulate their environmental ethics and behaviors ranging from active participation in the Pennsylvania Association for Sustainable Agriculture to gardening or buying locally-sourced organic agricultural products to recycling wherever they are to recreating in outdoors whether in parks like Yosemite, Zion, or on the rocky trails of the Bald Eagle or Rothrock State Forests. All of them believe that ecological literacy should be a higher education learning outcome. Twelve of them believe sustainability runs counter to the status quo, with David once again being the exception. Peter said that it does not have to be contrary to the status quo and that conversations could change that perception. All of them have effected changes in their universities' sustainability and ecological literacy policies and programming. As such, they are sustainability education policy entrepreneurs, perhaps unsuspected teachers of the institutions themselves.

Chapter 4: Suspect an Unsuspected Transformation of Higher Education

I think any self-respecting educational institution ought to judge its policies by its best estimate of what their long-term consequences for their students and for the society will be.

Derek Bok, Former president of Harvard University, *Frontline*

There is very little hopeful news on the environment these days. With the exception of some good news about better agricultural practices, the protection of some large stretches of water and land, and the dismantling of some dams, most environmental news is awful. The West Antarctic ice sheet is melting and it is “unstoppable” (Rasmussen, 2014). While it could take 200 to 900 years to melt under current modeling scenarios (Joughin, Smith, & Medley, 2014, p. 735), over that time, sea level rise could increase by 15 feet from that ice sheet alone (Lynch, 2014). There may be a tipping point that could accelerate melting, but scientists do not know what it is. On a shorter time scales, climate change has and will continue to alter where species live and how they interact—changing food webs, including parasite and pest populations, and leading to fundamental ecosystem transformations and extinctions. The consequences have already emerged and will continue to make human life more difficult because of their effects on cyclone, drought, and heat wave intensity; fresh water availability; and their effects on agriculture and human health (U.S. Environmental Protection Agency, 2014). In addition, a recent report by the World Wildlife Fund (2014) measured “trends in thousands of vertebrate species populations, show[ing] a decline of 52 per cent between 1970 and 2010. In other words, the number of mammals, birds, reptiles, amphibians and fish across

the globe is, on average, about half the size it was 40 years ago.” The news is heartbreaking and no better at smaller scales.

In West Virginia, large amounts of a highly toxic coal-refining agent called MCHM spilled into the Elk River (“West Virginia chemical spill declared federal disaster,” 2014). Nearby, West Virginia Governor Earl Tomblin is considering allowing shale gas development—read “fracking” —under the Ohio River (Atkin, 2014). New York Governor Andrew Cuomo’s administration has been found to have delayed and edited an assessment of shale gas development’s impacts (Waldman, 2014). Comparison to the original study shows that the “authors’ original descriptions of environmental and health risks associated with fracking were played down or removed” and also that the Cuomo administration “excised a reference to risks associated with gas pipelines and underground storage” (Waldman, 2014). In my own state, former Governor Tom Corbett recently rescinded a moratorium on shale gas development in state parks (Cusick, 2014), a wildly unpopular move that was met with a Memorial Day protest that I organized (WJACTV Johnstown, 2014). Fortunately, the Cuomo administration has banned fracking (Kaplan, 2014) and Corbett was not re-elected and his successor, Tom Wolf has put the moratorium on new leases in state forests and reversed Corbett’s parks policy (Hopey, 2015).

In light of just this very small sample of news, few people would blame an observer for thinking that environmental education, sustainability education, and ecological literacy programs have been abject failures. One has to wonder if the sustainability advocates about whom I have just written have committed their lives to a hopeless and fruitless enterprise.

To address this question, I revisit and update Orr's 1992 essay, "Is Environmental Education an Oxymoron?" (pp 149-152). In this piece, Orr alleged that the Amish represented the most sustainable communities in the United States (p. 149). I might suggest there are a handful of other intentional and indigenous communities scattered across the continent as well whose practices are remarkably sustainable. The Amish are assuredly what we would call un- or undereducated. They have not been schooled into the cultish notion that technological and technocratic widgets, fixes, policies, programs, and institutions constitute genuine progress. They have not discarded community wisdom that has developed from living well in a place for generations, sustaining its land and water as well as it has its human denizens.

Do not mistake Amish life for some kind of Arcadian revisionism. Examples certainly exist of Amish farms contributing to eutrophication and hypoxia problems in the Chesapeake Bay watershed, just as we could find examples of slash-and-burn agriculture among North American indigenous people before Europeans arrived. But the scale of their involvement in the death of Chesapeake eel grass or most any other ecological problem of note is so marginal as to be laughable as a topic of sober discussion. Industrial dairy and chicken farms from New York to Maryland overwhelm the bay's natural thresholds. The Amish do not. The agricultural systems designed by and for the most educated people in history have created the problem. The same can be said of most sides of the ecological crises before us. The Amish, schooled much less than most dropouts, have not designed a global economy that creates plastic soup in the ocean gyres, untouchable wastes ranging from spent nuclear fuel rods to mine tailings to the euphemistically named "produced water" from fracking operations, lagoons of pig

excrement so nasty they kill vertebrates in minutes, or carbon emissions so vast that they have changed the Earth's climate in the blink of a geologic eye. The American college graduate may be the most parasitic organism to have ever dwelled on planet earth.

Universities are working on global problems, including environmental challenges, infectious diseases, and food supply shortages, says E. Gordon Gee, currently president of West Virginia University. He asks (2012), "Who, if not America's public colleges and universities, should imagine and develop responses to these wicked problems in whose resolution every human being has a stake?" (p. 58). One might also ask, "Who, if not America's public colleges and universities, should imagine and develop the tools that have created these wicked problems that have put humanity, much of the biosphere, and integrity of Earth's physical systems at risk?"

Education, especially higher education, is part of the problem (Orr, 1992, p. 149). Cultures with written languages have furthered their own civilizations so successfully that they might be considered virulent. The crisis of deforestation that I outlined in Chapter 1 is one made possible by a civilization obsessed with technological progress and economic growth, a civilization that educates its populace with symbolic messages about and for consumption, economic and technological domination, and the corrosion of an informed and sustainable democracy (see Berry, 1990; Bowers, 1993, 1994, 1997, 2010; Giroux, 1978, 2002, 2010; Illich, 1968, 1973, 1978; Kahn, 2006, 2010a, 2010b; Orr, 1992, 1994). Following Orr, the more educated that one becomes, the more income one is able to earn and spend. The more one earns, the more material/energy one is able to have deployed, and all that energy and matter must come from somewhere. More educated people making more money have used more matter and energy, matter and energy that

has been taken from or used to take from the more-than-human world. The educated economy is violating every one of Heinberg's five axioms (2010).

In this view, education is necessarily ecocidal. It is a terrifying proposition, one that shakes our faith in education's prospects. It critically questions the modern institution of schools, especially the energy-intensive research universities that produce engineers, scientists, engineers, lawyers, and policy makers and act as if the world is infinite in its capacity to provide for human lusts and gluttony.

It would be easy to rest where Berry (1990) has rested and wonder, "May we look for help from the universities? Well, the universities are more and more the servants of government and the corporations," (p. 168).

Maybe schooling's effects are marginal or neutral. What difference does four years in college make? There is obviously a great deal of research on its effects (Pascarella & Terrenzini, 2005), but does it really do much at all to shape or inform students' environmental ethics or identities? Following Orr (1992) or Kahn (2010a) it seems that it may have done little since the first Earth Day given the news that I have presented here and in Chapter 1. At least marginal or neutral outcomes are not outright damage, and we can let education off the hook.

But there is a third possibility. As Orr (1992) says, conditions to foment a modern ecologically-literate and sustainable society have not been met. It is possible to meet them. Until recently, there was little incentive for most anyone in the educated global North to live better and more lightly. Quite the same has been true for professional work in universities.

The sense among the people I interviewed for this study indicates that few faculty members have taught courses that would foster ecological literacy, much less live into their environmental identities. As Jim, Dorothy, and Andy made clear in their interviews, their careers have been viewed askance by superiors in their departments and colleges. There has been little incentive—at least in terms of money or formal recognition—to out oneself as an advocate for ecological literacy. Many faculty outside this study have not cared much and have carried on. From my own experience and disposition, sometimes it is the opposition, the fight, and the potential notoriety that can drive the work for a more sustainable world. But few people are oppositional most of the time and may not be inclined to directly confront aspects of the status quo, especially when their job evaluations are in the way. Maybe higher education institutions can be places for a genuine shift to a more sustainable society.

Given what I have learned about the sustainability education entrepreneurs at Bucknell and Penn State, I propose a few modest ideas. These suggestions are not especially novel, although they are not without controversy. They include forums for sharing and deliberating, creating and sustaining institutional rewards and incentives for sustainability work, committing institutions to accept limits, and developing projects to bring fields bereft of sustainability or ecological literacy into the fold and communicating about those projects in informed ways.

As we have seen, no three of the dozen sustainability policy entrepreneurs with whom I spoke had the same environmental ethic or the same way of identifying with the environment. Jim's deeply ecocentric moral conception—that he has no right to ascendancy over the other organisms—is quite different from Duane's anthropocentric

notion that ultimately the reason we should value the environment is because we depend on it. One would be hard-pressed to deny either of their commitments to something we could call genuine sustainability, their ecological footprints as Americans aside. For an institution to foster the personal, professional, and ultimately ecologically-beneficial growth, these people should be brought together to deliberate matters of importance. Since sustainability has become such a prevalent buzzword, we need people who are working in higher education and who strongly identify with the more-than-human environment to share with one another to foment the transformation that the ecological crisis begs of us. These kinds of actions are clearly happening in a number of ways, from informal ad hoc group meetings of faculty members who are concerned with sustainable agriculture or energy to full conferences of the Association for the Advancement of Sustainability in Higher Education. But this must not be the insular work of the university and its all-too-often narcissistic experts. Colleges and universities need to be in a constant dialogue with their communities, living into them as fully as we do into our work in and for higher education.

While talk and deliberation are good, for it to take root in an institution, the hierarchy of the institution needs to reward people for their work to foment sustainability and ecological literacy. As Parris et al. (2014) found, the two things that helped students to identify issues of distributive and procedural (in)justice and/or ecological (in)justice were their environmental identities and the commitment of their institution to sustainable actions. If modern civilization is to genuinely adapt to, mitigate, and prevent further ecological crises, then our higher education systems will need to reward people living into their environmental identities through their work. Such a university shows its

commitment to sustainability and foments a culture of deeper environmental identification. It can create a positive feedback loop of deeper commitment that reshapes its mission, values, operations, curriculum, and more.

In 2012, I was awarded one of Penn State's first three Student Sustainability Leadership Awards for my service on campus, work as a teacher, and for activism in the community and state. When the two other students and I received our awards, we planted tulip poplar trees gifted in our honor. Where is the faculty award? Where is the part of the promotion and tenure evaluation that addresses sustainability? Developments such as these are already happening. For example, both Duke awarded sustainability leadership awards to faculty, staff, and students and a waste reduction award for 2013 and 2014 (Duke Sustainability, n.d.). University of Georgia has done the same since 2011 (Sustainable UGA, n.d.). There are others, and they could and should be happening more with appropriate gifts.

There are other ways we could act to improve the total environment. Funding sources should support innovative and transformative practices for sustainability. There is policy talk across institutions about service learning, engaged scholarship, and living labs curricula. While I am suspicious of these buzz words—especially when they are linked to another buzzword like sustainability—putting a concerted effort and resources into engaging students in the health and well-being of their campuses, communities, and ecosystems could transform our relationships quite profoundly. Such practices and policies are being crafted and promoted at Portland State, Arizona State (Beaudoin and Brundiers, 2013), and through Penn State's Reinvention Fund (Penn State Sustainability Institute, 2014b).

Third, and perhaps striking at the status quo the most, universities ought to accept limits to their material impacts, including limits on the size of the student body; restricting the amount of energy, water, raw materials that they take from upstream; and limiting waste of all kinds that they send downstream. The limit, too, should be one that seeks to situate the university within its region in such a way as to reduce its ecological footprint. Specifics will matter, as will the conversation about the specific limit. Nonetheless, with the average American demanding about seven hectares per person (Global Footprint Network, 2014), and university dwellers likely hovering around that number, something needs to be done. Universities must become places that transform shared living so that it reduces, reuses, and recycles to the highest degree. We might add “refuses” to that list. Are there principles to use?

Peter from Bucknell pointed me toward *Treading Softly* by Thomas Princen (2010). To honor Peter, I put forward Princen’s four principles for a home economy (pp. 69-77). The Greek word for home is oikos, the etymological root of eco- as in ecology and economy. Our home is not just the building in which we cook and sleep, it is also the place where we work, sometimes a sprawling campus of many structures. These principles are not “greenwashed” versions of the old ways of doing things. They are not the only principles that higher education institutions could use. For instance, colleges and universities could use Heinberg’s (2010) axioms or Orr’s (1992; 2011) version of ecological sustainability discussed in Chapter 1. But Princen’s principles are useful, potentially transformative, and they align with and extend the notions of the sustainability education advocates whom I interviewed.

First, we should adopt an *intermittency principle* (Princen, 2010) that accepts nature's fluctuations and cycles. Energy production and consumption built on renewable energy systems of scale will fluctuate, and our habits should adapt to their intermittency.

Second, a *sufficiency principle* (Princen, 2010) ought to guide consumption so that doing well becomes doing less than what is the most possible. This principle resembles a conservative version of the maximum sustainable yield in forestry and Heinberg's (2010) axiom on the use of renewable resources.

Third, to deal with pollution of all kinds, universities should adopt a *capping principle* (Princen, 2010) that is set according to downstream assimilative and regenerative capacities, such as the ability of the Chesapeake Bay's ecosystem to thrive or a wetland's ability to filter toxins over the long term.

Fourth, a *source principle* (Princen, 2010) should prudently preserve the source. "People can mine and manufacture, commodify and discard, but a sustainable society cannot destroy the source—a river's headwaters, a grassland's soil, a reef's coral, a forest's seed trees, a fishery's spawning ground, a grain's genetic stock, an atmosphere's chemical stock" (p. 76). Whether a person wants to earn millions of dollars or live lightly in a commune, our bountiful but finite wellsprings must be kept well.

To my mind, these principles honor the people I interviewed, their disciplines, and their ethical views. Every person spoke about deep and healthy relationships. At the heart of all they hoped for thrive healthy relationships. They yearn and work for conviviality.

In a way, Penn State and Bucknell have both taken some steps in this direction. Bucknell's Climate Action Plan (Chou, El-Mogazi, & Hawley, 2010) under the American

College and University Presidents' Climate Commitment (2007) works in this direction. In theory, all such ACUPCC plans tinker this way. And as of October of 2014, Penn State has declared it will reduce its energy use in buildings by 20% over the coming decade as part of the U.S. Department of Energy's Better Buildings Challenge (Novak, 2014). With these and other institutions working toward LEED and Green Globes certification for new and renovated buildings, impressive strides on reducing energy consumption will continue. These efficiency strides are not sufficiency strides, however. They dabble at the edges and deepen what Andy called techno-optimism. They do not force a conversation on genuine limits nor a commitment to biophilia.

Therefore, I propose a fifth *healing principle*. We must create healing and synergistic relationships between our buildings, technologies, occupants, and the natural environments in which they are nested. Perhaps a full-scale commitment to the Living Building Challenge (LBC) by institutions of higher education is in order. Their mission seeks "[t]o encourage the creation of Living Buildings, Landscapes and Communities in countries around the world while inspiring, educating and motivating a global audience about the need for fundamental and transformative change" (International Living Future Institute, 2014a). The LBC invites us to

imagine a building that is informed by its eco-region's characteristics. A building that generates energy with renewable resources, captures and treats water, operates efficiently and as part of a larger community; a building that acts as feedstock for new developments at the end of its life; and is beautiful... (International Living Future Institute, 2014b).

Were it followed by or joined with similar commitments across the institution the transformation would be incredible. If the university is to be the place that fosters a true form of sustainability, then it will need to be more biophilic. Imagine a Living University that is appropriate to the ecosystems in which it is nested, a place where people who strongly identify with the environment thrive and lead. It would be a beautiful and inspiring university that taught through its explicit and hidden curricula that its denizens—faculty, staff, students, and visitors—are part of and not apart from the natural world.

Finally, I ask readers who identify with the environment to deepen your commitments. Preaching to the choir can satisfy for only so long. At this point, there is a great deal of work that still needs to be done in and between many fields. For example, some colleagues and I recently encountered a gaping hole in what educational leaders concerned with ethics and leadership consider important. Of the dozens of panel presentations and the several keynotes on matters of administrative importance, ecological matters received no attention. One keynote speaker talked about important literacies that we must lead on and develop. He did not mention ecological literacy (see Brooks & Normore, 2010). The literature in his field is no more encouraging.

Surely educational leadership is not the only such desert of consciousness. Perhaps referring to it as a desert is the wrong metaphor. Conceive of it instead as a patch of burned forest where almost nothing has grown back, and one who deeply identifies with the natural world has the chance to begin that secondary succession. Be the first hickory to take root or the first seeds of echinacea, goldenrod, and New England aster to

touch the soil in a burned Pennsylvania meadow. If sustainability is to take hold, it needs our help. So preach to the choir and also pioneer.

All these proposals raise some political and identity questions for future research and practice. In Chapter 1, I noted the cultural cognition work by Kahan et al. (2012). Cultural cognition postulates that individuals tend to fit both their risk perceptions and risk-related factual beliefs to shared moral evaluations of risky actions. People are psychologically disposed to believe that their own and their moral peers' beliefs and actions are good for society, while beliefs and actions with which they disagree are bad for society. It follows that at a basic level people's risk perceptions of events and their beliefs about what is or is not good largely determine both what they believe is factually occurring and what, if anything, ought to be done about those occurrences (Kahan & Braman, 2006, pp. 149-155). This research shows that on issues of significant sociopolitical importance and tension where science plays an important role—including sustainability issues—people's worldviews confirm the cultural cognition position (Kahan, 2013; Kahan & Braman, 2006; Kahan, Peters, Dawson, & Slovic, 2013; Kahan, Peters, Wittlin, Slovic, Ouelette, Braman, & Mandel, 2012).

Nuclear waste disposal and climate change both have scientific consensus statements by the National Academy of Sciences (NAS), but people perceive risk from these issues very differently (Kahan & Braman, 2006). Shale gas development via horizontal drilling and hydraulic fracturing currently has no scientific consensus statement from the NAS (Kahan, 2014), yet people perceive its risk very differently. Those who score more highly on hierarchy and individualism typically identify themselves as politically conservative and vote Republican. They also overwhelmingly

tend to deny or discount the threats posed by fracking, nuclear waste disposal, and climate change. People who score high on the egalitarian and communitarian measures tend to self-identify as liberals and vote as Democrats. They perceive environmental threats from the aforementioned list and want them to be heavily regulated, mitigated, or banned. Additionally, and very importantly for education, Kahan found that the more numerate and the more informed people were on the issues actually amplified their polarization on these matter, showing that the deficit theory of public action on these important sustainability issues is wrong. (2013). In the light of this study and Clayton, Koehn, and Grover's (2013) work, there are some interesting ramifications.

All the people whom I interviewed said that the environmental stances and track records of political candidates contribute to their decision to vote for a particular candidate. For some of them, it was very important. A few of them said they have never voted for a Republican. Peter in particular expressed dismay at the last round of Republican presidential debates, during which candidates took opportunities to deny that climate change was real—much less that humans have caused it. This finding suggests three considerations for research, practice, and communication.

First, I suspect that sustainability education advocates are not only more likely than their peers to have strong environmental identities but that they also tend to be more politically liberal. This suggestion would be in line with Clayton, Koehn, and Grover (2013). Second, because so much of the policy and advocacy talk on sustainability is wrapped up in ideological language conducive to strong environmental identities and political liberalism, I additionally suspect that sustainability messages are setting off “worldview backfire effects” (Cook & Lewandowsky, 2011) among conservatives in

higher education. In line with Kahan and associates' work (2012), it is possible that sustainability talk polarizes them more. But there are a couple of other mediating factors as well. The liberal political orientation of the university culture and its liberalizing effect could ameliorate some negative perceptions. However, disciplinary cultures of expertise could harden them as well, creating ossified stances.

In my own experience hosting *Sustainability Now Radio*, I have provisional reasons to suspect that this is the case. We hosted a neoliberal energy economist who favors deregulating the energy market. I asked him the same question that I asked all my guests, "What does sustainability mean to you?" He replied with something to the effect of, "It's nonsense. Why should I give up wealth now so that some person at some time in the future might live better because I lived worse?" As a highly educated person he, his profession and his ideology could be feeding off of one another, putting him in a position where he chooses what he knows based on who he is and who is based on what he knows. As an outspoken economic neoliberal who favors choice and free markets, he would likely score as an individualist. Whether he is a hierarchist or an egalitarian is unknown to me. He may well be libertarian who could be a social egalitarian

His disciplinary specialization and ideological cohort might convince him that who he thinks he is matters more than what some other group says is true or desirable. Anecdotes aside, these are testable hypotheses with some bearing on the way people craft sustainability messages within, for, and from the university.

Additionally, in whatever ways we communicate about and for sustainability, there are two practical considerations coming from Kahan's work on cultural cognition. On the one hand, if we suspect that there are backfires (Cook & Lewandowsky, 2011),

we should not only be aware of them but also use our awareness strategically when we communicate with diverse constituencies. Dave made this point clear during his interview. He warned that we should not let sustainability get trapped in a narrow environmentalist agenda, and that for it to succeed in reaching more deeply into and across universities, we must account for dealing with the status quo. I suspect that Peter, Dina, Duane, and Jamie would be quite sympathetic to this view as well given their work in politicking the Environmental Connections requirement through the Bucknell faculty senate in general and due to Peter's interest in discourses and Jamie's work as a stakeholder theorist. That said, we should have parameters for sustainability, parameters that do not allow for pandering in the name of political framing or that make sustainability so meaningless that planet-tanking vandal corporations, governments, and their apparatchiks in other institutions can use it with ease. Enough of the greenwashing.

We should keep open minds about things, but not so open our brains fall out. While sustainability is a capacious orienting concept it needs to be bound and have teeth. As people at universities continue to work with it and from it, they must recognize that it is about the viability of human beings in relationships with one another and the more-than-human world through time. Currently, the developed human world in this relationship compromises the health and well-being of hundreds of millions if not billions of so-called underdeveloped people. We seriously damage the more-than-human living world and alter the physical and chemical systems inside of which all human experience takes place. Our concept of sustainability must not be so open that our health and wellbeing fall out. As I have shown above, I think sustainability should guide universities toward something like Princen's (2010) four rules for a home economy.

There is a great deal to despair about. I have read enough of the reports. I have loved stands of red maples, hickories, and hemlocks; held them close to my chest; and let them go when the time has come. Those clear cuts come from a world that higher education has helped to build. But the people with whom I spoke give us hope.

Hope lives in action, action taken with others to change this educated world. They have each in their own way been transformed by a view of humans as beings that are owed rights, dignity, material well-being, and health. And all of them—Cole who hugs and kisses trees, Dave who has ridden on horseback with the Cheyenne, Dorothy who started a community supported agriculture, I who trek the forests of Pennsylvania, and all the rest—believe that we must work toward harmonious relationships with one another and the more-than-human world. In a world so damaged by *homo educandus*, we must become the trim tab that Cole wants us to be. We have no reasonable choice, as Berry (1990) writes, but to become the “unsuspected teachers [who] belong to the task, and are its hope” (p. 13).

Appendix A: Recruitment Form

Dear [Subject's Name],

I am contacting you because you have been identified as someone involved with the sustainability education initiatives at Bucknell University, in particular the development of the Environmental Connections requirement. Currently, I am researching these initiatives for my dissertation in Educational Theory and Policy from Penn State. My research explores the relationship between sustainability education advocates' work and their environmental identities. Because you are involved with this program, I would like to conduct a face-to-face interview you for 30 to 45 minutes. This research has been cleared by Bucknell's Office of Research Protections.

If you would be willing to be interviewed, please contact me, Peter Buckland, by email – pdb118@psu.edu - and we can set up a time. You may also call me on my cellphone: (814) 206-4959. If you agree to an interview, I will provide you with an interview consent form prior to conducting the interview.

Thank you for your time,

Peter Buckland, A.B.D. Educational Theory and Policy
Pennsylvania State University College of Education
230D Chambers Building
(814) 206-4959
pdb118@psu.edu

Appendix B: Informed Consent Form

Dear Potential Subject,

You have been asked to participate in a research study conducted by Peter Buckland, A.B.D. of Pennsylvania State University's Educational Theory and Policy Program. *The purpose of the is to gather data on Penn State's development of a program to develop sustainability literacy across the curriculum and analyze it using Kingdon's Multiple Streams Policy Theory, paying particular attention to the policy entrepreneurs' environmental identities, role in the program development, and the connection between your identity and the policy outcome.* The results of this study will be included in Peter Buckland's dissertation. You were selected as a possible participant in this study because of your involvement in the Environmental Connections requirements creation. You should read the information below, and ask questions about anything you do not understand, before deciding whether or not to participate.

- This interview is voluntary. You have the right not to answer any question, and to stop the interview at any time or for any reason. We expect that the interview will take between 20 and 30 minutes.
- You will not be compensated for this interview.
- Unless you give me permission to use your name, title, and / or quote you in any publications that may result from this research, the information you tell us will be confidential.
- Peter Buckland would like to record this interview on two digital recording devices so that we can use it for reference while proceeding with this study. We will not record this interview without your permission. If you do grant permission for this conversation to be digitally recorded, you have the right to revoke recording permission and/or end the interview at any time.
- Peter Buckland would also like a photograph of you in a place you love. The photograph will not be included in the final research but serves as a focus during analysis.

This project will be completed by June 2012. All interview recordings and photographs will be stored in a secure work space for three years after the project's completion.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

(Please check all that apply)

I give permission for this interview to be recorded on a digital recorder.

I give permission for the following information to be included in publications resulting from this study:

My name **OR** a pseudonym my title direct quotes from this interview

Name of Subject:

Signature of Subject _____ Date _____

Signature of Investigator _____ Date _____

Please contact Peter Buckland with any questions or concerns. Phone: (814) 206-4959, Email: pdb118@psu.edu, 230D Chambers Building, University Park, PA, 16802

If you feel you have been treated unfairly, or you have questions regarding your rights as a research subject, you may contact: Director of the Office of Research Protections, Candace Yeakel, Email: cay3@psu.edu, Phone: 814-865-1775 ,Fax: 814-863-8699, The 330 Building, Suite 205, University Park , PA 16802-7014

Appendix C: Basic interview Protocol

Introduction: *You have been involved with the development of sustainability education policy changes at your institution. In one way or another, work you are involved with is trying to change general education at this institution. I would like to talk to you about that work and your perceptions about it.*

1. Will you give me your name, age, current position, and your educational history?
2. Can you tell me about where you grew up and your experiences with nature or the environment growing up?
3. Do you have a strong emotional attachment or relationship to nature or some natural place? [Can you tell me about that?]
4. Would you say that you have a strong environmental identity? That is do you have a “sense of self related to nature or the environment?” Do you have an environmental ethic?]
5. Are you part of organizations or do you do things that show your environmental identity?

You are involved with sustainability initiatives here and so I want to turn now to sustainability.

6. What does sustainability mean to you? [Does it mean something differently to you personally than it does professionally?]
7. Can you tell me how this initiative to implement sustainability education got started?
8. What has your role been in the initiative and how do you see yourself in it?
9. Before this opportunity arose, did you push for sustainability education here?

I want to go back to what we were talking about earlier regarding your environmental identity and any connection you feel with nature or the environment.

10. Do you see a connection between your personal emotional relationship with nature, your environmental identity, and your sustainability education work? In particular, do you see a connection between this identity and the particular policy that resulted? [Will you describe that relationship?]
11. Was there a collective environmental identity in your working group?
12. Were other parts of your identity important to this endeavor? Do you have a “sense of self” in some other regard that helped shape this policy?

References

- Abram, D. (2010). *Becoming animal: An earthly cosmology*. New York, NY: Pantheon Books.
- Alabaster, T., & Blair, D. (1996). Greening the university. In J. Huckle & S. R. Sterling (Eds.), *Education for sustainability* (pp. 86-104). London, UK: Earthscan.
- Alley, R. (2011). *Earth: The Operator's Manual*. New York, NY: W.W. Norton & Co.
- Association of American Colleges and Universities. (1998, October 1). Statement on Liberal Learning: Board Statement. Retrieved from <https://www.aacu.org/about/statements/liberal-learning>
- Association of American Colleges and Universities. (2007). *The essential learning outcomes*. Retrieved from http://www.aacu.org/sites/default/files/files/LEAP/EssentialOutcomes_Chart.pdf
- American College and University Presidents' Climate Commitment. (2007). *Text of the American college & university presidents' climate commitment*. Retrieved from <http://www.presidentsclimatecommitment.org/about/commitment>
- Association for the Advancement of Sustainability in Higher Education. (2013). *STARS overview*. Retrieved from <https://stars.aashe.org/pages/about/stars-overview.html>
- Association for the Advancement of Sustainability in Higher Education. (2014). *STARS dashboard*. Retrieved from <https://stars.aashe.org/institutions/data-displays/dashboard/>
- Atkin, E. (2014, September 29). West Virginia plans to frack beneath Ohio River, which supplies drinking water to millions. Retrieved from Think Progress website: <http://thinkprogress.org/climate/2014/09/29/3573449/west-virginia-to-frack-ohio-river/>
- Bardoglio, P., & Putnam, A. (2009). *Boldly sustainable: Hope and opportunity for higher education in the age of climate change*. Washington, DC: North American College and University Business Officers.
- Barlett, P. F., & Chase, G. W. (2012). Curricular innovation for sustainability: The Piedmont/Ponderosa model of faculty development. *Liberal Education*, 98(4), 14-21. Retrieved from <https://www.aacu.org/publications-research/periodicals/curricular-innovation-sustainabilitythe-piedmont-ponderosa-model>

- Bartlett, A. (1998). Reflections on Sustainability, Population Growth, and the Environment—Revisited. *Renewable Resources Journal* 14(4), 6-23.
- Beaudoin, F. & Brundiers, K. (2013). Strategies and processes for systematically linking sustainability operations with academics. Retrieved from AASHE website: <http://www.aashe.org/events/workshops/developing-a-campus-sustainability-living-lab>
- Bentz, B. (2008). *Western U.S. bark beetles and climate change*. Retrieved from U.S. Department of Agriculture, Forest Service, Climate Change Resource Center website: <http://www.fs.usda.gov/ccrc/topics/western-us-bark-beetles-2008>
- Berry, W. (1990). *What are people for?* New York: North Point Press.
- Berry, W. (1993). *Sex, economy, freedom, and community: Eight essays*. New York, NY: Pantheon.
- Blewitt, J. (2009). Introduction. In Blewitt, J. & Cullingford, C. (Eds.) *The Sustainability Curriculum: The Challenge for Higher Education*, (pp. 1-12). London, UK: Earthscan Publishers.
- Bowers, C. A. (1993). *Education, cultural myths, and the ecological crisis: Toward deep changes*. Albany: State University of New York Press.
- Bowers, C. A. (1994). *Educating for an ecologically sustainable culture: Rethinking moral education, creativity, intelligence, and other modern orthodoxies*. Albany: State University of New York Press.
- Bowers, C. A. (1997). *The culture of denial: Why the environmental movement needs a strategy for reforming universities and public schools*. Albany: State University of New York Press.
- Bowers, C. A. (2010). The challenge facing educational reformers: Making the transition from individual to ecological intelligence in the era of global warming. *International Journal of Illich Studies*, 2(1), 13-20.
- Bowles, S., & Gintis, H. (2002). The inheritance of inequality. *Journal of Economic Perspectives*, 16(3), 3-30. doi:10.1257/089533002760278686
- Boyer, E. & Levine, A. (1981). *A Quest for Common Learning: The Aims of General Learning*. Carnegie Foundation for the Advancement of Teaching: Washington, D.C.
- Brooks, J. S., & Normore, A. H. (2010). Educational leadership and globalization: Literacy for a glocal perspective. *Educational Policy*, 24(1), 52-82.

- Brundtland, G. H., & the World Commission on Environment and Development. (1987). *Report of the World Commission on Environment and Development: Our common future*. Retrieved from <http://www.un-documents.net/wced-ocf.htm>
- Buckland, P. (2013). Education and the Problem of “The Future.” *International Journal of Illich Studies*, 3(1). Retrieved from <https://journals.psu.edu/illichstudies/article/view/59287/59012>
- Bucknell Center for Environment and Sustainability. (2014). Bucknell Center for Environment and Sustainability. Retrieved from <http://www.bucknell.edu/environmentalcenter>
- Bucknell University. (2014). About Bucknell. Retrieved from <http://www.bucknell.edu/About>
- Burke, P. J., & Stets, J. E. (2009). *Identity theory*. London, UK: Oxford University Press.
- Campbell, J. (1988). *The Power of Myth with Bill Moyers*. New York: Anchor Books.
- Chou, W., El-Mogazi, D., & Hawley, D. (2010). *A Climate Action Plan for Bucknell University*. Retrieved from http://rs.acupcc.org/site_media/uploads/cap/608-cap.pdf
- Clark, H.C. & McDonald, M. (1991). *The Halifax Declaration for a Sustainable Biosphere*. Halifax, NS: Public Relations Office, Dalhousie University.
- Clayton, S. D., & Opotow, S. (2003). Introduction: Identity and the natural environment. In S. D. Clayton & S. Opotow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 1-24). Cambridge, MA: MIT Press.
- Clayton, S., Koehn, A., & Grover, E. (2013). Making sense of the senseless: Identity, justice, and the framing of environmental crises. *Social Justice Research*, 26(3), 301-319. doi:10.1007/s11211-013-0185-z
- Cook, A. J., Kerr, G. N., & Moore, K. (2002). Attitudes and intentions towards purchasing GM food. *Journal of Economic Psychology*, 23(5), 557-572. doi:10.1016/j.joep.2012.05.002
- Cook, J., & Lewandowsky, S. (2011). *The debunking handbook*. Retrieved from Skeptical Science website: <http://www.skepticalscience.com/Debunking-Handbook-now-freely-available-download.html>
- Creighton, S. H., & Cortese, A. D. (1992). Environmental literacy and action at Tufts University. *New Directions for Higher Education*, 77(2), 19-30.

- Cusick, M. (2014, May 23). Corbett lifts moratorium of gas leasing on state park and forest land. *State Impact Pennsylvania*. Retrieved from <https://stateimpact.npr.org/pennsylvania/2014/05/23/corbett-lifts-moratorium-on-gas-leasing-of-state-park-and-forest-land/>
- Davis, J. L., Green, J. D., & Reed, A. (2009). Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *Journal of Environmental Psychology, 29*(1), 173-180. doi:10.1016/j.jenvp.2008.11.001
- Davison, A. (2001). *Technology and the contested meanings of sustainability*. Albany: State University of New York Press.
- Department of Conservation and Natural Resources. (n.d.). *Hemlock wooly adelgid*. Retrieved from <http://www.dcnr.state.pa.us/forestry/insectsdisease/hwa/index.htm>
- Diamond, J. M. (2005). *Collapse: How societies choose to fail or succeed*. London, UK: Viking.
- Duke Sustainability. (n.d.) Awards. Retrieved from <http://sustainability.duke.edu/about/awards.html>
- Dutcher, D. D., Finley, J. C., & Luloff, A. E. (2007). Connectivity with nature as a measure of environmental values. *Environment and Behavior, 39*, 474-493. doi:10.1177/0013916506298794
- Earth Charter Commission. (2000). *The earth charter*. Retrieved from <http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html>
- Ehrenfeld, J. (2008). *Sustainability by design: A subversive strategy for transforming our consumer culture*. New Haven, CT: Yale University Press.
- Ehrlich, P.R. & Ehrlich, A.H. (1991). Reading, MA: Addison-Wesley Publishing Company.
- Eisner, E.W. (1993). Forms of Understanding and the Future of Educational Research. *Educational Researcher, 22*(7), pp. 5-11
- Elder, J., & Dyer, G. (2011). *Education for sustainability blueprint*. Retrieved from Second Nature website: <http://www.secondnature.org/sites/default/files/images/efs-blueprint.pdf>
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review, 36*(2), 90-100. doi:10.2307/41165746

- England, K. V. L. (1994). Getting personal: Reflexivity, positionality, and feminist research. *Professional Geographer*, 46(1), 240-256. doi:10.1111/j.0033-0124.1994.00080.x
- Esteva, G., & Prakash, M. S. (1998). *Grassroots post-modernism: Remaking the soil of cultures*. London, UK: Zed Books.
- Feeney, L. (2011, February 16). Futurist Ray Kurzweil Isn't Worried about Climate Change. Retrieved from <http://www.pbs.org/wnet/need-to-know/environment/futurist-ray-kurzweil-isnt-worried-about-climate-change/7389/>
- Fiala, R. (2007). Educational ideology and the school curriculum. In A. Benavot and C. Braslavsky (Eds.), *School knowledge in comparative and historical perspective: Changing curricula in primary and secondary education* (pp. 15-34). Dordrecht, Netherlands: Springer.
- FracFocus. (2014). *What chemicals are used*. Retrieved from <http://fracfocus.org/chemical-use/what-chemicals-are-used>
- Frontline. (n.d.) Secrets of the SAT: Interviews. Retrieved from <http://www.pbs.org/wgbh/pages/frontline/shows/sats/interviews/bok.html>
- Gaff, J. (1983). *General Education Today: A Critical Analysis of Controversies, Practices, and Reforms*. San Francisco, CA: Jossey-Bass.
- Gebhard, U., Nevers, P., & Billmann-Macheda, E. (2003). Moralizing trees: Anthropomorphism in children's relationships to nature. In S. D. Clayton & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 91-112). Cambridge, MA: MIT Press.
- Gee, E. G. (2012). The modern public university. In D. M. Fogel & E. Malson-Huddle (Eds.), *Precipice or crossroads? Where America's great public universities stand and where they are going midway through their second century* (pp. 51-62). Albany: State University of New York Press.
- Giroux, H. (1978). Developing educational programs: Overcoming the hidden curriculum. *Clearing House*, 52(4), 148-151.
- Giroux, H. (2002). Neoliberalism, corporate culture, and the promise of higher education: The university as a public democratic sphere. *Harvard Educational Review*, 72, 425-463.

- Giroux, H. (2010). Bare pedagogy and the scourge of neoliberalism: Rethinking higher education as a democratic public sphere. *Educational Forum*, 74(3), 184-196. doi:10.1080/00131725.2010.483897
- Glassman, S. B. (1995). The experience of women discovering wilderness as psychologically healing. *Dissertation Abstracts International*, 56(04B), 2325.
- Global Footprint Network. (2014). United States of America. Retrieved from http://www.footprintnetwork.org/en/index.php/GFN/page/trends/united_states_of_america/
- Great Ape Project. (n.d.) Mission and vision. Retrieved from <http://www.projetogap.org.br/en/mission-and-vision/>
- The green Bible*. (2008). New York, NY: HarperCollins.
- Gruenewald, D. A. (2003a). The best of both worlds: A critical pedagogy of place. *Educational Researcher*, 32(4), 3-12. doi:10.3102/0013189X032004003
- Gruenewald, D. (2003b). Foundations of place: A multidisciplinary framework for place-conscious education. *American Education Research Journal*, 40, 619-654. doi:10.3102/00028312040003619
- Gruenewald, D. A., & Smith, G. A. (2008). Creating a movement to ground learning in place. In D. A. Gruenewald & G. A. Smith (Eds.), *Place-based education in the global age: Local diversity* (pp. 345-358). New York, NY: Erlbaum.
- Hamilton, C. (2004). *Growth Fetish*. London: Pluto Press.
- Hardin, G. (1968). The tragedy of the commons. *Science*, 162, 1243-1248. doi:10.1126/science.162.3859.1243
- Head, I. (1992). Challenges for university leadership in sustainable development: Welcoming remarks. In H. J. Clarke (Ed.), *Creating a common future: Proceedings of the Conference on University Action for Sustainable Development* (pp. 1-2). Halifax, NS: Lester Pearson Institute for International Development, Dalhousie University.
- Heinberg, R. (2010). *Peak Everything*. Gabriola Island, BC: New Society Publishers.
- Hopey, D. (2015, January 28). Gov. Tom Wolf to reinstate moratorium on drilling in parks, forests. *Pittsburgh Post-Gazette*. Retrieved from <http://www.post-gazette.com/news/state/2015/01/28/Wolf-to-reinstate-moratorium-on-drilling-in-parks-forests/stories/201501280205>

- Illich, I. (1969). *Celebration of awareness: A call for institutional revolution*. New York, NY: Doubleday.
- Illich, I. (1973). *Tools for conviviality*. Berkeley, CA: Heyday Books.
- Illich, I. (1978). *Towards a history of needs*. Berkeley, CA: Heyday Books.
- Illich, I. (1992). Needs. In W. Sachs (Ed.), *The development dictionary: A guide to knowledge as power* (pp. 88-101). London, UK: Zed Books.
- Institute for Intercultural Studies. (n.d.) Frequently asked questions about Mead/Bateson. Retrieved from <http://www.interculturalstudies.org/faq.html>
- Intergovernmental Panel on Climate Change. (2013a). Climate Change: The Physical Science Basis: Headline Statements from the Summary for Policymakers. Retrieved from http://www.ipcc.ch/news_and_events/docs/ar5/ar5_wg1_headlines.pdf
- Intergovernmental Panel on Climate Change. (2013b). Summary for Policymakers. In Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (Eds.), *Climate Change 2013: The Physical Science Basis*. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge, United Kingdom and New York, NY: Cambridge University Press.
- International Living Future Institute. (2014a). Understanding the Challenging. Retrieved from <http://living-future.org/living-building-challenge>
- International Living Future Institute. (2014b). International Living Building Challenge 3.0 Public Presentation. Retrieved from <http://living-future.org/living-building-challenge/about/press-kit-handouts>
- Jasper, J. M. (1997). *The art of moral protest: Culture, biography, and creativity in social movements*. Chicago, IL: University of Chicago Press.
- Joughin, I., Smith, B. E., & Medley, B. (2014). Marine ice sheet collapse potentially under way for the Thwaites Glacier Basin, West Antarctica. *Science*, 344(6185), 735-738. doi:10.1126/science.1249055
- Kahan, D. (2013). *Motivated reasoning and its cognates*. Retrieved from Cultural Cognition Project, Yale University website: <http://www.culturalcognition.net/blog/2013/5/15/motivated-reasoning-its-cognates.html>

- Kahan, D. (2014). Fracking freaks me out. *Cultural Cognition blog*. Retrieved from <http://www.culturalcognition.net/blog/2014/3/13/fracking-freaks-me-out.html>
- Kahan, D. M., & Braman, D. (2006). Cultural cognition and public policy. *Yale Law & Policy Review*, 24, 147-170. Retrieved from Social Science Research Network website: <http://ssrn.com/abstract=746508>
- Kahan, D. M., Peters, E., Dawson, E.C., & Slovic, P. (2013). *Motivated numeracy and enlightened self-government* (Yale Law School Public Law Working Paper No. 307). Retrieved from Social Science Research Network website: <http://ssrn.com/abstract=2319992>
- Kahan, D. M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L. L., Braman, D., & Mandel, G. (2012). The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*, 2, 732-735. doi:10.1038/nclimate1547
- Kahn, R. (2006). The educative potential of ecological militancy in an age of big oil: Towards a Marcusean ecopedagogy. *Policy Futures in Education*, 4(1), 31-44. doi:10.2304/pfie.2006.4.1.31
- Kahn, R. (2008). Towards ecopedagogy: Weaving a broad-based pedagogy of liberation for animals, nature, and the oppressed people of the earth. Retrieved from: https://www.academia.edu/163839/Towards_Ecopedagogy_Weaving_a_Broad-based_Pedagogy_of_Liberation_for_Animals_Nature_and_the_Oppressed_Peoples_of_the_Earth
- Kahn, R. (2010a). *Critical pedagogy, ecoliteracy, and planetary crisis: The ecopedagogy movement*. New York, NY: Lang.
- Kahn, R. (2010b). Producing crisis: Green consumerism as an ecopedagogical issue. In J. A. Sandlin & P. McLaren (Eds.), *Critical pedagogies of consumption: Living and learning in the shadow of the "shopocalypse"* (pp. 47-57). New York, NY: Routledge.
- Kaplan, T. (2014, December 17). Citing Health Risks, Cuomo Bans Fracking in New York State. *New York Times*. Retrieved from http://www.nytimes.com/2014/12/18/nyregion/cuomo-to-ban-fracking-in-new-york-state-citing-health-risks.html?_r=0
- Kempton, W., & Holland, D. C. (2003). Identity and sustained environmental practice. In S. D. Clayton & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 317-341). Cambridge, MA: MIT Press.

- Kingdon, J. W. (1995). *Agendas, alternatives, and public policies* (2nd ed.). New York, NY: Addison Wesley Longman.
- Kissling, M. T., & Calabrese Barton, A. (2013). Teaching social studies for ecological citizenship. *Social Studies Research and Practice*, 8(3), 128-142.
- Lau, A. (2010). Sustainable design: A new paradigm for engineering education. *International Journal of Engineering Education*, 26(2), 252-259.
- Leakey, R., & Lewin, R. (1995). *The sixth extinction: Patterns of life and the future of humankind*. New York, NY: Anchor Books.
- Leiserowitz, A., Maibach, E., Roser-Renouf, C., Feinberg, G. & Howe, P. (2013) *Global Warming's Six Americas, September 2012*. Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. <http://environment.yale.edu/climate/publications/Six-Americas-September-2012>
- Leopold, A. (1970). *A Sand County almanac: With other essays on conservation from Round River*. New York, NY: Ballantine Books.
- Linneweber, V., Hartmuth, G., & Fritsche, I. (2003). Local environment threatened by global climate change. In S. D. Clayton & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 227-245). Cambridge, MA: MIT Press.
- Little, C. E. (1995). *The dying of the trees: The pandemic in America's forests*. New York, NY: Viking.
- Lomborg, B. (2003, September 22). Bjorn Lomborg on the environmental consequences of technological progress. *CIO*. Retrieved from http://www.cio.com/article/29794/Bjorn_Lomborg_on_the_Environmental_Consequences_of_Technological_Progress
- Lynch, P. (2014). *The "unstable" West Antarctic ice sheet: A primer*. Retrieved from NASA website: <http://www.nasa.gov/jpl/news/antarctic-ice-sheet-20140512/>
- Mann, M. E. (2012). *The hockey stick and the climate wars: Dispatches from the front lines*. New York, NY: Columbia University Press.
- Mannetti, L., Pierro, A., & Livi, S. (2004). Recycling: Planned and self-expressive behaviour. *Journal of Environmental Psychology*, 24, 227–236
- Martens, P. (2006). Sustainability: Science or fiction? *Sustainability: Science, Practice, & Policy*, 2(1), 36-41.

- Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.
- McCall, G. J., & Simmons, J. L. (1978). *Identities and interactions*. New York, NY: Free Press.
- McIntosh, M., Cacciola, K., Clermont, S., & Keniry, J. (2001). *State of the campus environment*. Retrieved from National Wildlife Foundation website: <http://www.nwf.org/Campus-Ecology/Resources/Reports/State-of-the-Campus-Environment-Report.aspx>
- McKibben, B. (2010). *Eaarth*. New York, NY: Time Books/Henry Holt.
- McLendon, M.K. & Cohen-Vogel, L. (2008). Understanding education policy change in the American states: Lessons from political science. In Cooper, B.S., Cibulka, J.G., & Fusarelli, L.D. (Eds.) *The Handbook of Education Politics and Policy*. (Pp. 30-51). New York, NY: Routledge.
- Meadows, D. H., Randers, J., & Meadows, D. L. (2004). *The limits to growth: The 30-year update*. White River Junction, VT: Chelsea Green.
- Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Synthesis*. Retrieved from <http://www.millenniumassessment.org/documents/document.356.aspx.pdf>
- Morse, J. M. (1995). The significance of saturation. *Qualitative Health Research*, 5(2), 147-149. doi:10.1177/104973239500500201
- Mumford, L. (1970). *The Myth of the Machine*. New York, NY: Harcourt Brace.
- Munich Re. (n.d.). Climate Change. Retrieved from <http://www.munichre.com/en/group/focus/climate-change/index.html>
- Myers, G., & Russell, A. (2003). Human identity in relation to wild black bears: A natural-social ecology of subjective creatures. In S. D. Clayton & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 67-90). Cambridge, MA: MIT Press.
- Novak, A. (2014, October 7). Penn State commits to historic 20 percent energy reduction [Press release]. Retrieved from <http://news.psu.edu/story/328942/2014/10/03/impact/penn-state-commits-historic-20-percent-energy-reduction>

- Opotow, S. & Brook, A. (2003). Identity and exclusion in rangeland conflict. In S. Clayton & S. Opotow (Eds.) *Identity and the Natural Environment*. Cambridge, MA: MIT Press.
- Orr, D. W. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany: State University of New York Press.
- Orr, D. W. (1994). *Earth in mind: On education, environment, and the human prospect*. Washington, DC: Island Press.
- Orr, D. W. (2002). *The Nature of Design: Ecology, Culture, and Human Intention*. New York, NY: Oxford University Press.
- Orr, D. W. (2010). What is higher education for now? In L. Starke & L. Mastny (Eds.), *2010 State of the World: Transforming cultures: From consumerism to sustainability* (pp. 75-82). New York, NY: W.W. Norton.
- Orr, D. (2011). *Hope is an imperative: The essential David Orr*. Washington, DC: Island Press.
- Palmer, P. J. (1998). *The courage to teach: Exploring the inner landscape of a teacher's life*. San Francisco, CA: Jossey-Bass.
- Parris, C., Hegtvedt, K., Watson, L., & Johnson, C. (2014). Justice for all? Factors affecting perceptions of environmental and ecological justice. *Social Justice Research, 27*, 67-98. doi: 10.1007/s11211-013-0200-4
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco, CA: Jossey-Bass.
- Patton, M. Q. (2001). *Qualitative evaluation and research methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Penn State Sustainability Institute. (2014a). About. Retrieved from <http://sustainability.psu.edu/sustainability-institute>
- Penn State Sustainability Institute. (2014b). Reinvention Fund. Retrieved from <http://sustainability.psu.edu/reinvention-fund-0>
- Penn State University. (2014). Our History. Retrieved from <http://www.psu.edu/this-is-penn-state/our-history>
- Prakash, M. S., & Esteva, G. (2005). *Escaping education: Living as learning within grassroots cultures*. New York, NY: Peter Lang.

- Princen, T. (2010). *Treading softly: Paths to ecological order*. Cambridge, MA: MIT Press.
- Proshansky, H. M. (1978). The city and self-identity. *Environment and Behavior*, 10, 147-169. doi:10.1177/0013916578102002
- Rasmussen, C. (2014). West Antarctic Glacier loss appears unstoppable [Press release]. Retrieved from NASA website:
<http://www.jpl.nasa.gov/news/news.php?release=2014-148>
- Ratcliff, J, Johnson, D.K., & Gaff, J. (2004). *New Directions in Higher Education* 125, pp.1-8.
- Revkin, A. (2011, January 30). Sustain what? *New York Times*. Retrieved from
<http://dotearth.blogs.nytimes.com/2011/01/30/sustain-what/>
- Reynolds, H. L. (2010). Core learning goals for campus-wide environmental literacy: Overview. In H. L. Reynolds, E. S. Brondizio, J. M. Robinson, D. Karpa, & B. L. Gross (Eds.), *Teaching environmental literacy: Across campus and across the curriculum* (pp. 17-28). Bloomington: Indiana University Press.
- Reynolds, H. L., Brondizio, E. S., Robinson, J. M., Karpa, D., & Gross, B. L. (2010). Introduction: The rationale for teaching environmental literacy in higher education. In H. L. Reynolds, E. S. Brondizio, J. M. Robinson, D. Karpa, & B. L. Gross (Eds.), *Teaching environmental literacy: Across campus and across the curriculum* (pp. xiii-xviii). Bloomington: Indiana University Press.
- Rodman, J. (1977). The Liberation of Nature? *Inquiry*, 20, 83-145. doi: 10.1080/00201747708601834
- Rolston, H. (2000). Values Deep in the Woods. In Peter C. List (Ed.) *Environmental Ethics and Forestry: A Reader* (pp. 75-79). Philadelphia, PA: Temple University Press.
- Romm, J. (2014, October 13). The Planet Just Had Its Hottest September on Record. *Climate Progress*. Retrieved from
<http://thinkprogress.org/climate/2014/10/13/3579242/nasa-hottest-september-on-record/>
- Roy, A. (1999). *The Cost of Living*. New York: Modern Library.
- Scott, R. (2012, September 14). The Bottom Line of Corporate Good. *Forbes.com*. Retrieved from
http://www.forbes.com/sites/causeintegration/2012/09/14/the-bottom-line-of-corporate-good/?&_suid=141408227478803684698739089072

- Sinner, A., Leggo, C., Irwin, R. L., Gouzouasis, P., & Grauer, K. (2006). Arts-based educational research dissertations: Reviewing the practices of new scholars. *Canadian Journal of Education*, 4, 1223-1270. doi:10.2307/20054216
- Slaper, T. F., & Hall, T. J. (2012). The triple bottom line: What is it and how does it work? *Indiana Business Review*, 86(1). Retrieved from <http://www.ibrc.indiana.edu/ibr/2011/spring/article2.html>
- Speth, J. G. (2008). *The bridge at the edge of the world: Capitalism, the environment, and crossing from crisis to sustainability*. New Haven, CT: Yale University Press.
- Steel, G. D. (1995). The structure of the environmental relationship in polar regions. *Dissertation Abstracts International*, 56(4B), 2310.
- Sterling, S. (2004). An analysis of the development of sustainability education internationally: Evolution, interpretation and transformative potential. In J. Blewitt & C. Cullingford (Eds.), *The sustainability curriculum: The challenge for higher education* (pp. 43-62). London, UK: Earthscan.
- Stets, J. E., & Biga, C. F. (2003). Bringing identity theory into environmental sociology. *Sociological Theory*, 21(4), 399-423. doi:10.1046/j.1467-9558.2003.00196.x
- Rose, A.M. (1963), *Human behavior and social processes: An interactionist approach*. Boston, MA: Houghton Mifflin.
- Sustainable UGA. (n.d.) Sustainable UGA Awards. Retrieved from <http://sustainability.uga.edu/get-involved/community/sustainable-uga-awards/>
- Swiss Re. (2014) *Sigma 1: Natural catastrophes and man-made disasters in 2013*. Retrieved from http://media.swissre.com/documents/sigma1_2014_en.pdf
- Thomashow, M. (1995). *Ecological identity: Becoming a reflective environmentalist*. Cambridge, MA: MIT Press.
- Townsend, L. (May/June 2006). License to be human: An interview with Van Jones. *Orion Magazine*. Retrieved from <http://www.orionmagazine.org/index.php/articles/article/4649/>
- Uhl, C. (2013). *Developing ecological consciousness: The end of separation* (2nd ed.). Lanham, MD: Rowman & Littlefield.
- United Nations Commission on Sustainable Development. (1992). *Agenda 21*. Retrieved from <http://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>

- United Nations Framework Convention on Climate Change. (2014). Home. Retrieved from <http://unfccc.int/2860.php>
- University Leaders for a Sustainable Future. (1990). *The Talloires declaration*. Retrieved from http://www.ulsf.org/programs_talloires.html
- U.S. Department of Energy. (2008). *20% wind energy by 2030: Increasing wind energy's contribution to U.S. electricity supply*. Retrieved from <http://www.nrel.gov/docs/fy08osti/41869.pdf>
- U. S. Department of Energy. (2012). Chapter 1: Buildings sector. In *Buildings Energy Notebook*. Retrieved from <http://buildingsdatabook.eren.doe.gov/ChapterIntro1.aspx>
- U.S. Environmental Protection Agency. (n.d.). *What is sustainability?* Retrieved from <http://www.epa.gov/sustainability/basicinfo.htm#sustainability>
- U.S. Environmental Protection Agency. (2013, December 24). Superfund: Basic Information. Retrieved from <http://www.epa.gov/superfund/about.htm>
- U.S. Environmental Protection Agency. (2014). *Climate change impacts on ecosystems*. Retrieved from <http://www.epa.gov/climatechange/impacts-adaptation/ecosystems.html>
- Van der Werff, E., Steg, L., & Keizer, K. (2013). I am what I am, by looking past the present: The influence of biospheric values and past behavior on environmental self-identity. *Environment and Behavior*, 46(5), 626-657. doi:10.1177/0013916512475209
- Vié, J.-C., Hilton-Taylor, C., & Stuart, S. N. (Eds.) (2008). *Wildlife in a changing world: An analysis of the 2008 IUCN red list of threatened species*. Retrieved from International Union for the Conservation of Nature website: http://cmsdata.iucn.org/downloads/wildlife_in_a_changing_world.pdf
- Waldman, S. (2014, October 6). Cuomo administration edited and delayed key fracking study. *Capital Playbook*. Retrieved from <http://www.capitalnewyork.com/article/albany/2014/10/8553530/cuomo-administration-edited-and-delayed-key-fracking-study>
- Weissman, N. B. (2012). Sustainability & liberal education: Partners by nature. *Liberal Education*, 98(4), 6-13. Retrieved from <https://www.aacu.org/publications-research/periodicals/sustainability-liberal-education-partners-nature>

- West Virginia chemical spill declared federal disaster. (2014, January 9). Retrieved from Al Jazeera America website: <http://america.aljazeera.com/articles/2014/1/9/coal-related-chemicalspillpromptsstateofemergencyinwestvirginia.html>
- Whitmarsh, L., & O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology*, 30(1), 305-314. doi:10.1016/j.jenvp.2008.11.001
- Whittenmore, R., Chase, S. K., & Mandle, C. L. (2001). Validity in qualitative research. *Qualitative Health Research*, 11(4), 522-537. doi:10.1177/104973201129119299
- Wilson, E. O. (1984). *Biophilia: The human bond with other species*. Cambridge, MA: Harvard University Press.
- Wilson, E. O. (2006). *The creation: An appeal to save life on earth*. New York, NY: W.W. Norton.
- WJACTV Johnstown. (2014, May 28). *Protestors against fracking attend Memorial Day service* [Video file]. Retrieved from <https://www.youtube.com/watch?v=U6cKvQUh1nQ>
- World Meteorological Organization. (2011a). *Provisional statement on the status of the global climate*. Retrieved from http://www.wmo.ch/pages/mediacentre/press_releases/gcs_2011_en.html
- World Meteorological Organization. (2011b). 2011: World's 10th warmest year, warmest year with La Niña event, lowest Arctic sea ice volume [Press release no. 935]. Retrieved from http://www.wmo.int/pages/mediacentre/press_releases/pr_935_en.html
- World Watch Institute. (2010). *State of the world: Transforming cultures*. New York, NY: W. W. Norton.
- World Wildlife Fund. (2014). *Living planet index*. Retrieved from http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/living_planet_index2/
- Wright, T. (2004). The Evolution of Sustainability in Higher Education. In P. Corcoran & A. Wals (Eds.). *Higher Education and the Problem of Sustainability: Problematics, Promise, and Practice*. Dordrecht, Boston, & London: Kluwer Academic Publishers.
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.

Zavetoski, S. (2003). Constructing and maintaining ecological identities. In S. D. Clayton & S. Opatow (Eds.), *Identity and the natural environment: The psychological significance of nature* (pp. 296-315). Cambridge, MA: MIT Press.

Zehner, O. (2012). *Green illusions: The dirty secrets of clean energy and the future of environmentalism*. Lincoln: University of Nebraska Press.

VITA

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PROFESSIONAL POSITIONS

Reinvention Fund, Penn State Sustainability Institute October 2014 – Present

- Assessed the effectiveness of Living Lab projects for sustainability funded by the Penn State Reinvention Fund.

Director of Sustainability, Kiskiminetas Springs School April 2012 – June 2014

- Developed and taught sustainability policies, programs, and curricula.

Coordinator of *Field Guide for Teaching Sustainability* 2011-2012

- Coordinated content of web resource for faculty to develop sustainability curricula.

Instructor of Education, Educational Theory and Policy, Penn State 2008-2012

- Designed, taught, and assessed courses in foundations of education and philosophy of education.

SERVICE & COMMITTEE WORK

2014-2015 Penn State Student Farm Visioning Committee
2011 Penn State Strategic Planning for Sustainability Committee: Metrics Team
2010-2014 Penn State Penn's Woods Project Development Team
2009-2010 Assistant to President, Pennsylvania Environmental Resource Consortium

AWARDS

2012 Sustainability Leadership Award, Penn State
2011 Laurel Haven Scholarship for Conservation Education, Penn State College of Agriculture
2011 Ivan Illich SIG of AERA – Graduate Student Paper of the Year Award
2010 Division of Student Affairs Outstanding Student Organization of the Year for 3E-COE, Penn State
2010 Harold F. Martin Outstanding Graduate Assistant Teaching Award from Penn State

RECENT PUBLICATIONS

Buckland, P. (11 June, 2014). 'Resolved: Climate change is not a 'crisis': Using cultural cognition research in high school ecology class. Cultural Cognition Project at the Yale Law School. Retrieved from <http://www.culturalcognition.net/blog/2014/6/11/resolved-climate-change-is-not-a-crisis-using-cultural-cogni.html>

Buckland, P. (2013). Education and the Problem of "The Future." *International Journal of Illich Studies*, 3(1). Retrieved from <https://journals.psu.edu/illichstudies/article/view/59287/59012>