Climate Change Virtue Ethics and Ecocriticism in Undergraduate Education

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Abstract

This thesis explores the question: can an ecocritical approach to environmental virtue ethics (EVE) in undergraduate climate change education inform students' understanding of the ethical issues of climate change and promote environmental responsibility and action? Philosophical theories of virtue ethics will be discussed from an historical perspective as well as to its renewal in the 20th century, especially within the context of the wicked dimensions of the climate change crisis. Dominant themes in climate change ethics including concerns over the scientific complexity, global dimensions, temporal issues, intergenerational fairness and responsibility, justice, and human rights will be presented and used to devise a compendium of climate change virtues and vices. Environmental and climate change education research will be reviewed as well as the reasons for its failure to produce a substantial shift in attitudes and behavior of people especially in the global North will be deliberated. Ecocriticism, which studies the relationship between literature and visual and audial art will be explored, and a novel curriculum based on theoretical elements from climate change virtue ethics and supported with examples of the ecocritical arts will be proposed. It is my belief that an interdisciplinary framework supported and illustrated by climate change ecocriticism from any and all of the literary, visual, audial, and performance arts will create deeper understandings of climate change complexity

Keywords: Climate change virtue ethics, ecocriticism, undergraduate education

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Acknowledgments

"Trust the process." Prescott College graduate students hear this a lot, and I suspect the words are never completely understood until after the thesis is revised for the last time, its presentation was yesterday, and graduation is a memory. The process is complex and evolves in ways that cannot be anticipated, but it is a process. Along the way I have been blessed with wise council and support from a number of wonderful people I would like to thank.

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> The peculiar features of the climate-change problem pose substantial obstacles to our ability to make the hard choices necessary to address it. Climate change is the perfect moral storm...even if the difficult ethical questions could be answered we might find it difficult to act. For the storm makes us extremely vulnerable to moral corruption.
>
> -Stephen M. Gardiner, *The Perfect Moral Storm*

This thesis explores the following question: Can an ecocritical approach to environmental virtue ethics (EVE) in undergraduate climate change education inform students' understanding of the ethical issues of climate change and promote environmental responsibility and action? I will present findings of environmental/climate change education research, including the reasons for its failure to produce a substantial shift in attitudes and behavior of people especially in the Global North, and propose a novel curriculum using theoretical elements from *climate change virtue ethics* (CCVE) in conjunction with ecocritical works. Ecocriticism, in the traditional sense, studies the relationship between literature and the environment, although recently the lens of ecocriticism has been extended to other art in its many forms. It is my opinion that an approach of this type will be effective in climate change education and achieving the greater goals of environmental responsibility and action.

Human societies are changing our atmosphere in dramatically dangerous and potentially irreversible ways. With the recent completion of the United Nation's Intergovernmental Panel on Climate Change (IPCC) fifth report, the Third National Climate Assessment for the United States, and a multitude of independent and collaborative research works there can be little doubt that climate change is real, that the evidence of human-induced climate change continues to strengthen, and that visible impacts are increasing worldwide.

The First Working Group's report of the IPCC's Fifth Assessment, *Climate Change 2013:*

The Physical Science Basis concluded that there is a "95 percent probability that humans are driving a significant part of the observed and projected changes in global climate" (p. 15). According to the study from Leiserowitz, Maibach, Roser-Renouf, Feinberg, and Rosenthal, (2013), *Climate Change in the American Mind: Americans' Global Warming Beliefs and Attitudes in November 2013*, sixty-three percent of Americans believe global warming is happening. Forty-seven percent believe that global warming, if it is happening, is anthropogenic and thirty-seven percent believe that it is due mostly to natural changes. Forty-two percent believe that most scientists think global warming is occurring, although only twenty-two percent correctly estimate that more than eighty percent of scientists think so.

Despite years of peer-reviewed scientific work supporting not only the existence of climate change but its connection with human-produced greenhouse gases (GHG) emissions, the United States in particular has remained largely absent in the global conversation and action on climate change policy. Analyzing the degree of consensus on anthropogenic global warming (AGW) in almost twelve thousand peer-reviewed research papers and other scientific literature, Cook, Nuccitelli, Green, Richardson, Winkler, Painting, Way, Jacobs and Skuce found that dissenting opinions comprise a "miniscule proportion." The numerical conclusion endorsing the scientific consensus, which made headlines in 2012, was 97.1-97.2% (2013, p. 6).

"Any one can *say* anything, but not anyone can get research results published in a refereed journal. Papers published in scientific journals must pass the scrutiny of critical, expert colleagues" (Oreskes, 2007, p. 69). The author made three significant points relating to what the scientific consensus on climate change is: "overwhelming" evidence that the climate is changing and that "the changes are outside of natural variability, that climate scientists agree on the anthropogenic component, and that dissenting voices, although numerous, are not of climate

scientists" (p. 74).

Writing an excellent analysis and overview of climate change issues, including the scientific evidence and impacts such as sea level rise, shifting climate zones, decreasing biodiversity, climate and weather extremes, and human health, an international panel of authors have inferred the repercussions to a number of social sciences, including economics, law and ethics (Hansen, Kharecha, Sato, Masson-Delmotte, Ackerman, Beerling, Hearty, Hoegh-Guldberg, Hsu, Parmesan, Rockstrom, Rohling, Sachs, Smith, Steffen, Susteren, von Schuckmann & Zachos, 2013). Although uncharacteristic for science literature, they expressed urgency for "large, long-term emission reductions [to] begin soon" (p. 10). The authors state:

> One implication is the likelihood of intergenerational effects, with young people and future generations inheriting a situation in which grave consequences are assured, practically out of their control, but not of their doing. As with the issue of slavery and civil rights, public recognition of the moral dimensions of human-made climate change may be needed to stir the public's conscience to the point of action. (pp. 19-20)

Singer (2011) considered the moral issues of climate change difficult for modern humans to perceive:

> What we are dong to strangers in other communities right now is, therefore, far more serious and far more widespread than the harm we would do if we were in the habit of occasionally sending out a group of warriors to rape and pillage a village or two. Yet causing imperceptible harm at a distance by the release of waste gases is a completely new form of harm, and so we lack any kind of instinctive inhibitions or emotional response against causing it. We have trouble seeing it as harm at all. (p. 217)

Ding, Maibach, Zhao, Roser-Renouf and Leiserowitz concluded that people who are unaware of the scientific consensus on AGW generally feel less certain about climate change and are less likely to support meaningful climate policy (2011). Public uncertainty regarding climate change can be attributed to several factors, including organized efforts promoting denialism, as evidenced in Oreske and Conway's popular book *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*

(2010). Additional research by Dunlap and McCright (2008) pointed toward impacts from political affiliation, and cognitive biases explored by Weber (2006).

In the United States, an interesting *American paradox* exists. After studying a number of surveys, Jamieson concluded that despite significant evidence to the contrary, most Americans consider themselves environmentalists, believe that climate change exists and is a serious problem, and are willing to pay for green policies, specifically those proposed for mitigation (2006, p. 97). He found that the gap "between attitude and action on this issue is very large and its repercussions are of great consequence for the entire world" (p. 98). Love (2003) believed that "the moral responsibility to leave our children and their descendants a world as livable as the one we inherited is…a matter of concern only among environmental philosophers" (p. 18). Reflecting on some of his previous work, Jamieson (2006) proposed that the solutions required to move Americans to action on climate change would entail acquiring a "level of self-consciousness and an ability to plan the development of one's own character... [examining] one's own psychological states and commitments, and to imagine how changing one's life situation would affect future habits and behavior" (p. 100). Bazerman and Tenbrunsel (2011) echoed Jamieson, referring to research in the new field of behavioral ethics which studies how people actually behave when faced with ethical dilemmas. It was shown that behaviors are often "contrary to our best ethical intentions...often inconsistent [and] at times even hypocritical" (p. 4).

Heise (2008) believed that part of the problem is a matter of semantics: do we refer to the current climate crisis as *global warming* or *climate change*? Using the term global warming worries scientists and environmentalists because it does not invoke concern among "populations who associate heat with pleasant summers on the beach" (p. 205). I actually had a student a

number of years ago make a comment about preferring warming temperatures; her limited life's experience being summers at the Jersey Shore. Heise also made a point about climate change being a "far more neutral term," conveying "no sense of risk," among other things (p. 205). But Leiserowitz, Feinberg, Rosenthal, Smith, Anderson, Roser-Renouf, and Maibach (2014) determined that the term global warming is actually better understood (at least by Americans), elicits greater emotional response, and garners more support for action personally and nationally than the term climate change, perhaps because they mean distinctly different things and are used differently to them. Americans are also more likely to say they hear the term global warming more frequently in public discourse, but that they use the term more often in their own conversations (pp. 4-5). So what do we call it? Perhaps *global weirding*, coined by Hunter Lovins of the Rocky Mountain Institute (Waldman, 2009), and although descriptive, it has not seemed to have caught on in mainstream media or conversation as far as I can tell. *Climate disruption* has emerged as the preferred term of the Sierra Club, and Melton preferred the term *climate pollution*, as it "comes with inferred impacts that our society can understand" (personal communication, November 3, 2014).

But regardless of what we choose to call it, the enormity and urgency of climate change issues, the prevalence of denialism among political decision-makers as well as individuals, and the lack of effective environmental education (Saylan & Blumstein, 2011), indicates a need for undergraduate environmental educators and perhaps all educators, to rethink their curricula. Whether the time demands do not allow for, or whether the instructor is reluctant to approach the social causes and consequences of climate change, the costs of continuing with business-as-usual climate policies are far too high to continue ignoring the importance of effective climate change education. Addressing the climate crisis with the urgency it deserves and in novel ways may

better help students develop the consciousness and commitment needed to make appropriate personal and societal decisions to ensure the habitability of Earth for all of its future inhabitants. If serving humanity is truly the purpose of education, then we should be rethinking and revising science and humanities curricula to equip students with not only a scientific understanding of the causes of climate change and the seriousness of its potential consequences, but also its inherent ethical questions.

It is evident that we have an ethical obligation to act on climate change for what Wei (2012) considered two related reasons: not harming future generations and preserving the environment based on principles of stewardship and respect for animal life, although he acknowledged several problems with these arguments. “Future generations and animals,” he stated, are “appeals that are extrinsic to the individual self and refer to beings distant spatially and temporally.” Lack of direct causality is another issue, along with the persistent problem of climate change denialism. The author made a direct appeal to virtue-based ethics, along with spiritual traditions as having potential roles in guiding climate change education towards meaningful behavior change.

Giving students the appropriate tools with which to overcome ignorance, hopelessness and inaction, and effective communication skills with which to reach others may be the only hope in increasing activism and true change both in the United States and globally in regards to addressing wide-reaching economic policy choices involving climate change and related issues of wealth inequality and social breakdown. Climate change communication research is interdisciplinary in nature, considering fields in the biological and physical sciences, the social sciences, environmental and land use policy, as well as education and communication. The work of climate change communication supports policy makers and others in understanding

information from the scientific community to make informed decisions. Its application in education are far reaching to "diverse audiences to raise awareness of and motivate action on climate change" (Kelly, 2013, pp. 117-118).

According to Pruneau, Khattabi and Demers, climate change education and communication strategies have been proposed in response to discoveries in the way people construct knowledge regarding the subject, leading to cognitive, social and psychological, and behavioral challenges (2010, pp. 16-18). Drawing on research from a variety of sources, the authors proposed specific pedagogical strategies in climate change education in regards to mitigation and adaptation as necessary for information transmission, motivation and behavior modification. Included among these strategies are collaborative action research, emotional and cognitive training activities, *experiential and reflective approaches*, technical and mathematical skills, problem solving, risk and vulnerability analysis, and sustainable decision-making and planning (pp. 20-21).

For over two decades, few leaders have recognized that the time has come (and now slipping past,) to deal with climate change issues and they are "deeper and more difficult" (Speth, 2004, pp. 5-6). He described *contempocentrism* as a convention that "discounts the future in favor of the present," akin to the self-centeredness we ascribe to anthropocentrism, and opposed to a central principle of environmental ethics – that we owe future generations consideration in our actions now (pp. 138-139). Furthermore, he stated that the public issue of climate change, driven by science and technology (or the denial of it) requires larger investments in environmental literacy (pp. 170-171).

Ultimately, no matter how high the costs are, we have a moral obligation to prevent harm from climate change to humans and the environment in which we coexist. As we progress further

into the twenty-first century, we must address climate change personally and politically by moving beyond the traditional communication frames of scientific certainty and economics, finding alternative, effective ways of producing the social changes necessary to promote flourishing in the human and non-human world. According to Trevors and Saier (2010):

> Our common future must include education in every aspect of our lives…vocational, political and moral education. Principles of tolerance, consideration and equality must be emphasized. One of the reasons we find ourselves in the present crisis is that politicians, and the military-industrial complex, are not the best qualified to understand and make the correct decisions. They simply do not have all the correct education and values. (p. S76)

In light of correct education, Kruger and Dunning (1999) found that "people reach erroneous conclusions and make unfortunate choices" in part because their lack of knowledge inflates their self-confidence. Additionally, their "incompetence robs them of the metacognitive ability to realize it" (p. 1121).

Lindemann (2008) determined that "the prospective benefits of an education focused on character development as a foundation for an environmental ethic, specifically the concept of moral perception, as the acquisition of virtue is correlated with the shaping and refinement of moral perception" (p. 3). I would extend this specifically to climate change ethics.

In my review of the literature I will present research suggesting climate change as both a *perfect moral storm* and a *super wicked problem*, presenting significant barriers to personal and global action as an ethical issue, and one concerning justice and human rights. Central to these barriers is the current research on the moral psychology of climate change. I will discuss contemporary virtue ethics, its relationship to environmental virtue ethics and its eventual evolution to climate change virtue ethics, with a discussion on ecotheology and environmental spiritual traditions from world faith communities and indigenous peoples. The literature review will conclude with a discussion of climate change education presented within the context of an

historical overview, and critique of environmental education.

My synthesis of virtue ethics in undergraduate climate change education and the structure for an ecocritical approach will be the final topics presented in the last chapters of the thesis, along with a brief syllabus for the course *Virtuous Reality: Climate Change Ethics***.**

Review of the Literature

Climate Change: The Perfect Moral Storm

> We think we don't want to sacrifice, but sacrifice is exactly what we're doing by perpetuating problems that only get worse; we're sacrificing our money, and sacrificing what is big and permanent, to prolong what is small, temporary and harmful. We're sacrificing animals, peace, and children to retain wastefulness while enriching those who disdain us. When we stop seeing our relationship with the whole world as a matter of sustainability, and realize it is a matter of morality – of right and wrong - we might make the moment we need.
>
> - Carl Safina, *The Moral Climate*

Wicked problems. The term *wicked problem* was introduced by C. West Churchman in 1967, although he gave credit to Horst Rittel, who had previously described the term during a seminar (p. B141). Several years later Rittel, along with Melvin Webber, further refined the characteristics of wicked problems in the context of social planning policies to include ten distinct features. Wicked problems have no definitive formulation and no "stopping rule," which means that the person working on the problem stops for reasons external to it. Solutions to wicked problems are not true-or-false; they are good-or-bad, there is no immediate or ultimate test for them, and there is no opportunity for trial-and-error: every attempt is crucial. Wicked problems are unique and potential solutions appear not only limitless, but the criteria for them may be poorly defined. Every wicked problem can be considered a symptom of another "higher level" problem. The existence of a specific wicked problem can be explained in multiple ways which will then determine the mode in which it will be resolved. Lastly, those who propose and initiate solutions to wicked problems are liable for the consequences and, as such, have "no right to be wrong" (1973, pp. 161-167). Rittel and Webber's use of the word wicked was fitting: "akin to that of 'malignant' (in contrast to 'benign') or 'vicious' (like a circle) or 'tricky' (like a

leprechaun) or 'aggressive' (like a lion, in contrast to the docility of a lamb)" (p. 160). It is in this sense that the term has been applied to a number of environmental issues, including climate change.

Uncertainty regarding climate change, such as the likely consequences and suitable policy responses characterizes this issue as wicked (Balint, Stewart, Desai & Walters, 2011, p. 49). Other wicked dimensions of climate change include the uncertainty of whether and when irreversible tipping points may be reached, or in the approximation of its social and economic costs (p. 50). Wicked environmental problems are generally typified by scientific uncertainty, wide public disagreement on values and seemingly unattainable solutions, and yet despite all of the unknowns and conflicts, policy makers must act (p. 20). Policy makers must contend with the innumerable ways science, technology, ethics, law, politics, economics, and culture intersect and interact. Ethical problems are also complex, dealing both with questions of fact and questions of value. As Nordhaus and Shellenberger observed, the "myriad overlapping" that occurs in many social issues "influences confound simplistic efforts to define causality" (2013, Section 1, para. 5). These issues, including climate change, would be identified and framed in "oppositional terms that pit one set of problem-solutions against another" (para. 7) in the United States. The opposing sides "constructed and reinforced by massive, polarized expert establishments, would come to frame virtually every national problem as a consequence of the irrationality, ignorance, and immorality of the political Other" (para 8).

Levin, Cashor, Bernstein and Auld further characterized anthropogenic climate change as a super wicked problem because it also entails four unique criteria:

> …time is running out; those who cause the problem also seek to provide a solution; the central authority needed to address it is weak or non-existent; and, partly as a result, policy responses discount the future irrationally. These four features combine to create a policy-making 'tragedy' where traditional analytical techniques are ill equipped to

> identify solutions, even when it is well recognized that actions must take place soon to avoid catastrophic future impacts. (2012, p. 123)

Barry, Mol and Zito noted that despite its dominance "in sophisticated academic analyses," and an increase in our "knowledge and understanding of the ethical, political, economic, sociological, cultural, and psychological aspects of climate change...political leadership on tackling climate change" appears to be inversely related (2013, p. 361).

Hulme (2009) found that the failure of understanding and treating climate change as a wicked problem has led to a "global solution-structure that possesses elements that appear either inadequate or inappropriate given the intractability" of the issue (pp. 334-335). He believes that the global argument over climate change is based in disagreement over every aspect of the problem produced by serious engagement with the problem, and argued that we should use "the idea of climate change" to adjust "our wider social goals about how and why we live on this planet" (p. 361). Although acknowledging the greater appreciation of climate change as an ethical issue, he appeared uncertain as to whether "appeals to religion – to arguably, or hopefully, common spiritual and human values" – may be adequate for "reconciling a fragmented" and argumentative world (p. 175). Within the context of wicked problem language, he discussed *clumsy solutions* for climate change which would involve the rethinking not only the nature of sought resolutions, but their implementation as well. He fully accepted that without complete, global commitment, they are suboptimal:

> Clumsiness therefore emerges as the opposite of elegance or optimality in policy making. It sits uneasily alongside universalist mentalities, whether those inspired by science economics, religion, risk management, development or politics. A belief in clumsy solutions demands that multiple values, multiple frameworks and multiple voices be harnessed together – clumsily, contradictorily – in our response to wicked problems. (pp. 338-339)

Thompson and Whyte noted that the wicked problem framework is significant in environmental philosophy and the identification of climate change as a multidisciplinary issue

demands interdisciplinary collaboration (2012, pp. 485-486). In using "training in a humanities discipline to produce a written account of the wicked problem context, one may be able to make a useful contribution to the collective learning process" (p. 493). Indeed, Ferkany and Whyte (2012) discussed the importance of incorporating certain *participatory virtues* within this context for the future of environmental education, claiming that inclusiveness and engagement are particularly significant (pp. 430-431).

Although the metaphor describing climate change as the perfect moral storm was first used by Gardiner in 2006, and who wrote a book by the same name five years later, a number of authors have since used this metaphor. It's most succinct interpretation was given by Rolston (2012):

> …an utter or consummate moral quandary….The storm is absolute, comprehensive, inclusive, ultimate; there is an unprecedented convergence of complexities, natural and technological uncertainties, global and local interactions, difficult choices scientifically, ethically, politically, socially. (pp. 210-211)

George Marshall is the founder of the Climate Outreach and Information Network (COIN) in the United Kingdom. I was privileged to receive a pre-release copy of his book *Don't Even Think About It: Why Our Brains Are Wired to Ignore Climate Change*, in which he interviewed scores of people on all sides of the climate debate, including some on no side: highly respected climate and social scientists, extreme weather survivors, activists, and Tea Partiers from Texas. He attempted to answer the question "How is it possible, when presented with overwhelming evidence, even the evidence of our own eyes, that we can deliberately ignore something - while being entirely aware that this is what we are doing?" (2014, p. 1). In a chapter titled "Powerful Words," Marshall discussed climate change within the context of a wicked problem in this way:

Metaphors frame how we come to think about the issue as a whole. If we think of climate

> change as a whole. If we think of climate change as a ticking bomb, we see it quite differently than if we think of it as a fever, or a gamble, or a new Apollo space mission or a World War II battle. In each case, we imagine different causes, outcomes and solutions. But all of these framings are misleading. They encourage us to see climate change as a finite challenge that can be cured, overcome, or won rather than as an open-ended and irreversible condition that can only be managed. This shapeless multivalent issue readily takes on the form of the metaphors we apply to it….This can create a dangerous illusion of familiarity. (p. 115)

An unbelievable problem. Public discourse between policy makers, experts and the general public, especially when it comes to integrating the science and ethics of climate change is complex, has become a process overwhelmed by disorder and disagreement over the current narrative and any potential course of action, and is characterized by uncertainty. Pielke (2007) contends that science can compel action "only in very specific decision contexts characterized by general agreement on valued outcomes and little uncertainty between particular actions and the achievement of outcomes associated with those outcomes" (p. 22). Consensus on climate change is beset with uncertainty and "the presence of uncertainty both complicates and facilitates achieving political consensus" (p. 55). The accompanying disorder is characterized by confusion, denialism, and contentious, polarizing debate (Dressler & Parson, 2006), compounded by difficulties in identifying and setting shared priorities and goals on how to protect a sustainable commons, in this case, the global atmosphere. In addressing that disorder, Felt, Fochler, Muller, and Strassnig (2009) raised the question of *unruliness* as the impetus behind a form of displacement of climate change ethics, occurring when concerns are "[displaced] to the margins or outside the realm of what should and can be discussed here and now." Displacement can occur in deference to the expertise of others or just by the *downstreaming* of the ethical concerns (p. 136).

Nordhaus and Shellenberger determined that the new media of cable television, talk radio and the internet has done much to polarize public opinion; it is "more media democracy and

consumer choice, not less, that is driving us apart" (para. 7). "Wickedness creates all manner of opportunity to disrupt the fault lines of our many intensely polarized debates and to disorient partisans accustomed to knowing exactly what they are supposed to think about any issue" (para. 17), and complicating this, as Love (2003) said, "The disquieting fact is that we have grown inured to the bad news of human and natural disasters" (p. 14).

In their 2009 book *Climate Change and the Media*, Boyce and Lewis made several important points trying to discern "one of the most obstinate displays of inertia in human history" (p. 3). Describing climate change as having been partially constructed by a "buy now, think later" consumer society, they proposed that this as a societal norm has made it difficult to think clearly about the issue (p. 5). Insisting that it is appropriate to hold news media accountable for the manner in which climate change is reported, they acknowledged that the problem is not a simple one. In a wider sense, the issue "encompasses the whole deregulatory, commercial thrust of media and telecommunications policy in recent years," one in which product proliferation trumps content and the "increasing incursions of advertising into all forms of communication." While admittedly, news journalism is the most important space for raising awareness on climate change issues and setting the "agenda for public concern and political debate, it functions significantly in framing how the issues are understood" (p. 9). The authors conceded that besides concerns over climate change media coverage, there are other problems that have contributed to the lack of action on every scale:

> ….the complexities of climate science along with the presence of publicly known climate skeptics, both from within and outside the climate science community, normative orders (e.g. journalistic and economic norms with media), and wider sociopolitical discourses contribute to public interpretation of consensus on anthropogenic cause in climate science. (p. 56)

In an atmosphere of scientific and moral uncertainty, conflicting testimony,

knowledge deficits, lack of awareness or acceptance regarding climate change, and confusing media coverage, public anxiety over accountability and trust in policy makers and scientists is hardly a surprise. Despite the urgency of global climate change, the citizens of wealthy industrialized nations all face similar questions: How are we responding? Why are so few of us taking any sort of action? How do we cope - "produce an everyday reality" - when this problem is regarded as invisible? (Norgaard, 2011, Prologue, para. 13). The answers to these particular questions have been studied in recent years, but solutions do not appear forthcoming.

In their book *The Burning Question: We Can't Burn Half the World's Oil, Coal, and Gas, So How Do We Quit?* Berners-Lee and Clark (2013) said "if you wanted to invent a problem to induce confusion, disbelief and the turning of blind eyes, it would be hard to come up with something better than climate change" (Part 3, section 10, para. 4). In discussing the scientific complexity and impact uncertainty, the authors addressed the temporal issues: "the most dangerous impacts are many years away....By the time we see climate changes shocking enough to act...we will be committed to many decades of worsening symptoms and it may be too late to stop runaway warming" (para. 5). Because of the unprecedented complexity and theoretical nature of the issue, the authors suggested we not only avoid or play down the unpleasant and distressing facts, but "in some ways we might be innately predisposed to doing just that" (para. 6). They cited a number researchers' work that support a number of systemic biases, including Tali Sharot's *optimism bias*, which she claimed is evolutionarily hardwired into the human brain; a "sunny outlook" that although it may improve our physical and emotional health, it makes us more prone to underestimate our view of personal negative outcomes and overestimate the positive ones (para. 7). Berners-Lee and Clark also discussed the "tendency for 'short-termism,'" reflected in the work of evolutionary biologist Richard Dawkins, and what they perceived as the

most significant psychological barrier to addressing climate change: a "confirmation bias...the human facility for interpreting facts in a way that supports our values, prejudices and the expectation of our social groups" (para. 9). Unfortunately, the authors maintain, these barriers are just another facet in a multifaceted crisis in which open-mindedness is crucial and any productive discussion has "been stifled by the polarisation of attitudes and even more biased and selective interpretations of evidence on all sides" (para. 11).

Marshall discussed a number of psychological, social, and political climate change concerns, including one very interesting chapter on how those who deal with them every day cope with frequent opposition and anxiety:

> ...internal moral dilemmas come to a head as they struggle to square what they know about the impacts of high-carbon lifestyles with the pressure to conform to a society where those lifestyles are not just encouraged but also often required as a mark of social belonging. (p. 200)

Kretz (2012) questioned why "immoral, depoliticized, hyper-consumptive behaviors" remain firmly in place, especially in North America, despite the obvious need for change and multiple ethical arguments describing why the "current human contribution to harmful climate change is morally wrong." She contends that it will require a vigorous effort on the part of ethicists to resolve what she called the *theory-action gap* between adopted moral values and the actions that reflect them (pp. 9-10). Referring to the work of Goralnik and Nelson (2011), Kretz acknowledged that "remedying ignorance is not sufficient for motivating moral behaviors," and what is required involves emotion: a "vital role for care and a sense of community in environmental moral theories meant to instigate action" (p. 14-15). Her call for a "theory of environmental action," while not fully realized in her work, may "make explicit the connections between knowledge, belief and behavior" (p. 23).

Reviewing current work in the newer field of moral psychology, Markowitz and Shariff

(2012) identified a number of challenges to moral judgment regarding climate change and suggest some communication strategies. They reiterated the psychological problems posed by the issue, (see Table 1, Appendix A), emphasizing that they are all features of climate change that do not "generate rapid, emotional, visceral reactions" (p. 244). Contending that moral intuition is a powerful motivator and that climate advocates and communicators should want to take advantage of this, the authors suggested approaches (see Table 2, Appendix A), that could be used to help people better engage with the issue, "rallying first our hearts, and then our hands, to action" (p.246). Shepherd and Kay (2012) cautioned that presenting an important issue to the public in ways that make it appear complex does not motivate increased efforts to address it. Using content from *An Inconvenient Truth*, the climate change book by Al Gore and its subsequent documentary as an example, the authors said that potential audiences unfamiliar with climate change might be motivated to "avoid seeing it, because maintaining unfamiliarity is an ideal way to protect the psychologically comfortable (even if inaccurate) belief that the government is taking care of the problem" (pp. 264-265).

At the end of his book, Marshall recommends "personal and highly biased ideas for digging our way out of this hole" (p. 231), with tongue firmly planted in cheek, as so much of the book is about the biases that limit our ability to deal with climate change. But perhaps the most remarkable statement he made was:

> ...of greatest relevance to our decision making around climate change is the discovery that this long evolutionary journey has led us to develop two distinct information processing systems. One is analytical, logical and encodes reality in abstract symbols, words and numbers. The other is driven by emotions (especially fear and anxiety), images, intuition, and experience. Language operates in both processes, but in the analytic system, it is used to describe and define; in the emotional system, it is used to communicate meaning, *especially in the form of stories* [emphasis added] (p. 48).

I have to admit that it was when I finished reading Marshall's book I began to see a light at the

end of the tunnel; the fragments of climate change, morality, and ecocriticism were coming together, and I owe the author a great debt for that.

Contemporary moral philosopher Gilbert Meilaender believed there was only a single "kind of teaching of virtue…possible for human beings. It is not an imparting of actual knowledge of the good, it is only the *telling of stories which transmit images and examples of moral virtue* [emphasis added], and in so doing begin to shape character by awakening a love for what is good" (p. 49). As we will see later, it is not just the written word that can tell stories. The provocation of emotions via the language of these literary, visual, or audial stories will be critical in the immediate future of climate change education and communication.

Climate change as an ethical issue. Climate change ethics is one of several themes falling under the broad heading of geoethics, which is defined as the "study and promotion of the evaluation and protection of the geosphere" and "focuses on some of the most important environmental emergencies," including the greenhouse effect and climate destabilization. When raising the question of how climate change should be addressed whether individually, as a nation, or as a global community, it is an ethical one because the choices facing especially the policymakers on the planet will have far-reaching effects both globally and temporally (Peppoloni & DiCapua, 2012, pp. 345-241).

Rolston (2012) summarized the ethical perspectives on climate change, maintaining that "intergenerational issues, distributional issues, concerns about merit, justice, benevolence, [and] about voluntary and involuntary risk" differ cross-culturally, and involve long lag times, where "local *goods* cumulate into global *bads*." He saw mounting vice, "opportunities for denial, procrastination, self-deception, hypocrisy, free-riding, cheating, and corruption," where "self-interest is at odds with collective global interests," and likened climate change to Garrett

Hardin's well-known *Tragedy of the Commons* (1968); when a collective resource is gradually degraded when individuals act in self-interest alone (p. 211). According to Marshall, climate change is the "*ultimate* tragedy of the commons," and that besides the focus on greenhouse gas emissions issues, there is the "exploitation of the common reserves of fossil fuels." Quoting Hardin, he claimed that "appeals to responsibility and conscience are a waste of time and only 'mutual coercion mutually agreed on' will work to curtail our insatiable personal interests." He described the work of Nobelist Elinor Ostrom who argued that "free communication, a shared vision, a high level of trust, and a mobilization of participating communities from the bottom up" can enable people to "sustain and even improve shared resources" (pp. 185-186).

Scientific uncertainty, political polarization, social ineptitude, or psychological barriers, are insufficient frames and arguments for climate change engagement specifically because they ignore moral and ethical principles involving the prevention of harm, the provision of justice and equity, and the obligation to honor and protect the resources and processes that make life on Earth possible. For the same reasons, the economic *self-interest frame* can be discounted (National Climate Ethics Campaign, 2011, pp. 2-3). Climate change cannot be described as a scientific, political, or energy problem; that it is fundamentally a "moral and ethical crisis," and cannot be solved with additional "scientific facts or technical arguments...harmful beliefs, practices, and policies can only be overcome when they are declared to be morally wrong and decidedly unjust. Only then are people motivated to right that wrong by working for a higher moral purpose" (p. 1), as it has been with this and other environmental issues for decades.

Addressing the economic issues within climate change, Nelson (2011) accepted the moral implications of the problem, and asserted that a system of "economics based on Enlightenment notions of mechanism and disembodied rationality" is unsuitable for dealing with them. He

suggested a novel role for economists, specifically involving activism within their field, cooperative effort, and "focus on avoiding the worst, rather than obtaining the optimal" (p. 145). Singer wrote "the discovery that human activities are changing the climate of our planet has brought with it knowledge of new ways in which we can harm each other" (p. 216). What are our responsibilities toward the disadvantaged and emissions-innocent now and the non-responsible future generations, in regard to the effects wrought by climate change? Should we be concerned with the flourishing of humanity exclusively, or do we have a responsibility to Earth in general? Outside of the climate change issue, these are questions that have been asked for decades in environmental philosophical thought.

A brief history of environmental ethics. Although the writings of American authors such as Aldo Leopold, John Muir and Henry David Thoreau reflect a moral tone towards the natural world, the distinct academic discipline of environmental ethics was not recognized in the West until the early 1970s, despite some evidence of its existence in indigenous cultures for hundreds, if not thousands of years. It is interesting to note here that these three authors in particular have been included in the works of some of the early ecocritical writers such Cheryll Glotfelty, Harold Fromm, Lawrence Buell, Glen Love, Timothy Clark, and Ursula Heise. The humanistic perspectives in the interests of environmental ethics include political ecology, sustainable development, bioregionalism, ecojustice, the ethics of stewardship, and human virtuous caring "recognize that nature and culture have entwined destinies" (Rolston, 2012, p. 195).

Anthropocentrism is the application of traditional Western moral philosophy to environmental problems, while *biocentrism* refers to the extension of these generally accepted human-to-human ethics to sentient beings and to non-sentient animals and plants, on the merit of possessing inherent good. *Ecocentrism* is a holistic approach that extends the land ethic of Aldo

Leopold where humans are no longer dominating the land community but merely citizens of it (Callicott, 1993, p. 30). This is beautifully summarized in that famous quote (one of several,) from Leopold's posthumously published *Sand County Almanac*: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community; it is wrong when it tends otherwise" (1949, p. 240).

One of the earliest environmental philosophy papers came from Australian Richard Sylvan, formerly Routley, (2009) who criticized traditional anthropocentric ethics as inadequate to deal with the burgeoning environmental crises of the day. In a 1973 essay titled "Is There a Need for a New, an Environmental Ethic?," he maintained that any extension of traditional ethics would be ineffective, and called for a "radical change" that would have to "amend the classical notion of a natural right, a far from straightforward matter now that human rights with respect to animals and the natural environment are, like those with respect to slaves not all that long ago, are undergoing major re-evaluation" (pp. 137-143). This would stand in contrast to Peter Singer's environmental philosophy of *utilitarian extensionism* expressed in *One World* thirty years later (p. 23).

Other philosophers and movements within the realm of environmental ethics were to follow. Arne Naess and the Deep Ecology movement began in 1973 (Curry, p. 101). John Passmore's 1974 *Man's Responsibility for Nature: Ecological Problems and Western Culture* posited that our *responsibilities* lay with other humans alone and could "include responsibilities *for* nature, insofar as that affects us, but not *to* nature (p. 11). Holmes Rolston III published the first of many papers and books on ecological ethics in 1975, titled "Is there an ecological ethic?" (Clowney & Mosto, 2009, pp. 22-37). *Ecofeminism*, a term coined by Francoise d'Eaubonne in 1974, sought to develop an environmental ethic through the lens of feminist philosophy, is

typified in the works of Vandiva Shiva, Val Plumwood, and Ariel Salleh (pp. 243-244). The environmental justice movement, now sometimes called *ecojustice*, began in the United States in 1979 (p. 314), and in 1993 Murray Bookchin answered the question "what is social ecology?" in an essay by the same name (2010, pp. 297).

The global ecocentric environmental ethic, proposed by Callicott (1993) recognizes the global dimension of contemporary environmental crises. He believed that such an ethic could serve as a commonality between nations, interfacing with those "implicit in the world's many indigenous and traditional cultures" (pp. 31-32). He noted an irony between the desperate need for the revival of such ethics in what he referred to as this "contemporary age of secularism, humanism, and materialism." The rise of modern philosophical thought, such as the intrinsic value, autonomy, and dignity of individuals described by Descartes, Hobbes, and Locke, and later expanded in Bentham's utilitarianism and Kant's deontology, has "seemingly obscured human temptation to exhaust and exploit Earth's resources" (pp. 33-34).

In *Silent Spring*, Rachel Carson wrote "The control of nature is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man" (1962, p. 297). Lauded by some as the beginning of the modern environmental movement, this statement epitomizes a consensus that certain human activities and technologies had and continue to have disastrous consequences on Earth. Close examination of these activities and technologies through a moral lens and the line that must be drawn between acceptable and unacceptable practice has become the foundation of climate change ethics.

Ethical concern regarding climate change is hardly new, as evidenced by its recognition at the Rio Declaration and by the UNFCC, more than twenty years ago, but very little appeared

in mainstream media, with a few exceptions including an article in *The Christian Century* written in 1992 by James Nash, former executive director of the Churches' Center for Theology and Public Policy in Washington, D. C. In "Ethical Concerns for the Global-Warming Debate," Nash admonished Americans from a Christian perspective for not realizing the moral implications of the issue. He introduced six specific concerns determined necessary for an ethics debate on the topic to "provide a moral framework in a controversy hampered by excessive moral confusion" (p. 776). The first concern was distinguishing the difference between global warming and global climate change, as he believed that although focusing on climate change would not change preventive strategies, anthropogenic climate change had greater moral relevance and assumed certain human responsibility. Avoiding "moral compartmentalization" in the debate was his second concern; Nash saw a direct connection between climate change and economic justice for the poor in terms of benefits and burdens, appropriate emissions reductions, and technical assistance from the North to the South to "provide poor nations with the means and incentives to combat ecological decline and economic deprivation" (pp. 773-774). The virtue of frugality was the author's third concern, connecting "thrift, moderation, temperance, efficiency and simplicity," ahead of the environmental virtue ethicists that would come later. Fourth, Nash recognized the importance of international cooperation as an imperative for global ecological security, and fifth, consideration to future human generations and non-human entities (p. 775). Lastly, the author expressed concern against high-risk taking, seeing inaction on climate change as a high-risk strategy with no palpable gains but significant potential for catastrophic loss. In his view, the morally preferable approach was one of low-risk: taking steps quickly to reduce global warming, entailing the development of "energy alternatives, conservation, an efficiency revolution and reforestation." As he pointed out, even in the absence of climate change (a

scenario that is now obsolete), "nations will still gain major social and ecological benefits" by adapting these tactics (p. 776).

In the years since Nash, numerous authors have furthered the cause of climate change ethics. Garrard argued that, contrary to McKibben's grieving the *end of nature* in his popular 1989 book by the same name, the "real moral and political challenge….must be in accepting that the world is *not* about to end," that humans will probably survive but without their Western-style civilization. "Only if we imagine that the planet *has* a future, after all, are we likely to take responsibility for it" (2004, pp. 106-107). Wapner also disagreed with McKibben's outlook: "we must acknowledge that we have partially manufactured the natural world…the scope and scale of human activity has created a world in which there is no longer any such thing as nature devoid of human influence" (2010, p. 6). Speaking about the environmental movement he was hopeful for a future that although challenging, is "an opportunity for… [and a] chance for the movement to think afresh about conventional philosophical and political categories, and therewith refashion itself into a more effective movement… [embodying] the movement's future" (p. 9).

Jamieson believed that increasing scientific information on climate change cannot solve the problem. "Science has alerted us to a problem, but the problem also concerns our values. It is about how we ought to live, and how humans should relate to each other and to the rest of nature. These are problems of ethics and politics as well as problems of science" (2002, p. 285). He acknowledged that the future of the planet "may be one without wild nature," but also said that the questions arising in that possibility are fundamentally moralistic. "They concern how we ought to live, what kinds of societies we want, and how we should relate to nature and other forms of life." He considered the evasion of discussing the "value dimensions of fundamental social questions" by social scientists a flaw in modern intellectual thought, providing "little

understanding of how value change occurs in individuals and societies." The author also found fault with policy professionals, asserting that they find "rational reflection on values and value change is impossible, unnecessary, impractical, or dangerous. Others see it as a professional, political, or bureaucratic threat" (p. 290).

Jamieson found these misgivings grievous. According to him, value systems provided behavior assessment standards necessary for personal reflection and gauging the actions of others, even as measures "of the acceptability of government action and regulation," and that the predominant system today is "inadequate and inappropriate for guiding our thinking about global environment problems," such as anthropogenic climate change. He claimed that this value system is outdated, given that it arose on a low population, low technology planet with seemingly infinite resources, and prior to the rise of capitalism and modern science (p. 291). It presupposes a paradigm consisting of three points: "that harms and their causes are individual, that they can readily be identified, and that they are local in space and time," and collapse "when we try to apply it to…human-induced climate change." The author developed a new paradigm maintaining new dimensions for the problem that vary greatly from the current value system: "innocent acts can have devastating consequences, causes and harms may be diffuse, and causes and harms may be remote in space and time" (p. 292). He said that conventional morality is ill-equipped to assign blame for the "serious, clearly identifiable harms [that] will have occurred because of human agency….No one intended the bad outcome or brought it about or was even able to foresee it" (p. 293). In this context, Jamieson believed that without the development of new values and redefining responsibility it would be difficult to motivate societal response to global climate change, and saw this as problematic on several levels. Although perhaps seen as idealistic, it must be remembered that "values are at least in part historically constructed, rooted

in the conditions of life in which they developed." The author called for new values to "reflect the interconnectedness of life on a dense, high-technology planet." Addressing the concern that some might believe the pursuit of a new value system to be too individualistic, he recommended "collective and institutional solutions," believing they bypass the idea that our values already "permeate our institutions and practices." The reformation of values would be "part of constructing new moral, political, and legal concepts," the benefit of which will be bringing them into the "domain of dialogue, discussion, and participation," and becoming "problems for all of us to address, both as political actors and as everyday moral agents," rather than merely managerial issues (p. 293). He wrote:

> In order to address such problems as global climate change, we need to nurture and give new content to some old virtues such as humility, courage, and moderation and perhaps develop such new virtues as those of simplicity and conservatism. But whatever the best candidates are for twenty-first century virtues, what is important to recognize is the importance and centrality of the virtues in bringing about value change. (p. 294)

Contending that the failure of Western democracies to admit to and meet the climate change challenge is a "failure of the collective imagination" (2012, p. 8), Lane compared Stern's (2007) call for public policy on climate change to "seek notions of what responsible behavior means" (2008, p. 452), with Jamieson's system of values specifying "permissions, norms, duties, and obligations," and assigning "blames, praise, and responsibility." She asserted Jamieson also deemed such a system generally constructed culturally rather than individually, but argued that while the state will obviously play a part in the process, it will not be merely a matter of public policy, as advocated by Stern or Jamieson, but "only as a part of a larger process in which individuals and groups throughout society can play an active part" (pp. 9-10). Overcoming resistance to maintain the status quo or the "inertial imaginative resistance to change" will require a "leap of initiative," and she envisioned "multiple agents of change,

playing multiple roles" (pp. 12-13).

Marshall discussed overcoming this inertia and accepting responsibility differently: "as soon as one creates responsibility, one creates blame," which in turn creates resentment; no one likes being told what to do. Calling it a "deep irony," he reviewed work by psychologist Jonathan Haidt, who had researched the moral foundations of varying worldviews, and determined that "liberal environmentalists" with "highly individualized values…[are] least suited to working together for a shared goal. *Conservatives* [emphasis added] apparently place the greatest 'moral emphasis' on personal responsibility" (p. 195).

Bazerman (2006) concluded that the failure of effective climate change response is part of a "massive pattern of unethical behavior" on the part of governments and citizens alike, attributed to economic issues and "cognitive biases" that have lead us to:

- Have positive illusions that reduce our tendency to focus on problems that loom in the distant future.
- Interpret events in a self-serving manner viewing others as responsible, not ourselves.
- Try desperately to maintain the status quo and refuse to accept costs, even when those costs bring about great good and prevent future harm.
- Fail to invest in preventing problems that we have not personally experienced. (pp. 1-15)

Bazerman and Tenbrunsel (2011) suggested that recognition of biases that create "personal and political bounded ethicality" would cause us to "remove our blind spots," seeing our collective societal behavior as unacceptable (p. 151). Bounded ethicality clouds our ability to behave ethically, because we don't always see the bigger picture. The authors believed this to be a major issue in the psychology of climate change, that is, failure to align "the gap between [our] 'want' and 'should' selves." We arrogantly predict that we will behave according to how we think we should behave, but when it comes to deciding how to act, we behave how we want to behave. Even worse, in reflection, we conveniently tend to believe that we actually had

acted as we had thought we should (pp. 153-154). In order to counter this at a personal level, they recommended focusing on abstract thinking strategies, such as imagining how we would like to be eulogized or using the "mom litmus test" (p. 159), while policy makers might benefit from having the "chance to evaluate more than one option at a time." Reformulating an ethical dilemma into an ethical choice versus an unethical one could "help bring the 'should' choice to the forefront, highlighting the fact that by choosing the unethical action," not choosing the ethical choice becomes a deliberate act (pp. 160-161).

Bookchin (2010) identified social ecology as recognizing what he claimed is the "often overlooked fact" that the environmental crisis is a direct result of "deep-seated social problems," and that how we treat each other "as social beings" is vital to addressing it (pp. 268-269). He said "we will tend to focus on the symptoms of a grim social pathology rather than on the pathology itself, and our efforts will be directed toward limited goals whose attainment is more cosmetic than curative" (p. 269).

Climate justice. According to Broome, the philosophical standards of goodness and justice are the filters used in issues of climate change ethics and many questions can be settled by common sense (2008, p. 96). Morality and ethics involve rights and duties, benefits and costs and virtue v. vice which in turn, influence human behavior and decision making processes. Grasso (2007) believed that the "principles of justice are shaped by criteria of equity" can lend greater legitimacy and "persuade parties with conflicting interests to cooperate more closely on collective action," asserting that larger numbers of participants will be engaged and "a global manageable solution can in principle be achieved" (p. 234).

Marshall (2014) stated that intentionality is the crucial factor determining moral responsibility in the climate change dispute:

> It is much harder to argue one's innocence when one *knows* that one's actions are causing harm. If climate change becomes intentionally harmful only when people *know* they are causing it, is it any surprise that most people do everything they can to avoid learning about it or accepting that it exists? (p. 84)

The issue of moral culpability was discussed by Sarkar (2012) who contends there is an "operational distinction" between humans and the rest of nature in the climate change debate that can be used in a practical context while acknowledging that humans are still part of nature. This, he said, is critical, as "we can straightforwardly be held ethically responsible for anthropogenic features; for instance, ongoing climate change." But he also added that even though we are not culpable for the effects of a non-anthropogenic event, such as an earthquake or volcano eruption, we still need to "have done all we could to mitigate those of their impacts over which we *have* [emphasis added] control" (pp. 19-20). There is also a moral imperative to support research and education that allows society to understand how natural events may exacerbate the impacts and feedbacks of anthropogenic change. According to Huppert and Sparks (2006), the largest events coupled with anthropogenic forcing could cause threats to civilization and although rare, will happen and require advance consideration. The more frequent and smaller events could also have very large human, environmental and economic consequences. They maintained that a sustained effort is needed to identify areas at greatest risk and take steps to apply science before the events occur (p. 1875).

Bellamy and Hulme (2011) discussed the implications of abrupt climate change within the context of their scientific and social concerns and the difficulties that ensue in understanding and communicating what is often referred to as *catastrophic climate change*. The authors used an interpretative framework of cultural theory and centered their research around four areas of risk perception: "concern about abrupt climate change as distinct to climate change in general, the likelihood or abrupt climate changes, fears of abrupt climate changes, and preferences in how to

mitigate [them]" (pp. 48-49). They concluded that disagreements about climate change based in the differing perceptions "reflected by individual values and beliefs" and coupled with that of the wicked problem scenario, have made visualizing "the success of international negotiations" gradually more difficult (p. 59).

It has been suggested that framing climate change issues from a human health perspective in public communication would be more effective (Maibach, Nisbet, & Weathers, 2011). Communicating the potential of global climate change to harm human health, and conveying the potential to improve human health through actions that decrease GHG emissions, the authors believe public understanding can be enhanced and appropriate responses by individuals can be elicited. Framing is also an important communication process for educators who can enhance their impact by linking messages and recommendations to the deeply held values and beliefs of their students. Framing the relevance of climate change in ways that connect to core values or familiar issues has the potential to engage a much broader cross-section of people (pp. 1-3).

O'Hara and Abelsohn suggested a number of ethical principles essential in responding to the climate change crisis: non-maleficence (*primum non nocere,* first do no harm), equity, retributive and distributive justice, and free and informed consent (2011, p. 27), of which some, as we will see later, have been called "environmental virtues" by a number of authors (van Wensveen, 2000, 2001 & 2005, Sandler, 2007 and others). They discuss the fundamental and primary obligation to avoid harming others within the context of the 1992 Rio Declaration on Environment and Development, which acknowledged that although individual states could "develop their own resources for their own benefit," they also had the responsibility to ensure that those activities did not damage the environments of areas outside of their jurisdiction, certainly a dilemma in regards to climate change. The signatories of the Rio Declaration and later

the same year, the UNFCC, affirmed this universal moral norm, agreeing to act in ways not harmful to Earth's ecosystems and extending these rights to current and future generations.

The principles of equity and distributive justice correlate to fair allocation of societal benefits and burdens; indeed, they are closely related (O'Hara and Abelsohn, p. 28). Although individual states have rights to resource use and greenhouse gas (GHG) emission, the finite nature of the atmospheric commons must be kept in mind, creating an additional obligation to avoid GHG emissions that exceed some conception of a fair share (p. 29). Retributive justice implies reparation to individuals or states (in this context developing nations,) harmed by others' excessive utilization of the atmospheric commons, especially after the industrialized nations have become aware of the harmful nature of their actions. "Past practices of utilizing more than one's fair share of a common trust is not justification for continued bad behavior" (pp. 30-31). These actions on the part of developed countries are largely responsible for the negative effects that are currently being felt unequally by developing countries; in other words, they have shared only in the costs and not the benefits. "The developing countries did not consent to being burdened with these adverse effects, nor did they cede their portion of the atmospheric commons to the developed countries that used it for their own ends" (pp. 35-36).

Brown insisted that once a clear link between the evidence of climate change and its anthropogenic implications had been established, nations and individuals responsible had a clear duty to take action. "There is an urgent need to increase the focus in international climate negotiations and at the national level on equity and justice" (2014b). He also found that ignoring the issues of equity and justice as they pertain to climate change "because they are difficult or contentious" will likely have disastrous consequences. Precisely "because of the unwillingness of nations to agree on what equity requires of them, initial steps should be taken to increase

awareness of the ethical and justice failures of national responses to climate change" (2014a). Researchers Hsiang, Burke, and Miguel (2013) reported a "substantial correlation" between climate change and conflict. I suspect that in a climate-changed future, those disastrous consequences will include deadly social conflicts over diminishing resources on a global scale.

Although an international focus is necessary to resolve the inertia on climate change action, Harris (2008) has observed that much of the literature on justice and climate change speaks "of obligations of *states* to act (or not) to limit their emissions of GHGs, or to act in ways to mitigate the effects of these emissions," and there is little discussion, mostly "among philosophers and activists, not diplomats" regarding the obligations of *individuals* (p. 482). He determined that more emphasis should be placed on individuals' actions along with the negotiations on the obligations of nation states, based on the premise that there are high greenhouse gas (GHG) emitting consumers in developing nations such as China, Brazil and India. If the duty to reduce GHGs is solely a national obligation and not a personal one, those individuals will continue their behaviors without recognizing their own moral failure (2013, p. 202).

According to Garvey (2008), the question of who should bear the burdens of addressing climate change has focused on the *polluter pays principle*, that is, those who are responsible for the production of climate-changing greenhouse emissions are morally culpable for harms caused by them (pp. 74-75). Caney (2005) maintained that this emphasis is not only more problematic than it first appears, but is also incomplete in several ways. He proposed grounding the polluter pays principle in a more general theory of justice and rights (pp. 747-748), addressing the issue in both individualist and collectivist methodologies, and within three different contexts which he referred to as the principle of "common but differentiated responsibility" (p. 774), first

articulated by the 1992 Rio Declaration (p. 772). First, in identifying the polluters, an individualist approach for reparations sought for some pollution created by earlier generations is not feasible as the individuals are no longer living. However, the collective (for instance, a nation), could be held accountable. Second is the issue of benefit and non-identity (originally discussed by Parfit, 1984, and will be further explained below), that individuals are not responsible for the standard of living they enjoy in an industrialized nation, but once again, this claim can be made to a collective. Caney's third context, and perhaps most important or at least interesting to him, involved the question of who is the "bearer of the right to *emit* (emphasis added) greenhouse gases (individuals or collectives)?" He stated "on an individualist approach…it is unjust to impose sacrifices on some current individuals because, and only because, of the excessive emissions of earlier inhabitants of their country" (p. 774). In regards to the "principle of common but differentiated responsibility" the author suggested a hybrid approach that maintains some of the features of it, but "does not restrict its duties to states," does not "accept historical responsibilities," and does not "take into account excusable ignorance" (pp. 774-775).

Grasso determined that given the dual importance of justice and equity, responsibility and retribution of each participant country should be "proportional to cumulative emissions, net of undeserved inequalities, and the allocation of raised resources should benefit the harmed countries in inverse proportion to their levels of human security" (p. 243). Sarkar agreed that equity is a critical component of justice, exemplified in fairness and more than mere equality (p. 174). Advancing Garvey's four criteria of moral adequacy – "historical responsibilities, present capacities, sustainability, and procedural fairness" – to replace simple equality, the author stated unequivocally "there is no question that the responsibility for acting on climate change

belongs…to the nations of the North" (p. 180). Sarkar continued, stating that the South "will experience a disproportionally higher share of the negative effects of climate change," owing to greater population densities and less resources with which to cope. Generally speaking, the populations of the South consist of people of color and those of the North are white, which leads the author to an interesting perspective on environmental racism. He cautiously advanced the statement that although "environmental problems are in general more often encountered by those who are economically disadvantaged because these people have less political power… association with race may result from a correlation between race and poverty." He believed that there may be a common cause in both racial discrimination effect and environmental harm (p. 182).

Imbalanced distribution of environmental, political, economic and social resources are usually hallmarks of unsustainable development, according to Harris. Concerned with fulfilling their basic needs, the poor are "unlikely to be immediately concerned with environmental changes whose adverse effects will be experienced" in the distant future. Furthermore, they deem it unfair to be asked to "forgo development so that the developed countries" can continuing consuming resources at their present rate (2010, p. 60). And so they should be.

Climate change as an issue of human rights. Worsening impacts of climate change undermine a whole range of human rights: rights to safe water, food, health and education. They also displace individuals, communities and threaten entire nations in some small, low-lying islands. These present and potential dangers are causing not only human distress, but as they worsen, will increase conflict in already volatile parts of the world.

Until recently, human rights has not significantly influenced international law and political debate. Hassan and Khan found that the previous focus in these areas had been on the

security and economic impacts of climate change, with scant attention paid to social and human rights issues (2013, p. 81). With direct reference to "core international instruments" such as the Charter of the United Nations (UN), the Universal Declaration of Human Rights (UDHR), the 1966 International covenant on Civil and Political Rights (ICCPR), the International Covenant on Economic, Social and Cultural Rights (ICESCR), the Convention on the Rights of the Child (CRC), the Convention on the Rights of Persons with Disabilities (CRPD), the convention on the Elimination of All forms of Discrimination Against Women (CEDAW), the International Convention on the Elimination of All Forms of Racial Discrimination (ICERD), and the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (ICRMW), the authors considered these basic rights: the right to life, the right to food, rights to water, and rights to health, housing and self-determination (pp. 80-83).

Recent documents from the United Nations Children's Fund (UNICEF) discussed the current and potential impacts of climate change on a particularly vulnerable group, children. *Our Climate, Our Children, Our Responsibility; A Brighter Tomorrow: Climate Change, Child Rights and Intergenerational Justice*, *Climate Proof Children: Putting the Child First in Climate Finance*; and especially *Climate Change: Children's Challenge*, highlighted children's vulnerability to climate change as a result of their particular physical, social and psychological characteristics. Climate change impacts threaten the realization of children's rights originally stated in the CRC and other human rights instruments. Within the context of specific impacts such as severe weather, flooding, and drought, decreased food security (already precarious in so many areas), and changes in communicable disease patterns, poor outcomes in terms of increased mortality and morbidity, malnutrition, and poverty and decreased equality, security and access to education (Burgess, 2013), are the themes that were interwoven in these important

documents. Atmospheric Trust Litigation (ATL) cases have been brought by non-profit organizations such as Our Children's Trust and Kids v. Global Warming in every state in the US, against the Obama administration and in other countries, with varying results. These suits sought judicial remedies requiring governments to develop climate recovery plans reducing greenhouse gas emissions by six percent annually, increasing with further delays, and many are still in litigation.

A human rights perspective of climate change can help locate the debate in terms "which have more resonance for the wider community," focus on the "human impact, rather than the economic or scientific impact," and provide a "normative framework" which can be utilized to "evaluate and develop responses" (Lewis, 2009, p. 72). Caney (2012) concurred, applying a human rights perspective with a minimal approach using Henry Shue's concept of basic rights to subsistence or economic security. These rights include unpolluted air and water, adequate food, clothing, and shelter, and minimal preventative health care. (pp. 95-96). As climate change jeopardizes these rights, "any plausible account of climate impacts should therefore reflect this," and by doing so, "captures the moral importance of combating climate change" (p. 97). Caney made additional assertions regarding mitigation and adaptation. In regard to distribution of greenhouse gas emissions, considerations in mitigation policy must be made so as not only not denying people the emissions they need to realize their basic rights, but to ensure access to them. He also pointed out that there are other aspects of mitigation to examine in a human rights framework, using biofuel development and use as an example. He cited concerns over contribution to increased food prices and even violations of labor rights, both of which have implications in basic rights violations (pp. 99-100).

Bell (2013) synthesized new literature from legal scholars and philosophers on human

rights concepts with regard to climate change, and promoted a human rights approach as a potential facilitator of global climate policy, and critically discusses the three main arguments for a human rights approach to climate change from legal and moral viewpoints (p. 159).

References to human rights in climate change discourse were absent until a petition from the Inuit peoples was submitted to the Inter-American Commission on Human Rights (IACHR) in 2005. The petition made clear reference to violations of their fundamental human rights under the protection of the "American Declaration of the Rights and Duties of Man and other international instruments," accusing the United States directly of "acts and omissions" producing the negative impacts of climate change. The IACHR failed to act on the petition, citing inadequate information to determine if the alleged facts constituted a human rights violation. Although it is not likely that victims of climate change impacts will "successfully seek redress under human rights law" any time soon, the incident did raise awareness of the concept. Since then, the United Nations Human Rights Council (UNHRC) adopted a resolution with human rights language pertaining to climate change impacts in the Maldives and other small island states, and the UNFCC has been approached directly on the matter (Bell, pp. 160-161).

Dominant political thinking regarding climate change policy has previously been of two forms: in the economic arena, a cost-benefit analysis assessing "what mix of 'business as usual', mitigation, and adaptation" is necessary and appropriate to determine maximum net benefit, and a focus on political leadership regarding "…inter-state burden sharing" and how "emission reductions obligations, in particular, and the economic costs of mitigation and adaptation, in general," should be "shared between states." Bell asserted that a human rights approach "shifts attention to the *individual victims*," putting a "human face on climate change," reminding us that it is about suffering, challenging the traditional international negotiator's focus of "*who pays*,

and asks us to focus on *who suffers*…and how their suffering might be prevented" (p. 159). The author stressed that a human rights approach to climate change has dual goals: to provide justification for collective action preventing the undermining of human rights from climate change, and "a compelling reason" for individual responsibility of a "fair share of the costs of mitigation and adaptation – namely, if we don't, we will be contributing to the violation of someone's human rights" (p. 160). It should be noted that Bell's views reflect a *moral* conception of human rights which differs from a *political* conception.

According to Bell, there are three common characteristics of all moral human rights: they are universal, isolated "moral thresholds," and take precedence over other values. Using the model of correlative duties from Henry Shue, he additionally identified the three duties associated with each human right: duties to avoid depriving, to protect from deprivation (by others), and to aid the deprived, noting that the first reflects a negative element of the right and the last two duties reflect positive elements (pp. 162-163). It is in this negative element that he built his case for a "new climate right" from the account of two contemporary environmental ethicists: Steve Vanderheiden's concept of the human right to an adequate environment and Simon Caney's interpretations of the human rights to life, health, and subsistence. Bell also discussed a third account which claims that there is a "human right to *emit* greenhouse gases," whether by equal per capita emissions or subsistence emissions, although there are multiple, complex arguments for both (pp. 163-167). In conclusion, he promoted the view that the "most plausible human rights approach to climate change [is] that anthropogenic climate change threatens basic rights," although he accepted that the "*wrongfulness*…may not be limited to violating basic rights [and] may have other morally significant adverse consequences" (p. 168).

Caney (2012) made a compelling conclusive argument to avoid the onset of climate

change without compromising human rights by describing three options: to "reduce population growth, reduce consumption of non-necessary goods and resources, and invest in and transfer, clean technology and alternative energy." He described this as a "tragic choice," and stated that "the very means needed to realize human rights turns out to be the cause of the violation of human rights" (p. 91).

Virtue Ethics

> What answer can we give when the question Why should I be Moral?, in the sense of What will it advantage me?, is put to us? Here we should do well, I think, to avoid all praises of the pleasantness of virtue. We may believe that it transcends all possible delights of vice, but it would be well to remember that we desert a moral point of view, that we degrade and prostitute virtue, when to those who do not love her for herself we bring ourselves to recommend her for the sake of her pleasures.
>
> - F. H. Bradley, *Ethical Studies*

Historical overview. Virtue ethics, or *aretaic* ethics (from the Greek *arete*, excellence or virtue,) emphasizes the role of one's character and virtue in moral philosophy (Hursthouse, 1999, p. 1). The English word *virtue* comes from the Latin *virtus* (moral perfection), the Roman translation from the Greek (Thompson & Bendik-Keymer, 2012, p. 10). It is one of the three major approaches in normative ethics and is generally distinguished from deontological (duty-based) and consequentialist (outcome-based) theories (Hursthouse, 1999, p. 1).

As one of the oldest of these three Western philosophical traditions whose roots lie in the work of Plato (Crisp & Slote, 1998, p. 4), and Aristotle and Seneca (Welchman, 2006, pp. xix-xx), virtue ethics emphasizes character development, excellence, theoretical wisdom (*sophia),* practical or moral wisdom (*phronesis*), and human flourishing (*eudamonia*). The Four Cardinal Virtues – wisdom, justice, fortitude and temperance – are discussed at length in Plato's *Republic*, and virtues figure prominently in Aristotle's *Nichomachean Ethics* (p. 3). The word "cardinal" is

derived from the Latin *cardo*, which means *hinge*. According to van Wensveen (2005), the name, possibly given by Ambrose, bishop of Milan in the fourth century CE, "expressed the idea that the moral life hinges on these four virtues" (p. 173). Theories of virtue ethics do not identify universal principles that can be applied in a moral situation as with deontological and consequentialist ethical theories, but are not entirely in conflict with them. Virtue ethics asks, among other questions, "What sort of person do I want to be?" and as such, posits that the development of morally desirable virtues for their own sake aids moral decisions and actions. A virtue ethicist would advise you to recall the acts of a virtuous person and respond accordingly to an ethical dilemma. The emphasis of virtue ethic theories is on *being* rather than *doing*. "We learn that through the lived experience of finding ourselves in concrete situations of ethical challenge guided by, and guiding as, exemplars: education in its broadest lifelong sense" (Curry, 2011, p. 48). Deontological and consequentialist theories will often use the term virtue, but in a restricted sense: the tendency to adhere to principles or rules, not in cultivating specific character traits (pp. ix-xiii, xvii-xviii). Valuable character traits are virtues; valueless character traits are vices.

Later Greeks such as Plutarch and Tacitus include virtue theory in their historical works, as did the Roman philosopher Cicero. St. Thomas Aquinas produced the most comprehensive consideration of theological virtue ethics in *Summa Theologiae*, and it is in this work that the three Christian virtues of faith, hope, and charity appear (Foot, 1998, pp. 163-164). Although the interest in virtue ethics diminished with the rise of other schools of Western philosophical thought during the Renaissance and the early modern period, some philosophers continued to emphasize the virtues, especially Francis Hutcheson and David Hume. Hutcheson's sentiment-based theory focused on the subjective observation of preferable character traits or *dispositions*.

Hume's approach was similar to Hutcheson, however he argued that it is sympathy that causes us to "share in the pleasures and pains of others," and to "approve of dispositions that help an individual advance her own personal good" (Welchman, pp. xxi-xxii).

A discussion of virtue is incomplete without at least a brief discussion of vice. Cafaro (2005) described vices as personal habits, social practices or aspects of human character widely disapproved of by most people. In traditional Western philosophy, the concept of harm is used to "clarify and justify" judgments about vice. These are derived from specific conceptions of the "goods" that constitute personal and societal flourishing (p. 136), although there are other ways to conceive of moral harm. Jamieson (2007) argued that personal understanding of harm towards others affects our view of responsibility. This necessitates an identifiable perpetrator and victim, along with a clear view of how the victim is causally made worse off by the perpetrator's actions, an important point when discussing culpability in climate change ethics (p. 163). Cafaro used the example of avarice to explain both: "avarice may tempt us to cheat our business partners or neglect the claims of justice and charity," and in this way reoriented the consequences of vice to include harm to the actor, those around him, and perhaps even society in general (p. 136). Vices are often seen as the extreme ends of a virtue continuum; for instance, the virtue of courage is situated between the two vices of cowardice and recklessness.

Virtue ethics revival in the 20th century. The contemporary revival of virtue theory is generally located in the 1958 essay of Elizabeth Anscombe, "Modern Moral Philosophy," which criticized J. S. Mill's utilitarianism (the *Greatest Happiness Principle*) and Kant's deontology (the *Categorical Imperative*), and claimed that reliance on rigid and universally applicable principles such as these made no sense for two main reasons. First, she said, they were based on a concept of obligation that had become less meaningful in modern society, and second, they

assumed the existence of a lawgiver, an assumption no longer as widely accepted as in previous times (Crisp & Slote, pp. 1-5, Anscombe, 1998, pp. 26-44). In his 1976 paper titled "The Schizophrenia of Modern Ethical Theories," Michael Stocker also summarized the main aretaic criticisms of deontological and consequentialist theory, stating that these predominant frameworks in modern ethics promote dissonance between reason and motive, and that duties and rightness or wrongness of action is only a small part of ethics (pp. 453-466).

Following Anscombe, a number of other 20th Century philosophers, including Phillipa Foot, Iris Murdoch, Bernard Williams, Alasdair MacIntyre, John McDowell, Martha Nussbaum, and Michael Slote have also advocated a fresh look at virtue ethics, not because they are "committed to any of the lamentable, parochial details of Aristotle's moral philosophy," but each has provided a new, "distinctive approach...that, its proponents think, can fruitfully be adapted to yield what we now recognize as moral truth" (Hursthouse, 1999, pp. 2-3). Two in particular were instrumental in changing our understanding of modern moral philosophy, Bernard Williams and Alasdair MacIntyre.

Bernard Williams' work took a wider concept of ethics, rejecting the narrow theory of morality which he viewed as characterized by the work of Kant and his ideas of duty and obligations, which assumes the notion of blame and blameworthiness. He posited that "someone who is blameworthy for having acted immorally was *free* to act otherwise than she did and had *reason* to do so," constituting "a (perhaps socially useful) illusion" (1998, p. 5). Williams' views on ethics also encompassed emotions and the possibility of chance: cultivation of appropriate virtues can be affected by different factors beyond a person's control, such as family, education, or society, and it is this feature of morality that makes the good life so precious (1985, pp. 177-178, 194-195).

Alasdair MacIntyre also inspired renewed interest in virtue ethics, mainly in his attempt to give a description of virtue based on his reviews of historical accounts from Homer to Jane Austen (with Aristotle, the New Testament and Benjamin Franklin in between,) in "The Nature of the Virtues," from his 1985 book *After Virtue*. He concluded that the differences in their individual compendia of virtues come from different social practices at the time they were created (pp. 118-119). He defined virtues in terms of their place within "particular practices" that are coherent, social forms of activity that enable us to achieve goods internal to the activity (p. 128), locating an important aim (*telos*) of humanity transcending all other practices, namely integrity or constancy (p. 140).

Virtue approaches to morality in modern philosophical thought are not without their opponents. In his paper "Some Vices of Virtue Ethics," Louden criticized them on at least two points. First he questioned whether virtue theory could provide guidance necessary for action or jurisprudence, given that its focus is on the qualities of a moral actor and not on what sorts of actions are (or are not) permitted. He then noted that developing a single set of virtues would be difficult in contemporary society given the varied ethnic, religious and class groups in existence now as opposed to the homogeneous moral community Aristotle theorized about (1984, pp.227-236).

Hursthouse, whose modern theory of virtue ethics is most often cited (Myers, 2005, p. 221) responded to Louden's first criticism adequately. On the count of jurisprudence as a personal virtue and in political philosophy, she used the examples of lying and murder to explain the role of virtue ethics:

> What is wrong with lying," she states, is "when it is wrong, it is not that it is unjust (because it violates someone's 'right to the truth' or their 'right to be treated with respect') but that it is *dishonest*, and dishonesty is a vice. What is wrong with killing, when it is wrong, may be not so much that it is unjust, violating the right to life, but,

> frequently, that it is callous and contrary to the virtue of charity. (Hursthouse, 1999, p. 6)

In response to Louden's second claim, MacIntyre (1998) dismissed it in a lengthy discussion, first stating:

> One of the features of the concept of a virtue which has emerged with some clarity from the argument so far is that is always requires for its application the acceptance of some prior account of certain features of social and moral life in terms of which it has to be defined and explained. (p.123)

He continued, discussing the social roles in the different cultures he examined, and the concept of the practice of specific virtues required to attain the desired internal good. It is in these practices that virtues "might flourish in societies with very different codes; what they could not do is flourish in societies in which the virtues were not valued" (p. 130), which implies requisite valuing of virtue, not the virtues themselves. This downplayed the importance of a rigid list, which is what Louden seemed to be after. MacIntyre specifically indicated what appear to be universalities among the virtues:

> For the kind of cooperation, the kind of recognition of authority and of achievement, the kind of respect for standards and the kind of risk-taking which are characteristically involved in practices demand for example fairness in judging oneself and others....A ruthless truthfulness without which fairness cannot find application….A willingness to trust the judgments of those whose achievements in the practice give them an authority to judge which presupposes fairness and truthfulness in those judgments, and from time to time the taking of self-endangering, reputation-endangering, and even achievement-endangering risks. (p. 130)

The Inception of Environmental Virtue Ethics (EVE)

> ...to treat the natural world ethically means loving and respecting it for its own sake, not just ours; and unless more of us do so more often, not only will we suffer more, but we will destroy many more others who are themselves blameless. Indeed, both things are already happening.
>
> - Patrick Curry, *Ecological Ethics*

As virtue ethics is the branch of traditional Western ethics focusing on issues of

character, excellence, and human flourishing, more philosophers have recently come to believe that virtue ethics is appropriate for environmental issues for a number of reasons. Some have seen deontological and consequentialist theories failing to prove the intrinsic value or moral considerability of nonhuman beings and argue that human well-being is entirely dependent on environmental protection (Hursthouse, 2007, p. 115-116). Other philosophers see a need to indicate specific character traits required for sustainable living (Newton, 2003, p. 18). Hill (1983) alleged that a "person that would destroy the natural environment – or even see its value in cost/benefit terms" reveals in that person the "absence of traits" which are a basis for "a proper humility, self-acceptance, gratitude and appreciation of the good in others" (p. 211).

Since the early 1990s several influential publications have supported the development of EVE. O'Neill (1993) argued that market regulation is necessary to uphold strong conceptions of the common good and that the "ethical life is one that incorporates a far richer set of goods and relationships than egoism would allow" (p. 25). van Wensveen's *Dirty Virtues* (2000) introduced new criteria in psychological (pp.131-139) and ecological sustainability (p. 51) to describe human qualities and catalogued 189 virtues and 174 vices mentioned in environmental writing since 1970 (Appendix A). Cafaro highlighted the life and works of Henry David Thoreau to draw attention to the benefits acquired by moderate consumption in *Thoreau's Living Ethics* (2006), emphasizing the additional benefit to nonhuman species and Earth in general (pp.95-96). Lindemann believed that virtue ethics is a good "alternative approach for environmental philosophy" for the same reason, and claimed that it "does not explicitly have to distinguish between creature meriting moral considerability and those that do not," but rather focuses "on the development of moral character instead of merely judging individual actions of a moral agent." She saw deontological and consequentialist theories as lacking the ability to assess "who

or what merits moral considerability" (p. 2), similar to Hursthouse.

van Wensveen (2005) reconfigured the four "cardinal environmental virtues" from the human context of the original cardinal virtues prescribed by the ancient Greek philosophers to the trans-human, describing them as habits with attendant virtues. For example, she described the "virtues of position" in terms of the "constructive habits of seeing ourselves in a particular place in a relational structure and interacting accordingly." van Wensveen's compilation of attendant virtues came from several sources, but include "humility, self-acceptance, gratitude and appreciation of the good in others" from Thomas Hill (1983), and "respect, prudence, and practical judgment" from Bill Shaw (1997) (p. 176).

In *Ecocriticism,* Garrard observed that the arrogance of anthropocentrism is criticized by ecophilosophers, often using the expression "hubris" to describe humanity's "self-righteousness and willful misuse of power, but does not subscribe to "self-abnegating humility and submission" to the natural world, as is often maintained by the deep ecologists. He recommended a virtue that combines appropriate "pride of place in a world we can neither wholly predict nor control… [the ancients] called it *megalopsuche*, which translates roughly as 'greatness of soul' (2004, p. 179).

Sandler (2007) presented a thorough, meticulous investigation of EVE. Justifying his comprehensive scholarship, he referred to three types of environmental virtues. The first were "environmentally responsive virtues," which describe those that involve a response to any environmental entity, and "for which some environmental entities are morally considerable." Those virtues that validate "the worth of living organisms, beneficial relationships with environmental entities or resources" he called "environmental justified virtues," and those that promoted or maintained environmental value, "environmentally productive virtues" (pp. 42-43).

Within these three groups of environmental virtues, the author further classified them into a typology of six: land virtues, virtues of sustainability, of communion with nature, of respect for nature, of activism, and of stewardship. Throughout his book *Character & Environment*, Sandler described specific virtues that frequently overlap from one category to another. His land virtues consist of love, attunement, and gratitude. Some virtues of environmental sustainability comprise temperance and frugality, those that allow communion with nature, attentiveness and wonder. Included among the virtues of respect for nature are care, compassion, and restitutive justice. Honesty and diligence, are among the virtues of environmental stewardship and cooperativeness, commitment, and perseverance of environmental activism. The author also mentions the accompanying vices of greed, intemperance and profligacy, arrogance, hubris, and intolerance, and apathy, pessimism, misanthropy, callousness, indifference, and cruelty.

van Wensveen (2001) wrote of attunement within the context of temperance and frugality. In her work she described a need for "moderation for the sake of ecojustice," and defined attunement as a virtue of sensitivity to and acceptance of ecological limits, "joyous contentment, creativity, and readiness to sacrifice" (p. 67). This notion of sacrifice, however, has been at the center of skepticism and criticism of the environmental movement, according to Wapner. He did not entirely disagree with sacrifice as a viable strategy for climate change action, but saw it as problematic in practice in global terms because "after experiencing economic development premised on using nature's resources and generating waste without abandon," he felt it unfair for the developed countries to ask developing nations to "curb their material appetites" (pp. 181-182). Wapner also saw sacrifice as a type of misanthropy, whereby "cutting back" constrains the human desire to expand, achieve and acquire:

> It suggests a dislike of humans, since our numbers are so high and our material acquisitiveness is so significant….A difficult politics to advertise and sustain… [offering]

> at best, a doom-and-gloom mentality in which we see ourselves as fundamentally the source of our problems. (p. 183)

Using the language of Buddhism, Wapner advocated a "middle path," and saw climate change as an opportunity for the rebuilding of "economic, political, and cultural systems" that will lead to improved "economic promise," more widespread "democratic governance, resilient and meaningful communities, and international security" (p. 191).

A criticism of EVE could be that little is offered in the way of imposing discipline on discussions of specific virtues that it is not sufficiently action guiding. Wenz (2005) argued that by focusing less on the virtues themselves and more on how the corresponding environmental vices such as consumerism impede human flourishing, guidance in limiting environmentally destructive practices is made clear (p. 197). Cafaro (2001) believed that broadening the definition of flourish to include all living things provides the necessary guidance, and Hursthouse (2007) argued that it is not the job of ethics to provide rules, pointing out that deontology and utilitarianism also have not been able to resolve hard ethical dilemmas (pp. 155-172).

Chan (2009) found that ecosystem sustainability is not only a precondition in the cultivation of virtue, but an essential aspect in human flourishing (pp. 135-136). Rolston (2007) agreed that EVE is anthropocentric in this respect because it "informs the contribution of environmental protection merely for human well-being." This focus, he said, leads to the same selfishness of character that creates environmental problems in the first place. As an alternative, he promoted "*ecological* [emphasis added] virtue ethics" and Westra's vocabulary of integrity virtue (pp. 66-70), which will be discussed below.

Most environmental virtue ethicists center their philosophies in the intrinsic value or moral considerability of nonhuman nature: virtues are those qualities that further both human and nonhuman nature (Cafaro, 2004). O'Neill (1993) believed that morality advances more from the

"is" of the intrinsic value of nonhuman nature than the "ought" compelling us to protect it (pp. 22-24).

Climate change virtue ethics (CCVE)….and vices. Focusing his attention on the ancient interpretation of virtue in respect to climate change, Hulme (2014a) asserted that wickedness as a problem "demands a flowering of human goodness." He determined that "a new language" would emerge "around the fringes of climate change research, discourse and action… the language of empathy, *story-telling*, trust, wisdom, humility, integrity, faith, hope and love," and suggested that although he does not have the solution to climate change issues, he believes that such a vocabulary "carefully deployed and realised, constitutes a re-discovery of virtue…alongside geographical sensibility and *imagination*" [emphasis added] (p. 303-304). His interpretation of the climate dilemma and the necessity for a change in focus in dealing with its impending impacts rests in the wisdom of the humanities and "relevance of the world's religious faiths" because

> The questions regarding human life are primarily philosophical. Reacting to the idea of climate change is about understanding and cultivating the human imagination and developing an acute sense of good character as the *telos* of Man, as much as it is about applying the instruments of reason and technology. (p. 309)

Hulme drew us back to his original thesis, the need for "a more explicit Aristotelian contemplation on the good life, the nature of well-being and the cultivation of virtue," where "the question then becomes less 'the world we want' than it is 'the people we should be'" (2009, p. 309).

Myers also discussed climate issues against the backdrop of classical virtue theory, postulating that although Aristotle would not have been witness to an environmental problem on such a large scale, he would have agreed that "a poisoned environment affects people's health negatively and so thwarts human flourishing" (p. 234). He believed, as Aristotle did, that

phronesis is distinctly human, but added that it is a dimension of what he termed "groundedness in the world," referring to "the various ways in which we necessarily live in and with the world, and are inseparable from the world," (p. 242), not completely unlike how Aristotle spoke of the socio-political environment of the Athenian city-state (*polis*) (p. 246). The author also discussed a number of references in environmental virtue theory to *eunoia*, the virtue which enables its possessor to "recognize the value of other beings or things normally translated as 'benevolence' or 'good will,'" (p. 365), specifically those of Frasz (2005) and Kawall (2003). Because he agreed with Aristotle that *eunoia* is also "the honour and respect due to…people and things," it is not only a "faculty of intellectual perception, but also something that we *do*" [emphasis added] (p. 268).

Frasz made a direct appeal for "benevolence as an environmental virtue," describing companion virtues of "compassion, friendliness, kindness, and generosity… [which] involve direct concern for the happiness and well-being of others (p. 123). Along with Hulme's inventory of virtue, Frasz' virtues are paramount to an articulation of CCVE. Much could also be said for Kawall's virtue-based approach to EVE, extending to CCVE; a reverence for life, which attempts to disallow objections to the "impracticability… [and] emptiness [of] biocentric individualism" (p. 339). Myers disagreed with these authors' conclusions (although I do not), as not being Aristotelian, but more deontological (pp. 268-269), and asserted that virtue theory is a genuine alternative to utilitarianism (p. 313). Because *eunoia* "recognizes the value of things in reference to…the value one assigns or attributes to one's [flourishing]…[it] is able to reveal the value of other beings, and it enables the virtuous person to invite those other beings into his practice of [flourishing]…in and with the world" (p. 276).

Towards the end of his book, Myers attempted to apply his notion of environmental

virtue to "the practical plane, and find how a person committed to this kind of thinking would choose between Preservation, Conservation, and Depletion," mostly within the context of Derek Parfit's utilitarian puzzle, the *Non-Identity Problem*, posed in *Reasons and Persons* (1984). Suffice it to say, this complex work has not been solved, by his own admission, and a lengthy explanation of Parfit's work is not within the scope of this thesis, but this mental exercise did motivate Myers to propose and defend two principles of environmental virtue ethics with implications in climate change ethics. The first is:

> …an action (affecting the environment) is right if it contributes [sic] the creation, development, maintenance, and protection of the social or ecological circumstances in which the good life is possible and supported, or at least if it does not damage, destroy or degrade those circumstances. (p. 304)

This certainly mimics the intent of Aldo Leopold's *Land Ethic*, as Myers' second principle was "an action is right if it is a manifestation of, or contributes to the development of, the virtues," and he clarified his definition of the virtues, "which, in accord with Hursthouse, MacIntyre, and Aristotle… [he defines] as *the qualities of character which we need in order to act in ways that sustain the aim for eudaimonia in practice"* (p. 311). This is where I would say that the individual climate change virtue ethics articulated by Hulme, Frasz and Kawall fulfill Myers' criteria for *eudaimonic* action.

To resolve conflicts between the "duty of fairness to others," and the promotion of particularly *American* well-being, Traer (2013) suggested considering "the kind of persons we believe we should be," a theme articulated in the work of most virtue theorists. Making decisions, he said, "often involves telling stories," and he asked, "What story would you like your grandchildren to tell about how you responded to global warming?" (Part 3, section 15, para. 24).

There is now a need for conversation regarding climate change vice. The vice of

pleonexia, is most often translated as greed, although Myers stated that "to the Greek mind it would have designated a tendency to engage in material acquisitiveness for its own sake, rather than a particular kind of desire," and imparts a modern translation of "narrow self-centredness or a disposition to be materialistic" to it (p. 330). He said:

> The cultivation of *pleonexia* on a social scale has created enormous volumes of wealth, material goods, and energy, but has also resulted in the widespread loss of landscape, biodiversity, wildlife and plant habitat, in the quest for resources to satisfy the demand, and the search for new sinks to absorb the waste. Conspicuous consumption has depleted invaluable resources across the planet, and created pollution-induced health hazards and climate change. *Pleonexia* is now not only a social issue, but also an environmental issue. (p. 331)

Recalling the environmental problems of the 1960s and 1970s, Sandler (2007) referred to them as "first- and second-generations problems" of "pollution and chemicals" with their "theoretical disagreements" between economists, the legal system and environmentalists. But, he said, there "have now been added third-generation problems that are not just 'out there' or 'right here' but 'everywhere:'"

> Issues such as global warming…offer unique theoretical and practical challenges because they are impersonal, distant (both spatially and temporally), collective action problems that involve the cumulative unintended effects of an enormous number of seemingly inconsequential decisions. (p. 3)

Couched in virtue language, he made the argument that a "character trait evaluation" of the "consumptive disposition" identifies a number of detriments to flourishing, which he went on to describe as "doubly detrimental, as those who possess them are less likely to be happy than those with alternative dispositions," thus making them vices:

- Materialistic evaluative dispositions – i.e., prioritizing possession and accumulation of material goods in evaluations of people, relationships, careers, and so on.
- Affective dispositions toward the possession and accumulation of material goods – i.e., being desirous of possessing or accumulating material goods.
- Emotional dispositions oriented around the presence or absence of material goods – i.e., distress, anxiety, or sadness regarding their absence.

- Practical dispositions toward possessing and accumulating material goods – i.e., prioritizing doing that which is considered conducive to amassing those goods. (p. 56)

Here Sandler articulated several other climate change vices, all of which can be related to *pleonexia*: (conspicuous) consumption/gluttony, materialism, and (misplaced) desire.

Quoting passages from Tim Kasser's 2002 *The High Price of Materialism*, Sandler continued with the idea that particularly in the United States there is a causal relationship between materialism and need frustration, besides several other "trends in the paradigmatic consumer society." Materialism weakens social relationships in and out of the home and the author asserted that "frugality, appreciation, and temperance are more conducive to a person flourishing, at least to the extent that they are less likely to undermine healthy interpersonal relationships." I would call those virtues *non-consumptive* dispositions, as he also believed, rightly, that *consumptive* dispositions promote poor environmental stewardship in wanton energy and water use (pp. 56-59), and further elucidated these vices, contrasting them with virtues:

> Greed, intemperance, profligacy, and envy….Tend to be detrimental to their possessor's well-being, and they favor practices that compromise the environment's ability to provide environmental goods. Moderation, self-control, simplicity, frugality, and other character traits that oppose materialism and consumerism are environmental virtues, inasmuch as they favor practices and lifestyles that promote the availability of environmental goods. (p. 60)

Williston (2012) maintained that the virtues of hope, actually *radical hope*, and courage based on Lear's account of the Crow people and their last chief Plenty Coups in the 1880s, will be essential in facing a climate-changed future. Although his outlook appears somewhat pessimistic and downright frightening, as he wrote "the possibility that the way of life of the whole species might collapse," he continued "our foundational hope now ought to be that humanity can come through the climate crisis in a way that allows us to flourish as the sorts of beings we constitutively are" (p. 167). Identifying the object of that hope, he asserted that "our

moral agency, as well as that of future people, be preserved," without resignation, which would "exacerbate our moral corruption." Quoting Lear, he said "'Radical hope is directed toward a future goodness that transcends the current ability to understand what it is….Anticipates a good for which those who have the hope as yet lack the appropriate concepts with which to understand it'" (p. 178). Williston argued that the social, economic and political inertia towards climate change reform requires a transformation of current policies and practice, demanding "extraordinary courage," not unlike that shown by Plenty Coups in his collaboration with the Sioux and relinquishing traditional Crow territory to provide a viable future for his people in the face of encroaching white settlers and the loss of the buffalo (pp.180-181). Thompson (2010) also wrote of radical hope, and called it "a form of courage at the end of goodness, underpinning action on the mere hope that someday the good will return in a presently unimaginable form…[which] we owe…to future generations" (p. 50). Using Lear's reference to Sitting Bull's Ghost Dance in which the chief of the Sioux envisions "a messiah who would strike down the white settlers and usher in a return of the old ways," he warned of our current overly optimistic reliance on alternative energy technologies, as yet undiscovered, as a convenient excuse for denying the realities of a climate-changed future and embracing behavioral and conceptual shifts towards sustainability (p. 57).

An interesting interpretation on the virtue of humility is given by Jasanoff (2007), whose motivation is on the need for climate scientists and policy-makers to look beyond their traditional roles in the climate change conversation: "Policy-makers need to focus on when it is best to look beyond science for ethical solutions. And science advisers need to admit that other sorts of analysis must also inform political decisions." She believed that humility can guide both of these groups, who are often at odds with each other, to think outside their customary boxes and

recognize the need for a multidisciplinary approach "engaging history, moral philosophy, political theory and social studies of science, in addition to the sciences themselves," calling them "technologies of humility" (p. 33). She asserted:

> Humility instructs us to think harder about how to reframe problems so that their ethical dimensions are brought to light….Directs us to alleviate known causes of people's vulnerability to harm….Policies based on humility might: redress inequality before finding out how the poor are hurt by climate change [and] value greenhouse gasses differently depending on the nature of the activities that give rise to them. (p. 33)

Westra (1998) and Hourdequin (2010) gave voice to the virtue of integrity within the context climate change ethics. Accepting the conclusion of Greek virtue ethics and Kantian ethics in their "inclusion of duties to oneself and the nonnegotiable of duty and right action," (p. 18) Westra promoted the ethics of *ecosystem* integrity, as crucial to the protection of the human (p. 31), and nonhuman (p. 137) world. Hourdequin approached integrity differently, meaning "congruence between one's actions and positions at the personal and political levels," and relied on the Confucian idea of "self-cultivation and individual moral development as the basis for social change" (p.444). One could say that personal and collective human integrity is necessary to preserve ecosystem integrity for human and non-human flourishing. "Being a person of integrity involves reconciling, insofar as one can, one's commitments at various levels" (Hourdequin, p. 450). His viewpoint stressed the importance of individual action towards reducing personal GHG emissions, which is often discounted by others; he cited Johnson (2003) and Sinnott-Armstrong (2005) who summarily dismissed individual obligation to reduce GHG emissions (p. 444).

Norlock (2010) articulated a novel understanding of "forgivingness" as a virtuous response to climate change and good for moral character in general, "preventing excess of excusing and condemning, so that we locate responsibilities rather than sliding into attitudes of

helplessness or recrimination, which foster inaction or misdirect our energies." Specifying "preservative forgiveness," a "predisposition to be forgiving in light of the inevitability of human error," the author asserted that this virtue has the potential to promote good "ecocitizenship" in terms of "activism and dedication to policy change," (p. 30) "reconciliation," (p. 33) and "continual recommitment," while averting negative, nonproductive character traits such as "hopelessness and surrender," (p. 34) "bitterness," (p. 36) and "cynicism" (p. 37). She acknowledged however, the potential value of a more pessimistic disposition in managing environmental wrongdoers, especially in bitterness as a response "to the culpable harms inflicted by human agents from those who had legitimate hopes of better treatment," as prescriptive for the promotion of "justice-seeking actions" (pp. 36-37).

From a number of authors, then, we have culled a collection of climate change virtues, vices and dispositions, presented in Appendix B. They form the framework for the course *Virtuous Reality: Climate Change Ethics* and the criteria for the topics and resources selected for it, including the ecocritical works.

Ecotheology and Spiritual Traditions

> If climate change really were a religion, it would be a wretched one, offering guilt and blame and fear but with no recourse to salvation or forgiveness.
>
> -George Marshall, *Don't Even Think About It*

> Men never do evil so completely and so cheerfully as when they do it from religious conviction.
>
> -Blaise Pascal, *Pensées*

Multiple world faith communities have issued official statements maintaining humanity's responsibility to protect the environment, affirming anthropogenic climate change is real and occurring now, and acknowledging humankind's accountability to the disproportionately

affected poor. Moreover, many of these groups are actively working to educate their communities and serve those already affected by climate change. Today there are "hundreds of thousands of religious environmental programs around the globe," built on several key aspects inherent in religious organizations: their long histories of effecting change, community trust, and tangible assets (Palmer & Finlay, 2003). Donner, however, warned that educators and scientists should give consideration to the idea that humans having the capability to directly change the Earth's climate may conflict with the religious beliefs of some of their audiences (2011, p. 1). Conservative evangelical groups in United States have active lobbying campaigns to "convince their millions of followers, as well the government to ignore climate change science [as an] unproven threat" that will "lead to restrictions in energy use and drive up the cost of energy and food for the world's poor," when in actuality, climate change is already harming the poor and "most vulnerable in developing nations" (Elsof, 2010, p. 102).

Discussions on the Judeo-Christian traditions predominant in the cultures of the Global North with respect to the environment generally start with the landmark 1967 essay of Lynn White Jr., asserting the biblical mandates to subdue the earth and to be fruitful and multiply, ultimately leading to the philosophical foundation for environmentally destructive industrial development. Scharper (1997) maintained that environmental destruction "led to a comprehensive, ontological, ethical and religious reexamination of what it means to be human and what our relationship to the nonhuman world should be" (p. 12). He discussed the "human-nonhuman relationship...from the Enlightenment [and] the Industrial Revolution....Modern technology and science are critiquing these understandings in a burgeoning environmental literature...calling into question conceptions of modern identity...with an emerging paradigm of the self...in critical dialogue" (p. 13). Hall echoed this sentiment, asserting that the question of

the human *telos* in regard to the natural world "plagues the contemporary spirit," and quoting American novelist Kurt Vonnegut, he asked: 'what the hell are people *for*?' (1993, p. 233).

Examining the relationship between religion and the environment has generated "methodological controversies" over how to conceptualize that relationship, and a reflexive criticism on what "counts as a religion" and what constituents of the environment should be considered, according to Jenkins and Chapple (2011). The authors made the argument that both environmental and religious studies share aspects of research whereby human interaction with the environment is influenced by religion, and conversely, that religious practice changes in response to changing environments (p. 442).

DeWitt integrated a scientifically informed discussion of environmental issues, including climate change, with the Old Testament creation story and elements from the New Testament, stating, "in the last several centuries we have chosen to redefine the long-recognized vices of avarice and greed as virtues…self-interest, we now profess, is what brings the greatest good" (1991, pp. 22-23). Myers insisted that "beyond a doubt," *pleonexia*, the "vice of excess connected to the virtue of *dikaiosune,* 'justice,' is the virtue of Aristotle and the vice of modern capitalism" (pp. 330-332).

Oelschlaeger (1994) noted a majority of people in industrialized democratic nations are "embedded" in what he called the *Dominant Social Matrix* (DSM), which outlines the worst qualities of Americans, "regardless of their faith commitments" (p. 54). Among these vicious qualities are that "nature has instrumental value only," and "short-term economic interests override long-term issues." Besides blatant disregard for any biocentric values, Oelschlaeger contended that Americans are also at fault for accepting environmental risks and arrogantly depending on "engineered solutions" for remediating pollution and environmental degradation

now and in the future, even if such technology doesn't currently exist." The DSM stands in stark opposition to his *New Social Matrix* (NSM), which describes an eco-friendly social and economic view of what he thought could become a reality in the West, admittedly with religion having "a role in leading the way." Components of the NSM include an integrated intrinsic/instrumental valuing of nature where long-term issues are at least as important as current economic concerns. He proposed that "risk that entails either unpredicted or irreversible ecological consequences is not acceptable" and that "there are biophysical limits to growth that no human technology can overcome." He warned: "hubris sustains the illusion that humankind can control the biophysical processes that govern life on Earth," believing "a citizen democracy, attentive to local geography and environmental issues as well as to global issues, is required to build a sustainable society that is also consistent with democratic life" (p. 55). In harsh criticism of congregations in the United States, Oelschlager maintained that "given the paradox of environmentalism, it appears that organized religion is incapable of transforming the DSM," and "Americans, regardless of their faith commitments, apparently prefer to live in ways that require massive consumption of natural resources and generate huge outputs of waste" (p. 54).

Marshall offered some hope in an interview with Ara Norenzayan, a social psychologist at the University of British Columbia. He asked how his work in religious psychology might aid the climate change effort, and Norenzayan responded:

> Climate change appears to be hopeless because people will never be prepared to make a sacrifice because of the rational calculation. But this is not the case in religions, which contain *sacred values* [emphasis added] that are so fundamental that they are entirely nonnegotiable. They cannot be bought or sold, and people will make any sacrifice to defend them. (p. 218)

Marshall maintained that these sacred values are embedded in our culture, using the examples of defending our children, our abhorrence of torture, and our collective love of national parks (of all

things!). He and Norenzayan believed that action on climate change could be transformed into a "non-negotiable sacred value;" not like a religion, per se, but an "assembly of values," as Norezayan said: "you could co-opt these successful qualities [of a religion] and use them in other contexts." Marshall compared this idea with the work of sociologist Robert Bellah who believed that religion "is transmitted more by *narrative, image, and enactment* [emphasis added] than through definitions and logical demonstration" (p. 219).

The idea of sacred values is the subject of Robert Nadeau's 2012 book *Rebirth of the Sacred*, in which he examined interdisciplinary causes of human failure to protect the environment, and maintained that massive changes in the current frameworks of political economic and social systems dominating human behavior are necessary. Synthesizing current research in economics, behavioral sciences and anthropology, Nadeau called for a synthesis of science, ethics and religion to form the basis for a global climate social movement (pp. 1-9). Drawing on research of existing hunter-gatherer tribes, he determined that strong beliefs in fairness and reciprocity, a capacity for empathy and impulse control, and a willingness to work cooperatively for the good of the community found within them, provides evidence of several moral universals which he believes could be appealed to in other populations to guide behavioral and social change (p. 25).

Wardekker, Petersen, and van der Sluijs (2009) posited that religious framings of climate change could serve as "bridging devices" among progressive and conservative politicians in the United States. Three narratives emerged from their work examining the proliferation of diverse Judeo-Christian faith communities' statements on climate change issues. The first was "conservational stewardship" which "holds that God created the earth as 'good,'" deserving of preservation, and man is charged with the "sacred task to protect [it]." Climate change is morally

unacceptable solely on the count that it threatens creation as made by God. The second was "developmental stewardship" which "places nature in a more serving position," sanctioning whatever changes are deemed necessary (p. 549-550), although it is unclear to me as to who the authors assume will make those decisions. "The poor, in the U.S. and in developing countries, would have to bear the heaviest burdens of such policies," and the promotion of economic and technological advances should be optimized. The third narrative was "developmental preservation," which appears to be a compromise of the first two. "Developed nations have the moral duty, as well as the opportunity, to prevent…the most severe impacts of a problem that the rich have created" and that the "poor will face…while they are the most vulnerable and least able to adapt." The authors concluded that faith communities have contributed to the "basis of societal support" for policy makers on both sides of the aisle, and that the "religious framings of climate change" has potential to "bipartisan climate-policy efforts" (p. 520).

Discussing virtue unites diverse religious perspectives, according to Deane-Drummond and Sideris (2011). By expanding the views of Ernst Haeckel, the 19th century German biologist credited for contributing the word "ecology" to the world's vocabulary, as well as promoting the ideas of "the order of nature [and] the virtues through which humanity might live in relationship with it," the authors determined that ecotheology "seeks a place at the negotiating table of international relations" because it connects the idea of wonder, "found across religious traditions," to wisdom, engendering a "host of related 'environmental' virtues…that enable us to flourish and allow future generations" to also flourish. Virtues such as "generosity, humility, simplicity [and] farsightedness...enable us to develop daily rituals that tap into what is wondrous about nature without destroying it" (pp. 66-70). Believing that discussion regarding climate change might "begin from basic survival, but an appeal to nobler emotions of wonder and respect

for the natural world provides a more enduring motivation," the authors also proposed that wonder

> …creates the aesthetic space in which we might think about other possible worlds, freed in some sense from the relentless desire for consumer goods that pervades the modern mind-set. This is why many religious commentators think that the current crisis expressed as climate change is a moral and spiritual crisis, for it expresses what Alastair McIntosh calls a pathological, addictive tendency to ecocide - human beings go on behaving in the same way, even though they know full well that it is damaging them and all around them. (p. 68)

The issue of climate justice appears throughout faith-based literature on the environment: intergenerational justice, a concern for our children and those generations to come after, as well as justice towards the poor who suffer the worst impacts of climate change and have the least capacity to adapt. Hessel (1995) determined that since the "modern ultra-anthropocentric" views of Francis Bacon asserted the human right for dominion over nature, "technologists, economists, politicians and theologians have shown confusion about the human vocation." Hessell called into question human responsibility "to future generations, as well as everykind now alive," and made a plea for "this tool-making species that does ethics to ...revalue the natural world, to welcome diverse human cultures and animal and plant species, while working for a just and sustainable community" (p. xiii). Oelschlaeger echoed this sentiment, stating that the climate change problem cannot be resolved independently from the problem of "economic inequity between industrialized and developing nations" (p. 129).

Addressing this issue further, Deane-Drummond and Sideris determined that any political or economic negotiations must include representation "for those nations and peoples who lack the political or economic authority to speak for themselves. This is a matter of justice-making, a moral issue, and an opportunity for religions to make a contribution to public debate by advocating for those who have too often been ignored," (p. 69). Jamieson said "as philosophers

and clergymen have become increasingly modest and reluctant to tell people what to do, economists have become bolder" (1992, p. 143). Perhaps it is time that that changed.

Martin-Schramm (2010) made a final point regarding ecological justice, ethics and religion, suggesting that justice, having "a more impersonal quality than love," is subjected to social groups more so than to individuals. However he argued that "justice divorced from love easily deteriorates into a mere calculation of interests and finally into a cynical balancing of interest against interest." The author believed that "without love inspiring justice, societies lack the push and pull of care and compassion to move them to higher levels of fairness." He may sound like a more articulate version of a Beatle's song, but said "love forces recognition of the needs of others….Love judges abuses of justice….Love lends passion to justice." He ends with "justice, in short, is love worked out in arenas where the needs of each individual are impossible to know" (p. 27).

In 2007, the United Nations Development Programme (UNDP) and the Alliance of Religions and Conservation (ARC) joined to manage a UN initiative to work with the world's major faith communities in addressing climate change and the protection of the environment in "practical ways – from forestry conservation to organic farming schemes, to introducing, promoting and financing alternative energy sources." Although UNICEF projects have worked closely with religious groups as part of its original mandate, this marked the first time the UNDP would engage with faith leaders. ARC's secretary general Martin Palmer commented:

> The faiths offer stability and resilience in a world where too many initiatives fail through lack of deep roots. In confronting the issues surrounding the present concern for the climate, as well as other environmental topics, the faiths can bring leadership and networks respected worldwide. They can also bring a long-term perspective which will be based more on optimism than fear. (ARC, 2007)

Deane-Drummond and Sideris concurred, saying this approach to ecology "will have a more

lasting impact on environmental ethics than just telling people that they are not doing enough to reduce their carbon footprint. Making people feel guilty or fearful is never a good enough motive for change" (p. 68). Especially within the context of abrupt climate change, Bellamy and Hulme also discovered that fear, rather than engaging citizens, is counterproductive, "weakening people's inclination to seek and believe in solutions to climate change" (p. 59).

In his review of Naomi Klein's recent *This Changes Everything* (2014), Hulme (2014b) noted, as I did, the author's missed opportunity in not recommending the harnessing of the world's faith communities' strengths: "Nowhere...does Klein mention the place of religion in the lives of the 80 plus per cent of the world's inhabitants who today affiliate to a religious faith, let alone analyse the potential contributions of enlightened religious convictions" (p. 3). Neither of us are condemning the work; Ms. Klein is an excellent author and this work is both readable and powerful, but there is considerable evidence for the potential of significant contributions from the world's faiths, as noted by the Alliance of Religions and Conservation:

- The faiths are major land owners – they own more than 7% of the habitable land surface of the planet.
- The faiths are major providers of education and health care worldwide.
- The faiths have vast media networks.
- The faiths together make up one of the largest investing groups in the world.
- The great faiths have astonishing outreach: and often faith leaders are trusted where government and military leaders are not.
- Each faith has clear teachings on caring for nature – which they are seeking to implement in practical projects. (ARC, 2007)

Palmer (2013) maintained "the faiths are the oldest human institutions and therefore the most 'sustainable.' They know…how to effect change in such a way as to carry people with them. The major faiths have perfected the appearance of being unchanging while subtly change the whole time." Faith communities "constitute 14% of the total capital market," and feed millions, citing the Sikhs in India who feed 30 million people daily, and as managers of farms and forests, are

now "concentrating on the ecological management of these assets." Even Aldo Leopold (2001), writing in *The Forestry of the Prophets* (1920), identified Isaiah as "the Roosevelt of the Holy Land" using the metaphor of the forest in his teachings, Joel as "the preacher of conservation of watersheds," and the writer of the Book of Job as "the John Muir of Judah" (pp. 105-106). The capacity and commitment of the world's faith communities have much to offer the climate change conversation.

Buddhism gives a biocentric view of the world in contrast to the Abrahamic traditions. Central to its teachings is the idea of the interconnectedness of all living things. Compassion, the practice of *ahimsa* (nonviolence,) and loving-kindness are extended to plants and to Earth itself. The Buddhist teachings of the Four Noble Truths, *karma* and reincarnation generate concern for future generations as well as the planet. Buddha "commended frugality and asceticism as virtues in their own right, acting as a counter to materialism and overconsumption and the exploitation of natural resources," which in turn has been inspirational for environmental writers and activists (Krznaric, 2007, p. 9). The Dalai Lama (2000) spoke of the "culture of violence" predominant in the twentieth century as the "most devastating cause of human suffering" (p. 169), and Timmerman (2000) stated that "Buddhism undercuts the aggression driving today's society," and by revealing another way of living, "according to the limits and constraints of a Middle Way," is attuned with current environmental "thought and action' (p. 367). According to Daniels (n.d.), the most important contributions from Buddhism, are the explanations of the "nature of human wellbeing and the interdependence which underlies the adverse consequences of disruption and disturbance of the processes and flows of the natural environment." The Eightfold Path, and in particular the ethic of moderation, or the "Middle Way," reveals the guidelines for "consumption, and hence production, imperatives and choices driving the environmental

pressures behind climate change" (p. 25).

Calling them "blessings turned toxic by a lack of restraint," Gardner (2006) proposed that Mahatma Gandi devised his own seven deadly sins from his Hindu tradition: "Wealth without work, pleasure without conscience, science without humanity, knowledge without character, politics without principle, commerce without morality, [and] worship without sacrifice." The correlation with climate change ethics appears obvious here, but the author's point is that Gandhi's restraint, promoted in Hinduism, has been "a moral check on individual and societal excess" (p. 4).

Jainas endeavor to fulfill the *anuvrata* (vow), *ahimsa* (non-violence), so predominant in Buddhist and Hindu philosophy. It is the fundamental vow among four others: *satya* (truthfulness), *asteya* (not stealing, avoidance of greed and exploitation), *brahmacharya* (chastity), and *aparigraha* (non-materialism and philanthropy,) whereby harm to other life forms is minimized. They believe that to attain higher stages of personal development, adherence to the *ratna-trava*, or "three jewels" of enlightened worldview, true knowledge, and appropriate conduct is mandatory. Jainism, by its nature, is a religion of ecology and its world view is often described as "biocosmological," which includes humanity's role in nature as not only one of nonviolence, but of noninterference. Its lay followers are encouraged to practice sustainable living and engage in acts of conservation and environmentalism, such as tree-planting, although Jaina priests and nuns would refrain from such activity so as not to disturb the living creatures in the soil (Chapple, n.d.). In a religion where "even the smallest microbes are respected and valued… [it] teaches about a subject as vast as consumerism,"… [and] can be extended to frame solutions to existential global issues" (Shah, 2012). R. P. Chandaria, Chairman of the Institute of Jainology said:

> Lord Mahavira preached about the environment in the first book of 'Acharanga Sutra,' which is accepted, as His direct words. The elements of nature were described as living beings and under the fundamental principle of *Ahimsa* these were to be protected in all ways - no waste, no overuse, no abuse, no polluting. If we follow these principles, then we would stop destroying our environment as well as preserve the resources that are available for all to share. If there are more resources available for all, then the poor will also get a fair share thereof. (Shah, 2012)

Abdul-Matin discussed the six ethical principles of a "green deen," where "deen" is translated as religion, creed, faith, belief, path or way in Arabic (2010, p. 3). These are: *tawhid,* understanding the Oneness of God and His Creation: Allah as creator and sustainer, and all of creation is comprised of the same basic elements ('flashes of light') and continuous; *ayat,* seeing signs of God everywhere: all elements of the natural world are signs of its creator; misusing the natural world means denying those signs; *khalifah,* being a steward of the Earth: humans, considered the best of creation have an obligation to care for, protect, and manage it; *amana,* honoring the covenant, or trust with Allah: the God-given gifts of speech and knowledge and ability to make decisions are to be used in the best interests of the planet and each other; *adl,* moving toward justice: just and fair treatment of the natural word, acknowledging the interconnectedness of everything on the planet and ensuring equal access of resources to all; and *mizran,* living in balance with nature: seeing the Earth as a mosque, appreciating the balance and order of the universe and reflecting on this balance as a form of worship (pp. 3-12). The author maintained that in addressing the issue of climate change, Islamic scholars cite a particular *ayat,* connecting corruption to carbon pollution as by-products of over consumption in a particular passage of the Qur'an: 'Corruption has appeared on the land and in the sea because of what the hands of humans have wrought (30:41).' Adopting policies that reduce carbon emissions growth would be, in essence, "praising God and protecting the planet" (p. 31). Ahmad (2009) summarized an Islamic response to climate change in his "sevenfold strategy" he believed will

lead to the "construction of a *global ethical force*," entailing: the "development of a holistic approach to life; equity (*'adl*), rights (*huquq*), and obligations (*farid*); promotion of life, inter-faith harmony, dignity and honor, and economic security" (pp.107-112).

"Global Climate Change," the 2001 pastoral letter issued by the (Catholic) Bishops of the United States, suggested that the human response to climate change should reflect respect for God's creation, one of the four moral values that also includes the universal common good, options for the poor, and a sense of intergenerational obligation (Hart, 2004, pp. 35-36). Pope Francis, who took his name from Francis of Assisi, the patron saint of animals and the environment, has repeatedly called for environmental protection since taking office in May 2013, and purportedly will release an encyclical sometime before the end of 2014 (Ormerod, 2014, p. 4). Francis' stewardship mindset arose from a "broader theology that sees the created world as inherently sacred because it is made by God. The 'falleness' of the world may have damaged the man-nature relationship, but the ideal toward which we should be working is one of reconciliation" and embracing "the Christian idea of salvific incarnation – that Christ represents not merely God in human form, but…God *becoming man*. If God can enter the physical world…then the physical world is made all the more sacred" (Plenda, 2014).

According to Gould and Wallace, the view of Christian animism is one regarding God as fully and completely embodied in the natural world, a divine "subscendence," as opposed to traditional transcendence: God flowing out into the Earth, becoming human in the form of Jesus Christ, and giving to all creation the Holy Spirit, infusing that creation with divine energy and love. They saw the current climate crisis as a spiritual crisis because the essences of the divine, God's power and beauty, are fading in the degradation of the Earth (p. 35).

Callicott (1997) discussed the humanist teachings of Confucius and, although his writings

generally concerned moral and political matters, his ethic of "noble virtue – as opposed to an ethic of rule-following or principle-applying – [was] similar in some respects but very different in others to the ethics of his younger Greek contemporaries." Confucius proposed five cardinal virtues, but they barely resemble those of the Hellenic tradition. The ancient Greek cardinal virtues (roughly translated) are *dike* (justice), *andreia* (courage), *sophrosyne* (temperance), *sophia* (wisdom), and *hosia* (piety), while the cardinal virtues of Confucius (even more roughly translated) are *jen* (humanity), *li* (ritual action), *yi* (appropriateness), *hsin* (honoring one's word), and *chih* (wisdom). For Confucius, the "moral ideal was that of an excellent or superior person who had become accomplished in these virtues and who live unfailingly and impeccably by them" (p. 76). Callicott maintained that the "potential for the development of an explicit indigenous Chinese environmental ethic based on classical Chinese thought is tremendous." Further, "the potential contribution of classical Chinese thought to deep ecology, ecofeminism, and, more generally, to a global ecological consciousness and conscience is equally great" (p. 81).

The "principle of the oneness of humankind" is at the center of the Baha'i position on climate change. In their 2008 statement "Seizing the Opportunity: Redefining the Challenge of Climate Change," the Baha'i International Community (BIC) stressed the moral implications of the "destructive impacts" of climate change, particularly those "exacerbated by the extremes of wealth and poverty [and] a need for new approaches centered on the principles of justice and equity" (Poznan). Conservation and environmental protection is addressed at the individual and societal levels. Effendi (1991) said:

> We cannot segregate the human heart from the environment outside us and say that once one of these is reformed everything will be improved. Man is organic with the world. His inner life moulds the environment and is itself also deeply affected by it. The one acts upon the other and every abiding change in the life of

> man is the result of these mutual reactions. (p. 84)

The Baha'i communal response is a seven-year plan entailing courses of study, acts of service and reflection for adults and children (Baha'i US, 2010).

In his book, *Judaism and Global Survival* (2001), Richard Schwartz considered the application of ancient, basic Jewish teachings in addressing current global problems and bringing about necessary, fundamental changes (p. xix). He specified the non-adherence to *bal tashchit*, (the prohibition of unnecessary waste or destruction), derived from Deuteronomy 20:19, 20, as not only a cause of anthropogenic climate change, but its reapplication as a viable solution (p. 139). Referencing *halakhah*, Jewish law, Cohen (2001) believed that "implicit in this principle…is the demand for acute environmental sensitivity." He maintained that each "interaction with the natural world involves the setting of priorities, the weighing of conflicting interests, and the permanent modification of the environment" (p. 78). Outlining a number of Jewish teachings and aligning them with the Jewish Council for Public Affairs' (JCPA) statement "Confronting the Challenge of Climate Change" (1997), Schwartz affirmed that these values can have a "major impact on the solution of global problems" (pp. 140-143). Tied closely to this and emphasized throughout Judaism is the teaching of *gemilut chasadim,* acts of loving kindness and social justice (p. 31). *Bal tashchit*, in multiple rabbinical interpretations, recognizes the importance of environmental stewardship and humanity's responsibility to not pollute the air and water, over-consume, or recklessly waste resources (Ehrenfeld and Bentley, 2001, p. 130-131).

Benstein (2006) stressed that working towards *tikkun olam* (healing and improving the planet) can be a powerful counterforce to the realization that we are not fulfilling our obligations as humans to sustain and nourish the world and its inhabitants (pp. 11-12). The festival of *Tu*

B'Shvat, The New Year of the Trees, calls to mind four aspects of the significance of the natural world: *economic*, as we can quantify the sustenance we receive from nature; *spiritual*, as the natural world is the foundation of our spiritual lives; *national-political*, as trees are "powerful symbols of collective identity and pride" especially in Israel; and *ecological*, as we realize we are part of an interdependent world. The integration of these aspects culminate in the definition of "our relationship to life and land: economic, spiritual, national-political, and ecological – body, soul, group, and world. Each component can become broken and require healing; an environmental perspective and *tikkun olam* provides a "unifying synthesis for our time" (pp. 179-181). According to Steinsaltz (2007), at the Jewish High Holy Days of *Rosh Hashanah* (the New Year) and *Yom Kippur* (the Day of Atonement), the process of *teshuva*, that of *return* or *turning* is a universal idea: "the profound need to elevate ourselves from where we are, to look at our failings, and to resolve to do better" (p. 1).

The precepts of Zoroastrianism are generally considered environmentalist. The purity of the earth, water and air are paramount and adherents are bound by ancient scriptures to protect nature. Many of their religious holidays fall on the equinoxes and solstices, as celebrations of Earth's natural cycles. The basic principles in the Zoroastrian faith are equality, respect and kindness towards all living things, hard work and charity, religious tolerance, environmentalism, and loyalty and faithfulness to family and community (Boyce, 2001, pp.224-226). In a 2007 press release from the Federation of Zoroastrian Associations of North America (FEZANA), prior to the 60th Annual United Nations Department of Public Information/Non-Governmental Organizations (UN DPI/NGO) Conference on Climate Change, Homi D. Gandhi said:

> Zoroastrians through the millennia have been known for their care and concern for the Earth, conservation of natural resources, and protection of the environment...we look forward to participating, collaborating and fostering a shared dialogue focused on a collective responsibility for improved environmental conditions worldwide. (p. 2)

In their 2006 "Statement of Conscience," the Unitarian Universalists called for an end to "the ongoing degradation and destruction of life that human actions are leaving to our children and grandchildren." Referring to their seventh Principle, which is to promote and affirm "respect for the interdependent web of all existence of which we are a part," the Unitarians especially commit to responding from their "moral and spiritual wealth… [and] ever vigilant against injustice," in mitigation and adaptation to climate change with "acts of moral witness" as individuals and as congregations (Unitarian Universalist Association).

Although the idea of the environmentally attuned American Indian culture has been argued from both sides since at least the writings of Henry David Thoreau, Callicott and Nelson (2004) offered "ideational evidence [focusing] on the attitudes toward and values respecting nature" demonstrated by several American Indian peoples (p. 133). Admitting substantive proof found in other research, the authors asserted that ethics differ from human behavior and are treated differently in their historic, sociologic, and psychological stances: ethics from a generally normative viewpoint, while human behavior is treated from a descriptive perspective. While few live up to "the ideals their ethics envision or the duties and obligations their ethics impose," it is not to say that "ethics have no effect on actual human behavior" (p. 134). In their research and interpretation of Ojibwa narratives, the authors uncovered a strong environmental ethos, "embedded in [their] worldview...much more oriented to setting out the proper way that people should treat other-than-human persons," but with less moral overtones regarding the treatment of each other (p. 117). In these foundational interpretations Callicott and Nelson suggested that the Ojibwa environmental ethic does indeed resemble Leopold's land ethic (p. 121).

According to International Union for Conservation of Nature and Natural Resources (IUCN) the costs of climate change are going to fall inequitably on the world's poorest and most

disadvantaged communities including traditional and indigenous peoples, many of whose communities live in marginal lands in developed countries including North America, Europe, Australia and New Zealand, and the Polar Regions where there can be some resources for mitigation and adaptation. Others who live in the tropical developing world get very little or no consideration. Indigenous people living in marginal lands have long been exposed to environmental changes. They have necessarily developed coping strategies and have valuable adaptation knowledge (Macchi, Oviedo, Gotheil, Cross, Boedhihartono, Wolfangel & Howell, 2008). I mention this within the context of and on the behalf of these communities, because demographically their faith, spiritual, and moral traditions have had little or no voice in the climate conversation. Within the World Commission of Protected Areas (WPCA), the specialist group Cultural and Spiritual Values of Protected Areas (CSVPA), is a global network of experts concerned with the preservation of cultural and spiritual sites having import for indigenous peoples and the "transcendent or immanent significance that gives meaning and vitality to their lives and motivates them to revere and care for the environment." Overdevelopment, ignorance, overconsumption at the expense of the natural world is destroying these sites. (Bernbaum and Verschuuren, n.d.). The Indigenous Peoples' Biocultural Climate Change Assessment Initiative (IPCCA) works with diverse groups: the African Maasia, the Pacific North American tribes, the Parque de la Papa and Sapara in South America, the Adivasi, Huay Manao, Ifugao, and Kuna Yala in Asia, and the Skolt Sami in Finland. Their *biocultural* approach is used for assessments of climate change and the evaluation of indigenous knowledge which has historically produced resiliency. Assessments of conditions and trends are producing evidence of the use of indigenous knowledge for responding to extreme climatic events, developing strategies that can build resilience and "an indigenous vision of an interconnected world, in which the bio-physical,

socio-cultural and spiritual all play an important role in maintaining resilience through the guiding principle of reciprocity" (IPCCA, n.d.).

Wei (2012) concluded that themes contained within major philosophical and religious traditions are consistent with low carbon living and material restraint and have the potential to inspire and appeal to people's intrinsic values. Although speaking from a monotheistic viewpoint, renowned Christian (and feminist) theologian Sallie McFague (2008) presented a broad reaching and meaningful commentary on climate change. She alluded to the "era of procrastination…entering a period of consequences," echoing the words of Winston Churchill when he spoke about the Holocaust in 1936 (p. 9). She wrote: "We are facing another such time, one of equal if not greater danger….But in the case of climate change, the evidence is even clearer than was the Nazi threat" (p. 10). In discussing climate change as a theological problem, the author covered some interesting ground with a novel approach to the idea of salvation and economics. Broadening the definition of salvation to include "the well-being of creation here and now," not just individual redemption, McFague argued that economics is not just important, but "*very* [emphasis added] important to religion" (p. 36). Although both viewpoints "acknowledge the significance of religion, the first view fervently denying that money has anything to do with God," that "God is only interested in our souls." The second view, in her opinion, was that it has "everything to do with God," a concern for "the well-being of the whole person, with all persons, and with all other creatures." The author redefined economics, having the same language roots as *ecumenical* and *ecological*, as "*the most basic of all human studies,*" concerned with the laws and good management of Earth, *oikonomia*, and sees global warming as a "prime example of bad planetary management." Combined, the three words provided rules she called "planetary economics" for every creature to "live sustainably and justly" (pp. 36-37), on Earth:

> Justice and sustainability are the norms that guide the allocation of resources in this model of economics; they are also what is needed to avoid excessive climate change. The central difference between ecological economics and neoclassical economics is that the first says for all creatures to have the good life (to be saved), sharing and limitation are necessary, whereas neoclassical economics claims that the good life is reserved for the few who can control the most resources for themselves, with justice and sustainability secondary matters. (p. 37)

The urgent necessity of these ethics, according to Krznaric, must be "combined to generate a powerful multi-faith response" to climate change as an effective way of "harnessing the extraordinary potential of religion" to not only raise awareness, but to "mobilise people to bring about the profound social, economic and political changes that the climate crisis demands" (p. 13). Citing the Australian Federation of Islam Councils' submission to the 2006 Australian Climate Institute's "Common Belief" discussion paper he said 'people of religion must forget their theological differences and save the world from climatic ruin' (p. 15).

One of the focal points of the UN and ARC collaboration, is "myth, metaphor and memory." The authors maintained that people are not engaged at any "deep level" on climate change, and in particular, the related issues of "consumption, economics and policy," because activist approaches have not addressed the narratives of "memories past, disasters, and the ways out," instead using "random…apocalyptical imagery without seeking to harness [their] power." There is strong belief that the faiths are the holders of the "mythological and metaphorical" narratives within their communities, and without these important inclusions, "few people are ever moved to change or adapt. The faiths have been masters of this for centuries." (ARC, 2007). Harnessing this power it would seem, is an important consideration for a viable way forward in meaningful and effective climate change education.

Environmental Education (EE)

> Where are our priorities? Children are not at risk of missing out on the fact that we're becoming a wired society. We don't need help making sure that future

> generations embrace technology. Technophobia just doesn't happen to be the dominant trait of our society. What we need is balance and connection.
>
> - Stephen L. Talbott, *Why Is The Moon Getting Farther Away?*

Historical overview and critique. Environmental Education (EE) has a long history in the United States, beginning with the *nature study movement* as a response mostly to urbanization and the industrial revolution at the end of the nineteenth century. Progressive educator John Dewey felt that the study of nature would produce both an "aesthetic sense" and an "ethical sensitivity" in students. Educational activities included time in the outdoors and planting school gardens to counter the sense of isolation the movement deemed prevalent as a result of expanding cities and mechanization. Adults became interested in the movement as well; authors such as Henry David Thoreau and John Muir became popular. But the nature study movement faded when many Progressive Era reforms ended in the 1920s and the United States entered World War I, when "using natural resources to support the war effort" became more crucial than saving them (Saylan and Blumstein, pp. 22-23). According to Miller (2007), wilderness preservation and nature conservation had taken enough of a hold that through the middle of the century, the legacies of Thoreau, Muir, Theodore Roosevelt (among a number of U.S. presidents), and Gifford Pinchot continued to gain ground with the creation and implementation of federal legislation aimed at protecting wilderness, natural resources, and wildlife (pp. 141-145).

The modern environmental movement beginning in the 1960s was more than likely the impetus for any recognition of EE in the United States, although according to Palmer (1998) the term appeared at a 1948 meeting of the International Union for the Conservation of Nature and Natural Resources (IUCN) in Paris (p. 5). At the 1970 IUCN/UNESCO (United Nations Education Scientific and Cultural Organization) International Working Meeting on

Environmental Education in the School Curriculum in Carson City, Nevada, a formal definition for EE was adopted:

> Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. (p. 7)

In 1971, the National Association for Environmental Education was created. Now known as the North American Association for Environmental Education (NAAEE), its mission is to improve environmental literacy by creating and providing resources to schools, promoting environmental education programs, and offering professional development courses and conferences (Disinger, McCrea & Wicks, 2001, p. 5). In 1972, the UN Conference on the Human Environment held in Stockholm, Sweden "declared that: education in environmental matters for the younger generation as well as adults…giving due consideration for the underprivileged is essential" (Palmer, J. A., p. 7). Through the 1970s, two other international declarations from UNESCO and the United Nations Environment Program (UNEP) were to have significant impacts on EE globally: the Belgrade Charter in 1975, which built upon the Stockholm Declaration by adding goals, objectives and guiding principles of EE programs, and the Tbilisi Declaration in 1977, emphasizing the role of EE in improving the global environment and specifying additional guidelines and goals (pp. 7-11).

In 1990, President George H. W. Bush signed the National Environmental Education Act (NEEA) into law, charging the U.S. Environmental Protection Agency (EPA) its "first Congressional mandate to strengthen and expand environmental education," mandating programs and activities to be administered by EPA's Environmental Education Division. These included an environmental education and training program, a grants program, an awards program, an

internship and fellowship program, and a federal task force and national advisory council" (National Environmental Education Advisory Council [NEEAC], 1996, p. 1). Appropriation of funds through the NEEA since the first in 1992 have totaled almost $100 million, an average of less than $6 million, which some feel has not been enough, not effectively allocated, or, according to Potter (2010), is operating within the framework of an obsolete piece of legislation. She believed that the NEEA has outlived its time and "was not written to accomplish systemic change." Although public awareness of "environmental issues is growing, their understanding of the issues and their ability to solve these problems are not" (pp. 22-25).

Citing the importance of the "No Child Left Inside Act" (a proposed amendment to the reauthorization of the Elementary and Secondary Education Act – the "No Child Left Behind Act" – of 2001) and recent publications from the National Research Council (NRC) Division of Behavioral and Social Sciences and Education (DBASSE), the National Council for Science and the Environment (NCSE), the National Science Foundation (NSF) Advisory committee for Environmental Research and Education (AC-ERE), and NEEAC, Potter highlights current recommendations for the future of EE, all of which promote EE as "fundamental to our ability as a society to address the economic, social, and environmental problems that are having a profound effect on us as present and future inhabitants of this planet" (pp. 25-29).

Saylan and Blumstein asserted a more "modern, practical redefinition of environmental education" is in order. Their book *The Failure of Environmental Education [and How We Can Fix It]* is a harsh criticism of EE "in its current state and the institutions responsible for its implementation." They charged education institutions with failure to "provide the tools necessary for critical thinking and for understanding the modern world" and not teaching "individual responsibility and social engagement." The authors suggested the current conception of EE has

"failed in part because of its limitations," and offered multiple recommendations for this new definition, which included one that "encompasses multidisciplinary teaching approaches…seeks to cultivate scientific and civic literacy….Stimulates community engagement….Fosters an *understanding of moral systems*….Reinforces the *appreciation of aesthetics* [emphasis added]… [and] inspires practical and critical reevaluation of education as a whole" (pp. xii-3). Stressing the importance of individual and collective responsibility, they wrote:

> We must accept that we are individually responsible for making sure we do no irrevocable harm to the natural systems that support us. Collective responsibility has nothing to do with liberal or conservative values. In no way does it conflict with religious or lifestyle choices. It is not a political issue… (p. 27)

Although recognizing the difficulties of moral education that can be encountered in some settings, i.e. public schools, the authors promoted education of "moral systems and cross-cultural similarities" as a reasonable, perhaps more diplomatic way of introducing and cultivating an ethics sensitivity in curricula (p. 90).

Commons education has been promoted by Bowers (2006) in response to the failure of traditional EE to help the people find "a reference point for assessing whether their ideas, values, and lifestyle are part of the problem, or part of the solution." Transforming environmental education with this approach "allows for thinking about the interdependencies between different aspects of the commons…'cultural commons' and the 'environmental commons'" (p. 5). He believed that the traditional science curriculum does not "address the systemic reasons that the rate of environmental degradation has reached a level that now exceeds what science and technology can reverse," and that beyond physical restoration of the environmental commons, what is additionally needed is a strengthening of "cultural practices and beliefs that have a smaller ecological footprint" (p. 7). The focus of commons education for Bowers was learning the difference between "intergenerational knowledge that is ecologically sustainable and

contribute[s] to *morally coherent* [emphasis added] communities," and that which "contributes to the colonization of other cultures and to the development of technologies and an economic system" that does not. For him, current liberal education was a prime example of what drove and continues to drive ecological degradation – "language and thought processes we associate with being modern and progressive have become doubly destructive" pp. 8-9).

Crosley (2013) pointed out that with few exceptions, little attention is paid to "urbanization, its characteristics, and its impact," despite the "unprecedented shift" of global society towards a "dominantly urbanized existence characterized by increasingly diverse and concentrated populations" (p. 47). She cited three reasons for this: an historical conception of humans as apart from nature and thus a tendency "to ignore man-made and urban spaces;" the perception of some urban learners who "often see science as irrelevant to their lives;" and a lack of attention paid to "nuanced racial, cultural, political, and economic issues." (pp. 47-50). Ecocritic Nichols (2011), interestingly enough, argued that the historically romantic notion of nature needs to be replaced by "urbanatural roosting" in his calendar-formatted book *Beyond Romantic Ecocriticism: Toward Urbanatural Roosting*. He identified the natural world as imbedded within urban life, and an indication for humans to live more lightly on the planet, imitating the creatures he eloquently detailed (pp. xiii-xi).

McLean (2013) offered a critique directed at outdoor experiential EE programs from a socio-economic perspective, maintaining that they "attract students from predominantly white middle- and upper class families, who therefore have access to the clothing and other necessary resources which allow them to engage in the many outdoor excursions and activities that are an expectation of the programming." Her research in racialization and EE raised some important considerations for environmental education programming using strictly ecologic frameworks

which focused entirely on the "effects of environmental destruction… depoliticiz[ing] and silenc[ing] primary causes such as colonialism, capitalism, and white supremacy" (pp. 356-357). Thoughtful reflection on the aforementioned societal issues, how they can impact EE, and implementing ways to address them appears necessary and crucial to the future of environmental education if it is to adequately fulfill its mission.

In defense of field study, Alagona and Simon (2010), found that such courses increased college students' appreciation for what they termed "environmental humanities…nonscientific areas of environmental scholarship such as environmental history, *philosophy, literature, ethics, art practice* [emphasis added], and cultural geography" (p. 193). They asserted that field courses "provide opportunities to break down disciplinary academic barriers," generating "increased student interest and engagement in humanistic approaches to environmental studies that may seem overly abstract in a traditional classroom setting" (p. 203).

Formal and informal environmental education has great potential to influence students of all ages by providing opportunities that promote understanding of environmental issues from scientific, economic, political and ethical viewpoints. Despite some of the aforementioned criticisms, and others (notably Hart & Nolan, 1999; Kollmus & Agyeman, 2002; Li, 2006), EE has at least provided foundational knowledge for students of environmental studies in the past two decades. Without it, according to Saylan and Blumstein, "we likely would not now have wide-spread recycling, environmental impact assessments, cleaner air and water in many communities, local decreases in pollution and urban runoff, and increased industrial accountability" (p. 36). Well beyond the scope of this thesis, there is growing body of research that is addressing some of the issues that have kept EE from realizing its full potential. It is the expectation of educators, administrators, and perhaps even the general populace that EE in the

future will provide a more robust, interdisciplinary discourse to move society to action on the environmental challenges we face.

Climate change education. In 2010, a workshop convened by the Board on Science Education (BOSE) with the NRC Committee on Human Dimensions of Global Change and the Division on Earth and Life Studies produced a comprehensive document asserting that although information is widely available, the United States is "unprepared or unwilling to respond effectively to climate change" (NAP, 2011, p. 1). The workshop was an outcome of the 2009 and 2010 Congressional appropriation process, requesting that NSF create a program in climate change education providing funding to ultimately improve climate change education in the United States. One of the outcomes was the Climate Change Education Roundtable, created as a "forum for dialogue between practitioners and experts in multiple disciplines relevant to climate change education." Its purpose is to "facilitate collaboration across federal agencies and private organizations, and promote unique contributions and align overall education strategies." The Roundtable steering committee comprises experts in "behavior and decision science, psychology, sociology, environmental science, climate science, and the learning sciences," who are responsible for workshop planning and implementation, with a focus on public understanding and decision maker support. During the first of two Roundtable workshops, an impressive list of educators, specialists in climate change communication, and scientists, identified "four critical challenges" that have "slowed development and delivery of effective climate change education" (pp. 1-3):

- The underlying science of climate change is inherently difficult for most learners to comprehend and for educators or schools to competently teach and the connection between science and society that is implied in climate change education aimed at changing people's behavior makes the task of teaching and learning more difficult still.
- Achieving the broad range of goals of climate change education requires a cross-

disciplinary approach, blending education with the learning, social, behavioral, and economic sciences as well as earth systems science.

- The myriad of federal agencies, nongovernmental organizations, and businesses invested in climate change education may duplicate efforts and waste limited resources without a forum for coordination, cooperation, and alignment of overall education strategies.
- Like evolution, climate change has become a highly politicized topic in the policy arena and in education, and people's willingness to be educated or to learn depends on their attitude toward the issue itself. (pp. 1-2)

The intent of this initial workshop was to "address a broader stakeholder community," including "climate change education researchers, educational practitioners, government agencies, nonprofit institutions, and information users." The second workshop, held in 2011, addressed climate change education in formal education settings, including grades kindergarten through high school and undergraduate studies.

Participants of the first workshop discussed issues in a forum that gave them the opportunity to relate to other "expert researchers and practitioners in complementary fields that often operate in relative isolation from one another," including "decision making and risk analysis, education, learning and cognitive science, behavioral and environmental economics, workforce analysis and green jobs, public literacy and communication, and physical and natural sciences" (pp. 3-4). Their numerous recommendations included further characterization of a "new system of knowledge transfer" (p. 57):

- Messages and information tailored to the specific needs, values, attitudes and interests of the audience;
- Engagement in active learning experiences as an individual and as part of a group; and
- Interactive and ongoing interactions to sustain relationships. (p. 57)

The second NSF Roundtable workshop, based on the "already articulated need to teach climate change education," provided a forum for presentation and discussion of evidence from current research and practice regarding:

- How climate change is currently taught in school;
- How best to teach climate change in K-14 settings;
- What factors impede the teaching of climate change in schools; and
- Innovations in K-14 climate change education. (NAP, 2012, p. 2)

According to Daniel Edelson, the keynote speaker, two assumptions underlie the common approach to climate change education: that although foundationally it is part of the science curriculum, and that "much of it would concern climate science and the dynamics of climate change," it is the wrong place to start. Acknowledging the importance of climate science, he clearly stated the necessity for *the ethics of anthropogenic climate change* [emphasis added] be included in climate change education (p. 4). Questioning the necessity and desirability of curricula focused solely on climate science and climate change to achieve the goal of climate literacy, Edelson reported that most of what is needed "has nothing to do with climate in particular, but rather is covered by the fundamentals of earth systems science" and "part of an integrated, holistic education," although he felt that "specific learning outcomes related to climate change would be part of that education" (pp. 5-7). His approach was in developing "geo-literacy, or the capacity to make 'big decisions,' those that have big impacts...such as formal democratic processes, advocacy, and public opinion," and is "intended to complement, not replace" existing standards. Geo-literacy would provide a broader framework for the integration of "key aspects of climate systems with human systems, applicable in science, social, and behavioral science curricula. He noted that this framework focuses on "reasoning and decision making, with an emphasis on place and geographic decision making," systematic elements currently absent in education, but necessary skills people will need after their formal education (p. 8). Hulme (2009), however, had previously cautioned that although "earth system science may demand and find a unitary framework of explanation and prediction…our social worlds resist such unifying frameworks," (p. 338). It will be interesting to see what eventually comes

out of the NSF roundtable work and what recommendations they have for moving forward on climate change education, given the current debate over systems education.

Cordero, Todd, and Abellerra (2008) promoted *action-oriented learning* as a way for college students enrolled in nonscience major meteorology courses to understand the connection between their own energy use and climate change. They believed, as many of us do, that "an educated citizenry is required to make wise decisions regarding policies and practices aimed at reducing greenhouse gas emissions." Additionally, they ascertained information on student misconceptions regarding climate change, and were able to evaluate teaching methods being used (pp.865-866). Using pre- and post-study questionnaires, they discovered significant improvement in the students' understanding of their personal energy use actions and global warming, although some student misconceptions persisted (pp. 870-971). Yanascavage (2012) determined that students taking an introductory global climate change course reported a change or an intent to change in "behaviors or decisions that impact the environment and how the communicate with others" (p. 133). She concluded that the results of the study indicated that students' "social involvement with knowledge" in the course could "lead to applied solutions outside the classroom," and a need for further research in this area (p. 148).

Recent interest in *environmental humanities*, an interdisciplinary approach encompassing specialized research in "environmental history, environmental philosophy, environmental anthropology and sociology, political ecology, posthuman geographies and ecocriticism, (among others)…shows a willingness to engage with the environment from within the humanities and social sciences" (Rose, van Dooren, Chrulew, Cooke, Kearnes, & O'Gorman, 2012, p. 1), and has produced a new professional journal with the same name. Bringing questions of "meaning, value, ethics, justice and the politics of knowledge production," traditionally the work of the

humanities to environmental issues, broadens the previously "narrow conceptualisation of human agency, social and cultural formation, social change and the entangled relations between human and non-human worlds." Climate change impacts require us to "rethink many of the concepts and ideals that have been central to our understandings and aspirations" (p. 2). Climate change education and environmental education in general ultimately require more than imparting the science of the biologic, physical and chemical processes that run the planet Earth and the anthropogenic practices that are currently moving our global environment beyond the evolution of mankind. For students to become ecologically literate and be able to make appropriate, informed personal and communal decisions, understanding the role of humanity within the environment must be creatively explored in its social, cultural, political, economic and moral contexts.

Virtue Ethics in Undergraduate Climate Change Education

> If we don't stand for something, we will fall for anything.
>
> -Irene Dunne, *America's Town Meeting of the Air*

Approaching environmental problems from an educative viewpoint, Ferkany and White (2011) posed these questions: "What is the role of education for deliberative skills and virtues relative to other aspects of environmental education, such as facts and values education? How important is it relative to careful design of the deliberative process? What virtues really matter? (p. 419). Their questions formed the basis of my initial inquiry into the idea that a virtue ethics approach in undergraduate climate change education could better inform students' understanding of the ethical issues of climate change and promote environmental responsibility and action. Tuana (n.d.) believed, as I do, that ethics courses provide students with the "tools for thinking about how values ground our actions and how to distinguish between warranted and unwarranted values." This chapter will examine virtue ethics in undergraduate education as a whole as well as some implications specifically in climate change education. It will be necessary to limit this discussion to that of education in the United States, despite climate change ethics being a global concern. As much as examining and incorporating educational theories and concepts from other countries would probably be beneficial, and certainly interesting, to do so would be far beyond the scope of this thesis.

Virtue Ethics Education

> Given the complexity of most moral situations, education is a crucial aspect of living an ethical life and being a citizen of a moral nation. Courses in ethics enable students to develop the critical reasoning skills necessary to moral reasoning. Ethics courses also provide the basis for uncovering the values that underlie actions.
>
> - Nancy Tuana, *Ethics Matters*

Ivor Pritchard (1998) defined moral education as "learning why standards of right and wrong are worth following, and developing the capacity to apply those standards" (p. 25). Klee (2003) stated that the purpose of moral education is twofold: "to cultivate the desire to act rightly and to help [students] discern the virtuous." She asserted that in order to "to act rightly, one must first *care* about doing right to have a *vision* of the virtuous" (p. 5), and believed that the time is ripe for the reintroduction of moral education in the classroom. In her book, *Core Virtues: A Literature-Based Program in Character Education*, she wrote "we live at a time when moral indifference – particularly among our youth – has taken center stage in our public life" (p. 3). Quoting moral educator William Kilpatrick, she said "'moral apathy is as large a problem among the young as the delinquency it spawns'" (p. 4). Klee considered virtue and character taught in the classroom able to "long outlive anything we pass on in the domains of math, science, or history," and relied on the wisdom of 19th Century American lexicographer Noah Webster who said "'Youth is a time to form both the head and the heart.'" As an early advocate for public education, he also noted "'the virtues of men are of more consequence to society than their abilities, and for this reason the heart should be cultivated with more assiduity than the head.'" (p. 7). Klee emphasized the virtues of "respect, responsibility, diligence, courage, perseverance, generosity, compassion, faithfulness, loyalty and patience" in order to cultivate students "love of the good – a vision of the sort of people they might aspire to be." (p. 5).

Values education has had significant influence in public education in the United States in recent decades. The term *values* in this context refers to principles or ideas which are strongly believed and guide behavior, such as respect and tolerance, and have to do with moral, political, and social preferences (Amundson, 1991, 19 & 29). These standards are used to judge the worth of an action or an idea, provide a measure by which we decide something is right or wrong, good

or bad, and predispose us to respond to other people, to events, and to our environment. This can be particularly important when considering the questions “What kind of future do I want?” and in the case of climate change morality, “What kind of future do I want for my children and grandchildren?”

Amundson traced the recent history of values instruction in American public schools to John Dewey's approach, derived from his progressive philosophy of education. His emphasis was the need for moral character development, which he felt would ensure “the continued existence in democracy comprised of a diverse population.” In the latter part of the twentieth century, the values clarification approach which became popular in the writings of Sidney Simon and others, was used to help students identify and recognize their own beliefs about moral values. With this approach, teachers were never to evaluate or judge whether students' values were right or wrong. Proponents noted that the process involved helping students recognize what *they* value, choosing what they value most, and incorporating these values into their daily lives (pp. 19-20). One could argue, however, that although it would appear this approach is used to address an increasingly diverse population, values clarification leaves much to be desired in the way of useful moral instruction, which will be discussed below.

Lawrence Kohlberg’s method of teaching values, character education, used discussions of moral dilemmas to develop students' moral judgment based heavily on the work of psychologist Jean Piaget (Reimer, Paolitto, and Hersh, 1990). Kohlberg maintained that at each stage of their development, individuals will use the same reasoning to analyze different moral situations, and suggests three basic stages of moral development:

> The preconventional stage, in which moral decisions are justified in terms of personal consequences; the conventional stage, at which moral decisions are justified in terms of interpersonal or societal relationships; and the postconventional and principled level at which moral decisions are generated from rights, values, or principles that are – or could

be – acceptable to all members of a society. (Amundson, p. 20)

Dewey and Kohlberg both asserted that schools should not be responsible for instilling any values directly because the experiences of students would cultivate both their skills of moral reasoning and decision making. However, many believe that values clarification supported the development of moral relativism, and "one of the biggest obstacles" to overcome in introducing a values education program in public schools is discontent with the values clarification model (p. 20). For Carr and Steutel, character education was an inadequate model because the promotion of only the single virtue of justice appears "abstract and universal" (1999b, p. 5). "Today, however...there is a growing consensus that schools must again emphasize their role in transmitting certain values" (Amundson, p. 29). Carr and Steutel promoted the idea of a virtues approach to moral education (pp. 5-6), and Klee agreed, asserting that educators in the United States are "ready to move beyond the morally neutral term 'value' and strive instead for 'virtue,' believing that it is better to uphold high standards – against which to evaluate ourselves – than it is to hold high selves – against which to evaluate our standards" (p, 6). This may certainly be a worthwhile goal (and clever turn of phrase), but perhaps too lofty an ideal for the public school classroom. I am not against it, but for reasons previously mentioned, virtues education could possibly meet with serious opposition in that particular venue.

Carr and Steutel found that despite the resurgence of virtue ethics within the fields of philosophy and educational philosophy, "relatively few educational philosophers to date have focused directly upon the practical implications of virtue ethics for moral education" (1999a, p. xv). Pritchard (1998) found this as well, saying that although the research on a virtue ethics approach, is "not as thorough or as rigorous as it could be, substantial evidence [for it] exists, and for the most part it confirms common sense." He believed that this approach might provide

information effectively and foster reasoning, but would probably not change student attitudes or behaviors (pp. 136-137). In the case of my course proposal, this certainly remains to be seen.

Agreeing with Amundson, Carr and Steutel also saw the goals of values clarification education as relativistic (1999b, p. 3), but understood a virtue approach to moral education "as a matter of the development of such traits along with promotion of some understanding of their moral value or significance." The authors presented an account of intrinsic and instrumental moral virtues from R. M. Hare's *Moral Thinking* (1981), and although couched in his utilitarian language, found it valuable and explicit: "courage, self-control, temperance and perseverance" as examples of intrinsic moral virtues, and "justice, benevolence, honesty and truthfulness" as instrumental (p. 5). Jamieson (2002) also applauded Hare's work, especially his distinction between intuitive and critical levels of moral thinking, helping us to see that applied ethics *is* relevant, contrary to the argument that since virtue cannot be "taught," applied ethics is not "worth doing." He asserted that "what people who say this usually mean is that virtue cannot be taught by the classroom method of the moral philosopher with their emphasis on reason and argument," and that applied ethics can be a part of moral education (p. 33-35).

Carr and Steutel also discussed the work of John Rawls, indicating traits of character including "tolerance, fairness, civility, respect and reasonableness" as "crucial to peaceful coexistence in conditions of cultural diversity," from Rawls' *Political Liberalism* (1993). Within this context, Rawls distinguished civic virtues from those of "more particular religious, moral or philosophical allegiance." (1999b, p. 6). Admitting that these particular viewpoints are more *deontic* (concerned with the evaluation of action), than aretaic (concerned with the evaluation of character), the authors defended a virtues approach to moral education (p. 8).

As previously noted, Jamieson (2002) promoted two levels of moral thinking, the

intuitive and the critical, despite the opposing view of Goralnik and Nelson, who believed that not only can rationality and emotion not be "disentangled," but that they should be addressed "as a single entity in education and ethical decision making" (p. 187-188). According to Jamieson the intuitive level is where most of our moral lives are conducted, and is overseen by deep-seated feelings. Critical thinking on the other hand, is not ruled by emotion, and he stated "sometimes the head should overrule the heart." This is important as we also need to know which virtues to encourage in our children and also because many of the issues we face today are new; "we have no deeply entrenched dispositions to guide us." He also considered our moral psychological insensitivity to these issues (wicked problems, if you will), "especially those which involve people and events that are not close at hand...which can be appreciated only by reason, since they outrun our capacity for heartfelt response" (p. 34). Critical thinking, in my opinion, has much more to do with the business of education: it is in the classroom where students are introduced to the method of critical thinking and are then given the opportunity to use it. Issues with moral dimensions can be presented and students can test drive solutions individually or in groups. Climate change ethics is a good critical thinking exercise for the reasons given by Jamieson, especially the spatial and intergenerational aspects of the issue.

Pritchard cautioned that moral education can be difficult with unavoidable conflicts stemming from social conditions that "may weaken or strengthen the practice of moral education, including political conditions, the market, religion, and race relations," although he firmly believed, as I do, that excellence in education requires the promotion and exercise of particularly the virtues of friendship, honesty, courage, and justice as "an integral part of good ordinary educational practice," (p. 26). Hunter (2002) maintained that the "core of a public, teachable morality" can be reduced to the two "universal" virtues of "respect and responsibility"

(p. 44), also worthy of consideration in my opinion. In classroom management alone, these virtues are fundamental for learning to even begin to take place. Lewis (2005) further extolled the merits of virtues for students, including those of Pritchard and Hunter but added love or caring, respect for life, and fairness in the context of civic responsibility. She said:

> History has shown that societies tend to self-destruct when their people don't possess a core group of positive character traits. In the words of General Douglas MacArthur, 'History fails to record a single precedent in which nations subject to moral decay have not passed into political and economic decline. There has been either a spiritual awakening to overcome the moral lapse, or a progressive deterioration leading to ultimate national disaster.' (p. 1)

Lewis also connected the personal development of positive character traits to self-respect, respect of others and the world, and provided classroom guidelines, which I used in my course development. They included clarification of facts or issues, provision of a trusting atmosphere, sharing ideas, and maintaining an inclusive, fair environment (p. 1-2).

For Jacobs and Jacobs-Spencer (2001), character education emphasized the development of "universally recognized virtues such as courage, generosity, respectfulness, fortitude, and honesty," with appropriate behaviors preceding "smart" ones. Clearly articulating the difference between values and virtues, they believed that values clarification can be an obstacle to character development based on competitiveness or disregard for values outside those being taught. Stressing the importance of nuance in language, the authors said "virtues make the world a better place for all. Values are what are important to you; they may or may not make the world a better place" (p. 35). This is an important distinction.

In *Character Matters* (2004), Lickona pursued multiple, concrete approaches for character education, whose goals are "persons of good character, schools of character, and a society of character" (p. 225); education addressing moral character as well as educating for intellect (p. 143). This of course raises the question of what good character means, and his

response within the context of a faculty training exercise was in the form not unlike the questions posed by virtue ethicists: “What qualities do we want our graduates to possess? What moral and intellectual strengths will best equip them to lead fulfilling, purposeful, and productive lives and to build a better world?” (p. 225). He concluded that the content of good character is virtue (p. 7), and considered the most important “intellectual virtue” in and out of the classroom to be the pursuit of truth, supported by a number of other virtues:

> …an openness to considering all sides of an issue in the search for the whole truth; a respect for evidence even when it contradicts our bias; a willingness to admit error; a desire to keep learning; and a humility in the face of all that we don’t know. (p. 135)

The author was also a proponent of education for justice (p. 141), the use of virtue language (p. 152), and teaching empathy through literature (p. 184). His list of ten essential virtues is accompanied by extensive “supporting virtues” (pp. 226-227) and was an invaluable resource for my curriculum project.

Pritchard had much to say about a virtue ethics approach in classroom discussions, asserting that such an approach provides participants the opportunity to tackle moral ideas that they might “unreflectively assume they understand in ordinary conversation,” and gain practical understanding of issues not generally considered in everyday life, prior to “when the moment for action” becomes a reality. He suggested that “academic learning may not lead to virtue, but it helps the virtuous figure out how to do the right thing.” Questions posed in the classroom help “widen students’ intellectual horizons and present moral concepts and principles in illuminating ways,” and allows for reflection. “Such critical reflection is contrary to the fundamental interests of indoctrination, which include keeping students from ever seriously examining the basis for their moral convictions.” (pp. 137-138). In the experiential learning model, critical thinking, problem solving and decision making is central to the learning process. By introducing topics

and issues, especially those personally relevant to the student, the instructor provides an opportunity not only for critical reflection, but for debriefing and consolidation of ideas and skills to be applied in future situations. Reimer et al., believed that by creating "cognitive conflict" in moving from theory to practice, the instructor's role is "to stimulate social perspective taking" and to "foster moral reasoning" in the classroom (p. 120).

Jacobs and Jacobs-Spencer endorsed a model for virtues-learning used at Alverno College in Milwaukee, Wisconsin. Students are expected to master and demonstrate a set of abilities that "show they can do something with their knowledge to make the world a better place," including "communication, problem-solving and analysis, valuing in decision making, social interaction, global perspectives, effective citizenship, and aesthetic responsiveness" (p. 165). The authors pointed out that this model emphasizes what they asserted is paramount in teaching virtues at any level of education; that talking about "facilitating the road to good character" necessitates a commitment to action. "Above all else," they said, "we need a language of moral vision and commitment. Moral education without affirmation and commitment is a contradiction in terms, an evasion, and an act of irresponsibility" (p. 167).

Problem-based learning (PBL) or enquiry learning, is another learner-centered instructional method. PBL challenges students to work cooperatively to explore and seek solutions to real world problems, which are used to not only initiate learning subject matter, but to engage students' curiosity and find resources for further study. PBL is similar to experiential learning as it also provides opportunities for students to develop critical and analytical thinking skills and can include discovery and creative activities. According to the guidelines for PBL, at the Institute for Transforming Undergraduate Education (ITUE) at the University of Delaware in Newark, engaging "questions of ethics" and recognizing "responsibilities to self, community,

and society at large," are stated aims in the framework for general education reform, along with understanding "diverse ways of thinking" underlying "knowledge in the arts, humanities, sciences, and social sciences, and developing "an international perspective" for engaging "effectively in global society" (Watson & Groh, 2001, pp. 20-21). The characteristics of the PBL approach, especially its emphasis on higher order thinking skills makes it suitable for climate change ethics instruction.

Practical advice from Carpenter (1960) led me to construct my thesis project curriculum according to the principles she believed are "basic to learning" and applicable in any subject area, including science (pp. 33-34):

> 1. A *knowledge* of the essential facts and principles related to the problems and issues under consideration is a fundamental requisite to that consideration.
> 2. An *understanding* of the meaning and significance of the essential facts and principles is an important step in the application of knowledge.
> 3. *Critical thinking* is imperative. It involves appraisal of the evidence available, the inferences to be drawn, the judgments to be made; and it necessarily utilizes the student's knowledge and understanding of the facts and is influenced by the emotional or attitudinal concomitants of the facts.
> 4. *Empathic and aesthetic* involvement of one's self and others plays an important role in the consideration of vital problems, issues and questions man poses for himself.
> 5. Effective learning culminates in *thought and action* appropriate to issues and problems. (p. 33)

Writing in the pre-Rachel Carson era, it is astounding to me that Carpenter not only brought together astute instructors willing to write about values instruction in higher learning institutions from colleges and universities all over the United States, but that her – and their – voices can be particularly relevant today as we find ourselves in need of such direction facing global climate change. Of his own experience in the classroom, her colleague Mayhew (1960) wrote:

> Apparently something was happening in the course which affected attitudes and beliefs of some students but it was not transmission of knowledge. To approach the problem of student values in the belief that cognition is not effective, demands that techniques be developed which appeal directly to the subconscious of individuals…. *Presenting students with films, dramatic exercises or literature in which they vicariously experience*

> *conflict and thereby change, is also illustrative of this approach* [emphasis added]. (p. 71)

Carpenter believed that higher education will cease to be the pursuit of wisdom "adequate for the problems of life today unless we hammer away at the kind of thinking and values and commitments which represent the very best we have experienced at any given moment" (p. 35). I was completely unprepared to first locate, and then find relevant, a seventy-eight page volume written by college professors fifty-four years ago!

Virtue Ethics in Environmental and Climate Change Education

> The most vital and fundamental ecological virtue is practical wisdom, which in turn is heavily dependent on both theoretical knowledge and experience.
>
> -Monika Lindemann, *Environmental Virtue Education: Ancient Wisdom Applied*

> …but the stark choice is this: Either engage in advocacy or not. But if not, understand that this is a decision, intentional or unwitting, to support the status quo that is responsible for global climate change.
>
> (Lemons, 2011, pp. 387-388)

In the face of escalating global climate change and the failure of most environmental education programs and curricula to bring about widespread and necessary behavioral changes in their participants (Saylan & Bernstein), it is apparent that new approaches of instruction are required. After reading the compendia of virtue (and vice) language in the works of van Wensveen (*Dirty Virtues*, 2000), Berry (*The Dream of the Earth,* 1988), Bookchin (*The Ecology of Freedom: The Emergence and Dissolution of Hierarchy,* 1982 and *Remaking Society: Pathways to a Green Future,* 1990), and elsewhere, I am struck by its persistent appearance in ecoliterature everywhere, for instance, in this passage from Trevors (2010), on environmental education:

> Ignorance is always the enemy, and it is often combined with fear, greed, corruption,

> agenda setting to serve special interest groups, discrimination, conflicts and other selfish agendas that often have little to do with the humanitarian needs of people. (p. 304)

Jasanoff's "technologies of humility" are also a call for "universities to teach modes of knowing" outside the realm of the science lab; a search for "what people value and why they value it… those aspects of the human condition that science cannot easily illuminate" (p. 33).

The urgent and perhaps "radical" need for institutions of higher learning to "respond to the challenges of anthropogenic climate change" was argued by Lemons (2011) "by focusing on the "complicated aspects of the scientific, social, political, policy, legal, cultural, and moral dimensions" (p. 379). Examining research on the evaluation of environmental and sustainability programs since the mid-1960s, he determined that although the number of programs doubled from 1990 to today and that jobs in these fields are "projected to increase at a rate of twenty-eight percent" by 2018, the efficacy of such programs "and more specifically about global climate change programs is problematic." The reason for this he believed, is that it is challenging to evaluate such programs in terms of "enrollment, learning outcomes, altering attitudes and beliefs, or influencing environmental legislation." Enrollment is relatively low with scientific issues being the major concentration; he questioned why the "social sciences and humanities, which one might think would have a keen interest in sustainability and global climate change, have been slow to focus on them," but noted that it "might be the lack of university hires focused on the ethical dimensions" and the lack of educational research in it (pp. 384-385).

Lemons referred to the work of Seth (2008), citing "'the strong ties between capitalism and ever-increasing consumerism'" as exacerbating the problems of climate change, as well as Nussbaum (2010), who believed that the overall neglect of liberal and civic education contributes to the "root causes of problems such as global climate change." Lemons also mentioned the prescient statement of the American Association for the Advancement of Science (AAAS) in

1990, which "concluded that scientific goals to solve society's problems are fostered by a greater emphasis on liberal education," and the essays of Shepard and McKinley (1969) who stated that "'ecology, if properly understood, is radical insofar as it is subversive to the powers that benefit from the status quo in society and that impose unjust harms on others'" (p. 386).

Markowitz (2012) suggested that "the moral intuitions of non-experts (or lack thereof)" in regards to climate change may have "important implications for [a] willingness to engage cognitively, emotionally and behaviorally with the issue." Reviewing the results of two studies of students enrolled in introductory psychology course exploring beliefs about the 'ethics of climate change,' he discovered that forty-five percent of the students agreed that climate change is indeed an ethical issue, twenty-five percent disagreed, and thirty percent were unsure (p. 479). His findings also suggested that the students who thought climate change was an ethical issue demonstrated "a greater willingness to engage in a positive manner with the issue," even when considering "differences in perceptions of harm and efficacy…known motivators of altruism under some conditions." He concluded that effective communication regarding the ethics of climate change may have a substantial impact on people's "other beliefs about the issue, and perhaps even their willingness and eagerness to confront the issue in meaningful ways" (p. 491). Mason (2004) had previously determined that the use of a problem solving approach to environmental ethical dilemmas is most appropriate for non-philosophy majors (p. 394), with a discussion of the "origins and natures of values" as a precursor to classroom debate (p. 396).

According to Nam and Ito (2011) climate literacy education is crucial for undergraduate students as they need a solid understanding of climate science and human interactions to make decisions in the future. In their research they found only a few good course models despite this widespread necessity, and also only a few studies showing "any evidence of the impact

of…climate change course[s] on student learning and their environmental behavior." The authors believed that climate literacy courses should take a multidisciplinary approach to include the scientific fields of environmental and earth science, physics, chemistry, math and engineering, and "social science." They admitted this is a difficult task, as it "requires systemic understandings of two ways of interactions between climate and humans," from both historical and scientific approaches (pp. 229-230). Their own course presented "historical and archaeological evidence of interaction between climate change and human society," but with mixed results. They claimed improvement in the students' scientific knowledge and critical thinking, but in evaluating the impact of the course on students' environmental behavior change, they ranked efficacy only "between neutral and good." The authors believed that there were some shortcomings in the course that lead to these results: a lack of "specific examples of the connection of how individual life style affects the environment" and difficulties in "learning about the uncertainties of human impact on current climate change." They also found that "regardless of the instructional approach or content, an individual's environmental behavior is difficult to change, especially if it is related to the convenience of their lifestyle or money they need to pay for the lifestyle change" (p. 240). Despite what I am sure was a worthwhile effort, I believe what was missing in this course, as well as in many climate change literacy courses, is a lack of emphasis on the moral responsibilities of humans to each other and to the rest of the environment in addressing the mitigation and adaptation issues of anthropogenic climate change. Schreiner, Henriksen, and Hansen (2005) determined that studies of the "larger, integrated understanding of the whole climate issue" are needed to improve climate literacy education and specifically refer to its ethical aspects (p. 31-32). This larger, integrated understanding must include the humanities.

Kazempour and Amirshokoohi (2013) proposed a number of essential components in climate education reform based on an undergraduate non-majors course in environmental science which includes "professionalism and class participation" and collaborative "hands-on/minds-on class activities and discussions that involving issue analysis, problem solving, critical thinking, and debates." They also suggested the use of a "discussion forum on online course management systems," personal "reflections of the course topics and components" and community action projects. (pp. 55-56) With the implementation of these components, they found improvement in "the learning outcomes on students' attitude toward science and their willingness to be active, *socially responsible* citizens" (p. 59). Although not explicit in their research, I suspect that the inclusion of community action projects in their course, which included "creating educational materials for kids, developing web pages and Facebook groups, writing newspaper articles, participating in river cleanup projects, and initiating recycling and waste reduction at their workplace or community," (p. 56) made a substantial impact on student learning and attitude shifts.

Ferkany and Whyte also promoted participation approaches which they called *deliberative activities* to "inform…empower…and facilitate collective learning by participants with different viewpoints, knowledges, and circumstances." The authors propsed that understanding the structuring of these activities is important for addressing problems with wicked dimensions, such as climate change (p. 420), and asserted that deliberative activities would fail to achieve stated goals when "participants lack certain virtues that are particularly relevant to working and collaborating with others under wicked conditions" (p. 422).

Kronlid and Ohman (2013) suggested the use of *value-oriented* and *relation-oriented* conceptual frameworks for analyzing environmental and sustainability courses grounded in

environmental ethical theories. The moral considerations of value-oriented ethics are: "who or what is considered as a moral object, the human-nature relationship and [the] definitions of nature's value," both anthropocentric and non-anthropocentric, which offer substantial variety (pp. 25-28). More applicable to my thesis are the relation-oriented considerations, whose theories embrace deep ecology, ecofeminism, social ecology, pragmatist environmental ethics, and postmodern environmental ethics and are full of virtue ethics language. The authors explicitly referred to the work of Lucie Sauve (2005), who defined fifteen *currents* or approaches in EE, and saw many similarities between her "holistic current" and their relation-oriented environmental ethics framework. The authors argued that relation-oriented ethics "seeks answers to questions about how we ought to live in political, spiritual and religious, gendered, technical and discursive everyday life," and "refers to positions in which people's relationships and experiences of and within the world are appropriate spaces for environmental ethical reflection" (pp. 29-31).

Although not presented within the context of education, the virtue of responsibility is discussed by Gjerris, Gamborg, Rocklinsberg and Anthony (2011). The authors concluded that virtue ethics is "a promising way of thinking," in this case, about the "question of animal welfare and climate change…[and] taking ownership of choices that we make, especially in the face of relationships that involve vulnerable or dependent others," (p. 344) which certainly pertains to humans too! Additionally, they stressed the importance of attentiveness, competence, and responsiveness to improve "thinking and practice regarding animal agriculture," which would facilitate a paradigm shift from "livestock production" to true "animal husbandry" (p. 331), intimating an "ethic of care" (which will be discussed below), again with human relevance. The authors concluded as Sandler (2010) did, that a virtues approach in this field has greater

applicability than utilitarianism and deontology (p. 347).

Ferkany and Whyte's argument for participatory virtues could be encouraged by educators, with the "shared values" of "frugality, farsightedness, and ecological sensitivity" as a common starting point. These are very appropriate for climate change education, and they believed, as I do, that experiential activities should be combined with a deliberative component, such as debate or persuasive writing in which those particular values are "held up to critical reflection" in preparing students to make environmentally sound decisions in their personal and political futures. What is interesting, as the authors pointed out, is that the participatory virtues they gleaned from other resources, as well as those determined from their research, overlapped significantly with Sandler's typology of environmental virtues (p. 426-427), previously discussed. They delineated three categories; the first were "virtues of inclusiveness," which include friendliness, empathy and charity, temperance, humility, reasonableness and fairness, generosity and patience. The second were those of "engagement," including courage, basic self-confidence, resilience and persistence, attentiveness, dependability, generosity and patience. The last category comprised "virtues of epistemic productivity," which are wit, empathy and charity, humility, and attentiveness. It can be noted that in Ferkany and Whyte's compendium, there is also some overlap; the authors identified these virtues as "critical" for the achievement and maintenance of constructive discussion and decision making (p. 431).

Acknowledging more than a decade of research on the relationship between morality and the socio-scientific issues, Sternang and Lundholm (2011) discussed the "affective aspects, in which moral aspects of environmental issues are of particular interest in promoting action competence and science literacy" as well as "preparing students for problem solving as citizens." Despite the increasing importance the role of the "human and social context of science" plays in

moral reasoning and decision making, they discovered that "little research focusing on the investigation of students' values and moral reasoning" has been done (pp. 1131-1132). They claimed that "moral reasoning [regarding climate change] depends on content, audience, and situation," and is typical for addressing "social dilemmas (p. 1145). The authors concluded that a challenge in addressing a socio-scientific problem such as climate change is the need for the "development of skills where students come to identify different perspectives or different contexts and develop contextual awareness." It becomes the responsibility of the instructor to assist their students differentiate between diverse perspectives and contexts in the climate change issue (p. 1146). Teachers must not only have an understanding of the science content, they need to be aware of students' "assumptions…reasoning patterns...and moral developments," (Schreiner et al., p. 4), which I assume includes the student's aptitude for moral judgment as well.

The authors discussed environmental empowerment in connection with climate education and considered it prerequisite for action and involving "personal value orientations." Although not couched specifically in virtue language, their criteria for climate issue empowerment were relevant and twofold. The first was a motivation "for action towards the climate problem," which requires a person to: "have hope and visions for the future; have a general feeling that s/he can influence the future of the world; be interested and engaged in the climate issue; and think that environmental protection is important for society." The second criteria was for "sufficient knowledge" regarding: "the science of climate change; possible adequate actions in terms of personal lifestyle, technical solutions and political measures; and possible channels of influence through politics, organizations etc." (p. 8). Using van Wensveen's (2000) catalogue for cross-referencing purposes, we can see some direct, but mostly implicit references to ecological or

environmental virtues such as hope, long-range thinking, empowerment, advocacy, concern, justice, eschatological thinking, frugality, stewardship, simplicity, participation, and communal sensibility (pp. 163-165).

Much has been said of simplicity as a virtue in past decades. Duane Elgin's *Voluntary Simplicity: Toward a Way of Life that is Outwardly Simple, Inwardly Rich*, highlighted Richard Gregg's thoughts on a life divested of the needless distractions of materialism in 1936 (1998, pp. 18-24), and is a resource I've used in the classroom. Although not overtly discussing global climate change within the context of over-consumption, Gambrel and Cafaro (2010) explored the virtue of simplicity based on their research and observations that materialism has failed to "secure subjective happiness or objective flourishing," and argued for the "practice of voluntary simplicity and for the radical reform of modern consumer societies" (p. 87). They saw simplicity as overlapping with the traditional virtues of "temperance, frugality, prudence and self-control," and agreed with the traditional philosophical view that these virtues at one time were "keys to living justly and wisely" (p. 90). *Consumer habituation* was the focus of their discussion with their main points being health-centered; personally, communally and ecologically, discouraging "simple-mindedness" and thoughtlessness, but using technology appropriately. They recognized simplicity as providing greater opportunities for and diversity in human flourishing having a place in societal and political change (pp. 92-94). Using examples from American cultural practices, specifically bad nutritional habits and their effects on health, "financial over-commitments," and longer working hours, the authors created an argument for individual practice of voluntary simplicity to achieve "higher states of human development," involving "experiences of transcendence and the appreciation of beauty, artistic creation, the pursuit of knowledge, and spiritual transformation" (pp. 95-96). Also referring to Kasser, Gambel and

Cafaro identified voluntary simplicity as having implications for societal flourishing in the form of better family relationships, "citizenship and communal responsibility….Fostering contentment with our status and possessions," helping to "minimize social tension and build up social capital" (p. 97). Acquisition of two kinds of knowledge were identified as important in regards to simplicity. The first, self-awareness, enables the development of "the full spectrum of human potentials: physical, emotional, mental, and spiritual… [and] facilitates the self-control necessary to combat materialism and live more focused lives." The second is the facilitation of "local, place-based, ecological knowledge," which the authors noted is not only a good unto itself, but is at the root of environmental activism (p. 99).

Place-based education within the context of ethics education was supported by Goralnik and Nelson: "Students will neither care about nor retain the knowledge they gain unless they are first emotionally and ethically engaged by place, community, and content" (p. 183). This sentiment, in various forms, has appeared in many of the readings I have done through the years by authors including Gruenewald and Sobel, and reflects my philosophy and experience co-teaching an environmental science course for non-majors at Eastern University in St. Davids, Pennsylvania for eight years. Recently, Goralnik, Millenbah, Nelson and Thorp (2012) examined the concept of feminist Nel Noddings *Ethic of Care* (1984) and others, within the learning environment based on the relationship between a "carer and a cared-for" (pp. 419-420), which although at first sounds like something completely different, the authors successfully located one within the other. They discovered that combining care concept strategies with those of experiential and place-based education and emotional engagement practice promoted by John Dewey (1938), informed a "promising environmental pedagogy of care for higher education field philosophy curriculum" (pp.418-424), and "cultivate[d] an empathetic environmental ethic" (p.

412).

Noddings (1988) found two distinct implications for an ethic of caring in education, "both as a moral orientation to teaching *and* [emphasis added] an aim of moral education (p. 215). From this perspective, moral education involves "modeling, dialogue, practice, and confirmation" on the part of the teacher and students in the development of a trusting relationship (pp. 222-223). Similarly, the work of environmental humanities is attempting to "vitalise traditional concepts of *ethics, care and virtue*" (Rose, et al., p. 4). Littledyke (2008) promoted a "care through empathy" basis for moral behavior located in human contexts, as in Noddings' work, but an "environmental moral context through care, empathy, and responsibility to the natural world" (p. 1). I believe the ideas from these scholars have important implications for climate change ethics in undergraduate education, as Kretz stated: "what *does* tend to motivate behavioral change involves emotion" (p. 15).

Cafaro (2010) explored the concept of patriotism as an environmental virtue in a unique way, and referred to a particular definition for its revival. "Patriotism," he wrote, "is a necessary word, but one whose meaning we must retrieve…it has become a meaningless abstraction for many of us, in part through our mistaking abstractions for our true country" (p. 203). I could not agree more. The widespread use of the yellow ribbon in the 1990's during the Gulf War and since continues to be a source of great annoyance to me, as I see such empty gestures as meager substitutions for real patriotism – what about peace as an alternative? – or moral action, as if purchasing and displaying a car magnet has any real purpose or effect other than supporting manufacturers of useless, carbon-based junk and does little more than eventually finding its way into a landfill. A perfect example of a meaningless abstraction. Cafaro also discussed several dangers that denigrate the real meaning of patriotism, including "contempt or (more often)

indifference toward outsiders… [and] the stifling of dissent within our own communities," and believed that recognizing the existence of basic moral rules "regarding how we may treat other people and places" are key to curbing these dangers. But on the positive side, and in keeping with the value of place-based environmental practice, he said that "rethinking and reliving" patriotism by living "closer to the land," striving "to know it better" and working "to protect all its inhabitants, human and nonhuman" is what real patriotism is. In this sense, it "can be put to good *environmental* uses, to bridge the liberal/conservative divide and achieve environmental protection" (p. 203).

In *This Changes Everything*, Naomi Klein described *ferocious love* in the context of sense of place and as a strong force in climate change activism:

> The power of this ferocious love is what the resource companies and their advocates in government inevitably underestimate, precisely because no amount of money can extinguish it. When what is being fought for is an identity, a culture, a beloved place that people are determined to pass on to their grandchildren, and that their ancestors may have paid for with great sacrifice, there is nothing companies can offer as a bargaining chip. (p. 342)

The essence of what is being fought for leads us to Goodin's (2009) work on *demandingness* as a virtuous attribute. Exploring its definition beyond characterizing a shrewish person, the author suggested that "morality demanding only what is morally due…is actually a desirable attribute" (pp. 1-2). Moral satisficing, a decision-making strategy that attempts to meet some stated ethical criteria for moral adequacy, could depict demandingness as either a virtue or a necessity, (p. 4) but the author believed that such an action is "morally good enough only if [the] moral costs…exceed the moral gains of doing any better" (p. 6). In other words he appeared to subscribe a case of extraordinary circumstances. Using climate change as an example, he asked if it would be too demanding to ask everyone to use public transportation instead of automobiles to avoid catastrophic global warming. In this instance his response was "not if everyone did so" (p.

9), and added that "proper collective organization of aid efforts is also necessary to overcome problems of moral demandingness….Without collective organization to extract a fair share from everyone, the willing few might be left with a burden that might be thought too demanding," and/or "proper collective organization would avoid those burdensome demands on people's strictly limited attention" (p. 10).

I can follow Goodin's reasoning just so far – yes, I agree that there are some social issues that we can defer to appropriate agencies – before I circle back to Hourdequin's integrity argument. In the case of global climate change where so much rides on, but is not being met by, the moral aptitude of world leaders, individual actions *have* to matter, and Lane agreed:

> Seeing the individual as negligible in relation to the mass has made it easy to downplay or dismiss the importance of individual virtues and actions in relation to the common good, and so has contributed…to the evacuation of self-control or self-discipline as an admired virtue of the individual character. (p. 76)

Happily, I am not thoroughly convinced that Goodin did not believe this to be entirely true. He closed his argument with this thought: "…true morality – whatever that may be, however we may find it – might be awfully demanding. It just cannot be 'too demanding', if its demands are morally legitimate" (p. 11).

Reviewing the work of a number of environmental education researchers, Kretz determined that closing the "interdisciplinary ties between philosophy and psychology specifically" was an appropriate strategy to engender appropriate environmental behavior. Other positive influences included interpersonal contact, issue investigation/evaluation, action training, and emphasis on fostering empowerment, motivational framing, and agentic language. Diverse instructional media written in ways that "emotionally, ethically, and rationally engage audiences," along with an "effective presentation" and an understanding of "motivational variation" among students may better encourage behavioral change. She made a final note

regarding the idea of transparency as the "difference between motivation and manipulation," and the responsibility of the instructor to enable independent thought and motivate moral action without indoctrinating (pp. 19-22). This in particular gives credence to the use of ecocritical works in climate change education, as the final interpretation of ecocritical literature or other art is in the hands, heart, and mind of the student. Kronlid and Ohman concluded:

> A climate change ethic does not only concern care for nature, but also involves an intimately mixed concern for the well-being of nature and culture. It is simultaneously a common global problem and one that is highly situated and contextual. Taken together, this highlights an intricate ethical question about how to balance mitigation and adaptation in responsible ways. Studies of climate change education and these ethical issues thus impose new demands on the functionality of an environmental ethical framework for education. (p.38)

It may be time for educators to stop worrying about behavior change and concentrate on reconnecting with the straightforward idea that from a moral standpoint, confronting climate change is the right and virtuous thing to do; the conviction that climate change is a matter of social justice, fairness and civic responsibility. Positive environmental behavior should be based in commitment to the virtues of living well and not the externalities of greed and conspicuous consumption so prevalent in the global North. As Sandler (2010) maintained, virtue theories are better equipped than utilitarianism to succeed in "longitudinal collective action problems" such as climate change (p. 182).

I have argued that a virtue ethics approach to climate change education has potential to promote a robust scientific and an ethical understanding of the complex issues of global climate change. Louv (2008) stated that the "anchoring of environmental ethics in responsibility to descendants gives environmental values a concrete and emotional grounding stronger than that of abstract principles" (p. 304). Below I will explore the idea that implementing such an approach in an undergraduate course using ecocritical works to illustrate and support elemental concepts

of CCVE with the intent of achieving the greater goals of environmental responsibility and action. Lioi (2008) said "[e]cocritics are certain that delight is an engine of ethics, that what we love is what we will save, that texts teaching us to value otherkind are instruments of environmental virtue" (p. 219). I believe that ecocritical art in its many forms can also be instruments of environmental virtue.

Ecocriticism in Undergraduate Climate Change Curricula

> When we write about the experiences of a group to which we do not belong, we should think about the ethics of our action, considering whether or not our work will be used to reinforce and perpetuate domination.
>
> -bell hooks, *Talking Back: Thinking Feminist, Thinking Black*

Garrard (2009) briefly defined ecocriticism as "the ability to investigate cultural artefacts from an ecological perspective" (p. 9). Ecocritics examine these "cultural artefacts" for underlying ecological values in their portrayals of natural landscapes or at their interface with the human built world. This chapter will trace the evolution of ecocritical thought from its formal beginnings less than two decades ago to current trends in the expansion of ecocritical work beyond literature to film, theater, photography, music, and the fine arts, and will introduce the idea of using examples from them to support climate change ethics education.

An Introduction to Ecocriticism

In her collaborative work with Harold Fromm *The Ecocriticism Reader: Landmarks in Literary Ecology,* Cheryll Glotfelty (1996) first described ecocriticism as "the study of the relationship between literature and the physical environment" (p. xvii), although William Rueckert may have been the first person to use the term, publishing an essay in 1978 titled "Literature and Ecology: An Experiment in Ecocriticism" (Barry, 2009, p. 240), in which he focused on "the application of ecology and ecological concepts to the study of literature, because ecology…has the greatest relevance to the present and future of the world" (Rueckert, 1996, p. 107). I would have to argue however, that although Leo Marx did not explicitly refer to "literary criticism" in his 1964 work *The Machine in the Garden: Technology and the Pastoral Ideal in America*, he introduced the volume with the intent to "describe and evaluate the uses of the pastoral idea" in Americans' adaptation to "conditions of life in the New World, its emergence as

a distinctively American theory of society, and its subsequent transformation under the impact of industrialism" (p. 4). Marx had all but come up with the formal label of ecocriticism, and used "the machine in the garden" as a metaphor illustrating the evolving relationship between culture and society during the nineteenth and twentieth centuries following the Industrial Revolution with examples from many authors, including Ralph Waldo Emerson, F. Scott Fitzgerald, Nathaniel Hawthorn, and of course, Henry David Thoreau. Furthermore he pointed to contemporaries Lionel Trilling, Richard Chase, and R. W. B. Lewis, who all produced work that could retrospectively be called ecocritical during the same time (pp. 341-343).

As an intellectual movement, Clark (2011) identified the founding of the Association for the Study of Literature and the Environment (ASLE) in 1992 as particularly notable (p. 4). Fromm (2009), however, insisted that Glotfelty (then Burgess) was the "the only true begetter" of ecocriticism, alluding to a 1989 form letter that he received from her and also sent to about two hundred other authors (p. 58). Coming from her experience in racial literary theory in her doctoral studies at Cornell University, Glotfelty had begun to catalogue hundreds of literary-critical texts with inferences to landscape or place written by these authors who "rarely cited one another's work; they didn't know that it existed….Each was a single voice howling in the wilderness" (p. vii). She was determined to question and explore the idea of a scholarship for "literature and environment studies" and as a vehicle for world change. *The Ecocriticism Reader*, along with Buell's *The Environmental Imagination* (1995) and Kroeber's *Ecological Literary Criticism* (1994) would "shape literary studies in English departments across the country (Balaev, 2012, pp. 607-609).

Environmental degradation, Love (1996) observed, was not the first widespread social concern addressed by literary criticism over the last decades, and cited civil rights and women's

liberation as two issues with obvious moral and philosophical aims that have benefited from the "discipline of English," although at the time he acknowledged that ecocriticism had failed to respond in a "significant way to the issue of the environment" (p. 226). Writing just seven years later however, he said:

> As the circumstances of the natural world intrude ever more pressing into our teaching and writing, the need to consider the interconnections, the implicit dialogue between the text and the environmental surroundings, becomes more and more insistent. Ecocriticism is developing as an explicit critical response to this unheard dialogue, an attempt to raise it to a higher level of human consciousness. (2003, p. 160)

Estok (2005) said that ecocriticism is more than "simply the study of nature or natural things in literature," but any theory that analyzes the "thematic, artistic, social, historical, ideological, or theoretical" function of literature and devoted to producing change (pp. 16-17). Part of Kerridge's (1998) definition of ecocriticism was "environmentalism's overdue move beyond science, geography and social science into 'the humanities.'" He saw the genre as important because it would keep environmental concerns within the "failure narrative," that is, the "inability of political cultures to address environmentalism….Bound up with questions of neo-colonialism, the political power of multinational corporations and the industrialization of countries" (pp. 4-5). It was clear that by the end of the twentieth century ecocriticism was finding its voice in environmentalism, much the same way as it had done with other important social issues in the past.

According to Armbruster and Wallace (2001), literary ecology was first mostly confined to the interpretation of classic non-fiction nature writing of the nineteenth and twentieth century American and British authors, with the 1854 publication of Henry David Thoreau's *Walden* being the definitive starting point (p. 11). Branch (2001), however, pointed out that Thoreau himself was "explicit in his discussion of the many earlier American literary natural historians on

whose work he built" (p. 91), and Fromm asserted that ecocriticism was also attracting "academics interested in, and consumed by, the growing problems of air pollution and environmental degradation" (p. 189). Since those earlier days, ecocritics have taken a broader approach to their craft in a number of ways. They have begun examining texts predating those "standards" as diverse as the Bible, Chaucer, and Milton, and finding new ecocritical perspectives in some unlikely literary works, such as those of Harriet Beecher Stowe, Thomas Hardy, and Virginia Wolfe (Armbruster & Wallace, pp. v-vi). Writers of contemporary social issues also engaged an ecocritical eye, as Fromm stated:

> As ecology has moved with urgency into the higher consciousness of Western societies….This awareness has permeated not just the sciences…but the humanities as well. Less known to the educated general reader are the myriad ways in which ecology has filtered through philosophy, ethics, sociology, political science, psychology, history, economics, legal studies, [and] religion. (p. 65)

Clark refuted any distinctive method to describe ecocriticism, calling it a "necessarily provocative misfit in literary and cultural debate," whose "force is best characterized in terms of its various challenges" (p. 4). Literary criticism and theory in other forms focuses on the human social domain, whereas ecocriticism includes the entire ecosphere and its complex interconnections (Gatta, 2004, p. 5). Still evolving, defining itself and pushing its boundaries, Clark maintained that ecocriticism traces multiple ideas of nature through different cultures throughout history, extending to linguistic and canon constructs, aesthetic considerations, and even "conceptions of personal identity" (p. 4).

The *meta-contextual* aspect of ecocriticism, Clark said, reveals itself in issues that "may involve perspectives or questions for which given cultural conceptions" appear narrow, quickly reaching the limits of competence in any single intellectual discipline requiring "environmental, scientific, critical, and historical literacies." He used the customary evaluation of a "classic

realist novel" as an example, where character development, family, social and political issues play out within a setting which may or may not figure prominently in the work. Thinking environmentally, he said, changes human priorities "as to what issues are more significant than others," and the "moral impetus" of ecocriticism demands a characterization of the relationship between the natural world and humans (pp. 4-5). Heise (1997), referring to the genre as "green literary criticism," also pointed out linguistic discrepancies stemming from the "shift in terminology from 'nature' to the 'environment.'" She found the term "nature" less abstract, as "environment" can both the natural and human-built world, and advocated for the incorporation of scientific vocabulary and contributions to ecocriticism for a "potentially more antagonistic confrontation between scientific and literary descriptions of nature" as a way of increasing the relevance and power of the field. Echoing this sentiment, Fromm wrote that through the gradual recognition of ecocriticism in academic cultural studies by the end of the twentieth century and despite what he called a near blindness to "the sciences upon which any knowledge of the earth and its life depends," ecocriticism has slowly been moving toward a "new and more comprehensive phase" transcending and acknowledging the "explanatory power of evolutional biology and evolutionary psychology" (p. 189).

Ecocriticism criticism and the way forward

Estok (2001) asserted that "ecocriticism has distinguished itself, debates notwithstanding, firstly by the ethical stand it takes, its commitment to the natural world as an important thing rather than simply as an object of thematic study, and, secondly, by its commitment to making connections." But he is not without close scrutiny of his own field and those in other areas of environmental activism, research, and scholarship as a whole, and wrote:

> Ecocritics will need to address the personal as well as the political, will need to assess how our individual involvement within the profession contributes to the very things under

> discussion, will need to look, for instance, at the sexism that underpins so much of our work, will need to act on the unsustainable practices of inter-continental flights, and will need to be far more conscientious. In short, for those of us working within the environmental humanities, we will need to stop kidding ourselves about our exemptions. We will need to stop practicing eco-exceptionalism. (Estok, 2013, p. 2)

Oppermann (1999) expressed the need to expand the basis for "analyzing or interpreting the literary version of nature/human relationships" with an "adequate critical perspective" synthesizing natural and literary phenomena (pp. 1-2). This, he believed, comes from the important role ecocriticism plays in recognizing the human "position in the ecosphere," the "ethical and aesthetic dilemmas posed by the global ecological crisis," the responsibility for "consciousness raising in environmental thinking" (p. 3), and the potential of multiple scientific disciplines including quantum physics, biology and geography (p. 7) in the future of ecocritical approaches to "transcend the duality of art and life, human and the natural" and the interconnections between them. An original, "unique fusion of literary, scientific, ecological and philosophical perspectives" are necessary for the inspiration of new insights and critical paths in ecocriticism, and recognizes a call within the humanities for revision (pp. 9-15).

Phillips (2003) called for recognition of the environmental justice movement in ecocritical discourse (p.115-116), and Easterlin (2004) believed that ecocriticism, since it is "motivated by environmental activism," (p. 1) should be expanded to include evolutionary, developmental, and cognitive psychology within its theoretical base to lend "coherence and identity" to the field and to better understand "human attitudes to physical environments" (pp. 2-3).

Seymour (2012) offered a revolutionary criticism of ecocriticism to "more deeply consider questions of disposition, feeling, and affect," and suggested an "irreverent turn…one whose inquiries [and focus] are absurd, perverse, and humorous in character as they arise in

relationship to ecology and representations thereof" (p. 57). She grounded her irreverence in two other recent "developments" in the field: poststructuralist ecocriticism, which finds the notion of "environment" as merely a reality that derives itself "from the way we write, speak, and think about it," in other words, entirely an imprecise human construct, as previously mentioned; and the "interdisciplinary field of queer ecology," which examines "traditional understandings of 'nature' and 'environment'…specifically around sexuality and gender identity. Queer ecologists ask, 'What counts as natural?' in terms of the human, the non-human, and those entities that fall between" (pp. 57-58). Her approach is definitely one squarely situated in self-reflective humor as she pointed to some absurdities in ecocritical language and pokes fun at Michael Shellenberger and Ted Nordhaus, founding fathers of the Breakthrough Institute and self-proclaimed "leading global thinkers on energy, climate, security, human development, and politics" (Breakthrough Institute). Ecocriticism, it would appear, has room for even a comedic approach. Seymour saw "mock reverence" for instance, in the treatment of animal figures in a particular television program, having "the effect of mocking and questioning not [the] animals but human behavior" (p. 65). An irreverent ecocriticism, she believed, could "militate against elitism…the alienating tendencies of the smug, the self-congratulatory, and the conspicuously educated in environmental scholarship and activism," and instead "turn its eye on itself, both recognizing the absurdity of, say, trying to argue with facts to those who do not care about facts, and asking where we have gone wrong in trying to reach such audiences." She was not advocating for buying into "disturbing anti-intellectualism," but did see room for ecocriticism to "avail itself more" to lay audiences (p. 67).

Gomides (2006) redefined ecocriticism as a "field of enquiry that analyzes and promotes works of art which raise moral questions about human interactions with nature, while also

motivating audiences to live within a limit that will be binding over generations" (p. 16). This is an important statement in the context of my thesis work, as he articulated the need for the inclusion of non-literary works in ecocriticism. He evaluated the film *The Burning Season* through an ecocritical lens and was not the first to do so, as evidenced by many books critically evaluating popular cinema, including some on animated cinema and television.

According to Ivakhiv (2006) *green film criticism* or *eco-cinecriticism* has extended to other film genres including wildlife and nature documentaries, experimental cinema, and to "critical analyses of the representation and use of animals in film" (p. 1). He explored post-production treatment generally used with the intent of enhancing the consumer experience, but often compromises the reality of the subject(s) being portrayed, and done "in deceptive ways, conveying a perception of nature that is very different from that which can actually be found 'out in nature,'" including the use of stock photos, slow-motion and telephoto lens treatment, and simulated sounds (p. 2). Ivakhiv also discussed "green cinematic practices," mostly in evidence through the work of The Environmental Media Association (EMA) which came into existence in the late 1980s to promote "greener practices in Hollywood film production," including recycling, waste management and educating audiences "about environmental problems and to act on them," and the foundation of a facility to care for animals used in film production (p. 23).

Films can be suitable teaching tools; I have had successful experiences using *A Civil Action*, *Medicine Man*, *Erin Brockovich*, *The Lorax*, *Day After Tomorrow, Silkwood* and the documentaries *Affluenza*, *After the Warming,* and *Keeping the Earth: Religious and Scientific Perspectives on the Environment* to illustrate the concepts of ecojustice, biodiversity preservation, resource conservation, conspicuous consumerism, and climate change theory, and to provide opportunities for meaningful discussion (and essay writing) in the college classroom.

Notwithstanding poetic license with the facts (*A Civil Action, Erin Brockovich* and *Day After Tomorrow*), silliness (*The Lorax*, although shown near mid-term exams is widely appreciated by students), campy screenwriting (*Affluenza*), and cheesy "special effects" (*After the Warming*), there is enough substance to make them useful supplemental resources.

Ecodrama or *green theatre* has created a forum for "inquiries into human connections to, interactions with, and ideologies about the other-than-human world that are found in drama and performance," according to Richmond (2006). She said new works

> …including ecologically informed interpretations of existing works and eco-activist performances…stimulate our imagination and interrogate cultural assumptions about, for example, the interdependency between the human and other-than-human worlds, social/environmental (in)justice, or environmental imprints left on the human body. (p. 123)

May (2005) applauded theatre as "a force for activism" and for pushing beyond the "traditional white/male-dominated wilderness aesthetic with its implied binaries of nature/culture, wild/tame, rural/urban," and toward a better comprehension of the "ecological community that includes human and non-human creatures, urban and wilderness places." She envisioned the future of ecodrama including themes such as "race, class, gender, geographic situated-ness, and white power and privilege…ripe for analysis" (p. 87). But May also traced historical "key American agendas (i.e. Manifest Destiny, frontierism, consumerism, globalization)," in American theatre and discussed theatre's "complicity" in them with in-depth analyses of *Oklahoma!* and *Death of a Salesman* (pp. 87-92). In more recent theatrical history, the author explored a number of stage productions that are overtly ecologic, such as *Alligator Tales* and *Dragon Island*, neither of which have enjoyed Broadway runs, but the promise of ecodrama, she said "possesses a unique capacity to generate new stories that can root us in a sustainable future" (p. 97).

Climate change as *docu-science* has appeared in several dramatic productions in British

theatre, according to Hudson (2012), including *The Contingency Plan* (Waters, 2009), *Earthquakes in London* (Bartlett, 2010), *Greenland* (Buffini, Charman, Skinner, & Thorne, 2011), *The Heretic* (Bean, 2011), and *Wastwater* [sic] (Stephens, 2011) (p. 261). The plays combine the use of docu-drama within the contexts of familial and professional relationships, as well as the dramatic use of science, such as catastrophic flood, eco-system collapse, and even chaos theory (pp. 262-266). Hudson asserted that the "debate playing out in the public domain is made for stage" and will bring "a rich mix of inherently theatrical material to the table: human interest, ethical dilemmas, narrative tension, metaphor, special effects, and universal questions about the relationship between humanity and the environment" (p. 260). The function of docu-science she stated, sometimes provides "an authentic context" within which characters "play out aspects of human behaviour," but can also be used to "debunk the public-domain uses and abuses of science." This type of theatre, she said, has an important role to play in portraying "ethics on the stage" (p. 262).

According to Allen (2013), increased interest in the fields of ecocritical musicology, historical musicology, and ethnomusicology led to the interdisciplinary field of *ecomusicology* in the early twenty-first century, mostly in North America and Scandinavia (p. 80). Mitchell (2014) suggested that *zoomusicology*, a term initiated by a Canadian composer and environmentalist named Murray Schaffer in his 1969 book *The New Soundscape*, and coined by Olivier Messiaen, and *ornitho-musicology*, may have at least indirectly influenced its later emergence (p.3). Approaches in ecomusicology are numerous. Ingram (2010) examined the different ways music interprets relationships between nature, technology and environmental politics and how these issues have influenced composers and songwriters "from folk singer Pete Seeger to jazz saxophonist Paul Winter." His work surveys a wide range of musical styles and "investigates the

growing link between music and philosophical thought, particularly under the influence of both Deep Ecology and New Age thinking." Of all the arts, Ingram said, music "has a special affinity with ecological ideas" (p. 11).

Toliver (2004) agreed, stating that "the longstanding connections between music and nature" supports the very existence of ecomusicology. He indicated recent work by Richard Leppert as demonstrating "how music sometimes acknowledges – and even tries to heal – nature's wounds." Toliver also mentioned Alexander Rehding who "works ecological concerns into the traditional – and always thorny – discussions of what 'nature' has meant through time" (pp. 329-330). Toliver's own work attempted to understand how the role Ferde Grofe's *Grand Canyon Suite* (which premiered in 1931), might have played in how the composer's contemporaries viewed wilderness, specifically the tension between two themes of the era: "a desire to celebrate wilderness and the desire to change it" (p. 330). Grofe visited Arizona several times between 1917 and 1926 and began writing the *Suite* in 1929, rendering what Toliver said is a specific "visual quality" to the music, corresponding to "both the aesthetics of the picturesque and the period's magazine-feature approach to the national parks." Grofe's original title for the work was *Five Pictures of the Grand Canyon*, perhaps wanting to encourage his audience to "see" the Canyon much in the same way the national park service devised its scenic overlooks (p.338). Toliver follows with a more in-depth description *Grand Canyon Suite* that is luscious; I would encourage the interested reader to listen and read.

Gray, Krause, Atema, Payne, Krumhansl, and Baptista (2001) explored the musicality of whale and bird song, a very different approach to ecomusicology. They began with the premise that humans have been "intrigued and inspired" by the natural "soundscape" since prehistoric times, and that indigenous peoples still living close to the land, such as the arctic Tlingit tribe

and the Hutu tribe of central East Africa have listened to and "incorporated these sounds in their songs and stories for centuries" (p. 53). The authors concluded that musical sounds form an "exciting, natural conduit" between humans, between humans and other species, and "between the arts and sciences by viewing musical sounds as an intuitive, nonverbal form of communication" (p. 54).

Feisst (2014) discussed the work of animal rights activist Laurie Spiegel who through music and visual art, advocates on behalf animals generally regarded as pests in the urban landscape: rodents, pigeons and geese. Spiegel views the animals as subjugated by human activity, pollution and urban heat islands, and even by the "human imagination, according to which rodents and feral pigeons are incompatible with 'clean' and 'orderly' urban environments" (p. 18), reminding us "of the human-caused ecological imbalances common in urban environments and speciesism" (p. 21).

Anthropologist Mark Pelty (2012) attempted to answer the question "Can musicians really make the world more sustainable?" His approach to ecomusicology included the artists themselves, for instance, discussing the role some have taken in environmental activism, such as those listed in the December 16, 2010 issue of *Rolling Stone* as 'The 15 Most Eco-Friendly Rockers.' "Musicians made the list by contributing time, money, or their celebrity image to an environmental cause or organization….Educating audiences was an additional criterion, as illustrated by the Bare Naked Ladies, who play a video about climate change before each concert (p. 73). Pelty deconstructed the meaning of musical performance "ecologically" to sound, people, and place, and the connections between them, going beyond the "musical affect to consider the material affect as well." The author asserted that material analysis is important for sound ecology and a "useful way to discover musical meanings." What makes music good

aesthetically is "partly dependent on what makes music good ethically. If the ethical problem is environmental sustainability, then musical meaning is partly dependent on material contexts and affects" (pp. 10-11). The job of the ecomusicologist is considering "multiple, interacting levels of life, from local concerts to global soundscapes, local groundwater to climate change" (p. 200).

A commonality in the "current interest in ecological topics is a pronounced sense of acute crisis," said Rehding (2011), and raises the question of how ecomusicology will respond, a more difficult task than in the literary arts. He believed that the "complexities of the materiality" as well as the "modes of representation of music make it difficult to adapt the same sense of crisis," although he suggested "stagings of Antoine Brumel's Missa *Et ecce terrae moto*" (a Renaissance Earthquake Mass,) "[Richard] Wagner's *Der Ring des Nibelungen*" (the epic four opera "Ring" cycle – think "Flight of the Valkyries" –), and " [Benjamin] Britten's *Noye's Fludde*" (A children's opera based on the Biblical flood) as having potential (pp. 409-410). Ecocritical musicology is not for the casual listener or beginning musician. Rehding described the 1873 work of Swiss geographer Albert Heim who discovered that the sounds of waterfalls (a C-major chord with an added F) "corresponded precisely to the sonority Beethoven had used at the beginning of the final movement of the Pastoral Symphony, following the musical depiction of a thunderstorm" (p. 411). It just does not get any better than that for an environmentalist who started her undergraduate career as a music major. "Life is improvisation and the biosphere is its ever-changing symphony. Our task is to practice its music" (Thomashow, 2002, p. 218). I have to agree with him, as well as Plato (2012), who said "Music is a moral law. It gives soul to the universe, wings to the mind, flight to the imagination, and charm and gaiety to life and to everything" (p. 77).

Nature has long been represented in art and photography, even if not defined within the

context of ecocriticism. Discussing photography in particular, Kurtz (2009) said:

> Nature is now delivered to our doorstep and found online through news of weird and previously unimaginable events cause by global climate change – extreme weather, melting ice caps, rising sea levels, and the like. These events cast new light on the age-old question about our relationship to nature: *Where does it end and we begin?*

She proposed a methodology of *visual ecocriticism*, which would rely on visual culture studies, from the perspective of an ecocritic because "climate change ushers in a whole new paradigm in which to consider representations of nature." As an example she cited the photography of Chris Jordan who archives environmental abuses of the environment and natural sites at risk from climate changes "before they disappear forever." Kurtz would like to see an expansion of the range of environmental images, from artwork to advertising and photojournalism, as well as "recognizing the role of race, class, gender, and sexuality" and the role it should play in addressing these issues. Her proposal encouraged "dialogue between cultural producers and the environmental community," and considered the "sustainability of the process and materials in a work's production," inasmuch the same way for literary ecocriticism Andersen (2013) concluded that "creators of commercials, journalists, and others who have a creative platform on the Internet, television or through other popular cultural products play a vital role in this regard" (p. 141).

Melton (2014) discussed climate change photography in terms of its risk perception value, believing the use of images in his *Climate Change Now Initiative*, a non-profit educational organization, helps to "instill a sense of realism" and immediacy by illustrating current climate changes and hopes to connect with reader's values and emotions, motivating them to act, while at the same time preventing "issue dropout." He said:

> Worry fatigue is real. We only have so much energy we can devote to concern of dread things. Beyond this level, we turn off. But regardless of psychological fatigue of any kind, major events will still create a significant impact on awareness. Hurricane Katrina or Sandy

or the attack of the killer polar vortices are examples.

Nicholson-Cole (2005) posited that although visual communication can be effective, care and balance need to be taken into consideration. When using "emotional visual appeals" conveying the urgency of climate change, the potential exists for "triggering defensive psychological responses," which might leave an audience numb with issue fatigue, possibly leading to feeling of powerless (p. 260), as previously discussed in regard to any type of climate change messaging.

Ecocriticism in the College Classroom

Simply stated by Garrard (2007): "from the outset ecocritics acknowledged the importance of pedagogy," however, "the need for innovative approaches to learning and teaching of ecocriticism, arguably because the commitment of 'first-wave' ecocritics," was to "wilderness epiphany" (p. 363), supporting environmental education in some respects, in my opinion, but certainly not in the context of climate change at that time. These ecocritical pioneers and their work included Jonathan Bate's 1991 study of Wordsworth and Lawrence Buell's assessment of Thoreau in 1995 (p. 360). Garrard, agreeing with experiential educators everywhere, asserted that "fieldwork can be valuable in teaching ecocriticism….Students often find working outside far more memorable and even transformative than a similar amount of time in a classroom." Quoting Joy Palmer, he iterated "people's personal experiences in and with the natural world are by far the most significant influences on environmental thinking and awareness" (p. 365).

Garrard is a greater proponent of ecocriticism in education for sustainable development (ESD) than EE, and suggested a shift in pedagogy to reflect the advantages he perceives: orientations toward "provisionality, dynamic responsiveness, and the future," and an emphasis on the "interrelatedness of environmental problems with economic and social issues such as global inequity, warfare, and consumerist forms of desire" (p. 375). Another shift promoted by

Littledyke is the integration of cognitive and affective domains in science education generally: the scientific, left brain activities of traditional EE (and less so ESD), with the "aesthetic, values-dominated" right brain. Science and science education generally seen as "dry, abstract, devoid of beauty and lacking in human purpose….Disconnected from the world," can transform into something more positive and learning-enhancing (pp. 2-3).

Bruce (2011) asserted that several approaches in ecocriticism and ecocomposition are "promising" in environmentally directed teaching: "ecological literacies; reading green; 'nature' writing or environmental literatures; insights from ecocomposition; place-based reading and writing, including indigenous literatures; environmental justice movements; and war as an environmental concern" (p. 14). She bases her practice as an English instructor in ecological literacy on the "frames of mind" posed by David W. Orr in *Ecological Literacy: Education and the Transition to a Postmodern World* (1992):

- All education is environmental education.
- Environmental issues are complex and cannot be understood through a single discipline or department.
- For inhabitants, education occurs in part as a dialogue with a place and has the characteristics of conversation.
- The way education occurs is just as important as its content.
- Experience in the natural world is both an essential part of understanding the environment, and conducive to good thinking.
- Education relevant to the challenge of building a sustainable society will enhance the learner's competence with natural systems (p. 15).

According to her these elements come together with classroom practices already in place: "aesthetic awareness, respect for life, awareness of worlds only encountered through the literatures we teach," to support ecological literacies. "Reading green," focuses on and explores the way literature can shape "cultural responses to environmental realities," or how the setting in literature affects the characters or the other way around (p. 16). As Carpenter indicated, "literature is full of conflicts in values," and "good aesthetic criticism is aided by a consideration

of the method" used to present characters (p. 28). Excerpts from nature writing or environmental literatures encourages a love of the natural world, especially for students with little experience in "open spaces and natural areas" (Bruce, p. 17). Ecocomposition, a written application of studying the "relationships between environments and discourse," helps students think about the effects place has on the writing process, and addresses matters such as "preservation, risk, and environmental crises" (pp. 20-21). This is closely related to place-based reading and writing, including indigenous literatures. Bruce grounds her classroom practices in the philosophy of David Sobel, suggesting four ways of implementing place-based education in the curriculum:

- Consider the place-value of ideas provided for reading nature writing and environmental literatures or by teaching regional literatures as a way of illuminating the particularities of one's home place.
- Engage in writing projects centered in local inquiry or by conducting place-based writing marathons.
- Engage students in activities that lead [them] to do some nature writing on their own.
- Study local indigenous literatures and conduct place-based writing marathons to locales of indigenous significance in your area. (pp. 21-22)

The environmental justice movement uses the expressive arts to "convey the issues at stake." Art and writing projects, especially if interdisciplinary and community-based, "helps students challenge the paralyzing stereotypes of inner-city dwellers." To highlight war as an environmental concern, Bruce suggested an exploration of literature on past and present conflicts that discuss its devastating effects on communities and landscapes, and recommends a number of classroom resources for "learning antidotes to cultures of violence and war" (p. 23).

In this era of climate uncertainty, education in all its forms has an essential role to play. For Kagawa and Selby (2010), "the learning process needs to have personal and societal transformative potential, flowing directly and naturally into direct community engagement." Referring to Harold Glasser's theory of "active social learning" (2007), the authors asserted that

such a process should be “interactive, participatory, challenging and risky,” and should have a greater “potential for emergence and transformation (p. 5). In a college classroom, I would have to add that any course content needs to be engaging, pertinent, and timely. The inclusion of ecocritical work in a climate change course supports these assertions. In the previous section ecocritical art in all of its forms, from the literary to the visual, was introduced and discussed in some detail. In the next chapter, I will offer an argument for a new process of transformative climate change learning, based in virtue ethic theory and using ecocriticism as part of its methodology.

Climate Change Virtue Ethics and Ecocriticism

> Especially important to the revival of this pedagogy is the use of great literature from the past – or at least talk about its use. The legends, drama, folk tales, and stories passed down from previous generations…are a robust body of moral instruction capable not only of reinforcing desirable behaviors and stigmatizing improper behavior but of stimulating the moral imagination and intelligence of the young and educating them into the intellectual complexities of competing moral principles.
>
> (Hunter, 2002, p. 43)

An ethical construct and an ecocritical methodology

The insights of climate change virtue ethics provide a stimulating and innovative way of looking at the challenges of climate change issues. Beyond the scientific and technological concerns and disputes, as many ethicists and philosophers have maintained quite plainly, climate change is above all else, a question of ethics. In the political arena, where meaningful, effective climate change mitigation and adaptation strategies can be implemented on a large scale, the global community is seeing its world leaders particularly in the global North, consistently abdicating their moral responsibilities, electing for economic advantage and favoring the special interests of their wealthiest citizens, time and again. For a number of reasons discussed previously, support for climate change action has not been rigorous enough to result in any alteration of the status quo. The moral implications of climate change have also failed to register with the majority of the population.

It is in an atmosphere of denial versus despair that we find ourselves mired in 2014. Houghton (2007) said "Neither demands action. With the first, action is not necessary, with the second, it is too late" (pp. vii-viii). We cannot give into that kind of thinking, but we need a way to navigate past denial, despair and inaction. The climate change virtue ethics solution, if we refer to Appendix B, would be faith and hope, but of course in reality it is not quite that simple.

For Trevors and Saier, “correct education” in our “vocational, political and moral” lives, emphasizing “principles of tolerance, consideration and equality” is vital for the preservation of “our common, shared biosphere” (pp. S75-S76). This is my objective for CCVE in education.

As previously shown, a virtue ethics approach to climate change issues is more appropriate because deontological and consequentialist theories fail to prove the intrinsic value or moral considerability of nonhuman beings, and human well-being is entirely dependent on environmental protection. Moreover, specific character traits required for sustainable living (an obvious goal for human survival), and true human flourishing clearly indicate and support strong conceptions of the common good.

Environmental education in general has failed to produce essential changes on every level in attitudes and behaviors needed to mitigate climate change effects and/or prepare for adaptation. Kagawa and Selby eschewed current education models, describing them as “confined within ‘business as usual parameters,’ with a focus on “imparting the science, but less often wrestling with the ethics.” In their opinion, the educational response to climate change has offered a *reformist* approach, aimed at personal change of its participants and mirroring that of society at large, rather than a *transformative* approach, capable through active social learning, of enduring collective change. (p. 5). Effective climate change education requires an infusion of new approaches that engage learners with a socially transformative language supported by a creative methodology. I believe that climate change virtue ethics provides such a vocabulary and ecocritical works can enhance transformative learning. As Seabright (2010) suggested “The temporal and psychosocial distance of the threat of global warming undermines the kind of *affective* [emphasis added] response that motivates moral concern….Images focusing more on the personal and short-term consequences of global warming will generate stronger moral

reactions" (p. 5).

The images Seabright is referring to could include those from any and all of the categories of ecocritical works discussed previously: literature, theatre, cinema, music, or the visual arts. Johns-Putra (2013) regarded "questions of ethics and aesthetics, the political and the cultural" as "part of one and the same problematic when it comes to critical climate change" (p. 9). We could surmise then, that if what is required for an emotion-filled response to instigate action on climate change, and that art is a method known to evoke such a response, we should be using this to our advantage in the classroom, with appropriate care to avoid issue fatigue and dropout. I also suggest that visual and audial images inspiring Klein's ferocious love, Lear's, Williston's, and Thompson's radical hope, and other positive virtues be included.

Several authors and researchers have written about the power of especially literature in this respect. Iovino (2011) said succinctly: "literary representations are able to increase our awareness about the relationship between human and nonhuman worlds…in terms of moral values" (p. 761). Moral education can be fraught with conflict especially when presented with religious overtones. The fear or abhorrence of indoctrination could become a powerful deterrent for an instructor using a virtue ethics approach to any subject, however I would emphasize along with Seabright, that using "personal, short-term appeals" in the form of storytelling and "imagery to make a stronger moral case about climate change would not be manipulative," so long as the information was accurate and "did not preclude rational choice." As Seabright concluded, this approach "engages the experiential mode, without disengaging the analytic mode" (p.12), and Klee said:

> With fine literature we can lift hearts and light lamps for the spirit. This is not 'indoctrination. This is 'education' in its truest sense - we are *supposed* to lead students to care about the right things and help them to discern qualities worth emulating. (p. 5)

Storytelling has been used to instruct and preserve cultural traditions and values since before written language. Carpenter claimed "there is nothing startlingly new about the use of literature as a vehicle for teaching the understanding of people, their conflicts…[and] their failures as they ignore values which we…recognize as important" (pp. 27-28). Oral and written storytelling tradition has had significant impacts on human behavior and I believe it has great potential in transformative learning within the context of climate change.

At the expense of sounding clichéd, I'd like to expand on a thought from Klee. The stories we tell, the literature we read, and the media in all its forms shapes the adults we become. They help us make sense of our lives and can inspire us to be better people. If our stories are self-consumed and violent, we will become as such. If our stories speak of those who seek only their own pleasure, we will become relentless seekers of their own pleasure. "Bart Simpson, Beavis and Butthead, and The Ninja Turtles are not innocuous vacationers in our children's imaginations" (p. 5), and I would say inasmuch as the Kardashians and the Real Housewives are in our adult lives. Klee concluded: "they are residents to be feared….Alternatively, with great literature (or art) we can awaken other sentiments and offer the young finer company" (p. 5). I am not advocating for censorship; there is an obvious difference between entertainment and education. Careful, loving thoughtfulness needs to be applied when we choose what we expose young minds to; discernment needs to be exercised in what and how much we expose our own selves to.

Most of the research and resources I have depended on for supportive advice informing my thesis and subsequent curriculum design have referred to literature as the emotive vehicle by which we can learn and appreciate virtue. But I strongly believe that all art, visual and audial, has this potential. So, in that sense, I agree with Carpenter again, who believed that students who

become the critical judges of art not only engage in a worthwhile intellectual pursuit, but are given the opportunity to make decisions, in the case of literature, cinema, and theatre, on the moral consistencies of the characters portrayed and the consequences of their ethical and moral actions (p.29).

Developing a climate change course with a focus on climate change virtue ethics and supporting the content with ecocritical art was a challenge, albeit an enjoyable one. Choosing the appropriate content and pedagogy, especially the selections for reading and discussion, and devising engaging learning activities where I could not find precedence, required a great deal of research and thought. Schreiner et al., noted that climate education needs methodology reform particularly in curriculum and assessment. They proposed theme-based, issues-based, and social action-based approaches as well as political and values pedagogy, although acknowledged that these are somewhat radical suggestions: "the science teacher must have the *courage* [emphasis added] to treat dimensions of the climate topic which are outside of her/his main qualification range (p. 12). If you look for virtue language, you will find it everywhere! My results are described below and are supported by an abbreviated syllabus in Appendix C, and additional resources not listed in the Reference section in Appendix D.

Course Description

Virtuous Reality: Climate Change Ethics addresses ethical concerns related to climate change such as ecojustice, intergenerational issues, and the allocation of mitigation and adaptation burdens and the benefits of greenhouse gas emissions as they relate to developed and developing nations. We will also explore the questions: How do uncertainty, politicization, and other obstacles challenge our ability to understand and decide what we should do individually and collectively in response to climate change and why? What virtues should be cultivated in all

of us to make us more responsive to the challenges climate change places before us?

Although *Virtuous Reality: Climate Change Ethics* focuses on the ethical challenges of climate change, it is interdisciplinary as it provides a foundation for understanding the scientific, social, and economic implications of climate change. The course is designed to help students understand first why climate change is inherently an ethical issue and to then explore questions about how and why climate change should be addressed. The learning goals of this course are to establish an awareness of the ethical questions raised by climate change, to critically reflect on the views presented in readings and discussed in class, and to improve reading, comprehension, and verbal and written presentation of ethical arguments. Students will be able to articulate verbally and in writing why and in what ways climate change is an ethical issue and will be able to assess and make arguments about questions of individual and/or collective obligation to reduce greenhouse gas emissions, financial obligations of nations in adaptation and mitigation efforts, and the ethical issues inherent in technological "fixes" such as geoengineering.

The readings assigned and class activities will come from a variety of sources and will follow a format based on Appendix B. Although reading and discussing the negative climate change vices is inevitable, the tone for the course will be set in virtue!

Conclusion

> The climate movement has yet to find its full moral voice on the world stage, but it is most certainly clearing its throat – beginning to put the very real threats and torments that ineluctably flow from the decision to mock international climate commitments alongside history's most damned crimes.
>
> -Naomi Klein, *This Changes Everything*

Navigating through the "Anthropocene," a conceptual framework advocated by Crutzen (2002) and describing the current geological era in which the global environment has been radically altered by human activity since the industrial revolution, presents ethical dilemmas on a scale greater than any in human history. Despite decades-long work of the international scientific community and committees of the United Nations, a coordinated global action on climate change to decrease greenhouse gas emissions or even towards adaptation in any *meaningful* way has been elusive. Weber believed that motivation for action on climate change will certainly increase as its consequences worsen and become more apparent, stating "increasing personal evidence of global warming and its potentially devastating consequences can be counted on to be an extremely effective teacher and motivator" (p. 116). But will it be too late? We may be quickly running out of time, and the stakes are far too high to wait and find out.

The practice of environmental philosophy, particularly through the lens of virtue ethics has attempted to address the climate crisis by identifying examining its wicked dimensions, including its scientific complexity, global dimensions, and concerns regarding current and intergenerational fairness and responsibility, justice, and human rights. Approaching climate change from a moral standpoint has had some success, notably with world faith communities. The idea of sacred values (Norenzayan, Nadeau) within religious organizations and the advantages they have over governments and political leaders forms a basis of societal support for

climate change action. It is believed by some that religious/ethical framings of climate change not only have potential to positively affect congregations and other populations, but may also help to overcome stalled climate policy conversations in the United States and elsewhere in the fossil fuel-addicted global North.

Climate change education would benefit from an interdisciplinary framework that integrates the scientific, social, economic, political, and concerns of climate change within a virtue ethics context, that is, using the language of virtue to highlight the moral considerations of the issues. One does not need to look past the many international human rights documents to find the language of justice illustrating this. Exploring environmental virtue references, such as those from Sandler, Cafaro, van Wensveen, Frasz, Hulme, and others, compelled me to devise a table of Climate Change Virtues, Vices, and Dispositions (Appendix B), which then became the guide for writing the curriculum *Virtuous Reality: Climate Change Ethics.* Virtue language lends emotional grounding stronger than the often abstract verbiage of science; emotion which could inspire behavioral change. Elder (2001) maintained that the "extreme specialization" found in contemporary academic science "muffles the ethical questions and flattens the language," and believes that the eloquent characteristics of nature writing in particular has helped "reinvigorate and reintegrate education" and "inspired environmental activism" (p. vii).

Ecophilosophical motivation exploring fundamental questions regarding the connections between human thought, language, and the environment is at the center of ecocritical enquiry (Rose, et al., p. 3). If indeed what Louv said is true, that "we know for a fact that the arts stimulate learning" (p. 138), the interdisciplinary framework supported and illustrated by climate change ecocriticisms from any and all of the literary, visual, audial, and performance arts will create deeper understandings of climate change complexity.

McKibben (2008) pessimistic viewpoint that the "images and metaphors" of American environmental writing," have been "insufficient" against the drivers of global warming (p. xxii) may be true to some extent, but I agree with Andersen, who championed new educational practices with "new storytelling" promoting simplicity and sustainability to define the good life and the telling of that story "over and over again if the banal practices of everyday life are to change" (p. 141). I believe those stories just need closer scrutiny to coax their moral meanings to the forefront, making space for "the indulgence of emotional and corporeal 'green pleasures' as alternatives to those offered by consumerism" (Gabriel & Garrard, 2012, p. 141). Further research in this area is needed, most specifically an opportunity to pilot *Virtuous Reality: Climate Change Ethics* as an undergraduate offering in environmental studies and general humanities curricula, and follow up with a thorough evaluation of the efficacy and palatability of the methodology and resources used.

Finch and Elder (1990) said: "All literature, by illuminating the full nature of human existence, asks a single question: how shall we live? In our current age that question has taken its most urgent form in relation to the natural environment" (p. 28), in light of the imminent threat of global climate change. It is profoundly relevant to climate change education that virtue ethics asks the same question.

References

Abdul-Matin, I. (2010). *GreenDeen: What Islam teaches about protecting the environment.* San Francisco, CA: Berrett-Koehler.

Ahmad, A. (2009). Global ethics, environmentally applied: An Islamic view. In K. Ip (Ed.), *Environmental ethics: Intercultural perspectives* (pp. 93-113). Amsterdam, NED: Rodopi.

Allen, A. S. (2013). Ecomusicology. In C. H. Garrett (Ed.), *Grove Dictionary of American Music* (pp. 80-81). New York NY: Oxford University.

Alliance of Religions and Conservation (ARC). (2007). UN and ARC launch programme with faiths on climate change. Retrieved from http://www.arcworld.org/news.asp?pageID=207

Amundson, K. J. (1991). *Teaching values and ethics.* Arlington, VA: American Association of School Administrators.

Andersen, G. (2013). Greening the sphere: Towards an eco-ethics for the local and artificial. *symploke. 21*(1-2), 137-146. doi:10.1353/sym.2013.0029

Anscombe, G. E. M. (1998). Modern moral philosophy. In R. Crisp & M. Slote (Eds.), *Virtue ethics* (pp. 26-44). New York, NY: Oxford University.

Armbruster, K., & Wallace, K. R. (2001). Introduction: Why go beyond nature writing, and where to? In K. Armbruster, & K. R. Wallace (Eds.). (2001), *Beyond nature writing: Expanding the boundaries of ecocriticism* (pp. 1-25). Charlottesville, VA: University Press of Virginia.

Balaev, M. (2012). The formation of a field: Ecocriticism in America – an interview with Cheryll Glotfelty. *PMLA. 137*(3), 607-616. Retrieved from http://hfromm.net/professional/GlotfeltPMLA.pdf

Baha'i US. (2010). Baha'i international community seven year plan of action on climate change. Retrieved from http://news.bahai.org/sites/news.bahai.org/files/documentlibrary/736_bahai_7_year_climate_change_plan.pdf

Balint, P. J., Stewart, R. E., Desai, A., & Walters, L. C. (2011). *Wicked environmental problems*. Washington, DC: Island.

Barry, P. (2009). *Beginning theory: An introduction to literary and cultural theory.* Manchester, UK: Manchester University.

Barry, J., Mol, A. P. J., & Zito, A. R. (2013). Climate change ethics, rights, and policies: an introduction. *Environmental Politics. 22*(3), 361-376. doi:10.1080/09644016.2013.788861

Bazerman, M. H. (2006). Climate change as a predictable surprise? *Climatic Change. 77*, 179-

193. doi:10.1007/s10584-006-9058-x

Bazerman, M. H., & Tenbrunsel, A. E. (2011). *Blind spots: Why we fail to do what's right and what to do about it.* Princeton, NJ: Princeton University.

Bell, D. (2013). Climate change and human rights. *Climatic Change*. *4*, 159-170. doi:10.1002/wcc.218

Bellamy, R., & Hulme, M. (2011). Beyond the tipping point: Understanding perceptions of abrupt climate change and their implications. *Weather, Climate, and Society. 3*, 48-60. doi:10.1175/2011WCAS1081.1

Benstein, J. (2006). *The way into Judaism and the environment.* Woodstock, VT: Jewish Lights.

Bernbaum, E., & Verschuuren, B. (n.d.). The cultural and spiritual values of protected areas. International Union for Conservation of Nature and Natural Resources. Retrieved from http://www.iucn.org/about/work/programmes/gpap_home/gpap_people/gpap_tilcepa/gpap_spiritual/

Berners-Lee, M., & Clark, D. (2013). *The burning question: We can't burn half the world's oil, coal and gas. So how do we quit?* [Kindle Fire version]. Retrieved from Amazon.com.

Berry, T. (1988). *The dream of the earth.* San Francisco, CA: Sierra Club.

Bookchin, M. (1982). *The ecology of freedom: The emergence and dissolution of hierarchy.* Palo Alto, CA: Cheshire.

Bookchin, M. (1990). *Remaking society: Pathways to a green future.* Boston, MA: South End.

Bookchin, M. (2010). What is social ecology? In D. R. Keller (Ed.), *Environmental ethics: The big questions* (pp. 268-275). West Sussex, UK: John Wiley & Sons.

Bowers, C. A. (2006). *Transforming environmental education: Making the renewal of the cultural and environmental commons the focus of educational reform.* Eugene, OR: Ecojustice.

Boyce, M. (2001). *Zoroastrians: Their beliefs and practices.* New York, NY: Routledge.

Boyce, T., & Lewis, J. (2009). *Climate change and the media.* New York, NY: Peter Lang.

Bradley, F. H. (1962). *Ethical studies.* New York, NY: Oxford University.

Branch, M. P. (2001). Before nature writing: Discourses of Colonial American natural history. In K. Armbruster, & K. R. Wallace (Eds.). (2001), *Beyond nature writing: Expanding the boundaries of ecocriticism* (pp. 91-107). Charlottesville, VA: University Press of Virginia.

Breakthrough Institute. Retrieved from http://thebreakthrough.org/voices/michael-shellenberger-and-ted-nordhaus

Brennan, A. (1991). Environmental awareness and liberal education. *British Journal of Educational Studies. 39*(3), 279-296. doi:10.2307/3121148

Broome, J. (2008). The ethics of climate change. *Scientific American*, *298*(6), 96-102. doi:10.1038/scientificamerican0608-96

Brown, D. A. (2014a, January 29). [Web log comment]. Has discussion of what "equity" requires of nations to reduce GHG emissions disappeared from climate negotiations? If so, what should be done about it? Retrieved from http//blogs.law.widener.edu/climate/category/climate-change ethics/

Brown, D. A. (2014b, February 14). Widely unrecognized benefits of a human rights approach to climate change, Part ii in a series. [Web log comment]. Retrieved from http//blogs.law.widener.edu/climate/category/climate-change ethics/

Bruce, H. (2011). Green(ing) English: Voices howling in the wilderness? *English Journal. 100*(3), 12-26. Retrieved from http://www.nwp.org/cs/public/download/nwp_file/15416/bruce_green(ing)_article.pdf?x-r=pcfile_d

Burgess, J. (2013). *Climate change: Children's challenge.* London, UK: UNICEF UK. Retrieved from http://www.unicef.org.uk/Latest/Publications/climate-change-report-jon-snow-2013/

Cafaro, P. (2001). The naturalist's virtues. *Philosophy in the Contemporary World*. *8*(2), 85-99. Retrieved from https://www.academia.edu/4968231/ The_ Naturalists_Virtues

Cafaro, P. (2005). Greed, arrogance, gluttony, and apathy: An exploration of environmental vice. In R. Sandler & P. Cafaro (Eds.), *Environmental virtue ethics* (pp. 135-158). Lanham, MD: Rowman & Littlefield.

Cafaro, P. (2006). *Thoreau's living ethics: Walden and the pursuit of virtue*. Athens, GA: University of Georgia.

Cafaro, P. (2010). Patriotism as an environmental virtue. *Journal of Agricultural Environmental Ethics. 23*, 185-206. doi:10.1007/s10806-009-9189-y

Callicott, J. B. (1993). Toward a global environmental ethic. In M. E. Tucker & J. A. Grim (Eds.), *Worldviews and ecology* (pp.30-38). Cranbury, NJ: Associated University.

Callicott, J. B. (1997). *Earth's insights: A multicultural survey of ecological ethics from the Mediterranean basin to the Australian outback.* Berkeley, CA: University of California.

Callicott, J. B., & Nelson, M. P. (2004). *American Indian environmental ethics: An Ojibwa case study.* Upper Saddle River, NJ: Pearson Education.

Caney, S. (2005). Cosmopolitan justice, responsibility, and global climate change. *Leiden Journal of International Law*. *18*, 747-775. doi:10.1017/S0922156505002992

Caney, S. (2012). Global justice, climate change, and human rights. In D. A. Hicks & T. Williamson (Eds.), *Leadership and global justice* (pp. 91-111). Basingstoke, UK: Palgrave Macmillan.

Carpenter, M. (1960). Practices in value-oriented courses. In M. Carpenter (Ed.), *The larger learning* (pp. 23-35). Dubuque, IO: W. C. Brown.

Carr, D., & Steutel, J. (1999a). Preface and acknowledgements. In D. Carr & J. Steutel (Eds.), *Virtue ethics and moral education* (pp. xv-xvii). New York, NY: Routledge.

Carr, D., & Steutel, J. (1999b). Virtue ethics and the virtue approach to moral education. In D. Carr & J. Steutel (Eds.), *Virtue ethics and moral education* (pp. 3-18). New York, NY: Routledge.

Carson, R. (1962). *Silent spring.* Cambridge, MA: Riverside.

Chan, J. (2009). Ecosystem sustainability: A Daoist perspective. In K. Ip (Ed.), *Environmental ethics: Intercultural perspectives* (pp. 122-145). Amsterdam, NED: Rodopi.

Chapple, C. K. (n.d.). Jainism, Hinduism, and ecology. Retrieved from http://fore.research.yale.edu/religion/jainism/

Churchman, W. C. (1967). Wicked problems. *Management Science* 14(4), B141-B-142. Retrieved from http://connection.ebscohost.com/c/editorials/17403670/wicked-problems

Clark, T. (2011). *The Cambridge Introduction to Literature and the Environment.* New York, NY: Cambridge University.

Cohen, J. (2001). On classical Judaism and environmental crisis. In M. B. Yaffe (Ed.), *Judaism and environmental ethics* (pp. 73-79). Lanham, MD: Lexington.

Cook, J., Nuccitelli, D., Green, S. A., Richardson, Winkler, B., Painting, R., … Skuce, A. (2013). Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters.* doi:10.1088/1748-9326/8/2/024024

Cordero, E., Todd, A. M., & Abellerra, D. (2008). Climate change education and the ecological footprint. *Bulletin of American Meteorological Society. 89*, 865-872. doi:10.1175/2007BAMS2432.1

Crisp, R., & Slote, M. (1998). Introduction. In R. Crisp & M. Slote (Eds.), *Virtue ethics* (pp. 1-25). New York, NY: Oxford University.

Crosley, K. L. (2013). Advancing the boundaries of urban environmental education through the food justice movement. *Canadian Journal of Environmental Education. 18*, 46-58. Retrieved from http://cjee.lakeheadu.ca/index.php/cjee/article/view/1257

Crutzen, P. J. (2002). Geology of mankind: the Anthropocene. *Nature. 415*, 23. Retrieved from http://www.nature.com/nature/journal/v415/n6867/full/415023a.html

Curry, P. (2011). *Ecological ethics: An introduction.* Cambridge, UK: Polity.

Dalai Lama (2000). The true source of political success. In S. Kaza & K. Kraft (Eds.), *Dharma rain: Sources of Buddhist environmentalism* (pp. 165-169). Boston, MA: Shambhala.

Daniels, P. (n.d.). Climate change and Buddhist economic systems: A scientific, ethical response. Retrieved from http://buddhist-economics.info/papers/daniels.pdf

Deanne-Drummond, C., & Sideris, L. (2011). Ecology: A dialogue. In W. A. Bauman, R. R. Bohannon II & K. J. O'Brien (Eds.), *Grounding religion: A field guide to the study of religion and ecology* (pp. 64-72). New York, NY: Routledge.

Dediu, M. M. (2012). *Aphorisms and quotations: With examples and explanations*. North Charleston, SC: CreateSpace Independent Publishing Platform.

DeWitt, C. B. (Ed.). (1991). *The environment and the Christian: What does the New Testament say about the environment?* Grand Rapids, MI: Baker.

Dillard, A. (1982). *Teaching a stone to talk: Expeditions and encounters.* New York, NY: Harper & Row.

Ding, D., Maibach, E. W., Zhao, X., Roser-Renouf, C., & Leiserowitz, A. (2011). Support for climate policy and societal action are linked to perceptions about scientific agreement. *Nature Climate Change. 1*(9), 462-466. doi:10.1038/nclimate1295

Disinger, J. F., McCrea, E., & Wicks, D. (2001). The North American Association for Environmental Education: Thirty years of History 1971-2001. Washington, DC: NAAEE. Retrieved from http://www .naaee.net/sites/default/files/us/reports/naaeehistory2001.pdf

Donner, S. D. (2011). Making the climate a part of the human world. *Bulletin of the American Meteorological Society*. *92*(10), 1297-2002. doi:10.1175/2011BAMS3219.1

Dressler, A. E., & Parson, E. A. (2006). *The science and politics of global climate change.* Cambridge, UK: Cambridge University.

Dunlap, A. M., & McCright, R. E. (2008). Anti-reflexivity: The American conservative movement's success in undermining climate science and policy. *Theory, Culture & Society. 27*(2–3), 100–133. doi:10.1177/0263276409356001

Easterlin, N. (2004). Loving ourselves best of all: Ecocriticism and the adapted mind. *Mosaic. 37*(3), 1-18. Retrieved from http://ezproxy.prescott.edu/login?url=http://search.proquest.com/docview/205372345?accountid=28426

EcoSikh. (2014). First Sikh statement on climate change. Retrieved from http://www.ecosikh.org/first-sikh-statement-on-climate-change-presented-by-ecosikh/

Ehrenfeld, D., & Bentley, P. J. (2001). Judaism and the practice of stewardship. In M. B. Yaffe (Ed.), *Judaism and environmental ethics* (pp. 125-135). Lanham, MD: Lexington.

Effendi, S. (1991). Approaches to protecting the environment. In Bahá'u'lláh, Abdu'l-Bahá, S. Effendi, and Universal House of Justice, *The compilation of compilations vol. i: Conservation of the earth's resources.* (pp. 65-91).

Elder, J. (2001). Foreword. In K. Armbruster, & K. R. Wallace (Eds.). (2001), *Beyond nature writing: Expanding the boundaries of ecocriticism* (pp. vii-viii). Charlottesville, VA: University Press of Virginia.

Elgin, D. (1998). *Voluntary simplicity: Toward a way of life that is outwardly simple, inwardly Rich.* New York, NY: William Morrow.

Elsof, L. (2010). Transforming worldviews to cope with a changing climate. In R. Irwin (Ed.), *Climate change and philosophy: Transformational possibilities* (pp. 75-108). London, UK: Continuum International.

Estok, S. C. (2001). A report card on ecocriticism. *Journal of the Australasian Universities Language and Literature Association* (*AUMLA). 96*, 200-238. Retrieved from http://www.asle.org/site/resources/ecocritical-library/intro/reportcard/

Estok, S. C. (2005). Shakespeare and ecocriticism: An analysis of 'home' and 'power' in *King Lear*. *AUMLA 103*, 15-41. Retrieved from http://simonestok.com/sitebuildercontent/sitebuilderfiles/lear.pdf

Estok, S. C. (2013). Global problems, local theory: Moving beyond particularity and eco-exceptionalism to action in ecocriticism. *Foreign Literature Studies. 35*(1), 1-12. Retrieved from http://simeonestok.com/sitebuilderscontent/sitebuilderfiles/global.pdf

Feisst, S. (2014). Animal ecologies: Laurie Spiegel's musical explorations of urban wildlife. *Social Alternatives. 33*(1), 16-22. Retrieved from http://eds.a.ebscohost.com.ezproxy.prescott.edu/eds/pdfviewer/pdfviewer?vid=17&sid=4c5f657b-1893-453d-90a1-21b95f1f2b5b@sessionmgr4004&hid=4211

Felt, U., Fochler, M., Muller, A., & Strassnig, M. (2009). Unruly ethics: On the difficulties of a bottom-up approach to ethics in the field of genomics. *Public Understanding of Science. 18*(3), 354-371. doi:10.1177/0963662507079902

Ferkany, M., & Whyte, K. P. (2012). The importance of participatory virtues in the future of environmental education. *Journal of Agricultural & Environmental Ethics. 25*(3), 419-434. doi:10.1007/s10806-11-9312-8

Finch, R., & Elder, J. (1990). Introduction. In R. Finch & J. Elder (Eds.), *The Norton book of nature writing* (pp. 21-30). New York, NY: Norton.

Foot, P. (1997). Virtues and vices. In R. Crisp & M. Slote (Eds.), *Virtue ethics* (pp. 163-177). New York, NY: Oxford University.

Frasz, G. (2005). Benevolence as an environmental virtue. In R. Sandler & P. Cafaro (Eds.), *Environmental Virtue Ethics* (pp. 121-134). Lanham, MD: Rowman & Littlefield.

Fromm, H. (2009). *The nature of being human: From environmentalism to consciousness.* Baltimore, MD: Johns Hopkins.

Gabriel, H., & Garrard, G. (2012). Reading and writing climate change. In G. Garrard (Ed.), *Teaching ecocriticism and green cultural studies* (pp. 117-129). New York, NY: Palgrave MacMillan.

Gambrel, J. C., & Cafaro, P. (2010). The virtue of simplicity. *Journal of Agricultural and Environmental Ethics. 23*, 85-108. doi:10.1007/s10806-009-9187-0

Gardiner, S. M. (2006). A perfect moral storm: Climate change, intergenerational ethics and the problem of moral corruption. *Environmental Values 15*, 397–413. Retrieved from http://www.jstor.org/discover/10.2307/30302196?uid=3739552&uid=2&uid =4&uid= 3739256&sid=21104199707601

Gardiner, S. M. (2011). *The perfect moral storm: The ethical tragedy of climate change.* New York, NY: Oxford University.

Gardner, G. T. (2006). *Inspiring progress: Religions' contributions to sustainable development.* New York, NY: W. W. Norton/Worldwatch.

Garrard, G. (2004). *Ecocriticism.* New York, NY: Routledge.

Garrard, G. (2007). Ecocriticism and education for sustainability. *Pedagogy: Critical approaches to teaching literature, language, composition, and culture. 7*(3), 359-383. doi:10.1215/15314200-2007-005

Garrard, G. (2009). Ecocriticism: The ability to investigate cultural artefacts from an ecological perspective. In A. Stibbe (Ed.), *The handbook of sustainability literacy: Skills for a changing world* (pp. 9-16). Devon, UK: Green.

Gatta, J. (2004). *Making nature sacred: Literature, religion, and environment in America from the Puritans to the present*. New York, NY: Oxford University.

Gjerris, M., Gamborg, C., Rocklinsberg, H., & Anthony, R. (2011). The price of responsibility: Ethics of animal husbandry in a time of climate change. *Journal of Agricultural and Environmental Ethics. 24*, 331-350. doi:10.1007/s10806-010-9279-6

Glotfelty, C. (1996). Introduction: Literary studies in an age of environmental crisis. In C. Glotfelty & H. Fromm (Eds.), *The ecocriticism reader: Landmarks in literary ecology* (pp. xv-xxxvii). Athens, GA: University of Georgia.

Gomides, C. (2006). Putting a new definition of ecocriticism to the test: The case of *The Burning Season*, a film (mal)adaption. *Interdisciplinary Studies of Literature and Environment (ASLE). 13*(1), 13-23. doi:10.1093/isle/13.1.13

Goodin, R. E. (2009). Demandingness as a virtue. *Journal of Ethics. 13*, 1-13. doi:10.1007/s10892-007-9025-4

Goralnik, L., & Nelson, M. P. (2011). Framing a philosophy of environmental action: Aldo Leopold, John Muir, and the importance of community. *The Journal of Environmental Education. 42*(3), 181-192. doi:10.1080/00958964.2010.526152

Goralnik, L., Millenbah, K. F., Nelson, M. P., & Thorp, L. (2012). An environmental pedagogy of care: Emotion, relationships, and experience in higher education ethics learning. *Journal of Experiential Education. 35*(3), 412-428. doi:10.5193/JEE35.3.412

Gould, R., & Wallace, M. I. (2011). Religion: A dialogue. In W. A. Bauman, R. R. Bohannon II, & K. J. O'Brien (Eds.), *Grounding religion: A field guide to the study of religion and ecology* (pp.27-40). New York, NY: Routledge.

Grasso, M. (2007). A normative ethical framework in climate change. *Climatic Change*. *81*, 223-246. doi:10.1007/210584-006-9158-7

Gray, P. M., Krause, B., Atema, J., Payne, R., Krumhansl, C., & Baptista, L. (2001). The music of nature and the nature of music. *Science 291*(1), 52-54. doi:10.1126/science.10.1126/SCIENCE.1056960

Hall, D. J. (1993). *Professing the faith: Christian theology in a North American context.* Minneapolis, MN: Fortress.

Hansen, J., Kharecha, P., Sato, M., Masson-Delmotte, V., Ackerman, F., Beerling, D. J., … Zachos, J. C. (2013). Assessing "dangerous climate change": Required reduction of carbon emissions to protect young people, future generations and nature. *PLoS ONE 8*(12), e81648. doi:10.1371/journal.pone.0081648

Harris, P. G. (2008). Climate change and global citizenship. *Law & Policy*, *30*(4), 481-501. doi:10.1111/j.1467-9930.2008.00283.x

Harris, P. (2010) *World ethics and climate change: From international to global justice.*

Edinburgh, UK: University of Edinburgh.

Harris, P. (2013). *What is wrong with climate politics and how to fix it.* Malden, MA: Polity.

Hart, J. (2004). *What are they saying about environmental theology?* Mahwah, NJ: Paulist.

Hart, P., & Nolan, K. (1999). A critical analysis of research in environmental education. *Studies in Science Education. 34*(1), 1-69. doi:10.1080/03057269908560148

Hassan, D., & Khan, A. (2013). Climate-change-related human rights violations. *Environmental Policy and Law. 43*(2), 80-86. Retrieved from http://www.ecolex.org/ecolex/ledge/view/RecordDetails;DIDPFDSIjsessionid=2249704289E2B53EE468AE376FD447EC?id=ANA-087680&index=literature

Heise, U. K. (1997). Science and ecocriticism. *American book review. 18*(5), 4-6. Retrieved from http://www.asle.org/site/resources/ecocritical-library/intro/science/

Heise, U. K. (2008). *Sense of place and sense of planet.* New York, NY: Oxford University.

Hill, T. E. (1983). Ideals of human excellence and preserving natural environments. *Environmental Ethics 5*(3), 211-24. Retrieved from http://www.umweltethik.at/download.php?id=403

Houghton, J. (2007). Foreword. In M. S. Northcott (Ed.), *A Moral Climate* (pp. vii-ix). Maryknoll, NY: Orbis.

Hsiang, S. M., Burke, M., & Miguel, E. (2013). Quantifying the influence of climate on human conflict. *Science 341*(6151), 1234567. doi: 10.1126/science.1235367

Hulme, M. (2009). *Why we disagree about climate change: Understanding controversy, inaction and opportunity.* New York, NY: Cambridge University.

Hulme, M. (2014a). Climate change and virtue: An apologetic. *Humanities. 3*, 299-312. doi:10.3390/h3030299

Hulme, M. (2014b, September 23). Does this climate narrative really change anything? [Review of the book *This Changes Everything,* by N. Klein]. Retrieved from http://www.newscientist.com/article/dn26257#.VDL_XSzwu01

Hunter, J. D. (2002). Virtue…on the cheap. *Society. 39*(3), 42-53. Retrieved from http://link.springer.com/article/10.1007%2Fs12115-002-1017-1?LI=true

Huppert, H. E., & Sparks, R. S. J. (2006). Extreme natural hazards: population growth, globalization and environmental change. *Philosophical Transactions of the Royal Society. 364*(1845), 1875-1888. doi:10.1098/rsta.2006.1803

Hursthouse, R. (1999). *On virtue ethics.* New York, NY: Oxford University.

Hursthouse, R. (2007). Environmental virtue ethics. In R. L. Walker, & P. J. Ivanhoe (Eds.), *Working virtue: Virtue ethics and contemporary moral problems* (pp. 155-172). New Oxford UK: Clarendon.

Indigenous Peoples' Biocultural Climate Change Assessment Initiative (IPCCA). (n.d.). Approach: Why bio cultural assessments? Retrieved from http://ipcca.info/approach

Ingram, D. (2010). *The jukebox in the garden: Ecocriticism and American popular music since 1960.* Amsterdam: Rodapi.

Intergovernmental Panel on Climate Change (IPCC). (2013). Working Group I (WGI) contribution to the IPCC fifth assessment report (AR5) "Climate Change 2013s: The Physical Science Basis. Retrieved from http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM _brochure_en.pdf

Iovino, S. (2011). Ecocriticism, ecology of mind, and narrative ethics: A theoretical ground for ecocriticism as educational practice. *Interdisciplinary Studies in Literature and Environment. 17*(4), 759-762. doi:10.1093/isle/17.4.759

Ivakhiv, A. (2008). Green film criticism and its futures. *Interdisciplinary Studies in Literature and Environment. 15*(2), 1-28. doi:10.1093/isle/15.2.1

Jacobs, D. T., & Jacobs-Spencer, J. (2001). *Teaching virtues: Building character across the curriculum.* Lanham, MD: Scarecrow.

Jamieson, D. (1992). Ethics, public policy, and global warming. *Science, Technology, & Human Values*. *17*(2), 139-53. Retrieved from http://www.jstor.org/stable/689781

Jamieson, D. (2002). *Morality's progress: Essays on humans, other animals, and the rest of nature.* New York, NY: Oxford University.

Jamieson, D. (2006). An American paradox. *Climatic Change. 77*, 97-102. doi:10.1007/s10584-005-9044-8

Jamieson, D. (2007). When utilitarians should be virtue theorists. *Utilitas. 19*(2), 160-183. doi:10.1017/S0953820807002452

Jasanoff, S. (2007). Technologies of humility. *Nature.* 450: 33. Retrieved from http://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?sid=e28b39b9-ebb6-4620-910e-c373381932dc%40sessionmgr112&vid=7&hid=110

Jenkins, W., & Chapple, C. K. (2011). Religion and environment. *Annual Review of Environment and Resources. 36*, 441-463. doi:10.1146/annurev-environ-042610-103728

Johns-Putra, A. (2013). A new critical climate. *symploke. 21*(1-2), 7-10. doi:10.1353/sym.2013.0004

Johnson, B. (2003). Ethical obligations in a tragedy of the commons. *Environmental values 12* (3), 271-287. doi: 10.3197/096327103129341324

Kagawa, F., & Selby, D. (2010). Introduction. In F. Kagawa & D. Selby, *Education and climate change: Living and learning in interesting times* (pp. 1-11). New York, NY: Routledge.

Kawall, J. (2003). Reverence for life as a viable environmental virtue. *Environmental Ethics 25*(4), 339-358. doi:10.5840/enviroethics20032542

Kazempour, M., & Amirshokoohi, A. (2013). Reforming an undergraduate environmental science course for nonscience majors. *Journal of College Science Teaching 43*(2), 54-59. Retrieved from https://www.academia.edu/5417408/Reforming_an_Undergraduate_ Environmental_Science_Course_for_Nonscience_Majors

Kelly, M. R. (2013). Climate change communication research here and now: Reflecting the past, present, and future of our field. *Applied Environmental Education & Communication. 11*(3-4), 117-118. doi:10.1080/1533015x.2012.777289

Kerridge, R. (1998). Introduction. In R. Kerridge & N. Sammells (Eds.), *Writing the environment: Ecocriticism & literature* (pp. 1-9). New York, NY: Zed.

Klein, N. (2014). *This changes everything*. New York, NY: Simon & Shuster.

Klee, M. B. (2003). *Core virtues: A literature-based program in character education.* Libertyville, IL: The Link Institute.

Kollmus, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research. 8*(3), 239-260. doi: 10.1080/13504620220145401

Kretz, L. (2012). Climate change: Bridging the theory-action gap. *Ethics & the Environment. 17*(2), 9-28. doi:10.2979/ethicsenviro.17.2.9

Kronlid, D. O., & Ohman, J. (2013). An environmental ethical conceptual framework for research on sustainability and environmental education. *Environmental Education Research. 19*(1), 21-44. doi:10.1080/13504622.2012.687043

Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology. 77*(6), 1121-1134. doi:10.1037/0022-3514.77.6.1121

Krznaric, R. (2007). For God's sake do something! How religions can find unexpected unity around climate change. *Human Development Report Occasional Paper.* Washington, DC:

Human Development Report Office.

Kurtz, K. (2009, August 7). Proposal toward visual eco-criticism. [Web log comment]. Retrieved from http://www.worldchanging.com/archives/010318.html

Lane, M. (2012). *Eco republic: What the ancients can teach us about ethics, virtue, and sustainable living.* Princeton, NJ: Princeton University.

Leiserowitz, A., Maibach, E., Roser-Renouf, C., Feinberg, G., & Rosenthal, S. (2013). *Climate change in the American mind: Americans' global warming beliefs and attitudes in November 2013.* Yale University and George Mason University, Yale Project on Climate Communication. Retrieved from http://environment.yale.edu/climate-communication/article/Climate-Beliefs-November-2013

Leiserowitz, A., Feinberg, G., Rosenthal, S., Smith, N., Anderson A., Roser-Renouf, C., & Maibach, E. (2014). *What's in a name? Global warming vs. climate change.* Yale University and George Mason University. New Haven, CT: Yale Project on Climate Change Communication. Retrieved from http://environment.yale.edu/climate-communication/files/Global _Warming_vs_Climate_Change_Report.pdf

Lemons, J. (2011, March 26). The urgent need for universities to comprehensively address global climate change across disciplines and programs. *Environmental Management. 48*, 379-391. doi: 10.1007/s00267-011-9699-z

Leopold, A. (1949). *A Sand County almanac*. New York, NY: Oxford University.

Leopold, A. (2001). The forestry of the prophets. In M. D. Yaffe (Ed.), *Judaism and environmental ethics: A reader* (pp. 105-111). Lanham, MD: Lexington.

Lewis, B. A. (2005). *What do you stand for? For teens: A guide to building character.* Minneapolis, MN: Free Spirit.

Lewis, B. (2009). Environmental rights, justice and climate change. In E. Weber (Ed.), *Environmental ethics.* Retrieved from https://www.inter-disiplinary.net/wp-content/uploads/2009/06/lewispaper.pdf

Li, H. L. (2006). Rethinking terrestrial pedagogy: Nature, cultures, and ethics. *Teachers College Record.* 108(12), 2450-2473. Retrieved from http://eric.ed.gov/?id=EJ747145

Lickona, T. (2004). *Character matters: How to help our children develop good judgment, integrity, and other essential virtues*. New York, NY: Touchstone.

Lindemann, M. A. (2008). *Environmental virtue education: Ancient wisdom applied.* Saarbrucken: VDM Verlag Dr. Muller.

Lioi, A. (2008). Delight is slave to dominion: Awakening to empire with Richard Ligon's

History. In I. Kamps, K. C. Raber, & T. Hallock (Eds.), *Early Modern Ecostudies* (pp. 219-234). New York, NY: Palgrave Macmillan.

Littledyke, M. (2008). Science education for environmental awareness: Approaches to integrating cognitive and affective domains. *Environmental Education Research. 14*(1), 1-17. doi:10.1080/13504620701843301

Louden, R. B. (1984). On some vices of virtue ethics. *American Philosophical Quarterly. 21*(3), 227-236. Retrieved from http://www.jstor.org/stable/20014051

Louv, R. (2008) *No Child Left Inside.* Chapel Hill, NC: Algonqin.

Love, G. A. (1996). Revaluing nature. In C. Glotfelty & H. Fromm (Eds.), *The ecocriticism reader: Landmarks in literary ecology* (pp. 225-240). Athens, GA: University of Georgia.

Love, G. A. (2003). Practical ecocriticism: Literature, biology, and the environment. Charlottesville, VA: University of Virginia.

Macchi, M., Oviedo, G., Gotheil, S., Cross, K., Boedhihartono, A., Wolfangel, C., & Howell, M. (2008). Indigenous and traditional peoples and climate change. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources. Retrieved from http://cmsdata.iucn.org/downloads/indigenous_peoples_climate_change.pdf

MacIntyre, A. (1984). *After virtue.* London, UK: Duckworth.

MacIntyre, A. (1998). The nature of the virtues. In R. Crisp & M. Slote (Eds.), *Virtue ethics* (pp. 118-140). New York, NY: Oxford University.

Maibach, E., Nisbet, M., & Weathers, M. (2011). *Conveying the human implications of climate change: A climate change communication primer for public health professionals*. Fairfax, VA: George Mason University Center for Climate Change Communication. Retrieved from http://www.climatechangecommunication.org/images/files/4C%20Communication%20Primer%20-%20Conveying%20the%20Human%20Implications20of%20Climate%20Change.pdf

Markowitz, E. M. (2012). Is climate change an ethical issue? Examining young adults' beliefs about climate and morality. *Climatic Change. 114*, 479-495. doi:10.1007/s10584-012-0422-8

Markowitz, E. M., & Shariff, A. F. (2012) Climate change and moral judgment. *Nature Climate Change. 2*, 243-247. doi:10.1038/NCLIMATE1378

Marshall, G. (2014). *Don't even think about it: Why our brains are wired to ignore climate change.* New York, NY: Bloomsbury.

Martin-Schramm, J. B. (2010). *Climate justice: Ethics, energy, and public policy.* Minneapolis, MN: Fortress.

Marx, L. (1964). *The machine in the garden.* New York, NY: Oxford University.

Mason, H. (2004). Teaching environmental ethics to non-specialist students. *Worldviews 8*(2-3), 394-400. doi:10.1163/1568535042690817

May, T. J. (2005). Greening the theater: Taking ecocriticism form page to stage. *Interdisciplinary Literary Studies. 7*(1), 84-103. Retrieved from http://www.jstor.org.ezproxy.prescott.edu/stable/41209932

Mayhew, L. B. (1960). Values and the future. In M. Carpenter (Ed.), *The larger learning* (pp. 62-78). Dubuque, IO: W. C. Brown.

McFague, S. (2008). *A new climate for theology.* Minneapolis, MN: Fortress.

McKibben, B. (1989). *The end of nature.* New York, NY: Penguin.

McKibben, B. (2008). Introduction. In B. McKibben (Ed.), *American Earth: Environmental writing since Thoreau* (pp. xxi-xxiv). New York, NY: Literary Classics.

McLean, S. (2013). The whiteness of green: Racialization and environmental education. *The Canadian Geographer. 57*(3), 354-362. doi:10.111/cag.12025

Meilaender, G. (1988). Theory and practice of virtue. Notre Dame, IN: University of Notre Dame.

Melton, B. (2014, March 14). Society's grand challenge: Global climate change (American Psychological Society). Retrieved from http://climatediscovery.com/societys-grand-challenge-global-climate-change-american-psychological-society/

Miller, C. (2007). A sylvan prospect: John Muir, Gifford Pinchot, and early twentieth-century conservationism. In M. Lewis (Ed.), *American wilderness: A new history* (pp. 131-147). New York, NY: Oxford University.

Mitchell, T. (2014). Music, politics and environment. *Social Alternatives. 33*(1), 1-6. Retrieved from http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=19&sid=4c5f657b-1893-453d-90a1-21b95f1f2b5b%40sessionmgr4004&hid=4211

Moellendorf, D. (2014). *The moral challenge of dangerous climate change: Values, poverty, and policy.* [Kindle Fire version]. Retrieved from Amazon.com

Myers, B. (2005). *Time and the land: Four approaches to environmental ethics, climate change and future generations.* Quebec, CA: Northwest Passage.

Nadeau, R. (2013). *Rebirth of the sacred.* New York, NY: Oxford.

Nam, Y., & Ito, E. (2011). A climate change course for undergraduate students. *Journal of*

Geoscience Education. 59(4), 229-241. doi:1089-9995/2011/59(4)/229/13

Nash, J. A. (1992). Ethical concerns for the global-warming debate. *The Christian Century. 109*(25), 773-776. Retrieved from http://connection.ebscohost.com/c/articles/9209072600/ethical-concerns-global-warming-debate

National Climate Ethics Campaign. (2011). *Campaigning for a moral and ethical response to climate change: An introductory handbook for community and organizational activists.* Washington, DC: Author. Retrieved from http://www.climateethicscampaign.org

National Environmental Education Advisory Council (NEEAC). (1996). Report assessing environmental education in the United States and the implementation of the National environmental Education Act of 1990. Washington, DC: Author. Retrieved from http://www.d.umn.edu/~tbates/educ5236-1/report.pdf

National Research Council. (2011). Climate change education: Goals, audiences, and strategies: A workshop summary. Washington, DC: The National Academies.

National Research Council. (2012). Climate change education in formal settings, K-14: A workshop summary. Washington, DC: The National Academies.

Nelson, J. A. (2011). Ethics and the economist: What climate change demands of us. *Ecological Economics. 85*, 145-154. doi:10.106/j.ecolecon.2011.07.029

Newton, L. H. (2003). *Ethics and sustainability: Sustainable development and the moral life.* Upper Saddle River, NJ: Prentice Hall.

Nichols, A. (2011). *Beyond romantic ecocriticism: Toward urbanatural roosting.* New York NY: Palgrave Macmillan.

Nicholson-Cole, S. A. (2005). Representing climate change futures: a critique on the use of images for visual communication. *Computers, Environment and Urban Systems*. 29, 255-273. doi:10.1016/j.compenvurbsys.2004.05.002

Noddings, N. (1988). An ethic of caring and its implications for instructional arrangements. *American Journal of Education. 96*(2), 215-230. Retrieved from http://www.jstor.org/stable/1085252

Nordhaus, T., & Shellenberger, M. (2013). Wicked polarization. In *Breakthrough Journal.* Masthead No. 3. [Kindle Fire version]. Retrieved from Amazon.com

Norgaard, K. M. (2011). *Living in denial: climate change, emotions, and everyday life.* [Kindle Fire version]. Retrieved from Amazon.com.

Norlock, K. J. (2010). Forgivingness, pessimism, and environmental citizenship. *Journal of Agricultural and Environmental Ethics. 23*, 29-42. doi:10.1007/s10806-009-9182-5

Oelschlaeger, M. (1994). *Caring for creation: An ecumenical approach to the environmental crisis.* Binghamton, NY: Vail-Ballou.

O'Hara, D. P., & Abelsohn, A. (2011). Ethical response to climate change. *Ethics & Environment. 16*(1), 25-50. Retrieved from http://www.jstor.org/stable/10.2979/ethicsenviro.16.1.25

Ormerod, N. (2014). The pope, the president and our pro-coal pm. *Eureka Street. 24*(10), 4-6. Retrieved from http://search.informit.com.au/documentSummary;dn= 355340578499739: res=IELAPA>

O'Neill, J. (1993). *Ecology, policy and politics: Human well-being and the natural world.* New York, NY: Routledge.

Oreskes, N. (2007). The scientific consensus on climate change: How do we know we're not wrong? In J. F. C. Dimento & P. Doughman (Eds.), *Climate change: What it means for us, our children, and our grandchildren* (pp. 65-99). Cambridge, MA: MIT.

Palmer, J. A. (1998). Environmental education in the 21st century: Theory, practice, progress and promise. New York, NY: Routledge.

Palmer, M., & Finlay, V. (2003). Faith in conservation: New approaches to religions and the environment. Retrieved from http://siteresources.worldbank.org/INTBIODIVERSITY/214584-112712965549/20480342/FaithInConservationNewApproachesPreface2003.pdf

Palmer, M. (2013). Faith and ecology. *The Ecologist.* Retrieved from http://www.theecologist.org/magazine/features/1827366/faith_ecology.html

Parfit, D. (1984). *Reasons and persons*. New York, NY: Oxford University.

Peppoloni, S., & Di Capua, G. (2012). Geoethics and geological culture: Awareness, responsibility and challenges. *Annals of Geophysics, 55*(3), 335-241. doi:10.4401/ag-6099

Pielke, R. (2007). *The honest broker: Making sense of science in policy and politics.* Cambridge, MA: Cambridge University.

Plenda, M. (2014, July 11). Pope Francis's radical rethinking of environmentalism. *The Atlantic.* Retrieved from http://www.theatlantic.com /international/archive/2014/07pope-franciss-radical-rethinking-…

Potter, G. (2010). Environmental education for the 21st century: Where do we go now? *The Journal of Environmental Education 41*(1), 22-33. doi:10.1080/009589603209975

Poznan, P. (2008). *Seizing the opportunity: Redefining the challenge of climate change.* Retrieved from https://www.bic.org/statements/seizing-opportunity-redefining-challenge-climate-change

Pritchard, I. (1998). *Good education: The virtues of learning.* Norwalk, CT: Judd.

Pruneau, D., Khattabi, A., & Demers, M. (2010). Challenges and possibilities in climate change education. *US-China Education Review. 7*(9), 15-24. Retrieved from http://eric.ed.gov/?id=ED514727

Rehding, A. (2011). Ecomusicology between apocalypse and nostalgia. *Journal of the American Musicological Society. 64*(2), 409-414. Retrieved from http://search.proquest.com.ezproxy.prescott.edu/docview/885916364?accountid=28426

Reimer, J., Paolitto, D. P., & Hersh, R. H. (1990). *Promoting moral growth: From Piaget to Kohlberg.* Prospect Heights, IL: Waveland.

Richmond, J. (2006). Introduction: Ecocriticism. *Journal of Dramatic Theory and Criticism. 20* (2), 123-125. Retrieved from *https://journals.ku.edu/index.php/jdtc/article/viewFile/3551/3427*

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences. 4*, 155-169. Retrieved from http://link.springer.com/article/10.1007%2FBF01405730

Rolston III, H. (2007). Environmental virtue ethics: Half the truth but dangerous as a whole. In R. Sandler & P. Cafaro (Eds.), *Environmental virtue ethics* (pp. 61-78). Lanham, MD: Rowman & Littlefield.

Rolston III, H. (2012). *A new environmental ethics: The next millennium for life on Earth.* New York, NY: Routledge.

Rose, D. B., van Dooren, T., Chrulew, M. Cooke, S., Kearnes, M., & O'Gorman, E. (2012). Thinking through the environment, unsettling the humanities. *Environmental Humanities. 1*, 1-5. Retrieved from http://environmentalhumanities.org/arch/vol1/EH1.1.pdf

Rueckert, W. (1996). Literature and ecology: An experiment in ecocriticism. In C. Glotfelty & H. Fromm (Eds.), *The ecocriticism reader: Landmarks in literary ecology* (pp. 105-123). Athens, GA: University of Georgia.

Safina, C. (n.d.). Carl Safina reflects on climate change. Retrieved from http://www.orionmagazine.org

Sandler, R. (2007). *Character and environment: A virtue-oriented approach to environmental ethics.* New York, NY: Columbia University.

Sandler, R. (2010). Ethical theory and the problem of inconsequentialism: Why environmental ethicists should be virtue-oriented ethicists. *Journal of Agricultural and Environmental Ethics. 23*(1-2), 167-183. doi:10.1007/s10806-009-9203-4

Sarkar, S. (2012). *Environmental philosophy: From theory to practice.* West Sussex, UK: John Wiley & Sons.

Saylan, C., & Blumstein, D. T. (2011). *The failure of environmental education (and how we can fix it).* Berkeley, CA: University of California.

Scharper, S. B. (1997). *Redeeming the time: A political theology of the environment.* New York, NY: Continuum.

Schreiner, C., Henriksen, E. K. & Hansen, P. J. K. (2005). Climate education: Empowering today's youth to meet tomorrow's challenges. *Studies in Science Education 41*(1), 3-49. doi:10.1080/03057260508560213

Schwartz, R. H. (2002). *Judaism and global survival.* New York, NY: Lantern.

Seabright, M. A. (2010). The role of the affect heuristic in moral reactions to climate change. *Journal of Global Ethics. 6*(1), 5-15. doi:10.1080/17449621003701410

Seymour, N. (2012). Toward an irreverent ecocriticism. *Journal of Ecocriticism 4*(2), 56-70. Retrieved from https://www.academia.edu/1832695/_Toward_an_Irreverent_Ecocriticism _ Journal_of_Ecocriticism_4.2_2012_

Shah, M. (2012, June 21). Jainism: The solution to climate change? [Web log comment]. Retrieved from http://shahmeera.wordpress.com/tag/institute-of-jainology/

Shepherd, S., & Kay, A. C. (2012). On the perpetuation of ignorance: System dependence, system justification, and the motivated avoidance of sociopolitical information. *Journal of Personality and Social Psychology. 102*(2), 264–280. doi:10.1037/a0026272

Singer, P. (2011). *Practical ethics.* New York, NY: Cambridge University.

Sinnott-Armstrong, W. (2005). "It's not my fault": Global warming and individual moral obligations. In W. Sinnott-Armstrong & R. B. Howarth (Eds.) *Perspectives on climate change: Science, economics, politics, ethics* (pp. 221-253). Amsterdam: Elsevier.

Speth, J. G. (2004). *Red sky at morning: America and the crisis of the global environment.* New Haven, CT: Yale.

Steinsaltz, A. E. (2007). Returning to our best selves. Retrieved from http://steinsaltz.org/learning.php?pg=Essays&articleId=1516

Sternang, L., & Lundholm C., (2011). Climate change and morality: Students' perspectives on the individual and society. *International Journal of Science Education. 33*(8), 1131-1148. doi:10.1080/09500693.2010.503765

Stocker, M. (1976). The schizophrenia of modern ethical theories. *The Journal of Philosophy.*

73(14), 453-466. doi:10.2307/2025782

Sylvan, R. (2009). Is there a need for a new, an environmental ethic? In D. Clowney & P. Mosto (Eds.), *Earthcare: An anthology in environmental ethics* (pp. 137-144). Lanham, MD: Rowman & Littlefield.

Talbott, S. L. (2013). Why is the moon getting farther away? In The Orion Society (Ed.), *Leave no child inside: A selection of essays from Orion Magazine* (pp. 2-14). Great Barrington, MA: Orion.

Thomashow, M. (2002). *Bringing the biosphere home: Learning to perceive global environmental change.* Cambridge, MA: MIT.

Thompson, A. (2010). Radical hope for living well in a warmer world. *Journal of Agricultural and Environmental Ethics 23*, 43-59. doi:10.1007s/10086-009-9185-2

Thompson, A. & Bendik-Keymer, J. (2012). Introduction. In. A. Thompson, & J. Bendik-Keymer (Eds.), *Ethical adaptation to climate change* (pp. 1-23). Cambridge, MA: MIT.

Thompson, P. B., & Whyte, K. P. (2012). What happens to environmental philosophy in a wicked world? *Journal of Agricultural Environmental Ethics. 25*, 485-498. doi:10.1007/s10806-011-9344-0

Timmerman, P. (2000). Western Buddhism and the global crisis. In S. Kaza & K. Kraft (Eds.), *Dharma rain: Sources of Buddhist environmentalism* (pp. 357-368). Boston, MA: Shambhala.

Toliver, B. (2004). Eco-ing in the canyon: Ferde Grofé's Grand Canyon Suite and the transformation of wilderness. *Journal of the American Musicological Society (JAMS). 57*(2), 325–67. Retrieved from http://www.jstor.org/stable/10.1525/jams.2004.57.2.325

Traer, R. (2013). *Doing environmental ethics.* [Kindle Fire version]. Retrieved from Amazon.com

Trevors, J. T. (2010). Human ignorance and education: A significant part of the global pollution crisis. *Environmentalist. 30*, 304-305. doi:10.1007/s10669-010-9291-8

Trevors, J. T. & Saier, M. H. (2010). Education is our best future. *Water, Air & Soil Pollution. 205*(Suppl 1), S75-S76. doi:10.1007/s11270-008-9779-8

Tuana, N. (n.d.) Ethics matters. Retrieved from http://rockethics.psu.edu/resources/documents/ethical_life.pdf

Unitarian Universalist Association (UUA). (2006). Threat of global warming/climate change. Retrieved from http://www.uua.org/statements/statements/8061.shtml

van Wensveen, L. M. (2000). *Dirty virtues: The emergence of ecological virtue ethics.* Amherst, NY: Prometheus.

van Wensveen, L. M. (2001). Attunement: An ecological spin on the virtue of temperance. *Philosophy in the Contemporary World. 8*(2), 67-78. doi:10.5840/pcw20018222

van Wensveen, L. M. (2005). Cardinal environmental virtues: A neurobiological perspective. In R. Sandler & P. Cafaro (Eds.), *Environmental Virtue Ethics* (pp. 173-194). Lanham, MD: Rowman & Littlefield.

Wapner, P. (2010). *Living through the end of nature.* Cambridge, MA: MIT.

Wardekker, J. A., Petersen, A. C., & van der Sluijs, J. P. (2009). Ethics and public perception of climate change: Exploring the Christian voices in the US public debate. *Global Environmental Change 19*(4), 512-521. doi: 10.1016/j.gloenvcha.2009.07.008

Watson, G. H., & Groh, S. E. (2001). Faculty mentoring faculty: The Institute for Transforming Undergraduate Education. In B. J. Duch, S. E. Groh & D. E. Allen (Eds.), *The power of problem-based learning* (pp. 13-23). Berlin: Falmer/KP.

Weber, E. U. (2006). Experience-based and description-based perceptions of long term risk: Why global warming does not scare us (yet). *Climatic Change*. *77*, 103-120. doi:10.1007/s10584-006-9060-3

Wei, M. (2012, December 18). Confucius, Keynes and Christ: The role and opportunity for ethics and ethical systems as a driver for climate-friendly behavior change. [Web log comment]. Retrieved from http://thinkprogress.org/climate/2012/12/22/1360091/confucius-keynes-and-christ-the-role-and-opportunity-for-ethics-as-a-driver-for-climate-friendly-behavior/

Welchman, J. (2006). Introduction. In J. Welchman (Ed.), *The practice of virtue: Classic and contemporary readings in virtue ethics* (pp. ix-xxv). Indianapolis, IN: Hackett.

Wenz, P. (2005). Synergistic environmental virtues: Consumerism and human flourishing. In R. Sandler & P. Cafaro (Eds.), *Environmental virtue ethics* (pp. 197-213). Lanham, MD: Rowman & Littlefield.

Westra, L. (1998). *Living in integrity: A global ethic to restore a fragmented earth.* Lanham, MD: Rowman & Littlefield.

Williams, B. (1985). *Ethics and the limits of philosophy.* London, UK: Fontana.

Williams, B. (1998). Morality, the peculiar institution. In R. Crisp & M. Slote (Eds.), *Virtue ethics* (pp. 45-65). New York, NY: Oxford University.

Williston, B. (2012). Climate change and radical hope. *Ethics & the Environment. 17*(2), 165-

186. Retrieved from http://www.jstor.org/stable/10.2979/ethicsenviro.17.2.165

Yanascavage, C. (2012). Climate change course impacts on the individual, their future, and interactions with others. *Applied Environmental Education & Communication. 11*, 133-147. doi:10.1080/1533015X.2012.776912

Appendix A

Table 1: *Six psychological challenges posed by climate change to the human moral judgment system*

1. Abstractness and cognitive complexity: The abstract nature of climate change makes it non-intuitive and cognitively effortful to grasp
2. The blamelessness of unintentional action: The human moral judgment system is finely tuned to react to intentional transgressions
3. Guilty bias: Anthropogenic climate change provokes self-defensive biases
4. Uncertainty breeds wishful thinking: The lack of definitive prognoses results in unreasonable optimism
5. Moral tribalism: The politicization of climate change fosters ideological polarization
6. Long time horizons and faraway places: Out-group victims fall by the wayside

Table 2: *Six psychological strategies that communicators can use to bolster the recognition of climate change as a moral imperative*

1. Use existing moral values: Frame climate change using more broadly held values that appeal to untapped demographics
2. Burdens versus benefits: Focus messaging on the costs, not benefits that we may impose on future generations
3. Emotional carrots, not sticks: Motivate action through appeals to hope, pride and gratitude, rather than guilt, shame and anxiety
4. Be wary of extrinsic motivators: Pushing action on climate change as 'good business' may backfire
5. Expand group identity: Increase identification with and empathy for future generations and people living in other places
6. Highlight positive social norms: Leverage human susceptibility to social influence and approval

Note. From "Climate Change and Moral Judgment" by Ezra M. Markowitz & Azim F. Shariff, *Climate Nature Change*, 2, pp. 244-245. Copyright 2012 by MacMillan. Reprinted with permission.

Appendix B

Climate Change Virtues, Vices and Dispositions

Virtues or Virtuous Dispositions	Vices or Vicious Dispositions
Empathy	Indifference
Trust	Suspicion
Wisdom	Ignorance
Humility	Arrogance, hubris
Faith	Skepticism, denialism, cynicism
Hope	Pessimism
Radical Hope	Despair
Integrity	Dishonesty
Geographical sensibility	Exceptionalism, provincialism
Responsible	Negligent
Imaginative	Uncreative, un-resourceful
Joyful	Miserable
Story-telling	Insularity
Benevolence	Miserliness
Compassion	Uncaring
Friendliness	Meanness
Kindness	Selfishness
Generosity	Uncharitable
Reverence for life	Disrespectful, thoughtless
Appreciation	Envy
Frugality	Profligacy (extravagance, wastefulness)
Temperance, moderation	Gluttony, *pleonexia*
Self-control	Weakness, *akrasia*
Simplicity	Materialism
Forgivingness	Bitterness
Reconciliation	Resentment, hatred
Recommitment	Surrender
Justice	Prejudice, inequality
Courage	Cowardice

Appendix C

Virtuous Reality: Climate Change Ethics Syllabus

Course Description:

Virtuous Reality: Climate Change Ethics addresses ethical concerns related to climate change such as ecojustice, intergenerational issues, and the allocation of mitigation and adaptation burdens and the benefits of greenhouse gas emissions as they relate to developed and developing nations. We will also explore the questions: How do uncertainty, politicization, and other obstacles challenge our ability to understand and decide what we should do individually and collectively in response to climate change and why? What virtues should be cultivated in all of us to make us more responsive to the challenges climate change places before us?

Learning Goals:

The learning goals of *Virtuous Reality: Climate Change Ethics* will include:

- The cultivation of philosophical skills: Critique of readings with verbal and written presentation of arguments
- Increased awareness of the ethical questions raised during the study of and response to climate change
- Critical reflection on the views presented and discussed in class
- An appreciation for ecocritical art as an emotive driver for appreciating the ethical aspects of climate change

Required Texts:

Moore, K. D., & Nelson, M. P. (Eds.). (2010). *Moral ground: Ethical action for a planet in peril.* San Antonio, TX: Trinity University.

The National Academy of the Sciences, & The Royal Academy. (2014). *Climate change evidence and choices: An overview from the Royal Society and the US National Academy of Sciences.* Atlanta, GA: National Academies Press. Available from http://www.nap.edu/catalog.php?record_id=18730

Course Assignments:

- Weekly readings
- Weekly reading reflections, question submissions for each (sent to me via e-mail at least four hours prior to the start of class), and reflections on in-class activities will be maintained in a journal which will be reviewed once during the semester and at the end of the semester
- Scholarly paper on a topic of your choosing related to climate change ethics or alternative (see below)

Learning Assessment:

- Participation and question submission 10%
- Quizzes on reading assignments (4) 20%
- Reading Reflections/Journaling project: 40%
- Scholarly Paper or Alternative: 30%

Each student will write a paper of either at least 2,000 words (about 6.5 pages), and should focus on an argument or issue related to climate change ethics. Dates for the submissions thesis statements, rough drafts and final versions will be announced at the start of the semester, along with detailed information on content and format. Rough drafts will be peer- and instructor-reviewed. As an alternative, the student may produce a visual or audial project based on their journaling that illustrates a climate change virtue accompanied by a short description (2-3 paragraphs). This could take the form of a painting, sculpture or photography, a music or dance composition/performance, a video project, or a short story or poem, with instructor approval. Papers and projects will be presented in class at the end of the semester.

The Classroom Environment and Policies:

- Assignments are to be handed in on the due dates specified. Extensions and absences for serious emergencies will be considered *with* notification.
- Late assignments without prior authorization will be downgraded by one letter grade for each day late.
- Plagiarism and other forms of dishonesty are unacceptable.
- You are expected to participate in general class discussions and activities.

- The classroom environment will be one of mutual respect accompanied by serious, reflective engagement with all assignments and activities using the following guidelines:
  - Before debating a dilemma, clarify your facts as much as possible
  - Help to maintain a safe, trusting classroom atmosphere where all ideas are accepted
  - Build on each other's ideas. Share your insights, inspirations, and expertise
  - When leading a discussion, be sure not to take sides or control or influence what other people think or say
  - It's okay to disagree, but without insults or offensive language
  - Remember that there is usually more than one right answer

Adapted from Lewis, B. A. (2005). *What Do You Stand For? For Teens: A Guide to Building Character.* Minneapolis, MN: Free Spirit.

Reading Schedule:

Reading assignments should be completed before the class session for which they are listed, and you will be responsible to submit 2-3 or more questions to me via email at least 4 hours prior to the start of class. Readings in *Moral Ground* are marked with MG (*Climate Change Evidence and Choices* with CC) and the page number on which they begin.

Topics:

- Introduction – Understanding Climate Change
- Virtue Ethics – "Philosophy 101"
- Climate Change as the Perfect Moral Storm – Wicked Dimensions
- Climate Change Virtue Ethics
- Trust and Faith: Climate Change and the Media
- Humility, Forgivingness, and Geographical Sensibility: Climate Change, World Governments, and Collective Responsibility
- Reverence for Life and Hope: Climate Change and Intergenerational Responsibility
- Wisdom: Climate Change Risk and Uncertainty
- Simplicity, Appreciation, Frugality, Temperance, and Self-Control: Climate Change and Individual Responsibility
- Story-Telling: Climate Change, Communication, and Advocacy

- Benevolence and Empathy: Climate Change and World Faith Communities
- Justice and Integrity: Climate Change and Human Rights
- Imagination: Climate Change and Technology
- Radical Hope and Courage: Climate Change and *Where do we go from here?*

Appendix D

Virtuous Reality: Climate Change Ethics Additional Resources

Scholarly Articles and Research

Bonnett, M. (2012). Environmental concern, moral education and our place in nature. *Journal of Moral Education. 41*(3), 285-300. doi:10.1080/03057240.2012.691643

Cuomo, C. J. (2011). Climate change, vulnerability, and responsibility. *Hypatia. 26*(4), 690-714. doi:10.1111/j.1527-2001.2011.01220.x.

Hardin, G. (1986). Tragedy of the commons. *Science, New Series 162*(3859), 1243-1248 Retrieved from http://iseethics.files.wordpress.com/2013/02/hardin-garrett-the-tragedy-of-the-commons.pdf

Hourdequin, M. (2010) Climate, Collective Action and Individual Ethical Obligations. *Environmental Values. 19*, 443-464. Retrieved from http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=24&sid=4c0fe3d1-eb29-4076-bd40-dbcef287d003%40sessionmgr4002&hid=4205

Hourdequin, M. (2011). Climate Change and Individual Responsibility: A Reply to Johnson. *Environmental Values 20*, 157-162. doi:10.3197/096327111X12997574391643

Johnson, B. (2003). Ethical Obligations in a Tragedy of the Commons. *Environmental Values. 12*(3), 271-288.

Johnson, B. (2011). The Possibility of a Joint Communique: My Response to Hourdequin. *Environmental Values 20*, 147-156. doi:10.3197/096327111X12997574391580

Kawall, J. (2011). Future harms and current offspring. *Ethics, Policy & Environment. 14*(1), 23-26. doi:10.1080/21550085.2011.561589

Moellendorf, D. (2011). A right to sustainable development. *The Monist 94*(3), 433-452. Retrieved from http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=15&sid=4c0fe3d1-eb29-4076-bd40-dbcef287d003%40sessionmgr4002&hid=4205

Nolt, J. (2011). How harmful are the average American's greenhouse gas emissions? *Ethics, Policy & Environment. 14*(1), 3-10. doi:10.1080/21550085.2011.561584.

Nolt, J. (2011). Replies to critics of 'How harmful are the average American's greenhouse gas emissions?' *Ethics, Policy and Environment*. *16*(1), 111–119. doi:10.1080/21550085.2013.768399

Schinkel, A. (2011). Causal and moral responsibility of individuals for (the harmful consequences of) climate change. *Ethics, Policy & Environment. 14*(1), 35-37. doi:10.1080/21550085.2011.561592

Vanderheiden, S. (2009). Distinguishing mitigation and adaptation. *Ethics, Place & Environment. 12*(3), 283-286. doi:10.1080/13668790903195503

White, L. (1967). The historical roots of our ecological crisis. *Science*. *155*(3767), 1203-1207. Retrieved from http://iseethics.files.wordpress.com/2013/02/white-lynn-jr-the-historical-roots-of-our-ecologic-crisis-original.pdf

Books, Articles and Websites on Climate Change

350.org

http://350.org/

Arnold, D. G. (2011). *The Ethics of Global Climate Change*. Cambridge, UK: Cambridge

University.

Broome, J. (2012). *Climate Matters: Ethics in a Warming World.* New York, NY: W.W. Norton.

Brown, D. A. (2013). *Climate Change Ethics: Navigating the Perfect Moral Storm*. London, UK: Routledge.

Changing Climates
http://changingclimates.colostate.edu/

Climate Access: Sharing What Works
http://climateaccess.org

Climate Discovery
http://climatediscovery.com

Climate Outreach and Information Network (COIN)
http://www.climateoutreach.org.uk/

Craven, G. (2009). *What's the worst that could happen?: A rational response to the climate change debate.* New York, NY: Penguin Group.

Dressler, A. (2012). *An introduction to modern climate change.* New York, NY: Cambridge University.

Henson, R. (2011). *The rough guide to climate change.* London, UK: Rough Guides.

Henson, R. (2014). *The thinking person's guide to climate change.* Boston, MA: The American Meteorological Society.

Kolbert, E. (2007). *Field notes from a catastrophe: A frontline report on climate change.* London, UK: Bloomsbury.

McKibben, B. (2012, July 19). Global warming's terrifying new math. *Rolling Stone.* Retrieved from http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719

McKibben, B. Complete bibliography available from http://www.billmckibben.com/bio.html

Melton, B. (2011). *Climate discovery chronicles: Recent, relatively unknown discoveries about our rapidly changing world.* San Diego, CA: Casagrande. See also http://climatediscovery.com/

Skrimshire, S. (Ed.). (2010). *Future ethics: Climate change and apocalyptic imagination*. London, UK: Continuum.

Thomashow, M. (2001). *Bringing the Biosphere Home: Learning to Perceive Global Environmental Change*. Cambridge, MA: MIT.

Yale Project on Climate Change Communication http://environment.yale.edu/climate-communication/

Books, Articles and Websites on Education

Orion Society. (2013). *Leave no child inside.* Great Barrington, MA: Orion.

Stone, M. K., & Barlow, Z. (2005). *Ecological literacy: Educating our children for a sustainable world.* San Francisco, CA: Sierra Club.

Books, Articles and Websites on Ethics and Climate Change Ethics

Bennett, W. J. (1993). *The book of virtues: A treasury of great moral stories.* New York, NY: Simon & Schuster.

Claassen, Scott: The Carbon Sabbath
http://carbonsabbath.org/

Clowney, D. & Mosto, P. (Eds.). (2009). *Earthcare: An anthology in environmental ethics.* Lanham, MD: Rowman & Littlefield.

Earth Charter
http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html

Earth Community Rights and Responsibilities
http://www.gaiafoundation.org/rights-and-responsibilities-earth-community

Garvey, J. (2008). *The ethics of climate change: Right and wrong in a warming world.* New York, NY: Continuum.

Gardiner, S. M. Caney, S., Jamieson, D., Shue, H. (Eds.). (2010). *Climate ethics: Essential readings.* New York, NY: Oxford University.

Havel, V. (2007, September 27). Our moral footprint. *New York Times.* Retrieved from http://www.nytimes.com/2007/09/27/opinion/27havel.html?_r=0

Interfaith Power and Light, an international climate change faith organization
http://interfaithpowerandlight.org/

Jamieson, D. (2014). *Reason in a dark time: Why the struggle against climate change failed –*

and what it means for our future. New York, NY: Oxford University.

Lear, J. (2006). *Radical hope: Ethics in the face of cultural devastation*. Cambridge, MA: Harvard University.

Macy, J. (1995). Working through environmental despair. In T. Roszak, M.E. Gomes, & A. D. Kanner (Eds.), *Ecopsychology: Restoring the earth, healing the mind* (pp. 251-271). San Francisco, CA: Sierra Club. Retrieved from http://www.morning-earth.org/CE6109/EARTHJOURNAL/JOURNALING%20PDFs/PDFs%20copy%201/EARTH%20&%20SURVIVAL/MACY%20WORKING%20THRU%20DESPAIR.pdf

Martin-Schramm, J. B., & Stivers, R. L. (2003). *Christian environmental ethics: A case method approach.* Maryknoll, NY: Orbis.

Moser, S. C., & Dilling, L. (Eds.). *Creating a climate for change: Communicating climate change and facilitating social change.* New York, NY: Cambridge University.

Penn State University Rock Ethics Institute on Climate Change http://rockethics.psu.edu/climate/

Plumwood, V. (2002). *Environmental culture: The ecological crisis of reason.* New York, NY: Routledge.

Sacks, J. (2005). *To heal a fractured world: The ethics of responsibility*. New York, NY: Schocken.

Singer, P. (2001). *Writings on an ethical life*. New York, NY: Harper Collins.

Sommers, C., & Sommers, F. (Eds.). (2007). *Virtue and vice in everyday life.* Belmont, CA: Thomson Wadsworth.

Vucetich, J. A., & Nelson, M. P. (2010, August 1). The moral obligations of scientists. *Chronicle of Higher Education* Retrieved from http://www.fw.msu.edu/documents/MoralObligationsOfScientists.pdf

Weil, Z. (2009). *Most good, least harm: A simpler principle for a better world and meaningful life.* New York, NY: Atria.

Worth, K. (2013). *Invisible nature: Healing the destructive divide between people and the planet.* Amherst, NY: Prometheus.

Books, Articles and Websites on Ecocriticism

Bryson, J. S. (2000). *Ecopoetry: A critical introduction.* Cambridge, MA: Harvard University.

Buell, L. (2005). *The future of environmental criticism.* Malden, MA: Blackwell.

The Dark Mountain Project
http://dark-mountain.net/

Dobrin, S. I., & Kidd, K. B. (Eds.). (2004). *Wild things: Children's culture and ecocriticism.* Detroit, MI: Wayne State University.

Hoeg, J. (2010, April 29). Consilience, ecocriticism, and ecological destruction. *Politics and Culture.* Retrieved from http://politicsandculture.org/2010/04/29/consilience-ecocriticism-and-ecological-destruction/

Ecocinema and Video

A River Runs Through It

Affluenza

Trailer available from https://www.youtube.com/watch?v=xlNAJm4FTVY

After the Warming

Available from https://www.youtube.com/watch?v=RfE8wBReIxw

The Age of Stupid

Trailer available from http://www.spannerfilms.net/films/ageofstupid

An Inconvenient Truth

Available from https://www.youtube.com/watch?v=OcLG-tcMvyg

Are You Listening?

Trailer available from http://vimeo.com/channels/areyoulistening

Avatar

The Burning Season

Category 7 – The End of the World

Trailer available from https://www.youtube.com/watch?v=dpxF8d1jwc

Chasing Ice

Trailer available from https://www.youtube.com/watch?v=HqknAn_3QpI

The Cove

Day After Tomorrow

Day of the Dolphins

The Day the Earth Stood Still

Disruption

Available from http://watchdisruption.com/

The Fight for the Rio Tigre

Available from http://meltonengineering.com/The%20Fight%20for%20the%20Rio%20Tigre%20031510.swf

Garden of Earthly Delights

Global Warming: The Signs and the Science

Grizzly Man

Happy Feet I

Happy Feet II

Ice Age: The Meltdown

The Ice and The Sea

Available from http://www.meltonengineering.com/The%20Ice%20and%20the%20Sea%20031710.swf

Into the Wild

Keeping the Earth: Religious and Scientific Perspectives on the Environment

Available from https://www.youtube.com/watch?v=UCodY8pOOn4

Madagascar: Escape to Africa

Manufactured Landscapes

The New World

Renewal: Stories from America's Religious-Environmental Movement

Silkwood

Sizzle: A Global Warming Comedy

Trailer available from https://www.youtube.com/watch?v=o96VZb27qug

Thin Ice: The Inside Story of Climate Science

Trailer available from https://www.youtube.com/watch?v=2UxViE9YP6U

Umar, Shaykh Mustafa: Fulfill your responsibility towards the earth:

Available from http://vimeo.com/64192183

Wall-E

Trailer available from https://www.youtube.com/watch?v=alIq_wG9FNk

Waterworld

What Have We Done

Available from http://www.meltonengineering.com/What%20Have%20We%20Done %20033110.swf

Years of Living Dangerously

Ecodrama

Whitehouse, Sheldon "God will not save USA from climate change" Available from http://www.rtcc.org/2013/05/13/sheldon-whitehouse-god-will-not-save-usa-from-climate-chaos/

Ecocritical Literature

St. Francis of Assisi. Canticle of the Sun. Available from http://www.franciscanfriarstor.com/archive/stfrancis/ stf_canticle_ of_ the_ sun.htm

Holmes, S. P. (Ed.). (2013). *Facing the change: Personal encounters with global warming.* Haverford, PA: Torrey House.

Jamail, D. (2014, June 3). On staying sane in a suicidal culture. *Truthout.* Retrieved from http://www.truth-out.org/news/item/24083-on-staying-sane-in-a-suicidal-culture

Levitin, D. J. (2008). *The world in six songs.* New York, NY: Penguin.

Lovelock, J. (2009). *The vanishing face of Gaia: A final warming.* New York, NY: Penguin

MacDonald, A. H. (2008). *Finitude.* London, UK: Creative Commons.

Macy, J. & Gahbler, N. (2012). *Pass it on: Five stories that can change the world.* Berkeley, CA: Paralax.

McKibben, B. (Ed.). (2008). *American earth: Environmental writing since Thoreau.* New York, NY: Library of America.

Sauer, P. (Ed.). (1992). *Finding home.* Boston, MA: Beacon.

Smith, Z. (2014, April 3). Elegy for a country's seasons. *The New York Review of Books.* Retrieved from http://www.nybooks.com/articles/archives/2014/apr/03/elegy-countrys-seasons/

"Classic" Nature Writers (List by no means is inclusive!)

Edward Abbey, David Abram, Wendell Berry, David Brower, John Burroughs, Rachel Carson, Willa Cather, Craig Childs, John Clare, Susan Fenimore Cooper, Annie Dillard, Marjorie Stoneman Douglas, Ralph Waldo Emerson, Edward Hoagland, Madhaviah Krishnan, Aldo Leopold, Barry Lopez, John McPhee, Joseph Meeker, John Muir, Gary Paul Nabhan, Sigurd Olson, Rebecca Solnit, John Tallmadge, Henry David Thoreau, Terry Tempest Williams, E. O. Wilson, Mabel Osgood, Wright, Ann Zwinger

"Cli-Fi"

http://eco-fiction.com/

Compilation of eco-fiction and cli-fi titles, including work by Barbara Kingsolver (*Flight Behavior*), Margaret Atwood (*Oryx & Crake*, *The Year of the Flood*, *MaddAddam*), Ian McEwan (*Solar*), Nathaniel Rich (*I'm With the Bears: Short Stories From a Damaged Planet*, *Odds Against Tomorrow*), Daniel Kramb (*From Here*), and Kim Stanley Robinson (*Sacred Space*, *Science in the Capitol Trilogy*)

Kormann, C. (2013, July 3). Scenes from a melting planet: On the climate change novel. [Web log comment]. *The New Yorker.* Retrieved from http://www.newyorker.com/books/page-turner/scenes-from-a-melting-planet-on-the-climate-change-novel

Trexler, A. (2011, November 7). The climate change novel: A faulty simulator of environmental politics. *Policy Innovations.* Retrieved from http://www.policyinnovations.org/ideas/ briefings /data/000230

Ecomusicology

Allen, A. S. (2011). Ecomusicology: Ecocriticism and musicology. *Journal of the American Musicological Society. 64*(2), 391–393. doi:10.1525/jams.2011.64.2.391

Ecomusicology resources and information
http://www.ams-esg.org/

James Ferraro "Far Side Virtual," discussed in Ottum, J. (2014). Sounds like garbage: Paddling through an imaginary island of trash toward a new sonic ecology. *Social Alternatives 33*(1), 52-59. Retrieved from http://search.informit.com.au/documentSummary;dn= 336633075356506;res=IELAPA
Performance available from https://www.youtube.com/playlist?list=ALGLx1orRGw4WQd1 ZTsoyMWHObqJBlwQL9

Bruce Melton, "The Beaches Decree"
Available from https://www.youtube.com/watch?v=pNgDyyViNKQ

Ortiz, E. (2013, July 30). Taking the world by storm? Weather inspired music. *San Francisco Classical Voice.* Retrieved from https://www.sfcv.org/article/taking-the-world-by-storm-weather-inspired-music

Sandel, "The Shadows"
Available from https://www.youtube.com/watch?v=5x-13jNXux8

Melody Sheep, "Symphony of Science – Our Biggest Challenge

Available from https://www.youtube.com/watch?v=HHP9Rh-ooh0

Laurie Spiegel "The Expanding Universe"
Available from https://www.youtube.com/watch?v=dYUZmsfm4Ww&list=
AL94UKMTqg-9D_K3piknd-ngyJ4erfsJdF

Ecopoetry

Astley, N. (Ed.). (2007). *Earth shattering: Ecopoems.* Northumberland, UK: Bloodaxe.

Gander, F., & Kinsella, J. (2012). *Redstart: An ecological poetics.* Iowa City, IO: University of Iowa.

Griffiths, M. (2013). *How to be late*. Northumberland, UK: Red Squirrel.

Hibbard, T. (2011). *The sacred river of consciousness.* Port Moody BC: Moon Willow.

Oswald, A. (Ed.). (2005). *The thunder mutters: 101 poems for the planet.* London, UK: Faber & Faber.

Phethean, E. (2014). *Portrait of the quince as an older woman*. Northumberland, UK: Red Squirrel.

River of Words
http://www.stmarys-ca.edu/center-for-environmental-literacy/river-of-words

Ecocritical Visual Arts

Arts and Climate Change
http://artistsandclimatechange.com/about-3/

Balog, James: Extreme Ice Survey photography:
http://extremeicesurvey.org/

Braasch, Gary: Climate change photography
http://worldviewofglobalwarming.org/

Buckland, David: Cape Farewell Project
http://www.capefarewell.com/

Canary Project
http://canary-project.org/about-us/

Climate change education and the visual arts
http://climatechangeeducation.org/art/visual_arts/index.html

Climate change in the Rogue Valley, OR
http://www.shiftingpatterns.org/

Cool Climate Art Contest
http://coolclimate.deviantart.com/

Jan, Lars: Holoscenes
http://grist.org/list/dont-care-about-climate-change-perhaps-this-artist-his-trusty-garden-hose-can-help/?utm_source=newsletter&utm_medium =email&utm_term=Daily%2520 June% 25205&utm_campaign=daily
-And-
http://www.huffingtonpost.com/2014/06/03/holoscenes-lars-jan-climate-change_n_ 437625.html

Johnson, Greg: IPCC report in 19 Haiku

http://daily.sightline.org/2013/12/16/the-entire-ipcc-report-in-19-illustrated-haiku/

Long Horizons: An Exploration of Art and Climate Change
http://www.juliesbicycle.com/resources/publications/long-horizons

Musselman, Annie Marie: A Delicate Trust
http://www.orionmagazine.org/index. php/articles/article/8272

Toles, T. (2011, March 31). Tom Toles goes green. *The Washington Post.* Retrieved from http://www.washingtonpost.com/opinions/tom-toles-goes-green/2011/03/31/AFD04K0D_gallery.html

UNEP Children's Painting Competition on the Environment:
http://www.unep.bayer.com/en/international-children_s-painting-competition.aspx