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RESPONSIBILITY FOR THE END OF NATURE

*OR, HOW I LEARNED TO STOP WORRYING
AND LOVE GLOBAL WARMING*

ALLEN THOMPSON

Global warming has aroused profound concerns about the future of humanity and the planet as a whole. Indeed, Bill McKibben has argued that anthropogenic climate change is tantamount to the very end of nature and articulates a sense of deep anxiety that many people share. I argue that this feeling of anxiety cannot be fully accounted for either by appeal to the consequences of global warming or the associated injustices. I locate its source with our recognition that human beings are now responsible for some of the basic conditions supporting all life on Earth. I argue that if we are to assume such an awesome responsibility (and we must), it's good that we do so anxiously. While some have criticized the "I have a nightmare" global warming rhetoric of environmentalists, I identify a particular feature of our nightmare and claim that in it we can find a source for hope.

I. In the last year we have seen radical changes in public opinion about global warming. It is now widely accepted that human activity is causally connected to global climate change. I will take it for granted that global warming is real and largely caused by human beings burning

fossil fuel for energy. Grim forecasts include environmental changes on a scale unprecedented in human history, including melting polar ice caps, increased desertification, rising sea levels, and mass species extinction. The consequences for human beings and other life on Earth are potentially catastrophic. Global warming poses a threat of outstanding magnitude. While some features of this threat are expressed in descriptive predictions about a wide variety of ecological changes and potential consequences thereof, still another aspect of the threat posed by global warming is an existential one connected to our moral responsibility.

Through the last decades of the twentieth century we became accustomed to the idea that human beings are responsible for the extinction of this or that particular species of plant and animal, the destruction of one or another irreplaceable local or regional ecosystem, and more generally a significant loss of global biodiversity. But part of the threat posed by global warming appears to be something else—a threat to the entire world of nature. The sense that many people have is of an impending apocalypse. Not unlike the threat of a nuclear holocaust during the Cold War, global warming has aroused profound concerns about the future of humanity and the planet as a whole.¹ In an early and still influential book of the same title McKibben (1989) argued that anthropogenic climate change is tantamount to the very *end of nature*.

This is, of course, a very provocative idea—global warming is the end of nature. The end of nature is an apocalyptic notion that can provoke a sense of horror, including moral horror when we recognize our culpability. But it is difficult to think clearly about the threat posed by global warming. According to Jamieson (1992), the value system inherited in Western society leaves us feeling confused about how to think about the moral problems raised by anthropogenic global warming. For example, focusing on the issue of moral responsibility, Jamieson writes, “Today we face the possibility that the global environment may be destroyed, yet no one will be responsible” (149). Indeed, our capacities to think about diffuse moral responsibility are not as well exercised as our ability to think about individual moral responsibility. I will return to the issue of moral responsibility below, but first I think there is a good deal of confusion hidden behind the seemingly innocuous phrase, “the global environment may be destroyed.” What do we mean when we say global warming will destroy the environment? What *is* the end of nature?

Here I am not interested in *how much* environmental degradation is sufficient to cause the end of nature. Nor am I interested in assessing which of the many models predicting the effects of global warming is likely to be correct. And since I lack the comic genius of Peter Sellers my purpose is not to deliver a strong dose of denial-defeating humor. Rather, I will consider what may lie behind the disquieting idea, or feeling, that anthropogenic global warming might as well be the very end of nature. To do so, I consider different conceptions of *nature* and ways of *valuing* terrestrial environments in light of two veins in environmental ethics: deep ecology and environmental pragmatism.

My purpose is to explore if we can make sense of a particular intuition of moral horror connected with anthropogenic global warming. I argue that this feeling cannot be fully accounted for either by appeal to the consequences of global warming (for both human and non-human life) or by the many associated injustices. My analysis provides support to recent criticisms of the role that the concept of intrinsic value is supposed to play in environmental ethics and allows me to outline how deep ecology can provide an alternative to a divide between those who endorse a non-anthropocentric theory of value in nature and those who favor some form of weak anthropocentrism. While some have criticized the “I have a nightmare” global warming rhetoric of environmentalists, I identify a particular feature of our nightmare and claim that in it we can find a source for hope.

II. Bill McKibben forcefully portrayed the sense of impending doom associated with global warming in his 1989 book *The End of Nature*. An idea can go extinct, according to McKibben, just like an animal or a plant, and he claims that the *idea* of nature as autonomous from human beings has gone extinct (48). A conception of the natural environment, or nature, as independent of human beings is something we can no longer sustain in good faith because the realities of anthropogenic climate change show it to be false. Because of human intervention, largely through the burning of fossil fuels and the release of greenhouse gasses, nothing in the natural world is as it would be without human activity and so everything has, in a certain sense, become an artifact. Nature has literally been destroyed and we now live, McKibben claims, in a post-natural world (60).

McKibben’s argument is not complex but the force of his conclusion

is unclear.² We can distinguish two claims, which he seems to confound: an ontological claim (that autonomy from humans is the essence of nature and global warming destroys this autonomy), and a significance claim (the *idea* of nature as autonomous was meaningful to us and global warming prevents us from maintaining this idea). The former is to claim that no part of the natural environment remains entirely non-artificial because of global warming. The latter claim is about the psychological *meaning* that the ontological claim can have, the consequence that when fully appreciated, anthropogenic global climate change will cause the *idea* of nature as independent of human beings to become extinct. What could it *mean* to us if we were to believe that we live in a post-natural world? I will address these two claims in turn.

If we presume there is a coherent distinction between the non-human world of nature and the non-natural world of human activity, then once the activity of human beings alters the basic conditions of the global biosphere, everything within the biosphere becomes somewhat artificial thus changing its fundamental mode of being. Here we have the idea of a pristine nature, the world as it is without human beings, and McKibben's ontological claim is that as a matter of fact this world of nature no longer exists.

Steve Vogel (2002) is critical of McKibben's claim that as a matter of fact global warming has brought about the end of nature. The basis of Vogel's critique is a familiar motif in environmental history, geography, and cultural history—global climate change cannot cause the end of nature as non-artifact because nature, in this sense, has failed to exist ever since humans began transforming it. Vogel takes this social constructivist position to be converged upon by environmental historians, poststructuralists, and “recent science studies: the world we inhabit is,” he writes, “always already one transformed by human practices” (Vogel 2002, in abstract).

Objection to the ontological claim could take a stronger or a weaker form. The weaker form is that McKibben has misidentified *when* human activity affected the end of nature. Although more obviously global in scope, as a candidate anthropogenic climate change is a relative newcomer. Events precipitating the end of nature could be located at any number of places, perhaps the invention of agriculture, splitting the atom, or completing the first map of the entire world, etc. The weaker objection is that global warming can't bring about the end of nature because *some other event* already has.

But Vogel (2002) articulates a stronger objection: “The ‘end of nature,’ it turns out, may be something that has *always already* occurred. As soon as humans appeared on the scene they began to transform it; indeed, one could say that that is what humans (like any other species, of course) ‘naturally’ do.... [W]e can only be said to have ended nature (recently) if nature had (recently) been there as something to be ended—if ‘nature’ means land never changed by human action, it isn’t clear that it *had* been there” (24). The logic of Vogel’s objection is clear—if we don’t have a coherent concept of a natural world independent of human activity, at least since human beings first appeared, then we cannot make sense of the claim that anthropogenic climate change is causally responsible for the end of this world. This stronger objection can, in turn, take an epistemic or an ontological form.

How do we *know* that what we take to be living parts of the natural, non-human world are not actually adapted to a world in which human beings live and act? For example, in order to protect a growing population of endangered Red-cockaded woodpeckers on the Savannah River Nuclear Weapons Site in Georgia, the U.S. Forest Service currently is undertaking the ecological restoration of pine savannah forests there. Long before European settlers cleared the land for grazing and agriculture, environmental historian Pamela Mack writes, “Native Americans set fires in the longleaf forest in the winter to keep down the undergrowth and improve the grazing for deer. The resulting ecosystem is called a pine savannah: widely spaced large trees with grass growing between them. The species that favored the longleaf pine-wiregrass ecosystem [including the Red-cockaded woodpecker] evolved to live successfully in an environment already modified by human beings.”³ So, is the Red-cockaded woodpecker a *natural* species, part of a world of nature independent of human beings? It seems not. Yet this woodpecker cannot rightly be considered a human artifact. It seems best to consider the Red-Cocked Woodpecker some sort of hybrid. But then, what isn’t? The point is to raise an epistemic problem: we cannot be certain that any part of the biological world is just as it would be independently of the existence and activities of human beings.

The epistemic problem arises also in the context of global climate. In his discussion of *intentional* climate change, that is, technological efforts aimed at returning the climate system to its “original” state, Dale Jamieson (1996, 325) asks, “do we really know what climate would be

like were it not affected by humans?” His point is that we have reason to doubt that we have, or even could have, a good idea about what the world would be like in case there never were any human beings in it. We have no baseline for comparison. Different forms of life and the climate itself may be as they are *because* of the human presence, even long before, say, the industrial revolution. It seems it just does not make sense to believe that we have an idea of what conditions of the natural world without human beings would be to compare against the world in which there are human beings.

Thus, this epistemic objection leads into an ontological one. Are human beings natural or not? Transformations that *other* living organisms effect upon the environment do not destroy nature because other living organisms are a *part* of nature. On McKibben’s view only *human* activity can destroy nature because human beings are precisely *not* part of nature. Indeed, as Vogel points out, for McKibben “nature is exactly identical to that which is not us” (Vogel 2002, 24). Vogel rightly identifies that McKibben is committed to a strong metaphysical dualism, “whereby human beings are viewed as ontologically *sui generis*, distinct from all other creatures on Earth. Once the human touch is on something, its ontological status shifts: no longer natural, it is now an artifact. The human world and the natural world are thus treated as separate realms” (25). In order to get his thesis off the ground McKibben must be read as a dualist so the human touch can transform nature into artifact but this, in turn, leads to the unpalatable implication that human beings are somehow *outside* of nature or are in some sense *supernatural*. As a result either McKibben’s position implies an implausible metaphysical thesis or it depends upon equivocating on the meaning of “nature.” “The problem,” Vogel writes, “is that neither meaning allows us to distinguish between those human actions that ‘violate’ nature and those that are in some way in ‘harmony’ with it: either we violate it *all the time* or violations of it are *logically impossible*” (27).

Aside from pointing out that this conceptual confusion haunts McKibben’s position—Vogel is enthusiastic about abandoning such a metaphysical dualism, as he believes most environmentalists at least somehow *want* to—by the radical move of eliminating the concept of nature from environmental philosophy! Vogel *agrees* with McKibben that we live in a post-natural world only, he claims, McKibben failed to realize that we al-

ways have. Vogel heralds the poststructuralist “discovery that what counts as nature is itself always sociologically and historically variable, and that even the material landscapes we like to call natural always turn out to be more the product of human action, and to be more enmeshed in the world of the social than we wanted to believe” (32). The upshot is that nature does not and, further, never did exist. Vogel proposes we move toward a version of environmentalism that overcomes the objectionable dualism between man and nature by denying the concept of nature.

Consider briefly what Vogel’s position must be regarding McKibben’s significance claim, the claim that the *idea* of nature as independent of human beings is valuable to us. Where McKibben finds our loss of this idea to be regrettable—the loss of something that, at least in western society, we found important and meaningful—Vogel would seem to rejoice that finally we have overcome an illusion. If this is right, then Vogel’s response to McKibben will not help us unearth what, if anything, lies behind the intuition of moral horror that somehow global warming really is *tantamount* to the end of nature.

George Sessions (2006) has responded, claiming that Vogel’s position relies on a false dichotomy—namely, “either Nature is totally pristine (literally untouched by human hands), or Nature doesn’t exist”—and that “Thoreau’s characterization of wildness (and wild Nature) cuts neatly through Vogel’s disjunction.” Sessions relies on this insight to emphasize a continuum between “‘virtually pristine’...wild environments at one end and totally human dominated and developed environments at the other.” This is right—parts of nature can be more or less wild or “self-willed.” The world is not simply either purely natural or entirely artificial, as illustrated by the case of the Red-cockaded woodpecker considered above.

In *The Practice of the Wild*, Gary Snyder (1990) borrows this theme (from Henry David Thoreau’s *Walking* and *Wild Apples* (Hyde 2002)) and develops it in a collection of essays on wildness and the “old ways” of primary people from a contemporary bioregional perspective. I suggest we follow Snyder and use Thoreau’s characterization of wild nature to *replace* Vogel’s objectionable disjunction. Along these lines, thinking about the environmental crisis can be reframed, not in terms of human artifice versus pristine nature but rather as a dichotomy to be resolved between human domination (what Snyder calls “civilization”) and that which is wild and free (Snyder 1990, 15).

There are at least two advantages of framing the environmental crisis in this way. First, we can side with Vogel and other environmentalists who reject the metaphysical dualism inherent in McKibben's position. Instead of abandoning the concept of nature, as Vogel advocates, we can place humanity together with nature by locating an essential property shared by both, namely, the wild. Wild nature is not by definition the non-human. Rather it is the whole world, including humans. "The world is nature, and in the long run inevitably wild," writes Snyder (1990), because the wild, what he describes as that mysterious "ordering of impermanence," is the very "process and essence of nature" (5). Humans are a part of nature and thus participate in, by belonging to, a wild nature understood metaphorically as "'self-willed' and not *dominated* by humans (not Nature 'untouched by human hands')" (Sessions 2006). Now the crucial tension is located where it belongs, *within* our own humanity or our conception of humanity and not between humans and nature.

Vogel may object that this move does not *abandon* the objectionable dualism but only *relocates* it. Instead of nature versus artifact, a metaphysical gap between the natural world and us, we are left with a metaphysical gap between the wild and civilization. It may be added that this dualism is even *more* troubling because, like a Cartesian mind and body dualism, it threatens the unity of our own person. But if we focus on *why* Vogel finds a dualism between nature and artifact problematic for environmental philosophy, we will see that this problem does not carry over to the distinction between the wild and the civilized.

John Stuart Mill (1874), among others, distinguished between two senses of the term "nature." On the one hand, nature refers to everything that constitutes material reality. In this sense, nature is whatever is (or could be) the object of the natural sciences. The appropriate contrast here is with the supernatural, not the artificial. On the other hand, according to Snyder nature is "a norm of the world that is apart from the features or products of...human will. The machine, the artifact, the devised...[are] spoken of as 'unnatural'" (Snyder 1990, 8). Vogel finds the second sense of "nature" problematic for environmental philosophy because on his conception of human nature, human beings naturally and perhaps essentially are creators of artifact. So, if we maintain a metaphysical distinction between nature and artifact while building an environmental philosophy around the valorization of nature as autonomous, then it's simply an ana-

lytic truth that human action cannot be consistent with the preservation of nature. We set ourselves up for failure.

But we can avoid this problem by reframing environmental problems at the most general level in terms of a “dichotomy to be resolved” between civilization and the wild. First, human action is not by definition opposed to the continued existence of nature, when nature is understood as essentially wild. It is not simply analytically true (if it is true) that human activity can’t be consistent with the preservation of what we value in the “more-than-human” world. If the essence of nature as a normative ideal is understood as wildness rather than autonomy from humans, then Vogel’s proposal to abandon the concept of nature loses motivation.

Second, unlike a metaphysical dichotomy between nature and artifact, where the presence of *any* human intervention is sufficient to transform what was natural into an artifact, human domestication of the wild is not inconsistent with the continued existence of the wild. In fact, on this scheme, no amount of civilization, no amount of human domination, could be sufficient to banish the wild completely. Understood as the essence of nature, the wild is primary and inexhaustible. Where the disjunction between nature and artifact is exclusive, marking the boundary of an ontological duality, the distinction between civilization and the wild is nowhere, except conceptually, complete. In the wake of William Cronon’s (1996) deconstruction of wilderness, we can understand how pristine wildness is, for us anyway, always inaccessible. But to conclude from this that *nothing* but human civilization remains would be a mistake, importing the illusion that social constructivists unmasked in our thinking about pristine nature. In sum, Vogel’s objection overlooks the fact that in the processes of constructing the artificial, human beings are *always already* wild, and so also is the world of nature we are busy at work on.

A second advantage to reframing environmental problems in terms of a dichotomy to be resolved between civilization and the wild is that we can conceive of anthropogenic global warming as a symptom of excessive civilization, the controlling or dominating influence of human beings—too much industry, too much energy wasted, too many engines, too many air-conditioners, etc. While it surely is a great tragedy, global warming cannot be the end of nature, not the end of *wild* nature. “Wilderness is a *place* where the wild potential is fully expressed, a diversity of living and nonliving things flourishing according to their own sorts of order,” Snyder

tells us, and "...[w]ilderness may temporarily dwindle, but *wildness* won't go away" (15).

Anthropogenic climate change, a symptom of too much human civilization and domination, cannot bring about the end of nature, because nature is essentially wild. The worst that we can do is to continue diminishing the wilderness, understood here not as select nationally designated recreational areas but places where the wild can be fully expressed. Indeed, Snyder tells us, the "[w]ilderness will inevitably return," however, regrettably, "it will not be as fine a world as the one that was glistening in the early morning of the Holocene. Much life will be lost in the wake of human agency on Earth, [especially] that of the twentieth and twenty-first centuries" (15).

III. So, one outcome of this deep ecological analysis is shared by Vogel's social constructivism—anthropogenic global warming cannot bring about the end of nature. McKibben's ontological claim is false. According to Vogel this is because there is not, and effectively never has been, any nature to end; on my view this is because human beings are essentially part of a wild nature, which (for that reason) we are simply incapable of destroying. If global warming cannot cause wild nature to end as a *matter of fact*, then what becomes of McKibben's significance claim that the *idea* of nature as independent of human beings was existentially meaningful but must be abandoned in light of the fact that global warming is anthropogenic? On my view he's right, we must abandon the idea of nature as autonomous, but he is right for the wrong reason.

Still, reading McKibben leads one to believe that the loss of our idea of nature as autonomous accounts for that great sadness, for that intuition of moral horror environmentally sensitive people tend to feel about the prospect of global warming. But on my deep ecological analysis, the idea of nature as autonomous *should* be abandoned. Yet the intuition of moral horror remains. So if one accepts that anthropogenic climate change cannot be the end of wild nature but continues to experience an intuition of moral horror *as if it were* the end of nature, how (if at all) can any sense be made of this? Put baldly, my puzzle is this: just what's so bad about global warming?

Of course, many environmentalists think this is an inane question. It's so obvious, they think, anthropogenic global warming is morally odious

for many reasons. First, it's very likely to cause tremendous human suffering. If something drastic is not done soon to curb emission of greenhouse gases, warmer oceans and melting ice sheets in Greenland and Antarctica will cause sea levels to raise dramatically, enough to flood coastal cities worldwide, displacing hundreds of millions of people and upsetting the social and economic processes that would be called upon to help mitigate the suffering of these refugees. As isotherms migrate toward the poles, tropical diseases like malaria will plague societies completely unaccustomed and unprepared to deal with them. Recently, top British climate scientists predict that by 2100 one third of the planet's land surface may be affected by extreme drought, compared to only about two percent today, rendering agriculture virtually impossible (McCarthy 2006). If temperatures rise enough to trigger various positive feedback loops, such as melting vast undersea frozen methane hydrates, then, as NASA scientist James Hansen (2006) writes, "all bets are off." There is good reason to believe that unchecked global warming will cause an astonishing level of human suffering.

Further, if we grant to nonanthropocentric environmental holists that parts of the natural world such as species and ecosystems are morally considerable for their own sake, possessing some form of intrinsic moral value, global warming is obviously morally objectionable. Predictions regarding the loss of plant and animal species across the globe range from twenty to sixty percent, largely due to loss of habitat—a loss of biodiversity unprecedented since the last "mass extinction," between the Paleocene and the Eocene epochs, fifty-five million years ago. If species and ecosystems are intrinsically valuable, then it is again easy to see why global warming is obviously a moral catastrophe of the highest order.

So there is a lot wrong with anthropogenic global warming: the loss of many plant and animal species, the loss of many and perhaps unique bioregional ecosystems, and of course the concomitant sum of human suffering and injustices. All this makes global warming morally bad, and I will agree. However, my view is that the intuition of moral horror at the threat of global warming feels as though something *even more* were at stake. Putting aside McKibben's objectionable dualism, his *moral intuition* was right: global warming is fearful as *if it were* the very end of nature.

Consider an analogy with a nuclear holocaust, or more specifically, a

contrast between nuclear and conventional weapons.⁴ Someday in the distant future, we may be in a position to know the sum of all the ecological and human disaster caused by anthropogenic climate change. Now consider the possibility these same consequences, or similar ones, were brought about by what I'll call conventional means, that is, by means *other* than global climate change. This seems possible—we are busy driving untold numbers of species into extinction and destroying many irreplaceable but regional ecosystems by means other than changing the atmosphere. And of course humans are able to more directly bring great suffering to bear upon other human beings. Suppose we were to cause all of this suffering, injustice, and destruction without altering the basic dynamic equilibrium of the global biosphere. Now, do we feel the same sense of moral horror? Do we have the same intuition, that is, as if it were the very end of the world? I submit the answer is “no.” By hypothesis, the consequences in terms of human suffering and injustice, on one hand, and the loss of species and ecosystems, on the other, are the same but the sense of moral horror is not. There is a gap. Global warming is something analogous to warfare by means of nuclear, rather than conventional, weapons. If this is right, then the question is a sensible one: apart from the obvious, i.e., bad consequences and injustices, what's so bad about global warming?

It may be that the global warming/nuclear weapon analogy goes further. Of course, nuclear versus conventional warfare commits us to radioactive fallout and contamination. Maybe causing human suffering and injustice, wiping out species, and destroying ecosystems by way of changing basic atmospheric conditions contains some direct analogy. I'm not an ecologist or an atmospheric scientist but neither are most of the people who share my intuition. So the missing analog, if there is one, will not fill the gap—it will not explain why many ecologically unsophisticated people fear global warming more than they would fear the equivalent human and ecological destruction by some other, more conventional means.

The project is now more focused, to find what could fill the gap between the wrongness of all the consequences and injustices of global warming and the moral horror of global warming itself. If global warming is not the end or loss of wild nature, then what exactly is it the end of? The most general descriptive answer is that increased levels of greenhouse gasses in the atmosphere are causing the loss of a particular equilibrium between the amount of radiation the Earth receives from the sun and the

quantity of energy it radiates back out into space in the form of heat. “When, for whatever reason, equilibrium is disturbed, the planet will either warm up or cool down until its temperature is once again sufficient to make the two energy streams balance out” (Kolbert 2006, 38). Greenhouse gases have the effect of limiting the amount of energy released back into space; “as a result, the Earth’s surface and its lower atmosphere need to be that much warmer before the planet can radiate out the necessary two-hundred and thirty-five watts per square meter” (39). Thus global warming is a symptom of disequilibrium caused by the increase of greenhouse gasses, which are released into the atmosphere by human consumption of fossil fuels for energy. Human activity is causing the loss of what I’ll call the present equilibrium of the atmosphere (PEA).

If the PEA is valuable or we value the PEA, then its loss may fill the gap, thus providing the explanation we are looking for. What kind of value could we attribute to the PEA? Suppose first that the PEA has only an instrumental value—it provides a necessary background condition for the well being of all the individual living things adapted to live within the various bioregional ecosystems that it makes possible. But it is difficult to accept that the PEA has only instrumental value so long as we have the intuition that there is something worse about global warming than accomplishment of the same consequences, in terms of human suffering and environmental degradation, by other more conventional means. If its value were only instrumental, its worth measured only in terms of sustaining the well-being of other life, then we would not expect there to be a gap between the wrongness of the consequences of global warming and global warming itself. If we were to lose the goods for which the PEA is a necessary condition, then we have no reason to value the PEA instrumentally, in which case its loss could not explain our extra anxiety.

Here environmental ethicists tend to consider that perhaps the PEA has some sort of intrinsic value. Let’s consider three distinct senses of the term “intrinsic value,” which nonetheless often are run together in the literature (O’Neill 1992). First, an object may be said to have intrinsic value in the sense that its value supervenes only on the object’s non-relational properties. This sense of intrinsic value is properly contrasted with a notion of extrinsic value. There are at least three things counting against the idea that the PEA has intrinsic value in this sense. For one, it just does not seem we value the PEA on account of its non-relational

properties. Rather we value this general range of atmospheric conditions, this particular dynamic equilibrium of the biosphere, as our home, as *our* world. If we value the PEA this way, its value does not supervene only on its non-relational properties and it cannot be intrinsically valuable in this sense. Second, if something, X, has an intrinsic value that supervenes only on its intrinsic properties, then X should be replaceable, without loss, by an identical duplicate, Y, with the same intrinsic properties. Thus, if the value of the PEA were intrinsic in this sense, there should be no grounds for objecting to a Twin Earth, numerically distinct but otherwise qualitatively identical to our own Earth. Each of us, in this case, along with every thing on Earth is destroyed but replaced with identical duplicates, within an atmosphere that somehow is not undergoing radical change due to anthropogenic forcings. But if the original Earth has a *unique* value to us because of its spatio-temporal history, one that cannot be replaced by a qualitatively identical duplicate, then the conditions constituting the PEA do not have intrinsic value in this sense.

Third, reasons for believing that greenhouse gasses are connected to an increase in mean global temperature involves thinking on a geological time scale; the evidence of correlations between greenhouse gasses and global temperatures is found in a geological record that stretches back hundreds of millions of years. This record reveals that in the course of the history of life on Earth there have been several different atmospheric equilibria and corresponding ranges of mean global temperature. From this temporal perspective it is difficult to understand why the atmospheric equilibrium that has characterized the environment during the history of human beings so far could possess any value that would not be replaced *without loss* by the succeeding equilibrium, if that value were not somehow dependent on the existence of human beings, and thus extrinsic. If, from an objective “view from nowhere” there could be no more intrinsic value to one atmospheric equilibrium than another, it seems implausible that the transition currently underway from one equilibrium to the next could supply the grounds for a moral objection based on the loss of the PEA.

This consideration leads into a second sense in which “intrinsic value” is used in the literature: saying something has intrinsic value involves the assertion that its value is objective, that it possesses its evaluative properties independently of any evaluators and acts of subjective valuation.

O'Neill (1992) distinguishes two readings of this crucial last clause: "(1) the evaluative properties of objects are properties that exist in the absence of evaluating agents (weak interpretation), (2) the evaluative properties of objects can be characterized without reference to evaluating agents (strong interpretation)." The paradigmatic cases of objective evaluative properties in the strong sense come from biology, in which various things are said to be "good for" or for the "good of" a particular living thing, promoting or conducive to its flourishing according to norms derived from a species-specific form of life. In order to characterize the conditions of flourishing, one need make no reference, even counterfactually, to the experiences of an evaluator. Some biological systems, such as individual living organisms, are rightly characterized in terms of natural teleology and thus possess intrinsic value in the strong sense of objective value. While no one would mistake the present conditions of Earth's atmosphere for an individual living thing, some environmental ethicists have attributed intrinsic value, in this sense of strong objective value, to collections of living things such as species and ecosystems. Along these lines one may think that the basic physical conditions of the Earth's atmosphere constitute a megacosystem comprised of all the smaller, regional ecosystems that make up the whole biosphere. But Cahen (1990) has argued that while some ecosystems exhibit properties that suggest goal-directedness, such as stability and resilience, these are not in fact systematic goals of an ecosystem itself but only byproducts of the goal-directed, individual living organisms which are its inhabitants. In short, individual or bioregional ecosystems are not teleological systems and thus cannot possess intrinsic value in this strong objective sense. If local ecosystems are not genuinely teleological systems, then on what grounds could we attribute goal directedness to the whole climate system? One of the world's leading climate scientists, Wallace Broecker (1995) wrote, "The paleoclimate record shouts out to us that, far from being self-stabilizing, the Earth's climate system is an ornery beast which overreacts even to small nudges." Without a natural teleology, it remains implausible to attribute intrinsic value, in the strong sense of possessing evaluative properties objectively, to the PEA.

Lastly, something may be said to have intrinsic value in the sense that it has value as an end-in-itself, a non-instrumental or final value. The paradigm of non-instrumental value is found in the Kantian conception of a rational person, which, of course, will have no analog in a mere physical

state of the Earth's atmospheric system. Of course, the physical condition of the earth's atmosphere does not share any of the properties for which we attribute human persons valued as ends in themselves. From a subjective perspective, it is just implausible to think we value the conditions that maintain the PEA for their own sake. The basic atmospheric conditions that characterize our planet are not valued merely for their own sake nor, as I argued above, are they intrinsically valuable in other senses of the term, that is, objectively or in virtue of their non-relational properties. At the same time, neither are they valued only instrumentally. So we reach a kind of impasse.

If the preceding considerations are right, the phenomena of global warming presents a moral problem about the environment that is not well suited for articulation in the axiological categories of instrumental and intrinsic value. Thus, I believe that thinking about the moral problems of global warming can provide support for the critique of the role that the concept intrinsic value is supposed to play in environmental ethics, a critique pursued in one form or another by environmental pragmatists such as Anthony Weston, Bryan Norton, and Andrew Light. "Pragmatism insists," writes Weston, "most centrally on the *interrelatedness* of our values...[it] offers, metaphorically at least, a kind of 'ecology' of values" (1996, 285).

Environmental pragmatism is connected with a rejection of value monism, embracing instead value pluralism, "in which many different kinds of value, and many different sources of value, can be recognized as serious and deep without requiring further reduction to some single" concept of intrinsic value in nature (Weston 1996, 286).⁵ We are encouraged to think of values in a holistic way that undercuts, Weston claims, the very center of the traditional notion of intrinsic value (Weston 1996, 293). The central difficulty facing intrinsic value theorists is that while nature certainly *is* valued as more than a resource, possessing something more than mere instrumental value, those other and quite important ways nature is valued or is valuable resist conceptual reduction into a single, or monistic, form. So exactly what additional kinds of moral conceptions of nature could be part of the web of values making intelligible the horror and anxiety we feel based on a moral intuition that anthropocentric global warming is something like the very end of the natural world? I will bring my discussion to a close with the consideration of three possible answers to this question, the last two involving notions of moral responsibility.

Consider the idea that the PEA, as a background condition of the world that we know, has what might be called “constitutive value” connected with our identity as individual persons, as members of a culture, and as members of our species. One’s identity—whether as an individual, a member of a culture, or as a human being—is partly constituted by the particular places of the world they inhabit, and our world depends upon the PEA. Expressing this idea, O’Neill, Holland, and Light (2008) write that,

An individual’s identity, their sense of who they are, is partly constituted by their sense of belonging to particular places. Particular places, whether ‘natural’ woodlands, streams and ponds, or ‘urban’ city streets, parks and quarries, matter to individuals because they embody the history of their lives and those of the communities to which they belong. Their disappearance involves a sense of loss of something real in their lives. The argument then runs that if one treats individuals as having an identity that is prior to and independent of such attachments one will not be properly able to capture this dimension of environmental concern (39).

Another quote from the same source:

[W]e do not only live from nature, but also in it and with it. Environments form a central component in the identities of individuals. Particular places matter to individuals in virtue of embodying their history and cultural identities and this is why their loss is felt so acutely. The loss of forests, the damming of rivers with the subsequent flooding of villages and their natural setting, the disappearance of particular economically and biologically insignificant places, ‘natural’ and ‘urban’, the displacement of populations to make ‘nature reserves’—all matter because they embody in a physical way the identity of individuals and the communities to which they belong. Their loss involves the loss of a way of life. Individuals feel a loss of something integral to their lives. To say this is not to deny the desirability of change, even radical change: it is to say that the nature of such changes and of the transition to new ways of life matters. Environments are not just of instrumental value, or a physical precondition of human life: individuals’ identities, their sense of who they are, is partly constituted by their sense of belonging to particular places (66).

Next, recall the analogy I suggested between global warming and nuclear weapons. The objectionable outcome in terms of human suffering and injustices, as well as the loss of species and ecosystems, seemed morally

worse when caused by global warming rather than when we imagined the same outcome effected by conventional means. Notice that when environmental harm is done by conventional means, the causes are widespread and diverse—air pollution here comes from that factory there, loss of this fish species results from the deregulation of that fishing industry or the popularity of this food, cultural norms change, average house size grows and houses require more energy to heat or cool, etc. The causal factors behind conventional environmental damage are diffuse, originating in many disparate parts of the landscape of modern life. However, when the same environmental damage can all be tied to a common causal factor, namely, global warming, I suggest that this highlights our sense of culpability; when all the environmental damage can be connected to single causal factor, the reality of our collective responsibility becomes salient in a way that otherwise is not possible.⁶ Dale Jamieson and others have noted that moral issues connected with global warming can be confusing because no one individual or event is responsible for the destruction of the global environment. I am claiming that since the cause of this destruction can be coherently framed under the single description of global warming, our ability to recognize that we are responsible is heightened in a way that explains why we would have the moral intuition that global warming was somehow the end of the world. It allows us to form an appropriate sense that we really are responsible.

My final point is connected. Consider a Baconian conception of the scientific enterprise: to dominate and subdue nature in the service of human ends. For all of human history the natural world has set the background conditions for life, largely conditions over which we have had no control. Thus scientific knowledge of the natural world was prized for the power it allowed us to exercise over nature. But with control comes responsibility. Meteorological events were something over which we seemed to have no influence, and certainly no control. These acts of nature or, for some, acts of God, were helpful or harmful to us but were certainly not our responsibility. But this has changed. We now know that the fundamental conditions of the biosphere are something that, collectively, we are responsible for. Science and technology have enabled us to wrest some control over nature but this has now come at the cost of being responsible for far more than we ever bargained for. I believe that at least part of the intuition of moral horror that we feel about anthropogenic global climate

change is existential angst over the burden of this responsibility. We valued not being responsible for conditions of the natural environment and we have lost what we valued. Our anxiety, I believe, is over our loss of innocence. We don't fear the *end of the natural world*; we fear *responsibility for the natural world*.

Being anxious over our responsibility for global warming is appropriate and good. I have argued that McKibben's ontological claim, that anthropogenic global climate change is the end of nature, is mistaken. At the same time, it remains true that there is no corner of the globe, no feature of our biosphere, which escapes the influence of human activity. Whether we accept it or not, human beings now shoulder the responsibility of planetary management; once the planet was larger than us, but it no longer is. Collectively, our activities play a significant role in determining the basic conditions under which all terrestrial life carries on. Given our responsibility, a certain level of anxiety is appropriate because this is an awesome responsibility. Consider an analogy that is sure to raise the hackles of some: the fundamental responsibility that parents bear toward children. This responsibility does not arise from specific roles in the child's genesis, for adoptive parents bear it just as well. It is the responsibility of enabling the child to be and become a flourishing human being. Things do not bode well for the child whose parents are not anxious in the face of their responsibility, let alone ignorant of the fact that they bear it. The view I have defended finds that part of our trepidation over global warming arises from what may be the unwelcome recognition that humanity now bears an awesome responsibility for the flourishing of life on Earth and recognizing that this anxiety bodes well for humanity is how I learned to stop worrying and love global warming.

NOTES

1. An analogy between global warming and a nuclear holocaust can be instructive and I will return to it later. One difference, however, is that the later hasn't happened yet. See (Cerutti 2007).
2. Here is the argument: (1) Human beings have drastically changed the composition of the Earth's atmosphere, adding significant amounts of carbon dioxide (CO₂), chlorofluorocarbons (CFC), and other particulate pollutants (including ashes and sulfates). (2) We have changed the atmosphere, which changes the weather. (3) If we change the weather, we thereby make every spot on Earth man-made or artificial (at least to some extent). (4) Thus, we deprive nature of its independence and this is fatal to its meaning. ("Nature's independence

is its meaning,” writes McKibben (1989), “without it there is nothing but us.” (58) (5) Thus, we have come to the end of nature; we live in a post-natural world.

3. Pamela Mack, “A Forest in the Shadow of Nuclear Weapons Production: The Forest Service at the Savannah River Site,” unpublished manuscript: 7, (May 21, 2007).
4. Stephen Satris brought this analogy to my attention.
5. To be clear, environmental pragmatists tend to methodologically embrace value pluralism but one need not be a pragmatist to do so. So, my arguments against value monism indirectly support environmental pragmatists who are pluralists.
6. This is not to deny that the phenomena of global climate change are caused by an increase of greenhouse gases in the atmosphere, which is caused by many and diverse individual acts, such as leaving the lights on, a diet rich in meats, etc. The point is that many bad environmental consequences can (rightly or wrongly) be attributed to a single factor, namely global warming. This point remains even though many things are contributory causes to global warming.

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