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Environmental Ethics in the Anthropocene

L'éthique de l'environnement à l'âge de l'anthropocène

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Introduction

- 1 Crafting an environmental ethic in (or for) a new unit of geologic time is utterly without precedent. As a topic of inquiry in philosophy, ethics was first pursued by the Presocratic philosophers, and, shortly after them, by Socrates and then more systematically by Plato and Aristotle. Their world, by comparison with ours, was much smaller in both space and time. The Greek philosophers knew nothing of China or any other region east of the Indus River, north of the Danube, west of the Straits of Gibraltar, and south of the cataracts of the Nile. They knew nothing of geologic time. And until this century, moral philosophers never imagined that they might be crossing a boundary in geologic time that would call for rethinking environmental ethics from the ground up. Therefore, crafting an Anthropocenic environmental ethic is a thoroughly speculative undertaking. The last thing it could be is an exercise in applied ethics. If we live in a wholly new unit, not merely of historical time, but of geologic time, no off-the-shelf ethic developed in the 20th century will be applicable in such radically changed circumstances. That we have now crossed a boundary in geologic time, however, remains controversial.
- 2 Maybe we haven't; the existence of a new Anthropocene epoch has not been affirmed by the International Commission on Stratigraphy (ICS) and the International Union of Geological Sciences. Complicating the issue, on 19 July 2018 the ICS divided the Holocene into three new ages: the Greenlandian (11,700-8,200 BP), the Northgrippian (8,200-4,200 BP) and the Meghalayan (4,200 BP-present). However, this turn of stratigraphic events has not captured the popular imagination and the Anthropocene debate rages on, quite independently of the niceties of stratigraphy. But whether or not the Anthropocene has arrived, the question itself forces us to think about environmental ethics for the first time

in the context of geologic time. So whether we are officially entering a new epoch, or not, environmental ethics is due for an overhaul.

- 3 Ethics are scale dependent, temporally as well as spatially. The virtue of filial piety, for example, is narrowly scaled to the family unit (which once was geographically localized), but fairly widely scaled temporally over several generations. The virtue of patriotism is scaled to the size and duration of the nation state, while human rights are scaled much more expansively—world-wide to all human beings, those living now and (albeit not without qualification) those living in the future. Aldo Leopold, a seminal figure in environmental ethics, indicated the spatial and temporal scales of his ‘land ethic,’ when he imaginatively explored “thinking like a mountain.”¹ And, with the land ethic, he expanded the set of the moral patients to include “soils, waters, plants and animals, or collectively: the land”.²
- 4 In crafting an environmental ethic in the context of geologic time, to specify the spatial and temporal scales that frame it is crucial. Again, the Aldo Leopold land ethic may serve as a referential point of departure for dealing with that problem. Preserving “the integrity, stability, and beauty of the biotic community” (an ecological unit consisting of soils, waters, plants, and animals) is the goal of the land ethic. Biotic communities are localized spatially—a forest here, a prairie there, a wetland yonder.³ The temporal scale of biotic-community dynamics may be calibrated in terms of such ecological phenomena as succession and disturbance regimes—that is, in decades and centuries. And that, for Leopold, was thinking like a mountain. If the Leopold land ethic is a reliable guide, specifying the spatial and temporal scales of an Anthropocenic environmental ethic will depend on the goal (or goals) of such an ethic. This much, however, is initially clear: The spatial scale of an Anthropocenic environmental ethic is obviously global; and geologic temporal scales are orders of magnitude greater than ecologic.
- 5 Further, moral agents and patients must be scaled up in proportion to the expansive spatial and temporal scales of an Anthropocenic environmental ethic. In the animal-rights ethic, moral patients are individual animals that meet rights-holding criteria, while moral agents are individual human beings, but also collective institutions, such as zoos, universities, and pharmaceutical companies that conduct research on animal subjects. The moral patient of the non-anthropocentric conservation ethic, espoused by the Society for Conservation Biology, is biodiversity, which is not even a holistic or collective thing, but an abstraction consisting of variety throughout the hierarchy of biological organization from genes to populations, to species (and higher taxa), to ecosystems, landscapes, and biomes.⁴
- 6 For reasons that will be advanced in the body of this article, the integrity and stability of human civilization is what is at stake in the Anthropocene; and the preservation of its integrity and stability should be a principal goal of an Anthropocenic environmental ethic. Accordingly, the principal moral patient of an Anthropocenic environmental ethic is the Holocene climate, the preservation of which is a necessary condition for the continuation of global civilization. And the principal moral agents are governmental parties to conventions and treaties aimed at preserving and/or restoring the Holocene climate. In other words, Anthropocenic environmental ethics and what is now known as climate ethics are one and the same.
- 7 To begin, let us come to grips with this thing called the Anthropocene in and for which we are crafting an environmental ethic. More precisely determining its temporal and spatial parameters is the first order of business.

Man Is the Measure or Putting the Anthropocene in Temporal Perspective

- 8 “Of all things (*pantōn chrēmātōn*), the measure (*metron*) is man (*anthrōpon*),” said Protagoras (an elder contemporary of Socrates), “of things that are that they are, of things that are not, that they are not.”⁵ These lines are quoted by Plato in whose dialogues we find the first extant fragments of Protagoras’s writings. Going all the way back to Plato himself, this famous sentence has been taken to affirm a radical relativism. Sextus Empiricus, who lived about half a millennium after Plato, quotes the same lines, and identifies them as the first sentence of a book by Protagoras titled *Refutations*. Here’s how Sextus interprets Protagoras: “he says all appearances and opinions are true, and truth is relative, because everything that appears or seems to someone really exists for him.”⁶ Taken that way, the words of Protagoras—echoing down to us two and half millennia after they were first uttered—seem prophetic. Across the political spectrum, we live in a post-fact and post-truth epistemic environment. On the left, postmodernism and science studies have deconstructed the “master narratives” of science and Enlightenment values. And politicians and their re-tweeters on the right feel entitled not only to their own opinions but also to their own “alternative facts.”
- 9 There might, however, be another way to take this dictum of Protagoras. Humans measure things—literally measure them—in reference to themselves.⁷ For example, in the imperial and US customary systems of measurement, a foot is, as the name suggests, the average length of a human foot. An inch, $1/12^{\text{th}}$ of a foot, is the average width of a human thumb. A second is $1/60^{\text{th}}$ of a minute and, not accidentally, the optimum rate at which a resting human heart beats.
- 10 In another dialogue (*Protagoras* 356C-357B), Plato turns measurement against appearance. On the popular assumption that pleasure = good and pain = bad, Plato’s character Socrates notes that “things of the same size appear larger when seen at hand and smaller when seen from a distance.”⁸ Therefore, if “our salvation depends on the right choice of pleasures and pains, be they more or fewer, greater or lesser, farther or nearer, what would be our salvation in life? Would it be the art of measurement (*metrētikē technē*) or the power of appearance (*phainomenou dynamis*)? Doesn’t our salvation seem, first of all, to be measurement (*metrētikē*), which is the study of relative excess and deficiency and equality.”⁹
- 11 Have we really entered a new geologic epoch, the Anthropocene? One way to begin to answer that question is to take account of how things appear when farther or nearer, not just in space but also in time. In the nomenclature of geologic time an epoch is longer than an age and shorter than a period. We are said to live in the Holocene epoch—at least until very recently—of the Quaternary period, which began about 2.5 million years ago, in the Cenozoic era (International Commission on Stratigraphy 2013-2014). The Quaternary is divided into two epochs, the Pleistocene being the other one. The Holocene—formed from Greek words together meaning “entirely recent”—epoch is usually dated from about 12,000 years ago and represents about .005% of the Quaternary period. Because it is “seen at hand” that .005% of the Quaternary seems to loom sufficiently great in duration as to be comparable to the 99.995% of the rest of the period. Else why call it an epoch, the same temporal designation denominating the Pleistocene? In view of this disparity, the recent

division of the Holocene into three ages appears—by the light Plato shines on the matter—to be ridiculous. No wonder recent news from the ICS that we now live in the Meghalayan “age” of the Holocene “epoch” has been met with a collective yawn.

- 12 The species *Homo sapiens* has been around for at most 300,000 years; and *Homo sapiens* became a globally distributed species when humans arrived in the Western Hemisphere sometime around 15,000 years ago.¹⁰ During just what millennium that happened remains a matter of heated controversy, but it would be fair to say that it was entirely recently in geologic measures of time. And that leaves out of consideration the human colonization of the Polynesian Pacific islands, which began only some 5,000 years ago and was completed with the peopling of the Hawaiian archipelago about 1,500 years ago.
- 13 Those who claim that we have entered a new geologic epoch—the Anthropocene (“human-recent”)—debate at what point in time to establish the boundary between the Holocene and the Anthropocene.¹¹ Should it be dated at the start of the industrial revolution, when, about 300 years ago, humans began to significantly change the chemistry of the atmosphere and hydrosphere? Or should the start date be the 1950s, when, less than a century ago, long-lived radioactive isotopes, such as technetium-99, created in atom bombs, began to register in the stratigraphic record?
- 14 Heed again Plato’s observation: “things of the same size appear larger when seen at hand and smaller when seen from a distance.”¹² Pleistocene glaciation is driven by the Milankovitch cycles of changes in the Earth’s orbit and tilt.¹³ For that reason, the near-to-hand Holocene “epoch” is almost certainly only a glacial interstadial of the Pleistocene—which is truly an epoch—and is thus not itself an epoch at all. Those sober geologists and glaciologists who do heed Plato’s observation call it the Flandrian age.¹⁴ So, to avoid both confusion as well as controversy, let’s just call it “the Holocene” without specifying a geologic temporal unit.
- 15 And, for us, it seems, the mere 75-300-year-old thing called the Anthropocene certainly appears larger than anything of the same temporal span in Earth’s 3.5-billion-year-old biography. Located on the geologic time scale, any past temporal span of similar magnitude escapes the resolution of our methods of dating. Indeed, even the start and end times of the Holocene Climatic Optimum cannot be dated within a 75-300-year margin of error. Whether he was serious or not, Heraclitus, a Presocratic philosopher, said that the sun is the size of a man’s foot. We can be pretty sure that Anaxagoras, another Presocratic philosopher, was serious when he declared that the sun was about the size of the Peloponnesian Peninsula. Are we at risk of holding equally laughable opinions, distorted by temporal foreshortening, when we proclaim the advent of the Anthropocene epoch? Epoch! So, per the suggestion regarding the Holocene, let’s just call it the Anthropocene without specifying a geological temporal unit.

Spatial and Temporal Bounds of Ethics

- 16 Particular ethics—the land ethic, the human-rights ethic—are not only scale dependent, temporally as well as spatially, but ethics in general is spatially and temporally bounded. To get a feel for how it is spatially and temporally bounded consider the following illustrations.
- 17 First, consider the spatial bound of environmental ethics. The concept of a land ethic may, for one reason or another, be incoherent, but it is not unintelligible. It may be false

that “a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community,” but at least the claim is sufficiently understandable as to be contestable.¹⁵ The concept of a sun ethic, by contrast, is unintelligible. What would it even mean to suggest that a thing is right when it tends to preserve the integrity, stability, and beauty of the sun? There is nothing we can do that affects the sun at all or in any way. Most expansively, environmental ethics is spatially bounded not just by the Earth but by the relatively thin liminal region above and below the Earth’s surface—from the Challenger-Deep depths of the Ocean to the Kármán-line height of the atmosphere. That, altogether, amounts to less than 2% of the Earth’s radius.

- 18 As to the outer temporal bound, consider the following two illustrations. First, after the five previous mass extinction events, biodiversity fully recovered and indeed exceeded its previous magnitude. Yes, it took several million years for biodiversity to bounce back, but it did bounce back. If that pattern holds, biodiversity will eventually reach and then exceed its current magnitude. Therefore, why should we think that there is anything morally wrong with the current rapid rate of biodiversity loss? Because ethics is calibrated on a human, not a geologic, temporal scale. The science of conservation biology was founded on a moral imperative: that biodiversity has intrinsic value.¹⁶ Nor is that moral imperative incoherent because biodiversity will eventually recover after the current mass extinction event has run its course. Second, and much more down scale, why should we think that there is any ethical reason to be concerned about global warming and the climate change that it entrains? Thanks to the aforementioned Milankovitch cycles, the Earth is destined to experience another ice age. Thus global warming caused by CO₂ accumulation in the atmosphere will eventually be offset by the Earth’s orbital variation—sometime between 25,000 and 50,000 years hence.¹⁷ That interval still exceeds the human temporal scale of ethics. If humankind is not the measure of things that are and are not, humankind is more plausibly the measure of right and wrong, good and evil. And global climate change is routinely characterized as of grave moral concern.
- 19 Moral concern also diminishes, it seems, as its objects recede into the distances of space and time. Consider the following two illustrations. First, the extinction of the passenger pigeon, the Carolina parakeet, and the ivory-billed woodpecker are duly lamented and mourned. Indeed, the extinction of the passenger pigeon elicited a poignant essay, “On a Monument to the Pigeon” by Aldo Leopold.¹⁸ And there is a great deal of genuinely moral concern for the threatened extinction of the African elephant and the blue whale, respectively the largest extant land and marine mammals. But these and other 20th-century extinctions pale in comparison with the magnitude of species extinction at the beginning of the Holocene in North America and across Eurasia and Australia in the very late Pleistocene.¹⁹ And yet no poignant odes to the dire wolf or the giant sloth adorn the literature of environmental ethics. Second, the European episode of genocide in the mid-20th century—looming so large that it is simply known as “the Holocaust”—is almost universally denounced as an unspeakable evil. Those equally horrific episodes of genocide in the more distant human past, however, take their places as but dispassionate facts among other such facts of ancient history. As to distance in space, only a few decades before the extermination of six million Jews by the Germans in Europe there occurred the extermination of one and half million Armenians by the Turks in Asia.²⁰ There seems to be little awareness and comparatively little moral outrage in the West directed to that episode of genocide.

The Holocene Climate and Anthropocenic Environmental ethics

- 20 Taking the correct measure of the Anthropocene (literally “human recent”) is the first step in ascertaining the temporal bounds of Anthropocenic environmental ethics. Doing so, to echo Plato, may put us on the road to salvation. We *Homo sapiens* evolved in Africa during the approximately 100,000-year-long ice age prior to the most recent one; and we spilled out of Africa during the most recent ice age, which also lasted for approximately 100,000 years. Toward the latter half of that geologic age, *Homo sapiens* had peopled the Australian as well as the Eurasian continent. And as noted, *Homo sapiens* became a globally distributed species only about 15,000 years ago as the last ice age was ending and the Holocene (age) was beginning.
- 21 The climate during the Holocene was remarkably favorable to the human species, just as it was unfavorable to the now-extinct mammoths, mastodons, short-faced bears, and other extinct species of Pleistocene megafauna. It enabled humans to abandon foraging for a living and develop settled agriculture, which started up almost as soon as the Holocene kicked in full tilt. Settled agriculture enabled humans to live in cities. Living in cities fostered a division of labor. Accordingly, there emerged various specialized artisans, artists, commercial classes, priesthoods, and politicians. In short, we owe the existence of human civilization—with its graphic, poetic, and musical arts; its philosophies and sciences; its technologies; its politics; and its economies—to the Holocene climate.
- 22 In sum and in short, consider the near coincidence of the following phenomena: (i) the global spread of *Homo sapiens*; (ii) the extinction of the Pleistocene megafauna in the Western Hemisphere; (iii) the advent of the Holocene; (iv/a) the shift from foraging to settled agriculture and (iv/b) plant and animal domestication; and (v) the rise of civilizations. In light of this cluster of phenomena, the “Anthropocene” might be considered to be just an alternative name for the Holocene. Or to put the point another way: in the debate about when the Anthropocene began, one plausible hypothesis is that it began at the beginning of the Holocene. As to a stratigraphic signal that the Anthropocene began 15,000 years ago, how about the sudden appearance of anthropogenic species (the fossil remains of domesticated plants and animals) following a wave of extinctions of wild animals in the wake of the human diaspora? This boundary marker is less controversial than the Ruddiman Hypothesis, according to which greenhouse-gas-driven climate change began with the Neolithic revolution and, therefore, also then began the Anthropocene.²¹
- 23 Whether the Anthropocene is an epoch, an age, another name for the Holocene, or a Heraclitean/Anaxagorean failure of measurement and perspective, there is overwhelming evidence that collective human activities are changing the Holocene climate and heading it toward climatic conditions that have not existed on Earth since the middle of the Burdigalian age of the Miocene (literally “less recent”) epoch of the Neogene period, about twenty million years ago. It stands to reason that if the Holocene climate gave rise to human civilizations, now merged into a single civilization of global scope, profound disruption of the Holocene climate will lead to the collapse of that civilization.

- 24 Concurrent with the present slight disruption of the Holocene climate is the proliferation of failed states. Environmental degradation, exacerbated by the effects of climate change, is a major cause of state failure.²² What human life is like in those failed states paints a grim picture of what awaits everyone after a climatic threshold is crossed and global civilization completely collapses. Whether the Anthropocene is coincident with the Holocene, or not, the first imperative of an Anthropocenic environmental ethic is to preserve the Holocene climate. In other words, focusing on saving planetary conditions that are humanly optimal and that can support a sustainable and peaceable global economy should be the goal of an Anthropocenic environmental ethic.

Anthropocenic Environmental Ethics Should Be Anthropocentric

- 25 Not surprisingly, Anthropocenic environmental ethics should be anthropocentric—for five reasons.
- 26 First, the very concept of an Anthropocene epoch is brazenly anthropocentric, practically by definition. It arrogates to our own species the power to shape the planet on geologic temporal scales. If the hubris of its implicit sunny optimism is not self-evident, consider an equally credible—if not more credible—expression of dark pessimism. At the beginning of 2017 the Science and Security Board of the Bulletin of Atomic Scientists moved their Doomsday Clock up thirty seconds to two and a half minutes before midnight.²³ In addition to an impotent international response to the existential threat posed by global climate change, a worldwide rise of xenophobic and bellicose nationalism and a cavalier attitude toward the use nuclear weapons on the part of the person inaugurated that year as President of the United States precipitated the change. With the nuclear and climatological swords of Damocles hanging perilously over our heads, surely our first priority should be our own survival and wellbeing as a species.
- 27 Second, non-anthropocentric pre-Anthropocenic environmental ethics have had little success in curbing the extinction of species and preventing the erosion of biodiversity more generally, or in halting and reversing ecological dysfunction. Furthermore, those non-anthropocentric environmental ethics were largely crafted before environmental philosophers became alarmed, first in the early 1990s, by the prospect of global climate change.
- 28 Third, the distinction between humans and nature is increasingly blurry, which is a major tenet of the proponents of the Anthropocene.²⁴ At about the same time that environmental philosophers became alarmed by the prospect of global climate change, they also began to debunk the wilderness myth.²⁵ According to that myth, the so-called New World was a hemisphere-sized wilderness in which, as David Brower famously quipped, “the hand of man had not set foot”.²⁶ There was, however, a truth inconvenient to the wilderness idea. There were humans in the Western hemisphere long before, in the words of Robert Marshall, “Columbus effected his immortal debarkation.”²⁷ Those indigenous Americans, Marshall and other wilderness-preservationists surmised, were too few, too technologically ineffectual, and too environmentally ethical to have had a significant impact on New-World natural conditions—which, therefore, remained all but pristine. We now know differently. Estimates of American Indian populations at the moment when Columbus effected his immortal debarkation have been upped by an order

of magnitude since Marshall wrote those fatuous words. Perhaps most dramatically, the aforementioned extinction of the Pleistocene megafauna testifies to the transformative power of Paleolithic technologies. The magnitude of the extinctions coeval with, or a couple millennia after, the arrival of *Homo sapiens* in the Western hemisphere is astounding—45 of 51 genera of large mammals in North America and 58 of 71 in South America.²⁸ Those technologies, in tandem with deliberately set fire, have for many centuries past rendered ecosystems the world over anthropogenic to one degree or another.

- 29 Fourth, the prospect of cataclysmic climate change both eclipses and entrains all other environmental concerns. A world no longer hospitable to our own species will no longer be hospitable to many of our “fellow-voyagers . . . in the odyssey of evolution,” to quote Aldo Leopold yet again.²⁹ Species extinction and the erosion of biodiversity more generally are exacerbated by global climate change. We, and our fellow voyagers in the odyssey of evolution, are all in the same boat. If we manage to head off cataclysmic climate change we at least will be vouchsafing the necessary condition for their survival as well as ours. An efficacious anthropocentric climate ethic may not be sufficient to stanch the progress of the sixth mass extinction event in Earth’s life history. A general moral philosophy theoretically uniting (i) an anthropocentric focus on climate stabilization and ecosystem services with (ii) non-anthropocentric land ethics and (iii) animal ethics may be required for that happy outcome to be possible.³⁰
- 30 Fifth, non-anthropocentric climate-ethics rhetoric has become not only maudlin, but itself witlessly arrogant. We often hear that the “planet has a fever” or even that the “planet is dying” and we *Homo sapiens* are the pathogens or carcinogens that are making it sick or killing it.³¹ Planet Earth has undergone far greater changes than any foreseeable climate change that we are inducing. And after each it has come out the better for it.³² Life survived the greatest atmospheric pollution event in the planet’s biography 2.3 billion years ago when oxygen began to accumulate in the atmosphere. That augured the appearance aerobic organisms that could metabolize oxygen—thus opening up still wider evolutionary opportunities. The Great Oxygenation was followed by several episodes of near total glaciation, also entraining extinctions. The Earth has also undergone episodes of hyper-volcanism resulting in molten basalt floods and sulfuric acid emissions. And it has suffered major meteor impacts and gamma-ray bursts from nearby supernovas. And yet, here we are on a very healthy planet. The Earth is in no danger from us; but we are from it, if we significantly disrupt the climate that has been especially good for us.³³
- 31 In the absence of an efficacious Anthropocenic environmental ethic, the future looks bleak—both for us *Homo sapiens* and for our fellow voyagers in the odyssey of evolution. Episodes of mass extinction often mark the boundary between geologic units of time. If, a million years hence, there are any paleontologists, human or otherwise, they will see a boundary marked by a sixth mass extinction event, spanning a sliver of geologic time, beginning with the diaspora of *Homo sapiens* out of Africa. They will also see a sudden spike in atmospheric CO₂ and in global mean temperature. On the future side of that boundary will lie another epoch. But it won’t be called the Anthropocene if *Homo sapiens* will have been lost in the shipwreck along with our fellow voyagers. Only with the guidance of a universally persuasive and efficacious environmental ethic can we avoid the worst-case (or, at least, very-bad-case) future scenario and make the now only dawning Anthropocene actually endure, by that name, in geologic measures of time.

Spatial and Temporal Parameters of Climate Ethics

- 32 One difference between environmental policies focused on such things as clean air and water and those focused on mitigating climate change is a matter of spatial and temporal scale.
- 33 While the atmosphere and the hydrosphere are spatially global, they may be regionally partitioned for purposes of regional environmental protection. Thus the air in the region of Brussels, Belgium may be relatively clean, thanks to EU environmental regulations, while that in the region of Beijing, China may not be, thanks to lax or laxly enforced Chinese environmental regulations. And so also with clean water. To be sure, the effects of global climate change are not uniform in all regions of the globe. Warming, for example, is greater in the arctic than elsewhere. The climate cannot, however, be regionally partitioned for purposes of regional climate mitigation. Warming, for example, cannot be checked in the Canadian arctic by mitigating policies put in place by the government of Canada, while it goes unchecked in the arctic territories of countries that have no such policies or, if they do, that laxly enforce them. The spatial scale of global climate change is global and thus climate ethics must be global if it is to inform and inspire international climate policy.
- 34 The effects of global climate change are presently manifest, not only in the arctic, but all over the world in the form of more intense storms, unprecedentedly frequent and voluminous rainfall and/or tidal-surge flooding, and increases in the number, duration, and intensity of droughts and associated wildfires. Sea levels have risen measurably over the 20th century and into the 21st—and at accelerating rates.³⁴ The intolerably destructive effects of global climate change, however, will not be manifest for many decades and centuries hence.
- 35 By the end of the 21st century, if no mitigating policies are implemented on a global scale, sea levels are predicted to have risen as much as two meters on average from a 1990 base line.³⁵ The largest driver of sea-level rise is melting ice on land surfaces. If all the world's terrestrial ice melted over the following centuries, sea level would rise 65 meters; and Memphis would be the major seaport on the Gulf Coast of North America.³⁶ But that's only if by then there would be any seaports in North America or anywhere else in the world in the aftermath of the attendant collapse of a global economy. The temporal scale of the effects of global climate change—sea-level rise being, perhaps, the most salient—is measured in centuries and millennia; thus climate ethics must include future generations among its moral patients.
- 36 The global spatial and protracted temporal scales of global climate change constitute corresponding parameters for a universally persuasive and efficacious climate ethic. Such an ethic cannot be culture-specific and must not exceed the temporal limits of human ethical concern. *Nota bene*: While human ethical concern may in fact be narrowly circumscribed in its spatial and temporal reach, universality may be achieved by appeal to the universally distributed human moral sentiments, in the manner sketched by David Hume (1751);³⁷ and a palpably present surrogate for distant future generations may be identified.

Mainstream Climate Ethics

- 37 Emerging in the 1990s, climate ethics has been developed mainly in the two paradigms that dominated 20th-century moral philosophy: utilitarianism and deontology.³⁸ The former determines the rightness or wrongness of human actions by their beneficial or harmful consequences. The latter determines the rightness or wrongness of human actions as they conform to or deviate from moral principles—“let the chips [consequences] fall where they may.” In both paradigms, moral agents and moral patients are individuals; and in both, reason is understood to be the wellspring of ethics. Taken together they represent an über-paradigm that might be labeled ‘rational individualism.’
- 38 In classical utilitarianism, the summum bonum was happiness, understood in terms of pleasure and pain. A moral agent should estimate the impact on all those whom such actions might affect of the several alternative courses of action that are available. And a moral agent should select that course of action which produces the greatest happiness (that is, highest ratio of pleasure to pain) for the greatest number of moral patients.³⁹
- 39 Because the concept of happiness is vague and the concepts of pleasure and pain range too widely, the summum bonum of contemporary utilitarianism is welfare understood in terms of preference satisfaction. The more preferences one can satisfy the better off one is—that is, the more well one fares. The crude “hedonic calculus,” developed by Jeremy Bentham, has been replaced, in contemporary utilitarianism, by benefit-cost analysis.⁴⁰ Such calculations of utility are rational in the most literal sense of the word, derived from “ratio,” but the principle of strict impartiality among moral patients is also derived from reason. It is contrary to reason to treat equal interests unequally—or so utilitarians claim. Thus one should not be partial to one’s own family and friends, members of one’s own race or religion, sex, gender, or other putatively irrelevant characteristics. In the name of impartiality, utilitarianism has been expressed in a non-anthropocentric form on the grounds that non-human animals also have preferences—especially in not being made to suffer unnecessarily—and interests in satisfying those preferences. Discriminating on the basis of species is as irrational as discriminating on the basis of race or religion—or so goes the argument for “animal liberation,” the utilitarian form of animal ethics.⁴¹
- 40 Classical deontology, originating with Immanuel Kant is trinitarian. There is but one moral principle, called the “categorical imperative,” expressed in three formulations. The first is Act in accordance only with those maxims that you can will to be an inviolable universal law—that is, analogous to a law of nature in regard to inviolability. Again, the source of the categorical imperative is reason. Kant’s favorite example is making a false promise, a promise that one makes intending not to keep it. Elevate that maxim —“Promise Falsely”—to an inviolable universal law, such that everyone always makes only false promises. The maxim then implodes on its own contradictoriness, and cancels itself out: If everyone always made false promises then no one would believe a promise and thus no promise would ever be made. Promise making would no more exist than circular squares. Unfailingly to keep one’s promises is what Kant calls a “perfect duty.” Suppose one wills that beneficence or charity be a universal law, but one avoids conforming oneself to that principle. One is then caught in a “contradiction of the will,” willing beneficence to be a universal law but also willing to make an exception of oneself. These are rational moral principles because they flow from the most fundamental law of reason or logic, the law of non-contradiction.⁴²

- 41 The second formulation of the categorical imperative is the one most commonly invoked: Treat all rational beings as ends in themselves withal and not as means only. Here too reason is the wellspring of this formulation of the categorical imperative. One demands of others that they treat oneself as an end and not as a means only. Thus one would be caught in a contradiction if one did not respond in kind to their similar demands on oneself. This formulation of the categorical imperative has been invoked as the basis of human rights. Deontology has also been expressed in a non-anthropocentric form by a line of reasoning similar to that invoked by non-anthropocentric utilitarians. Some animals have interests and should also be treated as ends in themselves and not as means only. “Animal rights” is the name of the deontological form of animal ethics.⁴³
- 42 In both the utilitarian and deontological versions of rational individualism, both spatial and temporal distance between moral agents and moral patients are also regarded to be as morally irrelevant as race, religion, and other inessential accidents of birth or circumstance. Thus moral agents should take into account the harmful or beneficial consequences of their actions on all the moral patients whom their actions may affect. No matter that those moral patients are half a world away spatially or away half a millennium (or more) temporally, according to utilitarian climate ethicists. And according to deontological climate ethicists, moral agents should consider the equal rights to a pleasant and livable climate of similarly spatially and temporally distant moral patients.
- 43 Further, because moral agents and patients in the 20th-century über-paradigm of ethics are individuals, to refrain voluntarily from actions that contribute to climate change is the responsibility of individual moral agents. Thus, each of us, individually and voluntarily, should minimize our use of energy and make sure that it comes from non-CO₂ producing sources; become a strict dietary vegan, because animal agriculture is a significant source of greenhouse gases; boycott consumer goods that produce greenhouse gases in their processes of production and delivery to market; and so on and so forth. In the highly integrated global economy of the 21st century, rational individualists insist, practically every action one takes will have some bearing on some spatially or temporally distant moral patients. Thus practically all of one’s actions are subject to moral evaluation. Trying to be environmentally good thus becomes overwhelming and exhausting. Meanwhile, one’s neighbors may be unaware of the gravity of global climate change or may self-servingly believe that it is a left-wing hoax. One watches as they go merrily on grilling their beef steaks over dirty charcoal; driving everywhere in gas-guzzling SUVs; overheating their McMansions in winter and overcooling them in summer; and flying first-class to Maui for a two-week vacation at a luxury golf resort.
- 44 Surrounded on every side by militant ignorance and willful heedlessness, a climate-ethical person is liable to “moral corruption” leading to the “perfect moral storm”.⁴⁴ Why behave in climate-responsible ways, when most others do not? Moreover, one is haunted by the realization that however drastically one reduces one’s own carbon footprint, no measurable reduction in aggregated greenhouse emissions will register. It’s as if we are all aboard a recklessly speeding train heading into a curve on the edge of a precipice. We are all about to plunge into the gorge; most of the passengers will die; and the survivors will never be able to climb out and resume their journey. And all one can do about it is to drag one’s foot on the roadbed in a perfectly futile effort to slow the train down.
- 45 Conventional climate ethicists have an answer to the question, Why behave in climate-responsible ways, when most others do not? They have turned to a third, more recently

resurrected, paradigm in moral philosophy: virtue ethics.⁴⁵ As originally formulated by Aristotle, the virtue-ethics paradigm is another variation of the rational individualistic über-paradigm. Aristotle understood *eudaimonia* (literally “well-spirited,” but conventionally mistranslated as “happiness”) to be achieved when one fully realizes one’s potential as a human being. That is, when one achieves human *arête* (meaning “excellence of character” but usually translated as “virtue”) and thus becomes an excellent (or virtuous) human being, one then is in an active state of *eudaimonia* (best translated as “wellbeing”). Humans are, according to Aristotle’s definition, “rational animals.” Thus an excellent rational animal governs his or her animal appetites and impulses, by applying a rational principle in the literal sense of ratio. The moral virtues are means (ratios) between the extremes of excess and defect: temperance is the mean between voluptuousness and abstemiousness; courage the mean between rashness and cowardice; generosity the mean between profligacy and miserliness; magnanimity the mean between vulgarity and insouciance; pride the mean between boastfulness and diffidence; wit the mean between buffoonery and humorlessness; and so on, and so forth. The intellectual virtues involve the exercise of reason in the arts, the sciences, in making prudent choices, and in becoming wise. But the pertinent point here is that virtue ethics is all about self-cultivation and self-respect. So in the full knowledge that one’s individual climate-ethical actions will not measurably contribute to mitigating climate change, one may nevertheless feel good about oneself, seize the moral high ground, and smugly look down on others who make no sacrifices in obeisance to climate ethics.

- 46 And after all of the self-righteous talk about moral corruption and the perfect moral storm in mainstream climate-ethics discourse, we are still rushing headlong into a greenhouse climate with its floods, its droughts, its inundated coastal cities, its demographic dislocations, its famines, its failed states, its resource wars and brutal sectarian conflicts, its sociopathic war lords, its barbarity, its new and irreversible dark age. We are rushing headlong into the obscene Anthropocene.

A Twenty-first Century Climate-Ethics Paradigm

- 47 To try to craft an attractive and efficacious climate ethics—an Anthropocenic environmental ethic—with the philosophical resources of the dominant paradigms in 20th-century moral philosophy is like trying to power an airplane with a steam engine. In contrast to rational individualism, a more attractive and efficacious paradigm for 21st-century climate ethics should be (A) holistic and (B) affective.

Holistic ethics

- 48 The most effective moral agent at the spatial and temporal scales of the ethical challenge presented by global climate change is some form of global government, which at present seems like a hopeless prospect. Second best would be national governments working in concert. We see some gestures of national governments cooperating to combat global climate change, beginning with the 1992 Earth Summit and the United Nations Framework Convention on Climate Change that it produced. There followed the Kyoto Protocol in 1997, which was never ratified by the United States, and from which some signatories, notably Canada, Japan, and Russia subsequently withdrew or dropped out of the second round of commitments established by the Doha Amendment in 2012. Under

the Kyoto Protocol, a number of less well-developed countries— including India and China and all those in South America and Africa—were effectively exempted from CO₂ reduction targets. There is hope that the Paris Agreement of December 2015, which went into force in October 2016, will be more successful, despite the hopefully short-lived withdrawal of the United States by the criminal Trump Administration. In addition to holding the average surface temperature of the Earth down to a 2° C rise above pre-industrial levels, fostering adaptation to the inevitably forthcoming effects of increased CO₂, already resident in the atmosphere and oceans, is also a goal of the Paris Agreement.

- 49 Mainstream climate ethicists are inclined to go further and demand that the governments of wealthy countries pay reparations to the governments of poorer countries.⁴⁶ That's because the wealth of wealthier countries was generated by fossil fuel economies, benefitting their citizens, while the harms of the global climate change caused by fossil fuel economies fall on everyone. Furthermore, those harms disproportionately fall on the citizens of poorer countries, who are least able to adapt, while being least responsible for the untoward effects of global climate change. One critique of the Anthropocene concept is that it masks these intra-species differences in culpability.⁴⁷
- 50 Rational individualism, however, provides no theoretical means of accounting for holistic moral agents, such as governments. Do governments per se have preferences, wills, or welfare? Do governments per se have a dignity, intrinsic value, and rights? Without providing a detailed account of how moral agents and patients can be non-individual entities, such demands, in the name of international justice, remain unsupported by any general philosophical superstructure.
- 51 Thus one major task for a coherent Anthropocenic environmental ethic is a robust theory of holistic moral agents and patients. Some unconventional 20th-century environmental ethics—in particular those in the land-ethic tradition—have undertaken a theoretical exploration of holistic moral patients, such as whole species, biotic communities, and biodiversity.⁴⁸ Thus some work in the area of holistic environmental ethics at ecological spatial and temporal scales might prove to be a fruitful point of departure for a holistic Anthropocenic environmental ethic at global spatial and geologic temporal scales.
- 52 There is the further problem of the moral obligations of the individual constituents of governmental actors. As noted, one's voluntary individual efforts to reduce one's personal carbon footprint are efforts in vein. Worse, they may displace more effective morally motivated actions. One should fervently support politicians who will work, among other things, to impose a steep carbon tax on gasoline along with a steep luxury tax on SUVs and to spend the revenue thus generated on developing non-fossil-fuel energy technologies and infrastructure? Is it hypocritical to show up driving a gas-guzzling SUV at a political rally for such a candidate? Hardly. If one's political activism is successful, then oneself and, more importantly, almost all one's fellow citizen will no longer be able to afford showing up anywhere in such a vehicle. It's more important to take effective political action than to pride oneself on taking symbolic but ineffectual action.
- 53 But one should not be too hard on the innocent individuals who make heroic efforts voluntarily to reduce their personal carbon footprints, for such commitments may help build communities of like-minded and like-motivated individuals. Such communities may then coalesce into an effective political constituency. But the only effective individual

action—and thus the only genuine moral obligation borne by individual agents in the domain of climate ethics, the environmental ethics of the Anthropocene—is political action.

- 54 Ultimately and metaphysically, a holistic account of individuality itself might be most efficacious. In cognitive harmony with quantum field theory, evolutionary biology, and ecology, each individual should conceive and experience oneself to be a node or nexus in a skein of internal socio-environmental relationships. As such, oneself is not a social atom, nor is society an aggregation of externally related atomic individuals. Rather, one's identity as an individual is constituted by one's socio-environmental relationships. Thus understood, the well being of oneself, as an individual, is inconceivable apart from the socio-environmental whole in which one is entwined.⁴⁹

Affective ethics

- 55 Philosophers may be mortified to be caught in a contradiction of the will or inconsistently to treat equal interests unequally, but that appears to be a weak motivation for doing the right thing among those who are not philosophers. Indeed, strict impartiality is patently immoral. Imagine determining what elder person one will care for by means of a global lottery; and giving one lottery ticket to one's own mother. Imagine choosing to rescue a hamster from a burning building, by a coin flip, instead of a human child. After all, consistency requires treating equal interests equally, irrespective of species as well as gender, race, and religion. David Hume more democratically located the wellspring of ethics in a complex of feelings that he called the "moral sentiments."⁵⁰ Further, the relatively new science of evolutionary moral psychology supports Hume's claim that the wellspring of ethics is not reason but feeling.⁵¹ Hume does, however, grant reason a crucial role in ethical deliberation. It informs the moral sentiments of relevant facts and causal relations enabling the moral sentiments to be rightly oriented and engaged.
- 56 Utilitarianism, deontology, and virtue ethics are products of the Western philosophical tradition; thus, they are culture-specific. The Humean theory of moral sentiments is also a product of Western philosophy. Nonetheless, because it is supported by the new science of ethics, it has the same international cache as theoretical physics, computer science, or any other science. And the global scale of Anthropogenic environmental ethics requires its theoretical foundations to have international currency.
- 57 Chief among the moral sentiments, according to Hume, is sympathy (literally "with-feeling"), but sympathy is not the only moral sentiment. Among the others that he identifies is a more general or more broadly cast sentiment of beneficence. Sympathy may attach to or be directed only toward those entities that one can feel with or for—that is, to other individual emotional beings such as other persons and sentient animals. But some of the moral sentiments, such as loyalty and patriotism, may attach or be directed toward holistic entities. Patriotism pretty specifically attaches to the fatherland (as the name suggests), that is, to one's country or nation state. But loyalty may be directed toward an individual person or persons, to the organization one works for, to a sports team, even to a brand of beer.
- 58 Among the most heartfelt of the moral sentiments—but also among the most narrowly circumscribed and patently partial—is love. And, in the context of climate ethics, love is universal in two ways.

- 59 Every psychologically normal human is capable of love, especially of one's own spouse, children, grandchildren, and great grandchildren, not to mention love of self. That's one way that love is universal. This most palpable and strongest of the moral sentiments can be readily enlisted in the service of climate ethics. For those who were born in the year 2000, their own futures are at grave risk. If and when they turn 75, they will have lived through three quarters of the 21st century. Many of their children—barring nuclear or environmental apocalypse—will live to see the turn of the 22nd century; and their grandchildren will be living well into the 2100s. If the fossil-fuel economy goes on, business as usual, by then the great coastal cities of the world will be routinely if not continuously flooded. And who knows for sure what other untoward environmental phenomena will have changed the world and in what ways, but they're not likely to be good. So while love may be narrowly circumscribed in its focus, its temporal reach across generations is fairly extensive. It seems to be extensive enough to make one viscerally concerned about the world one's nearest and dearest will have to live in—or even, for the younger ones among us, the world in which one oneself will spend one's old age.
- 60 People who do not passionately care about other people half a world away, or about future generations collectively, do care about their kith and kin. Many take measures to provide their children, grandchildren, and great grandchildren—and them alone—with a college education, a down payment on a house, and an inheritance of as much wealth as they can accumulate. But they cannot bequeath a pleasant and salubrious climate—a world of integrity, stability, and beauty—to their progeny and to them alone. That can only be done cooperatively and collectively with other parents, grandparents, and great grandparents—that is, only with practically everyone else. That's the other way in which love is universal.
- 61 So climate ethics based on love of kith and kin should be sufficient to motivate the current generation of humans to undertake collective and cooperative political action to address the challenge of global climate change. It certainly beats guilt-tripping people and accusing them of “moral corruption” for failing to voluntarily and individually undertake a whole host of sacrifices, all of which are patently ineffectual if they are not also politically imposed on everyone else. Present loving concern for future generations may extend only about a century and a half out into the future. But there is “sentimental transitivity”—a kind of “chain of love”—in which each generation reprises the same sentiments for their own kith and kin.⁵²
- 62 In a little-known essay, “Some Fundamentals of Conservation in the Southwest,” Aldo Leopold distinguishes between “immediate posterity” and the “unknown future.”⁵³ Present loving concern for distant future generations is weak at best and incoherent at worst. Incoherent—at least from the point of view of rational individualism—because which individuals will make up distant future generations will be determined by present climate policy.⁵⁴ If current climate policy is radically changed, then our diets, modes of transformation, and other current ways of doing things will change accordingly. People will meet and marry different people and copulate with one another at different times and in different places than they would have if current climate policy had not been radically changed. After four or five generations, the individual persons constituting the fourth or fifth generation will not be the same individual persons that would have constituted the fourth or fifth generation had current climate policy not been radically changed. Ironically, if current climate policy does not change, no individual member of a distant future generation can say that the failure of the present generation to meet the

challenge of global climate change has made him or her worse off than he or she would have been had we acted to avert future climate catastrophe. For he or she would not exist to be better or worse off.

- 63 A presently existing surrogate for distant future generations is global human civilization. Again, there are, right now, regions of the world in which civilization has largely collapsed into abject barbarism and which thus provide a preview of human life in the world at large after a climate apocalypse. The statues of the Buddha in the Bamiyan Valley of Afghanistan—formerly the largest in the world—were deliberately destroyed by the Taliban.⁵⁵ The so-called Islamic State of Iraq and the Levant has set about systematically destroying the cultural heritage of the territories it has seized in Iraq and Syria.⁵⁶ Kidnapping, rape, and savage murder are a daily reality in those lawless territories. Imagine the wanton destruction of libraries, art museums, universities, science laboratories, ancient temples, and modern architecture, after governance worldwide is overwhelmed by crop failure, famine, and mass migrations away from encroaching deserts and inundated coastlines. Those of us living today may not live to see such a collapse of global civilization, but we cherish the things that will be destroyed in such a climate apocalypse—the accumulated treasures of thousands of years of human genius; and perhaps, just as bad, the termination of the internal dialectic that continues to generate the creations of human genius in the domain of the sciences, the industrial arts, and the fine arts. Human civilization has endured continuously for thousands of years. There is no reason to think that it cannot endure continuously for thousands more, provided we preserve the climate that gave birth to human civilization and that has, up until now, continued to foster it.
- 64 These two affects, then, are the twin pillars of a holistic, anthropocentric, environmental ethic in (and for) the Anthropocene: (1) a doubly universal love for self, kith, and kin; and (2) fiduciary care for the artifacts of human civilization and for the circumstances and processes that fostered them.

Conclusion

- 65 The Holocene and the Anthropocene do not measure up to the standard for epochs in geologic measures of time. We remain in the Pleistocene epoch. The Holocene and the Anthropocene are ages in geologic time. And in fact they are one and the same age because a signal in the stratigraphic record marking *Homo sapiens* as a titanic global force of nature can be detected at the boundary between the last ice age and the beginning of the Flandrian glacial interstadial (aka the Holocene and aka the Anthropocene). If Malm *et al.* and Ruddiman *et al.* are correct, that signal is constituted by the fossil remains of large and slow-breeding fauna (the so-called Pleistocene megafauna), which were then rendered extinct, coupled with the fossil remains of new anthropogenic species (domesticated plants and animals).
- 66 The Holocene/Anthropocene climate enabled *Homo sapiens* to switch from foraging for a living to farming for a living. Settled agriculture enabled cities to be established; the existence of cities fostered a division of labor; and with the division of labor, the artifacts of human civilization began to emerge. The threat posed by global climate change is an existential threat, but certainly not to planet Earth. Nor is it a threat to the resourceful and resilient species, *Homo sapiens*, which will probably survive either a global nuclear or a global environmental catastrophe (or both) in remnant numbers. Global climate change

is, rather, an existential threat to global human civilization. In order to preserve human civilization—and thus to preserve any Anthropocene worthy of the name—it is necessary for us somehow to preserve the Holocene climate. Thus Anthropocenic environmental ethics is identical with climate ethics.

- 67 Mainstream climate ethics has been singularly ineffectual because mainstream climate ethicists have stubbornly pursued it within the constraints of rational individualism, an obsolete über-paradigm that dominated Western moral philosophy during the 20th century. During 90% of that century, philosophers did not recognize that global climate change was a moral issue. In the 21st century it has become the most urgent of all moral issues.
- 68 The unprecedented spatial and temporal scales of global climate change demand the crafting of a new paradigm in moral philosophy, which will have the following characteristics: (i) It will provide a coherent account of holistic moral agents (such as national governments) and moral patients (principal among them, the Holocene climate and human civilization). (ii) It will be affective, deploying the moral sentiments to motivate effective political action to preserve the Holocene climate and *eo ipso* the necessary condition for the continuation of human civilization. (iii) It will be anthropocentric because the looming environmental crisis we face is existential. But preserving the Holocene climate is also a necessary condition for the preservation of other so-far extant species, biotic communities, functioning ecosystems, and what is left of biodiversity. If a single moral philosophy, such as Callicott proposes, can also coherently undergird land ethics à la Leopold and animal ethics, ancillary non-anthropocentric ethics may complement the anthropocentric Anthropocenic environmental ethic.⁵⁷

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RÉSUMÉS

Les délibérations éthiques dépendent de l'échelle à laquelle elles sont menées, d'un point de vue spatial et temporel. La perspective de l'entrée dans une nouvelle ère géologique impose une remise en question de l'éthique environnementale. Dans la perspective du temps géologique, l'Holocène et l'Anthropocène ne peuvent pas être distingués l'un de l'autre. C'est ainsi que la préservation du climat de l'Holocène est le premier impératif d'une éthique environnementale anthropocénique. La portée du changement climatique s'étend à de nombreuses décennies et de nombreux siècles dans l'avenir. Son échelle spatiale et son échelle temporelle nécessitent que l'échelle des patients moraux soit corrélativement élargie, des individus à des collectifs coopérants, comme les gouvernements nationaux. Il doit en aller de même des patients moraux qui doivent passer des individus à la civilisation humaine mondiale qui court un risque

d'écroulement imminent. De sorte qu'une éthique environnementale anthropocénique efficace sera anthropocentrique et sollicitera les sentiments moraux autant que la raison.

Ethics is scale dependent, both spatially and temporally. The prospect of entering a new geologic unit of time mandates a rethinking of environmental ethics. The Holocene and the Anthropocene are indistinguishable in the perspective of geologic time. Thus preserving the Holocene climate is the first imperative of an Anthropocenic environmental ethic. Global climate change ramifies many decades and centuries into the future. Its spatial and temporal scales require a correlative scaling up of moral agents from individuals to cooperating collectives, such as national governments, and moral patients from individuals to global human civilization, which is in imminent danger of wholesale collapse. An efficacious Anthropocenic environmental ethic therefore is anthropocentric and also engages the moral sentiments as well as reason.

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J. BAIRD CALLICOTT

The American philosopher J. Baird Callicott is one of the most prominent and longest-serving practitioners of environmental ethics in the United States. He is mostly known for his promotion of Aldo Leopold's land ethic and his advocacy of ecocentrism, an ethic predicated on the perception of ecosystems as communities. In his life-long effort to justify Leopoldian ecocentrism, Callicott has relied on the contributions of David Hume, Adam Smith, and Charles Darwin. He is the author of many articles and several books including *In Defense of the Land Ethic* and *Thinking like a Planet*.

Le philosophe américain J. Baird Callicott est l'un des éthiciens de l'environnement les plus expérimentés et les plus importants aux États-Unis. Il doit une grande partie de sa notoriété à sa défense de l'éthique du vivant d'Aldo Leopold et de l'écocentrisme. Dans sa défense de l'écocentrisme léopoldien, Callicott s'appuie notamment sur les travaux de David Hume, Adam Smith et Charles Darwin. Il est l'auteur de nombreux articles et de plusieurs ouvrages, dont *In Defense of the Land Ethic* et *Thinking like a Planet*.