

CHAPTER 6

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THE ANTHROPOCENE!

Beyond the Natural?

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1 THE ANTHROPOCENE? GEOLOGY, ANTHROPOLOGY, POLICY

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By recent accounts, we are entering a new geological epoch: the Anthropocene (Crutzen, 2006a; Zalasiewicz et al., 2010). Taken figuratively as a metaphor for environmental policy, entering the Anthropocene is replacing the focus on sustainability that has characterized the last two decades. The term “Anthropocene” was first used by ecologist Eugene F. Stoermer, though geologists have regularly spoken of “The Age of Man,” sometimes of the “Anthropogene” (Allaby, 2005: 25) or the “Homogenocene” (Cumutt, 2000). Concern that we are crossing a hinge point in history has pushed it into center focus. Recall how Galileo’s new astronomy triggered dramatic changes in our worldview.

What is the empirical evidence? Anthropocene enthusiasts say: Just look, anywhere, everywhere. But geologists need stratigraphic evidence. Human-dominated ecosystems cover more of Earth’s land surface than do wild ecosystems (McCloskey and Spalding, 1989; Foley et al., 2005). Human agriculture, construction, and mining move more earth than do natural rock uplift and erosion. Humans are now the most important geomorphic agent on the planet (Wilkinson and McElroy, 2007).

Shifting from geology to policy, there is a move from *is* to *ought*, from *facts* to *values*. We probe here the normative assumptions underlying shades of meaning in this ambiguous term. “Embrace the Anthropocene!”? “We are entering the Anthropocene inevitably!” Possibly, economists, politicians, bioscientists, environmentalists, and philosophers are using the idea to frame their axiological assumptions and are hiding, or are blind to, their framing. Possibly, we are facing a new environmental ethics, with choices about accepting or rejecting it. We can confront the Anthropocene in different moods.

1. *Anthropocene, Alas! Toxic Anthropocene.* One claim is that we are entering the Anthropocene willy-nilly, rushing into degrading environments, and should lament it. The Millennium Ecosystem Assessment concluded that over the past fifty years

60% of all ecosystem services have declined as a direct result of the growth of agriculture, forestry, fisheries, industries, and urban areas (Millennium Ecosystem Assessment, 2005). By this account, matters will inevitably get worse, a global tragedy of the commons. A more descriptive name would be Anthro-po-blitz. If one must use geological metaphors, the "seismic epicenter" of the planetary earthquake is this newly imperial man.

2. *Anthropocene. Limit and Adapt.* Another perspective is that, indeed, we inevitably are entering the Anthropocene; so we should get going and make the best of a bad situation. Humans have discovered ways of doing agriculture from the tropics to boreal landscapes, across a wider spectrum of climates than anything we are likely to experience due to global warming. We will have to adapt to shifting climates. But we also can and should push back and limit how far and with what zeal we enter the Anthropocene. We ought to shrink the human footprint; or putting another spin on the metaphor, conserve more places where humans leave nothing except their footprints. We might, for instance, pack the agriculture more productively into limited areas and preserve and rewild other areas. Even on agriculturally developed lands we can keep the wildlife in the nooks and crannies of the fence rows and woodlots.

Entering the Anthropocene is heading over a slippery slope, but we do not have to fall the way down. Maybe we can flourish on terraced slopes. At least we can act to take the edge off of an uncertain future with unanticipated nonlinear shifts and catastrophic outcomes. Yes, humans are "the dominant animal," now in "a totally unprecedented position ... overshooting the capacity of its planetary home." "We have utterly changed our world; now we'll have to see if we can change our ways ... creating a sustainable future for ourselves and the rest of the living world" (Ehrlich and Ehrlich, 2008: 362, 368). Aldo Leopold was already thinking this way: "Every head of wild life still alive in this country is already artificialized. ... The hope for the future lies not in curtailing the influence of human occupancy—it is already too late for that—but in creating a better understanding of that influence and a new ethic for its governance" (Leopold, [1933] 1948:21).

The focus should not be resignation to catastrophe. No, write philosophers Allen Thompson and Jeremy Bendik-Keymer; rather, we should think about "how we might *flourish* in a new global climate." Discover a new kind of "excellence (*eudaimonia*)."*Mitigation* has not worked and will not work. Focus on *adaptation*, not as "reducing vulnerability" and "mere coping strategies," but to create a "*humanist view of adaptation*." "Begin adjusting ourselves to live life well through the emerging Anthropocene Epoch." They insist that "it is also crucial that we think of human excellence *ecologically*." But their mood is that we should adapt and embrace the Anthropocene (Thompson and Bendik-Keymer, 2012:1-15, emphasis in original). Thompson has "radical hope" that humans, urged to find a significantly "diminished place for valuing naturalness," can produce a new kind of "environmental goodness ... distinct from nature's autonomy" (Thompson, 2010:43, 56).

3. *Anthropocene. Hurrah!* The way forward is to embrace an ever-increasing human domination of the landscape, a perpetual enlargement of the bounds of the human empire. Humans are in the driver's seat. The Anthropocene is "humanity's defining moment" (Seilstad, American Geosciences Institute, 2012). We are "the God species" (Lynas, 2011). *The Economist* has a cover story: "Welcome to the Anthropocene." "The challenge

of the Anthropocene is to use human ingenuity to set things up so that the planet can accomplish its 21st century task" (*Economist*, 2011:11). Erie Ellis, celebrating what he calls the "Planet of No Return: Human Resilience on an Artificial Earth," concludes: "Most of all, we must not see the Anthropocene as a crisis, but as the beginning of a new geological epoch ripe with human-directed opportunity" (Ellis, 2011). He joins colleagues in the *New York Times*: "The new name is well deserved. ... The Anthropocene does not represent the failure of environmentalism. It is the stage on which a new, more positive and forward-looking environmentalism can be built (Marris, Karieva, Mascaro, and Ellis 2011).

The argument to follow focuses on the enthusiasts, concerned that, however well intended, Anthropocene: Hurrah! has the potential to accelerate the tragic outcome of Anthropocene, Alas. That could (alas, again) prevent the possible successes of Anthropocene: Limit and Adapt. Enthusiasm for the Anthropocene bodes impending tragedy for humans and the community of life on Earth.

2 BIOSPHERE AND TECHNOSPHERE

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Until now, the technosphere was contained within the biosphere. Moving into the Anthropocene, the biosphere will be contained within the technosphere, the "Anthroposphere" (Baccini and Brunner, 2012). "Nature no longer runs the Earth. We do" (Lynas, 2011: 8). "The biosphere itself, at levels from the genetic to the landscape, is increasingly a human product (Allenby, 2000: 11). "The deliberate management of the environment on a global scale would, at least in part, force us to view the biosphere as an artifact (Keith 2000a; 277; 2000b). We live in "anthropogenic biomes" (Ellis and Ramankutty, 2008). What we must push for, according to the Royal Society of London, the world's oldest scientific society, is "sustainable intensification" of reaping the benefits of exploiting the Earth (Royal Society, 2009).

The Ecological Society of America has a different focus: "Achieving a sustainable biosphere is the single most important task facing humankind today" (Risser, Lubchenco, and Levin, 1991). A Royal Swedish Academy of Sciences research team agrees, emphasizing "reconnecting to the biosphere" (Folke et al, 2011). Such reconnecting will produce benefits for humans no doubt, but inseparably from an ongoing biosphere.

Rather than think of a biosphere/technosphere flip-flop, one can think of degrees of naturalness. The 100% natural system no longer exists anywhere on Earth, since there is DDT in penguins in Antarctica. Yet there are still areas where the human influence is minimal and the prevailing processes are spontaneous, wild nature. On Earth, the settled continents (excluding Europe) are between one-third and one-fourth wilderness (McCloskey and Spalding, 1989). Inside the dominant technosphere, we can have large natural reserves or smaller ones pocketed within islands, vignettes, colonies of wildland nature.

Even on long-settled landscapes there can be significant naturalness remaining. In Great Britain and Europe, there are native woodlands, ancient forests treasured by the owners over centuries, often with quite old trees. Think of a large country estate. There are secondary

woodlands with trees fifty to a hundred years old, wetlands, moors, hedgerows, and mountains, such as the Alps or the Scottish Cairngorms (Adams, 2003). Naturalness is a continuous variable, ranging from completely natural (100% natural) to completely artificial (0% natural). One study uses an eight-point scale (Peterken, 1996). Another uses twelve landscape zones, placed on axes ranging from human “controlled” to autonomously “self-willed” and “pristine” to “novel” (Aplet, 1999). There are multiple dimensions of naturalness (Siipi, 2008). So one can claim that there are, on differing places on the landscape, various degrees of human alteration, with options about how much further into the Anthropocene we want to go.

In another survey, researchers find Earth’s terrestrial surface altered as follows: (1) little disturbed by humans, 51.9%, (2) partially disturbed, 24.2%, (3) human dominated, 23.9%. Factoring out the ice, rock, and barren land, the percentages become (1) little disturbed, 27.0%, (2) partially disturbed 36.7%, (3) human dominated 36.3%. Most habitable terrestrial nature is dominated or partially disturbed by people (73.0%). Still, nature that is little or only partially disturbed remains 63.7% of the habitable Earth (Hannah et al, 1994).

Estimating degrees of transition, consider the following criteria: What is the historical genesis of processes now operating? Were they introduced by humans, or do they continue from the evolutionary and ecological past? What is the species present constitution or form compared with its prehuman makeup? How much cultural energy is required for the upkeep of the modified system? The more management requires large amounts of labor, petroleum, electricity, fertilizer, and pesticides, the further we are from a system that has ecological integrity or ongoing stability. Without humans, would the system re-organize itself, if not to the pre-human integrity then at least to a flourishing system? Planetary climate management, however, would overarch all these degrees of naturalness.

3 PLANETARY MANAGERS, GEOENGINEERS?

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We manage landscapes in differing degrees in different places. Few will dispute that. But the novel claims, entering the Anthropocene, are that we must think more globally, managing the planet as a whole, not just parcels of it. “What we call ‘saving the Earth’ will, in practice, require creating and re-creating it again and again for as long as humans inhabit it” (Shellenberger and Nordhaus, 2011:61). Enter the designer World.

1. *Planetary Management*. “Whether we accept it or not, human beings now shoulder the responsibility of planetary management” (Thompson, 2009: 97). “Once the planet was larger than us, but it no longer is” (Thompson, 2009: 97). Richard Alley provides us with *Earth: The Operators Manual* (Alley, 2011). “Human beings are now responsible for some of the basic conditions supporting all life on earth” (Thompson, 2009: 79). We need to start thinking how “to adaptively manage the basic ecological conditions of the global biosphere” (Thompson and Bendik-Keymer, 2012: 15). More carefully put, humans are indeed now responsible for degrading some basic life support systems, three of nine according to one study. We have dangerously degraded Earth’s climate, biodiversity and nitrogen cycles (Rockstrom, 2009). The Millennium Ecosystem Assessment examined

twenty-four ecosystem services and found that fifteen are being degraded or used unsustainably (Millennium Ecosystem Assessment, 2005).

Humans had nothing to do with the creative genesis of any of these basic conditions. Managing the planet, humans are not likely to reconstruct global rainfall patterns, or photosynthesis, or tropic pyramids, or genetic coding and speciation, or heterotroph-autotroph relations, or bird migrations, or what earthworms do in soils and insects do pollinating, or any other of the basic systems that nature provides. Perhaps, taking responsibility, we can limit or repair some damages we have introduced (global warming, ocean currents, toxics, extinctions), but that we might engineer these foundational grounding systems for the better is overblown fantasy.

More modestly, the managers may prefer to speak of planetary stewardship (Sanderson et al., 2002; Folke et al., 2011; Steffen et al., 2011). Even better would be humans as trustees of Earth. Stewards are still “users,” trustees are more inclusive “caretakers” of values. Such management seeks to keep in place or to restore basic natural systems, not to rebuild them. We are quite sure that a Holocene environment accommodates humans.

Those who celebrate moving into the Anthropocene point out that although humans probably will not reconstruct these big-scale global systems, humans are bringing about novel ecosystems composed of new combinations of species under new abiotic conditions. Old styles of management, which focused on restoring ecosystems to a prior condition, are no longer sufficient or even possible. We need to experiment with novel outcomes or trajectories, rather than simply taking preventative or therapeutic measures (Seastedt, Hobbs, and Suding et al., 2008). We are not going back to once-upon-a-time nature, but beyond nature. Environmental policy and ethics is mostly about intelligently domesticating landscapes (Fox, 2006). More than 80% of all people live in densely populated rural, village, and urban landscapes (Ellis and Ramankutty, 2008). Natural systems are inextricably entwined with cultural systems, which introduces new levels of complexity (Liu et al., 2007). Plan for a socially reconstructed, anthropogenic nature.

At this point, Anthropocene limit-and-adapt proponents may caution: Slow down, fit in with natural systems, which we may adapt but also to which we adapt ourselves. Conservationists have always said that we need “working landscapes.” They have never opposed “multiple use,” though such use has been ecosystem oriented, multiple valued, more inclined to fit in with ongoing natural processes than to rebuild them. Thomas Princen advises: *Treading Softly: Paths to Ecological Order* (2010). Build an economy grounded in the way natural systems work.

Embrace limits, learn self-restraint, and seek to live well within natural processes—which is not exactly celebrating the Anthropocene. Humans manage natural environments across a spectrum of options. Leave enough nature remaining to produce biotic integrity and health on the landscapes we inhabit. Favor ecosystem management that “goes with the flow,” rather than hands-on, high-tech management of environments that have to be constantly doctored and engineered. We have inherited a pro-life planet and ought to preserve it, even if we are only concerned about our own flourishing.

2. *Planetary Engineering*. Perhaps we will have to push further. Geoengineering is “the intentional large-scale manipulation of the environment” (Keith, 2000a: 245). In this mood, the Anthropocene enthusiasts are gung-ho for change. The editors of a *Scientific*

American special issue, *Managing Planet Earth*, ask “What kind of planet do we want? What kind of planet can we get?” (Clark, 1989). Find ways to redistribute rainfall, stop hurricanes and tsunamis, prevent earthquakes, redirect ocean currents, fertilize marine fisheries, manage sea-levels, alter landscapes for better food production, and generally make nature more user-friendly. Edward Yoxen urges: “The living world can now be viewed as a vast organic Lego kit inviting combination, hybridisation, and continual rebuilding. Life is manipulability.... Thus our image of nature is coming more and more to emphasise human intervention through a process of design” (Yoxen, 1983:15).

Typically, geoengineering is contemplated as warranted only in the face of radical emergency—“a last resort” (Victor et al., 2009). Proponents may argue that they only wish to geoengineer until humans can curb emissions, then the geoengineering will cease. Once geoengineering is in place, however, we might be even less likely to reform and quite likely to find ourselves unwilling, or unable, to return to any past conditions. Are we to suppose that the geoengineers will then take the matter into their own hands? Various nations already allow for “emergency powers,” in times of national distress, such as wars. Ought the engineers, if they find themselves confronting planetary survival, to act re-building the planet without the consensus, or even consulting most of its inhabitants, on grounds that they (think they) know what is best? They might do something similar if there were a huge meteor about to crash into the Earth or if some pandemic disease were impending.

Meanwhile, none of this sounds like humans rationally planning for an Anthropocene age. It sounds more like panic on a planet that the engineers are realizing that they have messed up in ways almost beyond their control. Humans are smarter than ever, so smart that we are faced with overshoot (Dilworth, 2010). Our power to make changes exceeds our power to predict the results, exceeds our power to control even those adverse results we may foresee. Yes, true—comes the reply—but that is all the more reason to get still smarter. Fix the problem by deliberate geoengineering.

The geoengineers will find that their engineering is not just a technical problem; they have to consider the social contexts in which they launch their gigantic projects, the welfare and risks of those they seek to save, the (in)justice of geoengineering that spreads benefits and costs inequitably, the governance of geoengineering (Parson and Keith, 2015). Engineers are no better equipped to deal with transdisciplinary systems problems than were the politicians. Or with the ethical problems. They may find a majority of Earth’s residents wondering: Is our only relationship to nature one of engineering it for the better? Now Thompson and Bendik-Keymer back off, more inclined to work with, rather than revise, the basic processes in ecosystems. “Far from the current rush toward geo-engineering, this kind of response would exhibit the virtue of humility” (Thompson and Bendik-Keymer, 2012:15).

Better to think: *Harmony*; not *Control!* On larger global scales, it is better to build our cultures aligned with the way the world is already built than to rebuild this promising planet by ourselves and for ourselves. “Hands” (the root of “manage,” again) are also for holding in loving care. What kind of planet ought we humans wish to have? One we resourcefully manage for our own benefit? Or one we hold in loving care? An engineered planet is a Trojan horse. Bring it in and there will be unanticipated surprises coming out of it. This is Promethean imperial anthropocentrism.

4 ANTHROPIC CLIMATE

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The one human activity that might justify geoengineering is global warming. Nobody wanted it; it is an undesired side effect. Upsetting the climate upsets everything—air, water, soils, forests, fauna and flora, ocean currents, shorelines, agriculture, property values, international relations, because it is a systemic upset to the received elemental conditions on Earth. A United Nations report, *The Global Climate 2001-2010, A Decade of Extremes*, documents that the first decade of the twenty-first century was the warmest for both hemispheres and for both land and ocean temperatures since measurements began in 1850. The world experienced “unprecedented high-impact climate extremes,” and more national temperature records were broken in that decade than in any other (WMO, 2013). There were fourteen environmental disasters causing greater than \$1 billion of damage in the United States in 2011 alone, more than during the entire decade of the 1980s [<http://www.noaa.gov/extreme2011/>]. A frequent fear is that we may trigger a runaway greenhouse effect, where negative feedback processes, which tend to keep equilibrium in atmospheric and oceanic circulations, are replaced by positive feedbacks—non-linear or cascading shifts—spinning Earth into a disequilibrium over which humans are powerless.

Paul Crutzen, a climate scientist who has dramatized the term “Anthropocene,” argues that geoengineering “should be explored,” given the dismal prospects of any other solution (Crutzen 2006b: 212). “The time has come to take it seriously. Geoengineering could provide a useful defense for the planet—an emergency shield that could be deployed if surprisingly nasty climatic shifts put vital ecosystems and billions of people at risk” (Victor et al., 2009: 66; Launder and Thompson, 2010). We are hedging disaster, buying insurance. There are several possibilities: Launch reflective particles into the upper atmosphere, or aerosols, or a cloud of thin refracting disks; or reflective balloons, thereby cooling the Earth, as volcanic eruptions have done in the past. Or fertilize the ocean so as to increase plankton, which absorb more carbon. Or spray fine ocean water mist into the clouds to make them brighter, reflecting more sunlight.

Others are not so sure whether geoengineering is appropriate or safe or moral. “Some scientists are seriously considering putting Earth on life support as a last resort. But is this cure worse than the disease?” (Robock, 2008: 14). “Such schemes are fraught with uncertainties and potential negative effects” (Blackstock and Long, 2010). There may be disastrous side-effects, such as changed rainfall patterns and increased droughts and floods, irreversible tipping points we do not foresee. We do not yet model global warming well, much less what these “fixes” would do on top of that. Cloud cover would change, especially cirrus clouds. The sky would be less blue. Injected aerosols would destroy ozone and increase damaging ultraviolet. The oceans would continue to become more acidic. Who controls the thermostat, especially if there are uneven benefits and harms? Engineers? Governments? Developed or developing nations? Ethicists (Bunzl 2008)?

The biggest worry is that geoengineering does not address the deeper causes of the problem. Indeed, having such a promised cure will make us more likely to procrastinate and less likely seriously to address the problem where it arises: in our relentless consumption of fossil fuels pursuing endless growth. Calling geoengineering a last resort might mask our inability to bring ourselves under self-control, making matters worse.

5 ANTHROPOCENE ETHICS/RESPECT FOR NATURE

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Entering the Anthropocene forces reconsidering our ethical obligations both to the human and the non-human communities of life. Thompson encourages our taking “responsibility for the end of nature” (Thompson, 2009: 79) and, joining Bendik-Keymer, urges facing what is “fundamentally an ethical challenge of adjusting our conception of humanity, that is, of *understanding human flourishing in new ways*,” a new kind of “humanist excellence” (Thomson and Bendik-Keymer, 2012: 8-10). There is a pivotal trade-off in such a challenge: Ought we to promote such novel humanist excellence—even if this (responsibly) leaves “diminished place for valuing naturalness as autonomy from human interference” (Thompson, 2010: 43)? Will such displacement really further human excellence?

A first claim is that such power is to be welcomed ethically. For all of human history, we have been pushing back limits. Especially in the West, we have lived with a deep-seated belief that life will get better, that one should hope for abundance and work toward obtaining it. Economists call such behavior “rational.” Ethicists can agree: We ought to maximize human satisfactions, the abundant life, with more and more of the goods and services that people want. We have a right to self-development, to self-realization. Such growth, always desirable, is now increasingly possible.

Here Anthropocene enthusiasts take the moral high ground: Classical conservation has been “socially unjust” (Kareiva and Marvier, 2012: 965). “Protecting nature that is dynamic and resilient, that is in our midst rather than far away, and that sustains human communities—these are the ways forward now. Otherwise, conservation will fail, clinging to its old myths.” “Instead of pursuing the protection of biodiversity for biodiversity’s sake, a new conservation should seek to enhance those natural systems that benefit the widest number of people, especially the poor” (Kareiva, Lalasz, and Marvier, 2011: 36-37).

The dream of living in harmony with nature is bygone. There is a more promising ambition: audacious humans manage their brave new world. Nature has been operating on the planet for five billion years. Human culture has been operating alongside and dependent on nature for something in the range of 40,000 to 100,000 years. Now the Anthropocene architects wish to displace globally systemic nature and radically shape the future as no generation before has had either the capacity or aspiration to do. And this will be a blessing in a more humane, equitable world.

Critics worry that, though the intentions sound high, they have an immoral trailer. “Forward for me and my kind!” “Save nature for people, not from people.” That could be as much the problem as the answer. The subtext seems to be the “old myths” that wild life or ecosystems or biodiversity or evolutionary creative genesis have goods of their own, intrinsic value worth protecting. Essentially this puts *Homo sapiens* as the first, if not the only, location of moral relevance. Justice is just-us. This is the Anthropocene, and too bad for the non-*anthropic*. Anthropocene proponents are concerned to get people fed, even if doing so drives tigers and butterflies into extinction.

Kareiva and Marvier urge us to shift “from a focus almost exclusively on biodiversity to more attention to “human well-being. ... Conservation is fundamentally an expression of human values. ... Today we need a more integrative approach in which the centrality of humans is recognized.” “We do not wish to undermine the ethical motivations

for conservation action. We argue that nature also merits conservation for very practical and more self-centered reasons concerning what nature and healthy ecosystems provide to humanity" (Kareiva and Marvier, 2012:963-965). Despite the caveat, ethical concern for nonhumans is soon undermined. We may be told that once-abundant species can vanish with no ill effects on humans—the bison, the chestnut, the passenger pigeon, the dodo, the tigers and butterflies.

Rebuilding the planet with humans at the center, or even protecting ecosystem services, no longer sounds like the high moral ground. This still puts the whole planet in the service of only one species—an unnatural condition. If our concern is for the poor in this new humanist excellence, then emphasize environmental justice, more equitable distribution of wealth between rich and poor on developed lands, rather than diminishing wild nature to benefit the poor. Solve the problem in the right place.

Anthropocene enthusiasts may further claim that there is no more "primal" or "pristine" nature; indeed, there has been none for the millennia humans have been agents on the planet (Kareiva and Marvier 2012: 965). So we can't save what isn't there. Actually, environmentalists more often speak of "wild" nature, or nature "untrammelled" by humans, "spontaneous" nature, of values "intrinsic" to nature "in itself" or "on its own." But, comes the reply, such wild nature is a myth: "We create parks that are no less human constructions than Disneyland" (Kareiva, Lalasz, and Marvier, 2011: 31). Wilderness advocates may wonder if anyone who makes such a claim has ever done a backcountry trek in Yellowstone or the Bob Marshall Wilderness.

"The concept of Nature, as opposed to the physical and chemical workings of natural systems, has always been a human construction, shaped and designed for human ends" (Kareiva, Lalasz, and Marvier, 2011: 31). Ecologists reply that such "workings," biological as well as physico-chemical, just are "nature," the natural history of life, which they also respect. They often do know foundational processes that were ongoing in evolutionary ecosystems before humans appeared and are still ongoing. Environmentalists are not doing museum work; they study and conserve ongoing basic natural processes—trophic pyramids, energy flow, ecosystemic resilience, stability, diversity, succession and upsets, r and k selected species, capstone species, and so on. They do because they find capabilities, integrity, and a goodness that they respect in these wild communities of life.

The Anthropocene proponents may at this point reply that they do indeed wish to save tokens of such wild life in these "natural" parks that they "construct." These refugia will be useful in various ways; reservoirs of natural resources, museums of the past, parks for recreation, for environmental education, perhaps pockets of baseline processes as a reference for planetary engineering. They may even add that in these pocketed reserves they protect wild life for its intrinsic value. They meanwhile overlook the detrimental genetic effects of small, isolated populations, stressed by global warming, which cannot shift range to any suitable habitat outside their refuges. Proponents may say they will fix this with assisted colonization. They may say they are allowing biospheric nature to continue below by fixing the stratospheric sky above. There would be an unnatural umbrella layer spread over so as to protect the natural landscape layer, something like the natural ozone layer already does.

Certainly, humans are the dominant species and will become more so. Certainly, we have moral responsibilities for each other. And we ought, as well, to respect the larger communities of life on Earth. We ought to reside, flourishing on our landscapes, with domains that are urban, rural, and wild. Three-dimensional persons need experiences in all three.

But the more we become dominantly Anthropocene, the more we shrink to become one-dimensional. We hope for healthy people on a healthy planet. Alas, as likely a future as any on our present trajectory is a warmer, less biodiverse planet—weedier, more degraded, less sustainable, with a widening gap between rich and poor, with lives that are more artifactual, more artificial. We cannot be human without culture; that is our distinctive genius. Yet equally we do not want a denatured life on a denatured planet.

6 ONCE AND FUTURE NATURE

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Let us not be arrogant about this Anthropocene Epoch. Nature has not ended and never will. Humans stave off natural forces, but the natural forces can and will return. In that sense, nature is forever lingering around. Given a chance, which will come sooner or later, natural forces will flush out human effects. Even if the historic wildness does not return, nature having been by humans irreversibly knocked into some alternative condition, wildness will return to take what course it may. This ought not to serve as an excuse to continue our dominance; rather it should sober us into finding a more lasting fitness for humans on Earth.

If one is thinking of a geological epoch, one needs to think big. The Holocene covers 12,000 years; there is no prospect of our contemporary, escalating Anthropocene forcing of the planet lasting twelve millennia. If we humans were to vanish from the planet (a definite possibility in view of pandemic diseases, nuclear proliferation, or environmental collapse), future visitors from space 100,000 years hence would find traces of our activity in the fossil record, particularly in massive anthropogenic extinctions at that layer, like we now find traces of some ancient meteor impact that killed the dinosaurs. But in the deposited layers above, these extra-terrestrial geologists-anthropologists, would find only the natural and have no need for the term “Anthropogenic Epoch.” Is there prospect of smart humans forever reinventing the Earth again and again in search of a new humanistic excellence? Rather, given such arrogance, bacteria have a more certain future on Earth than do we.

The Anthropocene! Beyond the Natural? A better hope is for a *tapestry* of cultural and natural values, not a *trajectory* even further into the Anthropocene. Keep nature in symbiosis with humans. Keep the urban, rural, and wild. Our future ought to be the Semi-Anthropocene, kept basically natural—with the natural basics—and entered carefully, full of cares for both humans and nature on this wonderland planet!

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