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ENVIRONMENTAL ETHICS AND ENVIRONMENTAL ANTHROPOLOGY

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Introduction

Anthropology, including environmental anthropology, is a science, as also is ecology. Philosophy, including environmental ethics, analyzes issues often to make value judgments about right and wrong. Science deals with the facts of the matter; ethics needs such facts, but moves from *is* to *ought*. Science and philosophy are both theoretical and applied, however; and applied anthropology, like ecology, must cross over into applied ethics, willy-nilly. How activist will environmental anthropologists be? Will they be allies of those they study? Whose needs, what needs are served? Environmental ethics will inevitably hope to shape, focus, and inspire action. Here theory without application is wasted time—unless perhaps the theorist is facilitating policies or practices set or done by others. Almost half of the people in the world still live in close encounter with their surrounding landscapes. Urban as well as rural people depend on supporting landscapes, near or far. So situated, what ought they, what ought we to do?

So, right at the start, we face a challenge: clarifying the intermingling of science and conscience, which has never been more demanding than in this first of the 45 million centuries of life on Earth in which one species with its escalating populations, powers, and appetites, can jeopardize the planet's future. The *logos* of *anthropos* is the problem. *Homo sapiens* needs wisdom desperately, along with its knowledge, *sapientia* with its *scientia*. Environmental ethics is theory and practice about values in, or carried by, and duties to, or concerning, the natural world. Environmental ethics needs to address concerns about humans living well in their natural environments, about equitable resource use, about domestic and wild animals, plants and living organisms, endangered species and biodiversity, ecosystems and communities of life, and about the global Earth.

We will move through these levels, wondering what special contributions environmental anthropologists might bring to bear. We here invite dialogue between environmental ethicists and anthropologists. As a philosopher, I am more interested in your forming your own answers than in delivering answers to you. But such crosstalk will result in better answers if the questions are well formed. Expect some probing. I found thinking through these ideas and cases probing myself. If you need to know where I am coming from, what answers I have reached, Christopher Preston has written my intellectual biography (Preston 2009).

Aboriginal humans on their landscapes

What is all over most landscapes is not wild nature, but nature linked with people who inhabit these landscapes. So we need an “anthropology which puts more than usual emphasis on the interface between cultural and ecological factors” (Thin 1996: 186; Townsend 2009). In their dialogue with philosophical ethicists, environmental anthropologists may insist that environmental ethics too is as social as it is natural. Most of life for most people takes place on anthropogenic biomes that are a hybrid tapestry of nature and culture. More than 80 percent 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 introduce new levels of complexity (Liu *et al* 2007). So far as they can, these peoples purposefully transform nature, sometimes more, sometimes less, into a desirable humanized form. Often also, accepting trade-offs or degrading landscapes unintentionally results. Human values and natural values are synthetic, or symbiotic. If nature means pristine nature, totally unaffected by human activities, past or present, there is relatively little remaining on Earth. If culture means totally re-constructed, civilized, de-natured lands with no dependence on natural systems, there is none of that on Earth either.

So environmental ethics is a synthesis of humans and nature, with humans hoping to live well on their Earth. Still, by many accounts, humans are the focus: “Human beings are at the centre of concerns . . .” So the *Rio Declaration* begins, formulated at the United Nations Conference on Environment and Development, and signed by almost every nation on Earth (UNCED 1992a: online). This was once to be called the *Earth Charter*, but the developing nations were more interested in asserting their rights to develop, and only secondarily in saving the Earth. The Rio claim is, in many respects, quite true. The human species is causing all the concern. Environmental problems are people problems, not gorilla or tiger problems. The problem is to get people into “a healthy and productive life in harmony with nature” (UNCED 1992a: online).

Environmental ethics, continuing this account, is sometimes founded on what we can call a human right to nature. The UN World Commission on Environment and Development claims: “All human beings have the fundamental right to an environment adequate for their health and well-being” (1987: 9). This includes the basic natural givens—air, soil, water, functioning ecosystems, hydrologic cycles, and so on. These could previously be taken for granted. But now the right must be made explicit and defended. This is not any claim against or for nature itself; rather it is a claim made against other humans who might deprive some humans of such nature. But note that this might still support the argument that humans need to sustain nature on these landscapes they inhabit, at least insofar as it sustains their well-being.

So caution: in the lives of local peoples, natural process and forces are still very much on the landscape they inhabit; the natural is as important as the social, even more so. Much more than those in developed societies, local peoples depend on ecosystems services. Also, while the anthropologists are focused on their social needs, these peoples themselves typically have their own traditional worldviews in which nature may feature as much as culture: they may believe in spirits good and bad, in gods and goddesses abroad on the landscape. They often take animals as totems for their tribes.

In 1996, I was at Uluru or Ayer’s Rock in Australia, a spectacular huge red sandstone mountain dome isolated on its landscape, one of the most recognizable landmarks in the nation, and a favorite climb, especially to be on top at daybreak. This is now on designated Aboriginal land. A tribe named the Anangu are the traditional owners. Signs at the base

welcome visitors, and give them permission to climb, but request that they not do so. By their tradition, only Mala warriors (men who take the name of the Mala, or hare wallaby) are permitted to climb. Tourists are invited to see sites at the base where Anangu women, who were not permitted to climb either, prepared food for the warriors. Outsiders, and women, they say, will pollute the tracks of their ancient warriors.

You are invited to view, from a distance, Mala Puta, a cave (eroded pocket) in the sandstone wall, said to be the pouch of the female hare wallaby, where the Anangu believe they were created by or from the hare wallaby, though you are sternly forbidden to photograph the cave, lest you desecrate it. I climbed Uluru, torn between respect for their culture, disbelief in their creation story, doubts about their macho men insisting that their women not climb, but serve them, doubts about whether a small local tribe should impose their wishes on half a million others each year wishing to visit a World Heritage geological site. Since my visit, there has been ongoing debate whether the right thing to do is to forbid the climb to outsiders (and native women?) (Uluru-Kata Tjuta National Park 2012). Now I am wondering whether environmental anthropologists have any insight in such conflicts. They might set forth the Anangu worldview, empathetically enabling ethicists better to evaluate aboriginal rights traded off against more global rights to a natural heritage.

In 2004, in Taiwan, I was invited to an aboriginal site of the Paiwan tribe. Entering the reservation, my host, the chief, and I had to stop at a shrine to placate the local spirits. In the mountains there lives, or once lived, the Taiwan clouded leopard, now perhaps extinct. Some research scientists had set cameras to see if they could photograph any leopards. Some researchers “disappeared,” as they put it.

The locals claimed they had angered the spirits. In the ceremony, the chief, now acting as priest, was pouring rice wine into a foot-long bamboo stick. He was to drink out of one end and I out of the other, to show that we were friends and the local goddess would welcome me. In the midst of pouring the wine, his cell phone rang. The goddess was put on hold, and the ceremony resumed later. I found this a curious mix of reverence, superstition, and high technology.

The reason I was there is that the tribe hoped to open up a part of their reservation to eco-tourism. They wanted my impression of the possibilities. We hiked a trail a mile or so to two interesting waterfalls. At the second I heard that the most spectacular falls were still further off, and suggested that we could hike there too. “Oh, no,” I was told. “An ornery spirit lives there, and it would be dangerous for you to go.” I began to doubt whether eco-tourism was feasible, not because of the landscape, but because of their beliefs about spirits inhabiting their lands.

Indigenous peoples may live in an enchanted world, one of spirits, good and bad, witches, demons, fairies to which they may ascribe their fortunes and misfortunes, their good luck, or disease, seeking to please or placate these spirits with rituals and taboos. Neither ethicists nor anthropologists themselves personally live in any such enspirited world, nor can they take seriously—at least not literally—these local animisms, though they may have their ways of pretending to “go native,” or of de-mythologizing these beliefs, perhaps still holding to some convictions about the sacred depths of nature.

Environmental justice

Environmental justice demands an equitable distribution of burdens and benefits to racial minorities, the poor, and those in developing nations (Attfeld and Wilkins 1992). The ethical issues here typically involve who gets the benefits and who bears the costs—equity

and consent issues. The rich may argue that some people and nations have achieved more than others; they earned their wealth by hard work and Yankee ingenuity. If one compares, say, Sweden with Uganda, the Swedes have an earned prosperity that the Ugandans lack, unfortunately. But Idi Amin Dada and his supporters did make a series of mistakes that left the country in a shambles (Kaufman 2003). Fairness nowhere commands rewarding all parties equally; justice is giving each his or her due.

True, but this is not the whole truth. The rich in developed nations—also within the developing nations—have power to exploit the poor, and capitalists will soon exploit them. The vast inequities in wealth are impossible to justify on the basis of merit. All who benefit from capitalism are complicit in the injustice. The victims downwater or downwind never gave any free, informed consent and usually have no means of proving their damages or asserting their rights. The wealthy (some of whom are producing the toxic substances, all are enjoying benefits) can afford to protect themselves. Environmental justice seeks protection from such injustice, empowering local peoples against outside threats and using moral, as well as social and political, convictions to do this. On this environmental ethicists and environmental anthropologists will entirely agree, and environmental anthropologists may be in a better position to estimate the local damages.

Some prefer here to use the term “ecojustice,” arguing that we ought to blend justice in the social order and integrity in the natural order (see Veronica Strang, Chapter 21 in this volume). Ecojustice may claim to be a more inclusive ethic than environmental justice, which is mostly about people. Caring for humanity requires caring for the Earth; these are complements—not opposites as so often argued. One does not need to sacrifice nature to benefit people; rather, people benefit from a nature that is protected and conserved. Environmental anthropologists hope to put human and biotic communities together comprehensively. They seek sustaining communities in which people are fulfilled; beyond that, they hope to sustain the entire community of life. Although this caring-for-people-justice which complements the caring-for-nature-justice sounds vaguely reasonable so long as it is kept reasonably vague, on closer analysis one wonders whether the fulfillment of the human community is historically possible with the simultaneous fulfillment of the whole biotic community (Wenz 1988). Ethicists may also wonder whether the concept of “justice” is appropriate to trees or butterflies, preferring such terms as respecting their life, their “intrinsic value,” or a “good of their own.”

One place where concern for both human and biotic communities does coincide is in environmental health. Health is not only skin-in; it is skin-out. It is hard to be healthy in a sick environment. In “conservation medicine,” physicians and veterinarians now realize that “health effects ripple throughout the web of life. Health connects all species” (Tabor 2002: 9). Developed countries, which may have thought themselves protected with their advanced medical systems, discover they are still linked with health, human and animal, to the developing world, even to wild nature, and vulnerable to disruptions there, to which they may also be contributing. Before jumping to humans, HIV/AIDS existed in primate populations in Africa, with which it had co-evolved. It might never have emerged as a pandemic if it were not for the social disruptions in post-colonial and sub-Saharan Africa: with the bush-meat trade; the movement of rural populations to large and crowded cities, caught in poverty there; with disrupted family structures promoting promiscuity and prostitution—all of which facilitate HIV transmission (Morens *et al.* 2004). The ill-health effects of pollution often show up first in women, especially pregnant women, and in children.

A further complication is that aboriginal peoples are likely to have diseases or malnutrition that we know how to cure or treat (polio vaccine, smallpox, AIDS, vitamins). But does our

desire for their welfare require introducing them to such medicine, if this will destroy their cultural folklore? Environmental anthropologists are in a good position to adapt the flexibility in aboriginal worldviews to find ways to combine modern medicine and traditional healing.

Environmentalists concerned with the health of local peoples will have to set this in a more comprehensive context. They will have to consider the environmental policies of the World Bank, the North American Free Trade Agreement (NAFTA), the World Trade Organization (WTO), and the International Monetary Fund (IMF). These will affect, sometimes dramatically, the living conditions of the poor, their wages, their taxes, and their health. They may be poor because they are living on degraded landscapes, owing to their long habitation there, such degradation intensified by colonial empires, continued by global capitalists, who now protect themselves with NAFTA and WTO. Such peoples are likely to remain poor, even if developers arrive, because they will be too poorly paid to break out of their poverty. In terms of social as well as natural surroundings, their health, again, is not just skin-in, but skin-out; it must be seen in terms of their larger welfare, which often depends as much on global forces as on locally available resources and medical care.

Joseph Stiglitz, Nobel laureate, became increasingly ethically concerned:

While I was at the World Bank, I saw firsthand the devastating effect that globalization can have on developing countries, and especially the poor within those countries . . . Especially at the International Monetary Fund . . . decisions were made on the basis of what seemed a curious blend of ideology and bad economics, dogmas that sometimes seemed to be thinly veiling special interests . . . The IMF's policies, in part based on the outworn presumption that markets, by themselves, lead to efficient outcomes, failed to allow for desirable government interventions in the market, measures which can guide economic growth and make *everyone* better off.

(Stiglitz 2002: ix, xiii, xii)

Nor are governments, pushed by such financial interests, always willing so to guide growth. Stiglitz wrote in April 2000: "I was chief economist at the World Bank from 1996 until last November, during the gravest global economic crisis in a half-century. I saw how the IMF, in tandem with the U.S. Treasury Department, responded. And I was appalled" (Stiglitz 2000: 56). "While there may be underlying economic forces at play, politics have shaped the market, and shaped it in ways that advantage the top at the expense of the rest" (Stiglitz 2012: xix-xx).

One ought first to seek fair trade, after that free trade. Environmental anthropologists can join environmental ethicists in this conviction, and both may add "environmentally sustainable trade."

Global inequalities in income increased in the 20th century by orders of magnitude out of proportion to anything experienced before. The distance between the incomes of the richest and poorest country was about 3 to 1 in 1820, 35 to 1 in 1950, 44 to 1 in 1973, and 72 to 1 in 1992.

(UNDP 2000: 6)

That inequity has since become even more extreme. "Economic inequality is rapidly increasing in the majority of countries. The wealth of the world is divided in two: almost half going to the richest one percent, the other half to the remaining 99 percent" (Oxfam 2014: 1). Free trade moves capital and goods across national boundaries, but the labor also

required for production is confined within nations, which means that capital can relocate production, exploiting the cheapest labor.

Environmental ethicists may now also be faulted for overlooking the poor (often of a different race, class, or sex) in their concern to save wildlife. The poor are kept poor because their development is not only constrained by the wealthy rich, but by the setting aside of biodiversity reserves, forest reserves, hunting and catching limits. The livelihood of such poor people may be adversely affected by protected elephants, who trash their crops (Tidsell 2014). There may be concern, as we next see, about the rights of indigenous peoples in nature reserves, which they may claim as their native lands.

Wild animals

Several indigenous groups in the United States, especially Alaska, maintain their right to cultural whaling. The Makah tribe in Washington State has reinstated their right to whaling, going back the Treaty of Neah Bay (1855) in which they ceded to the United States over half of their ancestral land to ensure their right to continue hunting whales. They may be traditional people, but they know how to enlist excellent lawyers (Miller 2000/2001). From the 1920s until the 1980s, the tribe ceased hunting, concerned about whale survival. After the gray whale was removed from the Endangered Species list in 1994, they decided to hunt again, revitalizing their ancient tradition. They harpoon the whale from a cedar canoe manned by eight men, trained for the hunt both physically and spiritually. They claim great respect for the whales they kill. They now shoot the whale with a rifle after it is harpooned, so that it dies with less pain. A number of Makah tribal members opposed resuming the hunt.

In 1999, the United States Government allowed the Makah to take five whales a year for their ancestral hunt. They killed their first whale on 17 May 1999, with TV cameras in helicopters overhead, and with threat of harassment by protestors' boats. Environmentalists are concerned about viable whale populations, especially if other native peoples make similar claims. There is a quota of 124 whales for native groups in the Northwest. Many also hold that eating whales, like eating chimpanzees, is immoral. Several hundred environmentalist and animal rights groups from over two dozen countries opposed the hunt, though Greenpeace and the Sierra Club did not.

Their permission to hunt was reversed in 2001. The issue has remained contorted by differing decisions, often involving environmental impact. Some of the 1999 Makah hunters, though now unauthorized, killed a whale in September 2007; the whale was immediately seized by the US Coast Guard, and sank unharvested (this is the word used by the Makah). The question posed for environmental anthropologists is what insights they can offer for enriching, or resolving, this issue, especially those relative to the ethical issues: the rights of the Makah, the "rights" of the whales, and their conservation.

Members of the Hopi tribe in northeastern Arizona engage in a ceremony that requires ritual suffocation of golden eagles, sending their spirits to fly to the world of their ancestors, informing them of what Hopis need in today's world. However, they were refused admission to capture eagles in Wupatki National Monument, outside Flagstaff, Arizona, which they claim as ancestral land (Shaffer 1999; Stevens and Velushi 1999). Elsewhere, US Forest Service officials have deferred to their preferences, but environmental ethicists will wonder: is it right to sacrifice eagles, a threatened species, to satisfy these traditional tribal beliefs? Most environmental ethicists, even if they compromise to tolerate such beliefs, would not find this an appropriate way to treat eagles; many would endorse prohibiting such behavior

where this involves taking eagles by trapping on public lands. Anthropologists often make the point that these aboriginal worldviews are not static, but dynamic, and partially at least, adaptable to new situations (Grossman and Parker 2012). Can they find ways of resolving this dispute?

Plants—Botanical life

Local peoples are often gatherers, who must eat from their landscapes, and also gather firewood, and materials for shelter. In this respect they can be expected to know their landscapes better than outsiders, such as Westerners who visit, including botanists. Anthropologists can illuminate this ethnobotany and ethnoecology. Some of this knowledge might lead to effective conservation, of which an environmental ethicist will approve. But from the fact that they know what a plant is good for, it may or may not follow that they have means for ensuring a sustainable harvest, or that they even know when they are overharvesting, especially if their population is increasing. This is likely to differ with different tribes.

Ginseng (*Panax quinquefolius*) is a native plant in Appalachian forests, with rather precise habitat requirements. The plant adds diversity, interest, and richness to the woods. The Orientals had already eradicated a prized Asian ginseng when a Jesuit priest in Canada in the early 1700s found the American plant. Many tons were shipped to Asia, and ginseng became known as “Appalachian gold.” Chinese herbal medicine claims that drinking tea made from the roots enhances virility and sexual prowess, especially in the elderly. The Chinese still cultivate some domesticated plants. Conservation biologists will deplore the present trade in roots as nothing more than catering to mistaken superstition. Chinese folk beliefs that lead to exploiting ginseng are not supported by contemporary medicine, and those who hold them would be better off if they knew better. Can environmental anthropologists help? They might consider cases where folk medicine did lead to discoveries of useful medicines, such as metformin for diabetes, made from a Chinese plant. This could lead to discussions of mistakes the folk healers have recognized and corrected (snake oil?), and then to reconsidering ginseng.

Horticulturalists in 1962 took a wild tomato (*Lycopersicon chmielewski*) and bred it into and enhanced the commercial tomato for the United States industry, resulting in \$8 million a year profits: no one in Peru, where it was found, was paid anything for this. Vandana Shiva has lambasted this as unjust, claiming that “this wild material is owned ... by local people” there (1991: 260-261): The UN *Convention on Biological Diversity* insists that “States have sovereign rights over their own biological resources” (UNCED 1992b: Preamble, Article 15). But the tiny tomato, more like a yellow ball nettle, was not cultivated or even known by these local people. The horticulturalists claim that germplasm is not subject to local or national ownership, although individual plants and cultivars may be. No one owns the basic genetic information in tomatoes, apples, pineapples, or bananas (even if they may patent specific horticultural varieties), much less in wild plants, which may happen to be on lands where they live. The commercial value from its use resulted from the high-tech skills of geneticists, not from any knowledge or activities of the local peoples in Peru (Rolston 1994: 54-58).

Again, might environmental anthropologists have insights here? The local peoples are themselves likely to hold that some things found in nature are not subject to ownership, perhaps that wild plants have intrinsic value, or a good of their own to be respected, in contrast to what they can own, such as plants they cultivate and garden. Even these high-tech

geneticists, under Western law, do not own the genetic information (what is *discovered*), though they can patent and own what they may have *invented* using such information. Cross-cultural discussions of ownership could lead to dialogue between anthropologists, local peoples, and ethicists.

Biodiversity, ecosystems, and communities of life

Half of the remaining tigers in the world are in India. A recent estimate is 1,410 in more than 43 reserves. India launched a flagship program, Project Tiger, in the 1970s, with powerful support from then prime minister Indira Gandhi. That has been praised as a success, although recent studies find that management effectiveness ranges from very good to poor. India has over four times the population of the United States in a land area one-third the size. The world's most densely inhabited democracy—over a billion people—is today challenged to save the world's largest population of tigers. The main threats are loss of habitat and poaching for body parts, largely sold in China and Tibet. To preserve habitat, some local peoples have been given nearby lands outside the reserves and moved.

In 2006, the Indian Parliament passed The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act. Those who once lived in the forest are given rights to collect, use, and dispose of forest products; this includes grazing, though not hunting and trapping. Each family that has been living in an area is entitled to four hectares of land in the forest. This greatly fragments the reserve (with over 2.5 million such claims) and often makes it impossible to keep sufficient areas free of human presence for tiger conservation. Such people are likely both to kill tigers that threaten their safety, and to sell poached body parts. The Act has been much abused, with corruption in local politics, and with urban people staking windfall claims on the basis, of their ancestry (Tilson and Nyhus 2010: 306-314). Implementing the Act—with concern for ecojustice, concern for saving the tiger, as well as concern for forest ecosystems—is complex and dynamic. This would seem to be an ideal situation for the insights of environmental anthropology to enlighten environmental ethics, speaking both to the local peoples, who both live on the land and have had the tiger deeply embedded in their mythology for millennia, and to wildlife conservationists, determined to save the world's most charismatic cat.

Local peoples typically depend heavily on ecosystem services, which figure into the environmental justice as we have noted. Thirty percent of the Millennium Ecosystem Assessment Development Goals depend on access to clean water. A third of the people on the planet lack readily available safe drinking water. The principal authors conclude:

We lack a robust theoretical basis for linking ecological diversity to ecosystem dynamics and, in turn, to ecosystem services underlying human well-being ... Relations between ecosystem services and human well-being are poorly understood. One gap relates to the consequences of changes in ecosystem services for poverty reduction. The poor are most dependent on ecosystem services and vulnerable to their degradation.

(Carpenter et al. 2006: 257)

The concern becomes how to combine these uncertainties in scientific knowledge with the protection of such local peoples, and how to get these peoples also to protect their ecosystems (Orlove and Brush 1996). The Yamuna River is a major watercourse that flows from sources in the Himalayas through Delhi, and into the Ganges and Bay of Bengal. Pristine in its origins

and dangerously polluted downstream, the river has (or is) a mother goddess. When I was at that river recently, some conservationists claimed that accentuating local beliefs that the pollutants were making the mother goddess sick, raising fears of her anger, was a more effective strategy than teaching local people any science. Keep their myths! But is there a better way to combine these forces for ecosystem conservation, conserving the communities of life?

Living on Earth/on earth—at home on a planet

Anthropology typically features local communities at home on their earth, but were it not for their contact with the West, they would not even know they lived on Earth. Even in the West, for millennia, we did not know that we lived on a planet. Encountering this global sphere, such communities meet destructive forces that threaten their lifestyle. Local peoples in the past underwent changing climates, which changed their fortunes. But they did not know anthropogenic climate change on global scales (Dove 2014). They also meet radical worldviews, far removed from their traditional ones, that can overwhelm them cognitively as well as environmentally.

For example, global leaders may now urge that we manage the planet. We have entered the Anthropocene epoch, the latest global claim. Anthropologists will need to look twice at this, once to see what they make of it themselves, and second to see how local peoples can possibly fit into this contemporary picture. These peoples know their local landscapes; but they have never thought about managing a planet. Anthropocene, a novel word, is reminiscent of anthropology, established among the sciences. But this immediately becomes high-profile discourse, taken to showcase the expanding human empire on the planet. We are now “the God species.” “Nature no longer runs the Earth. We do” (Lynas 2011: 8). Richard Alley (2011) provides us with: *Earth: The Operator’s Manual*, This God species, with its operator’s manual, makes human enterprise now a fully coupled, interacting component of the Earth system itself.

Here environmental anthropologists might seem to be left far behind. Traditional cultures did not come within light years of such possibilities. They were subsistence peoples, who lived at the mercy of storms, droughts, diseases. They managed to find enough food to survive, make it through winter, barely raise enough children to keep their tribes alive, often with noble resolution and courage, using what beliefs they had to muddle through, sustaining themselves for centuries. Maybe sympathetic anthropologists might hope that such peoples can learn from the West to improve their lot; maybe Western capitalists can be brought to treat them more justly. But these Anthropocene proposals will simply make all such antiquarian views irrelevant.

But there is another possibility, more topsy turvy. Our encounter with these worldviews that we take to be naive, pre-modern, prescientific systems may expose the metaphysics that drives our science. Our global high-tech cultures may be infected by hubris, by desire for power and domination. Traditional views may render perceptible something authentic in nature to which science blinds us. No one is the worse for having his or her receptive faculties increased, whether by science, religion, art, philosophy, myth, or whatever.

Science has discovered the community of life on Earth in ways not known to traditional cultures—through microscopes, explorations around the globe, fossil evidence, and the labors of taxonomists with their phylogenetic insights. But the same science licenses our uses of this Earth. The axiology with which we interpret natural history interlocks with the axiology that drives our cultural development. 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). Biological knowledge has fueled technology, agricultural development, the control of disease organisms, declines in infant mortality, lengthening spans of life, the elimination of predators, and the exploitation of genetic resources. The logic at the bottom of this is that a valueless nature can be put to any cultural use we please; humans are constrained only by prudence and regard for our fellow humans.

These local peoples have by now seen the marvelous photographs of Earth taken from space, so they too know that they live on Earth. They know more immediately that they live on Earth with their feet on the ground and the sky over their heads, and they have attitudes about belonging on earth. Compare these with the Anthropocene zealots, celebrating themselves as the first species ever to be able to re-engineer the planet, who are at the same time the first species ever to imperil its future. Even the most enlightened exploiters are not residents of a community of life, only consumers of materials. They reduce their environment to a place to gather food or deposit waste, to resource and sink. The environment must be this much, of course, but it can be much more.

Though traditional cultures do not have ecology as a science, they often have what ecology means etymologically: a logic of a home. They may have worldviews in which they are meaningful residents in a meaningful world—as did the ancient Hebrews in their promised land. It can hardly be said that science has yet given us a worldview in which we readily find ourselves at home. The West with its growth ethic has tended to replace ecology, the logic of a home, with economics, a logic of efficient resource use. Such an ethic of dominance in the only moral creature becomes one of arrogance, an Earth-eating mentality that has become consumptive and no longer resides in any place in peace.

Compared with the traditionalists who believe that the myriad natural kinds all have a place under the sun, that creation is to be revered, that a spiritual integrity places claims on human conduct, we moderns are the ones who seem axiologically naive. Yes, humans are standouts, on Earth. But perhaps we are on a wild yung trip. We see more comprehensively than the old-timers biologically, but sometimes they see more comprehensively than we do axiologically. They have a more inclusive ethic than we have yet attained. Not always, of course, for teachings about reverence for life mingle with contradictory abuses. Meanwhile, those of us who embrace the modern scientific and technological worldview have little to brag about in our Anthropocene enthusiasm.

The worldview that has triggered the great losses of biological diversity in recent centuries did not arise from traditional cultural values, either classical or primitive. These losses began when science-based models were exported to traditional societies. The environmental damage done within primitive and classical cultures (which was sometimes considerable) pales beside damages done in our own centuries when these cultures are "opened up" for development, when they get entangled in world markets, when they aspire to Western standards of living, and when they are secularized. Our escalating consumer mentality may need to reform its values as much as do the unfortunately foolish folk who desire ginseng to keep their sexual prowess or who sacrifice eagles to get help from ancestors in their poverty. In a worldview without value except by human preference assignments, science-based values are not part of the solution; they are the root of the problem.

We in the dominant West cannot return to superstitious folklore, to an enchanted world. It is unlikely that we can lift intact from traditional cultures any pre-scientific, mythological way of valuing nature. But partly as a result of our dialogue with these cultures, we might accept non-human life on Earth as neighbors, with a good of their own, of value for what

they are in themselves, not simply as our global stock. Perhaps we can begin to see ourselves not so much as maximizers of human development, but as fellow residents in a global community of life. Using traditional values as a catalyst, we might draw our model of Earth from ecology, rather than from physics, chemistry, computing, or mechanics. No model of development can be “right” in terms of inter-human justice unless it is “right” in terms of adapted fit to the land. So, somewhat to our surprise, we might well reach the conclusion that both our science-based, secular, ever more exploitative cultures and traditional cultures alike need a revised environmental ethic.

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