

## Multicultural Environmental Ethics

### INTRODUCTION

ONE MAIN APPROACH to a theory of environmental ethics is “anthropocentrism”—that is, the human-centered approach. A single individual’s actions with regard to the environment may have an impact on all human beings. We are outraged by a direct assault perpetrated by one human being against another, especially if the perpetrator is more powerful and privileged than the victim. When the assault, however, is indirect, mediated by a vector of some sort, then our moral sensibilities may remain untouched, especially if the powerful and privileged perpetrators work to direct attention away from the causal chain of events beginning with their actions and ending with injury to the weaker and poorer.

As Donald Brown notes in his essay in this issue of *Dædalus*, there is another, by now well-developed, way of thinking about environmental ethics—the nonanthropocentric approach. If nature has “intrinsic value,” if it is a “sacred object . . . it should not be treated in a cost-benefit analysis,” even if we justly consider the costs and benefits from the point of view of all human parties affected, poorer people as well as richer, and future human generations too. The idea of justice for all human beings is not new to most world religions, but many have only just begun to explore the conceptual resources of their sacred texts or oral traditions for a nonanthropocentric environmental ethic. This search for faith-based environmental ethics—whether an-

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thropocentric or nonanthropocentric—is sometimes called the “greening of religion.”

That environmental problems do not respect political boundaries is by now a truism. They also cross boundaries of religion and culture. The migration routes of the endangered Siberian crane, for example, extend from shamanic Siberia through Eastern Orthodox Russia, cross Buddhist Tibet, Confucian China, and Islamic Afghanistan, and end in Hindu India.<sup>1</sup> So if the biodiversity crisis and all our other environmental problems mandate the development of environmental ethics—and I think they do—then environmental ethics must be correspondingly multicultural.

But at the end of it all, we should not rest content with a collection of environmental ethics grounded in diverse worldviews that are not somehow unified and reconciled. Precisely because environmental problems cross religious and cultural boundaries, we need to achieve coherence and coordination among the conservation policies inspired and guided by the multicultural environmental ethics now taking shape. An anthropocentric Islamic environmental ethic, for example, might counsel conserving elephants by carefully regulated trophy hunting, while a biocentric Jain environmental ethic might find such a policy abominable. How are such differences to be adjudicated?

Three approaches to this “one-many problem” of pluralistic, multicultural environmental ethics suggest themselves. The first we may call the “ecological” approach; a second we may call the “hegemonic” approach; a third approach, which combines positive aspects of the other two, we may call the “orchestral” approach. The first is radically pluralistic and bottom-up; the second is monolithic, overbearing, and top-down. The third is temperately pluralistic and represents a middle path between bottom-up and top-down approaches.

#### THE ECOLOGICAL APPROACH

To characterize something as “ecological” is implicitly to commend it, because things ecological have so positive a connotation in contemporary discourse. Like “democratic,” the adjective “ecological” is a thick descriptor—it mixes a positive value

with a factual characterization. For present purposes, let us concentrate on the descriptive aspect of “ecological” and hold any evaluative judgment in reserve.

To characterize a state of affairs as “ecological” suggests to the layperson that its components are in unity, balance, and harmony.<sup>2</sup> A unified, balanced, and harmonious state is not imposed by an external force, but emerges from the interaction of the components of an ecosystem themselves. That is what is meant by calling it “bottom-up.” Moreover, each component of an ecologically unified whole retains its autonomous identity and integrity. In an ecosystem, a fox remains a fox and is free to do what foxes do; and so for an oak tree, a rabbit, and all the other components of organized ecological wholes. To suggest that multicultural environmental ethics might be reconciled and unified ecologically—better to achieve coherence and coordination in international conservation policy—is to suggest that each cultural-national entity retain its autonomous authority to make conservation policy within its jurisdiction, in the hope that over time a unity, balance, and harmony among them will emerge naturally.

Now, back to the example of the endangered Siberian crane. As the religion and ecology initiative gains momentum and matures, shamanic, Christian, Buddhist, Confucian, Islamic, and Hindu environmental ethics will begin to inform national conservation policy intraculturally in Russia, Tibet, China, Afghanistan, and India. That is, for each national-cultural region crossed by the migration route of the Siberian crane, a conservation policy will evolve that is informed by an environmental ethic grounded in a local religious worldview. As noted, these policies will likely be different, because of the differences between the environmental ethics that inform them, which in turn arise out of the differences between the religious worldviews in which the environmental ethics are grounded. The ecological approach to reconciling these divergent national conservation policies is basically to do what I began by suggesting we should not be content to do—nothing—and affirm a faith that a unity, balance, and harmony among them will eventually sort itself out naturally without compromising the autonomous identity and integrity of any of them.

There are several appealing attributes of this approach to solving the one-many problem of pluralistic, multicultural environmental ethics. The autonomous identity and integrity of every cultural-national unit are respected. At the most fundamental level, each religious worldview is respected; so is the peculiar environmental ethic that each religious worldview grounds, as well as the conservation policy based on that ethic. Corollary to this, no intercultural epistemic issues arise. Each religious worldview has its own epistemology—from divine revelation to deep meditation. The “truths” of one may conflict with those of another, but balance and harmony among them all will emerge—we hope—as they do among the components of an ecosystem.

A core value of contemporary conservation biology is biodiversity. In his field-defining paper, “What is Conservation Biology?” Michael Soulé states categorically that “diversity of organisms is good.”<sup>3</sup> Cultural diversity, in the view presented here, is analogous to biological diversity; it too is good. Cultural diversity and biological diversity are not only analogous, they are also complementary—the conservation of biological diversity often depends on the conservation of cultural diversity and vice versa.<sup>4</sup> The ecological approach to solving the one-many problem of pluralistic, multicultural environmental ethics therefore resonates well with conservation concerns, for both place a cardinal value on diversity, biological and cultural.

Unfortunately, there are also some problematic attributes of this approach. First, there is no guarantee that coherent and coordinated international conservation policies will be achieved. It is to be hoped that they can be achieved by negotiating differences. But in ecosystems negotiation of differences is not the predominant way things work. As noted, the perceived unity, balance, and harmony of ecosystems—if and when it is real—is an emergent property. That is, it is a property of a whole—an ecosystem—that emerges from the interaction of its components. Among the most salient of nature’s putative balances is that between predators and their prey. The wolf preys upon the deer and thus keeps the numbers of deer within the carrying capacity of the deer’s “prey,” the plants that they browse. The harmonious emergent balance of the whole unified

ecosystem—regeneration of vegetation, stable populations of grazers and browsers, stable populations of predators—is achieved, if and when it is achieved, at the cost of considerable struggle, pain, and death among the components.

In the late nineteenth century, Stephen A. Forbes described the underlying conditions of ecological unity and harmony:

In this lake, where competitions are fierce and continuous beyond any parallel in the worst periods of human history; where they take hold not on goods of life merely, but on life itself; where mercy, charity, sympathy, and magnanimity are all virtually unknown; where robbery and murder and the deadly tyranny of strength over weakness are the unvarying rule; where what we call wrong-doing is always triumphant, and what we call goodness would be immediately fatal to its possessor,—even here, out of these hard conditions an order has evolved . . . ; an equilibrium has been reached and is steadily maintained that actually accomplishes for all the parties involved the greatest good which the circumstances will at all permit.<sup>5</sup>

Aldo Leopold is one of the most eloquent twentieth-century writers on the emergent harmony of nature, but he is not oblivious to the point of view of a nonhuman member of the biotic community: “The only certain truth is that its creatures must suck hard, live fast, and die often, lest its losses exceed its gains,” that is, unless its balance be upset.<sup>6</sup> The very first ecological philosopher in the Western tradition, Heraclitus, was even more blunt in putting the point: “War is the father and king of all” in an emergent “ecological” order.<sup>7</sup>

As in the natural realm, so in the cultural a bottom-up “ecological” unity, balance, and harmony of diverse cultural perspectives is achieved through struggle, even when differences are negotiated. Negotiation is premised on rough equality of power. Only equals negotiate. From the bottom up, cultural difference appears to be absolute; identity is everything. We see this Heraclitean emergent order playing itself out on the world stage daily: Judaic Israelis versus Islamic Palestinians; Islamic Pakistanis versus Hindu Indians; Buddhist Tibetans versus Marxist-Confucian Chinese; Roman Catholic Croats versus Orthodox Serbs versus Islamic Bosnians. Each culture has its own uncompromising ontology, epistemology, religion, ethics

(social and environmental)—its own worldview and ethos, in short. If there is no broadly accepted intercultural worldview and ethos to reconcile the differences between cultures, struggle between them is inevitable when they come into conflict, even when the outcome is a negotiated settlement. When such struggles reach a stalemate, an equilibrium—a bottom-up “ecological” unity, balance, and harmony—is achieved. To me personally, this is not an inviting prospect. However, other environmental philosophers—Catherine Larrère, for example—disagree: “One can relish a more conflictual and more bottom-up global order, wherein peace and cooperation are not achieved through a preordained wholeness, but through temporary, precarious settlements between conflicting units. Such a view is certainly more political, but it is not unnatural. It has not only the merit of being more realistic; it is similar to the ecological order of nature.”<sup>8</sup>

#### THE HEGEMONIC APPROACH

The hegemonic alternative to “ecological” harmony among different and diverse cultures is Hobbesian in spirit: a single sovereign superpower to “overawe” them all. This is the untempered top-down approach, in which one culture dominates all others. Epistemologically, the hegemonic approach is absolutist. There is one “true,” “objective” worldview and a wide variety of quaint myths, stories, and superstitions belonging to the subordinated cultures. Associated with this worldview is a “factual” ontology and a “correct” ethos, both social and environmental.

The repugnant attributes of the hegemonic approach to cultural unity, balance, and harmony are too many and too obvious to thoroughly enumerate. Suffice it to say that the hegemonic approach is arrogant, repressive, and homogenizing. Not so obvious, perhaps, is that it is manifest not only in the military, political, economic, and religious domains, but in the domain of environmental ethics and conservation policy. Speaking as members of the hegemonic culture, but from the point of view of members of subordinated cultures, Arturo Gomez-Pompa and Andrea Kaus point out that “we assume that our

perceptions of environmental problems and their solutions are the correct ones, based as they are on Western rational thought and scientific analysis.” Theirs is a modest plea to listen as well to members of subordinated cultures who have “a knowledge of successes and failures that should be taken into account in our environmental assessments.”<sup>9</sup>

Ramachandra Guha compares the more zealous conservation biologists to missionaries in their epistemological absolutism. According to Guha, the global consequences of traditional Christian “missionaries” include the undermining of political independence, the erosion of cultures, and the growth of an ethic of sheer greed.” The new environmental missionary is “a deeply committed lover of the wild . . . [who] now wishes to convert other cultures to his gospel.” The eco-missionary appears to be benign, according to Guha: “After all, we are not talking here of the Marines, with their awesome firepower, or even the World Bank, with its money power and the ability to manipulate developing-country governments. These are the men (and, more rarely, women) who come preaching the equality of all species, who worship all that is good and beautiful in Nature. What could be wrong with them?” According to Guha, a lot. They share a conviction that “biologists know all, and that the inhabitants of the forest know nothing.”<sup>10</sup> Through insidious devices such as debt-for-nature swaps, they attempt to gain control of large tracts of land in poor countries, thus undermining national sovereignty and dispossessing resident peoples.

#### THE ORCHESTRAL APPROACH

The complementarity of biological diversity and cultural diversity is illuminating in more ways than one. From a multicultural perspective, the hegemonist—whether his or her mode of hegemony is military, political, economic, religious, or environmental (or all of the above)—appears to be pathetically ethnocentric. The hegemonist’s culture is but one among thousands of human cultures—thousands of possible ways to acquire human knowledge, to adapt to a habitat, to be at home in a place, to be human—scattered across the globe and spanning many centuries of human experience. However, when we look at cultural

diversity from the perspective of biological diversity, *Homo sapiens* is but one species among millions of others, and the many human cultures are but slight variations on a defining human trait, culture itself, as a means of survival, a way of biological life. The paradox of human existence is indeed a one-many problem: we are one species, yet many peoples; we share one planet, yet inhabit many (culturally constructed) worlds. In meeting the most daunting challenge of the new millennium—achieving a mutually enhancing human relationship with nature all over the planet—our manyness must be reconciled with our oneness, and neither must be discounted in deference to the other. Moreover, contemporary transportation and communication technologies are encouraging the emergence of a universal, international society, a “global village” incorporating elements from many cultures.

The third, orchestral approach to achieving coherence and coordination in international environmental policy is inspired by the unity-in-multiplicity that is the human condition at the advent of the third millennium. Here is the defining analogy. Imagine going to a concert. As you take your seat, the musicians are tuning their instruments and warming themselves up to play. The sound you hear is cacophonous. When the music begins, the sound immediately becomes wonderfully harmonious. Yet each of the instruments is not silenced or overwhelmed by a single instrument, such as a coarse, braying calliope. On the contrary, the music is composed of many instrumental voices, all singing parts of the same song. There are the bass viols, the cellos, the violas, the violins; the bassoons, clarinets, and flutes; the baritones, trombones, and trumpets, grouped into sections—the strings, the reeds, the brasses, and so on. Each player has a score for his or her part. The conductor has a grand score, which includes and coordinates all the parts.

In this concert analogy, the braying calliope would correspond to the hegemonic approach for achieving balance, harmony, and unity in multicultural, international conservation policy. What would correspond to the ecological approach? Well, imagine that the concert you are attending is an experimental aleatoric musical event, and that there is no conductor and no universal score. Each player moves at his or her own



pace from tuning and warming up to playing whatever he or she feels like playing. After some time of conflict, struggle, and negotiation, the players might settle on some common theme, upon which each plays an idiosyncratic variation—as do improvisational jazz musicians. Or they might not; each might stubbornly persist in playing his or her own tune. Under these circumstances—even at their best—the harmony, balance, and unity would be fleeting and imperfect, in contrast to a symphony.

The orchestral approach acknowledges the paradoxical duality of humanity that we are now confronting fully for the first time. Once again: we are surely many peoples, but just as certainly we are one species; correspondingly, we are each now also bicultural—members of at least two cultures simultaneously, a traditional, regional culture and the new international, global culture. To achieve an orchestral coherence and coordination in international environmental policy, I suggest that we first posit an international or global environmental ethic, articulated in the intellectual currency of the eclectic, international, global culture, and then indicate how that ethic might be related to the many culture-specific environmental ethics it is supposed to unify and coordinate—in a word, to orchestrate.

Several discourses presently enjoy global distribution—that of commerce, that of geopolitics, and that of science salient among them. The first of these discourses is generally regarded as antithetical to environmental ethics. The second is generally considered to be the global framework for implementing environmental policy, but not a substantive foundation for it. That leaves the discourse of science. If an environmental ethic could be grounded in science, it would be universally intelligible and acceptable, at least among all the denizens of the global village, as we enter the third millennium. The environmental ethic most thoroughly grounded in the discourse of science, more particularly in evolutionary biology and ecology, is the Aldo Leopold land ethic, which I have long championed.

But first a caveat: I am using the word “science,” here, in its conceptual, not its institutional, sense. I intend to include, within its purview, not only those well-delineated, discipline-specific projects that win funding from the U.S. National Science Foun-

dition and similar funding institutions, but the shared natural philosophy in which such specific research is embedded. I also use the word “science” in the broadest temporal sense, such that contributors to it would include Al-Biruni as well as Albert Einstein, Democritus of Abdera as well as Paul Dirac. In other words, included in the present concept of science would be works by natural philosophers that set forth the widest possible cognitive framework for thinking about nature in a disciplined and systematic way, such as Nicolaus Copernicus’s *On the Revolutions of the Heavenly Spheres*, Charles Darwin’s *On the Origin of Species*, and Eugene Odum’s *Fundamentals of Ecology*, as well as those that are published today in *Nature* and *Science*. Further—while acknowledging the scientific discoveries of ancient Egypt and China—science, as a methodical and systematic inquiry into the structure of the physical world, and the natural philosophy in which it is embedded are, historically, Western in provenance. However, science is now practiced internationally with only the slightest culture-specific variations from country to country. These variations are so slight, indeed, that such expressions as “Japanese science” and “Indian science” refer not to different and mutually unintelligible species of thought, but to the international science going on in Japan and India, largely untouched by Shintoism or Hinduism. The ever-evolving scientific worldview—that is, contemporary natural philosophy—thus enjoys genuine international currency.

#### THE LAND ETHIC

In *The Descent of Man*, Darwin confronted the apparent evolutionary anomaly of ethics. From an evolutionary point of view, it would seem, the most ruthlessly selfish individuals would better succeed in the competition for resources and mates, and thus their qualities of character and behavioral traits would be represented in ever greater degree in future generations. How could those who loved their neighbors as themselves, who turned the other cheek, who kept promises, who endangered themselves to help their fellows, have survived and reproduced? As Forbes notes above, it would seem that “what we call goodness would be immediately fatal to its possessor,” in

the human community as well as in the lacustrine biotic community. Darwin's answer was simple and elegant. Individual survival and reproduction were enhanced for many primate species—and especially for *Homo sapiens*—by membership in a closely knit society or community, which can exist only if its individual members refrain from antisocial conduct—that is, from behavior that we now call immoral or unethical. As Darwin so memorably put it, “No tribe could hold together if murder, robbery, treachery, &c., were common; consequently such crimes ‘are branded with everlasting infamy.’”<sup>11</sup>

In addition to the evolution of ethics by natural selection, Darwin envisioned a kind of social evolution or development. The first human societies, which the first generation of post-Darwinian anthropologists called “clans” or “gens,” were little more than extended families. As time went on, these merged to form “tribes,” which in turn merged to form nationalities, then eventually republics (or nation-states). In the late twentieth century, republics merged into regional confederations, such as the European Union. Also during the late twentieth century, as noted, most of the peoples of the world, if not politically, were united economically, and by transportation and communications technologies, into a global village. At each stage of this process of social development, Darwin noted that ethics develops correlatively: “As man advances in civilisation, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him.” As the scope of ethics expands to the boundaries of each emergent society, the content of ethics changes to accommodate and foster the new social order. Thus, corresponding to the emergence of republics, there developed the virtue of patriotism, and corresponding to the recent emergence of the global village, there developed the concept of universal human rights. Incidentally, Darwin himself anticipated the development of a species-wide human ethic. He continues: “This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. If indeed such men are separated from him by differences in appearance or habits,

experience unfortunately shews us how long it is before we look at them as our fellow-creatures.”<sup>12</sup>

Aldo Leopold built his land ethic squarely on these Darwinian foundations. He merely observed that ecology portrays plants and animals, soils and waters, as members, with human beings, of a *biotic* community. Following Darwin, recognition of the existence of and membership in this community should engender in *us*—though not necessarily in its other, nonhuman members—an ethical response. In Leopold’s compact and elegant prose, “All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts.” That, in a nutshell, is Darwin’s account of the origin of ethics. Leopold then observes that ecology “simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.” From that realization there follows a “land ethic” that “changes the role of *Homo sapiens* from conqueror of the land community to plain member and citizen of it” and that “implies respect for . . . fellow-members and also for the community as such.”<sup>13</sup>

The Universal Declaration of Human Rights was adopted by the United Nations in 1948, soon after the end of World War II—the end of the period in human history when the nation-state was the pinnacle of human social organization. We may therefore regard 1948 as the beginning of the era of globalization.<sup>14</sup> Universal human rights is the ethical counterpart of the emergence of a transnational human community, the global village. Correlative to the newly perceived existence of a worldwide biotic community, the United Nations may soon adopt a universal declaration of environmental ethics. After hundreds of consultations with thousands of organizations representing millions of people, the Earth Charter Commission, cochaired by Maurice Strong and Mikhail Gorbachev, issued a final version of the Earth Charter in March of 2000, composed by the Earth Charter Drafting Committee, led by Steven Rockefeller. The Earth Charter reaffirms the concept of universal human rights and adds to that reaffirmation an environmental ethic. Its preamble declares that “we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community . . . a unique commu-

nity of life.” The very first principle (1.a) of the Earth Charter echoes the Leopold land ethic: “Respect Earth and life in all its diversity. Recognize that all beings are interdependent and every form of life has value regardless of its worth to human beings.”<sup>15</sup> Leopold called such noninstrumental value “value in the philosophical sense . . . something far broader than mere economic value.”<sup>16</sup> Contemporary environmental philosophers, as Brown indicates, call it “intrinsic value.”<sup>17</sup>

A POSTMODERN DECONSTRUCTION OF  
SCIENTIFIC EPISTEMOLOGICAL PRIVILEGE

From the point of view of religion, however, a science-based or naturalistic environmental ethic may be suspect. Is not positing the land ethic as a universal environmental ethic just another form of hegemony, less naked than that of the conservation biologists that Guha excoriates, but for that reason only the more insidious? The mandarins of modern classical science have been so certain that they and they alone have exclusive access to the Truth (with a capital “T”) about Reality (with a capital “R”) that the venerable wisdom traditions of other cultures have been dismissed as mere myth and superstition. This arrogance is not only insufferable; it has wreaked havoc upon centuries-old local hydrological and agricultural systems that are embedded in nonscientific, religious worldviews. An infamous example is what happened to the time-tested distribution system of irrigation water on Bali, which was efficiently administered by priests of Dewi-Danu, a Hindu water goddess. It was dismissed as a “rice-cult” and dismantled by Green Revolution zealots, only to be eventually reinstated after the disastrous failure of the “scientific” substitute.<sup>18</sup>

Having been subjected to persuasive deconstructions by feminists and other postmodernists, the discourse of science may now be seen for what it is and all along has been: an alternative grand narrative. Often called “master narratives” to bring out the point, grand narratives have been “totalizing” as well as hegemonic. That is, they aim to be comprehensive, as well as claiming to be uniquely true. And as for “truth,” they brook no alternative organization—no other, different telling—of what

they comprehend. The examples are too numerous to catalog. The Pentateuch and the Qur'an are, respectively, ancient and medieval texts that still function as totalizing and hegemonic master narratives. *The Wealth of Nations* and *Das Kapital* are modern and secular, but they too function as such. In my opinion, the most insidious master narratives of all are the foundational texts of modern classical science—Bacon's *Novum Organum*, Descartes's *Meditations*, and Newton's *Principia*. But these ancient, medieval, and modern texts do not advertise themselves as narratives or stories. They variously claim to be the infallible word of God, demonstrated rational philosophy, or value-free, disinterested, objective, and certain (or "positive") natural or social science. To advertise your story as a story, to call it a "myth," an "epic," or a "grand narrative," is to disavow any intention to make a claim of absolute truth or to deny the possibility of cogently organizing experience some other way, of telling some other meaningful story.

The recognition that science is more honestly understood as a probable story than a positive fact is nicely illustrated by the recent characterization of the theory of evolution as an "epic."<sup>19</sup> There is a scientific "Gaia hypothesis" and "universe story."<sup>20</sup> Further, scientific revolutions involving relativity and quantum theory at the beginning of the twentieth century inaugurated a postclassical reconstruction of the scientific narrative itself. In physics, the Newtonian worldview of Euclidian space and time strewn with solid material corpuscles has given way to a sinuous Einsteinian space-time continuum of which matter and energy are but dichotomous configurations. Contemporary ecology affords a model of the familiar middle-sized world that we daily inhabit that is analogous to the Einsteinian worldview; organisms and their abiotic environments are internally related and together form an integrated systemic whole, the biosphere. The aforementioned epic of evolution embeds us in this organic continuum as one of its components. We are not, as Descartes and Newton imagined, essentially outside nature, apprehending it synoptically, objectively, and disinterestedly by means of a divinely implanted rational faculty. Indeed, from an evolutionary point of view, reason is not an instrument of certain knowledge, but a flimsy, fallible, and imperfect survival tool.

A POSTMODERN RECONSTRUCTION OF  
SCIENTIFIC EPISTEMOLOGICAL PRIVILEGE

On the other hand, all stories are not equally credible. None are exclusively, absolutely, and finally true, but I think that, for the following reasons, scientific stories—such as the epic of evolution, the Gaia hypothesis, and the universe story—are more believable than those that antedate science or that ignore it.

To be genuinely grand, a grand narrative must be comprehensive; that is, it must take into account the full range of human experience. And human experience has been greatly enlarged by the inquiries of science, both classical and postclassical, over the past four centuries. Our spatial and temporal horizons have been enormously expanded—by light years and geological epochs. We cannot ignore such things as quasars, black holes, the fossil record, mitochondrial DNA, keystone species, and such. Any story that does ignore such things simply leaves too much out to qualify as grand, and any story contradicted by these things is hardly credible.

For two and a half millennia, from the time of Confucius and Socrates to the present, logic has exerted a powerful influence over human patterns of thought. And though “a foolish consistency” may be “the hobgoblin of little minds,” as Emerson said, we now demand that any account of anything be logically—if not foolishly—consistent.<sup>21</sup> Before any critical experiments are designed, a scientific theory is brought before the tribunal of the logical law of noncontradiction. So scientific narratives are likely to be internally more consistent than other alternatives, and thus more tenable.

There is another kind of consistency in the many chapters of the scientific narrative, called “consilience.”<sup>22</sup> A given domain of science, say chemistry, is not contradicted by another, say astrophysics. There is thus a marvelous unity and concordance within contemporary natural philosophy. I employ this feature of the scientific discourse to advantage when my fundamentalist students sometimes argue, falsely, that the theory of evolution cannot be true because it is contradicted by the more basic and universal second law of thermodynamics. According to the theory of evolution, the world is becoming more complexly

organized, they tell me, while according to the second law of thermodynamics, the universe is becoming more disorganized. I will not rehearse the refutation of this sophistry here; suffice it to say that biological evolution and thermodynamics are not mutually contradictory. When consilience is not obtained between different domains of science—as it has not been for the domains of general relativity theory, on the one hand, and quantum theory, on the other—the response of contemporary natural philosophers is not to rest content, but frankly to acknowledge that one, the other, or both domains in question are flawed, and that eventually consilience will be obtained.

While postclassical natural philosophy may present an ontology that is radically different from classical natural philosophy and make far more modest epistemic claims, there is a continuity between classical and postclassical science; if there were not, the latter would not be science at all. That continuity is most evident and complete in the adherence of postclassical science to the scientific method of testing models, hypotheses, and theories in the crucible of experience. Hypotheses, theories, and models that are contradicted by deliberately sought novel experience are abandoned. Hence, scientific conclusions are always provisional and subject to revision—now often before the ink is dry on the peer-reviewed research paper. The grand narrative of contemporary natural philosophy is thus self-correcting and always changing, in response to changing human experience.

A good story, a tenable story, must have aesthetic and spiritual appeal. The Cartesian-Newtonian grand narrative—which divorced spirit from body, mind from matter, and humankind from nature, and reduced nature to a valueless, meaningless plenum of space, time, and qualityless corpuscles—is spiritually bereft. Granted, such a story has a certain aesthetic appeal, but only to our formal, logicomathematical sensibilities; from a more sensuous point of view, it is also aesthetically empty. The aesthetic and spiritual potential of postclassical natural philosophy is infinitely greater. The writers of the epic of evolution are developing some aspects of it. Such works as Thomas Berry's *The Dream of the Earth*, Stephen Hawking's *A Brief*



*History of Time*, and E. O. Wilson's *Biophilia* and *The Diversity of Life* stand out.

A tenable myth must pass a pragmatic test: it must facilitate the survival and prosperity of its subscribers. At first, classical natural philosophy seemed preeminently practical. Applied, it enabled its subscribers to throw projectiles ever farther, to go from here to there ever faster, to mine the earth ever deeper, even to walk on the moon. However, the twentieth-century environmental crisis has now undermined confidence in the Cartesian-Baconian dream of a human conquest of nature by means of a scientifically informed technology. The short- and mid-term successes of the classical scientific worldview are now overshadowed by the long-term prospect of ecological cataclysm. The emerging grand narrative of postclassical natural philosophy, by contrast, emphasizes embeddedness, not transcendence; cooperation, not conquest; wholeness, not fragmentation. It may, therefore, inspire its subscribers to better adapt, long-term, to the ecological exigencies of the biosphere, and thus prolong human tenure on the planet.

THE RELATIONSHIP BETWEEN POSTCLASSICAL SCIENCE  
AND LOCAL KNOWLEDGE SYSTEMS

How do the many culture-specific environmental ethics, grounded in world religions and representative indigenous traditions, relate to the global or international land ethic, based upon revolutionary postclassical science or natural philosophy? In a word, dialectically: that is, there is a reciprocal interaction between postclassical science and local knowledge systems.

The first aspect of this dialectical relationship is mutual validation. The posture of modern Cartesian-Newtonian science toward local knowledge systems is dismissive and derisive. The posture of postclassical science is attentive, open, and occasionally thunderstruck with astonished admiration. For example, geographer Susanna Hecht and journalist Alexander Cockburn describe the agroecology of the Kayapó Indians of South America.<sup>23</sup> The text of this story speaks of the productivity and efficiency of Kayapó swidden horticulture, their management of fallows,

and their creation of small resource-rich forest islands in the open country of their territories in Brazil. But the subtext is that this local knowledge system is valid because it jibes with contemporary ecological knowledge. Hecht and Cockburn draw out the comparison between Kayapó vernacular knowledge and ecological science at some length, especially the way in which Kayapó gardeners emulate patterns of natural plant succession as they manage their plots over ten or twelve years from clearing and burning to fallow and reforestation. In the aforementioned case of the indigenous irrigation regime on Bali, after it was restored, computer models showed that the water management schedules divined by the Dewi-Danu priests were more efficient than any other possible solution.<sup>24</sup> Here again, postclassical science (computer modeling, in this case) and vernacular knowledge (that of the water priests) were mutually validating. And kudos go to the traditions of vernacular knowledge for having hit upon the “truth” first.

On the other hand, those local knowledge systems that conflict with postclassical science are not treated with the same respect and reverence. For example, the local knowledge systems that regard powdered rhino horn as an aphrodisiac are indignantly—and in my opinion properly—condemned as superstition. Respect for the discourse of the Other has its limits.

The second aspect of the dialectical relationship between the many culture-specific environmental ethics and the one global reconstructive postclassical ecological ethic that I commend is co-creation. The postclassical scientific grand narrative is a work in progress. But its discourse is dry, bloodless, abstract, and accessible only to initiates. Hence a scientific narrative can never, in itself, be popular. But to be influential, it must be popular. It must therefore be mediated. I think I know what Ilya Prigogine and Isabelle Stengers mean in *Order Out of Chaos* when they describe living organisms thermodynamically as “dissipative structures,” but I do not think that such a description is going to create much excitement outside the very narrow circle of intellectual elites.<sup>25</sup> Even less likely to be popular is physicist David Bohm’s idea of an “implicate order,” a holistic interconnectedness of matter and energy.<sup>26</sup> The world religions

and the many indigenous traditions have had centuries of experience formulating the most abstract and inaccessible ideas as arresting images, such as the Jeweled Net of Indra or the Yin-Yang mandala. When such traditions of thought resonate well with contemporary theory in evolution and ecology, their images, similes, and metaphors may be incorporated into the globally current evolutionary-ecological grand narrative. In that way the world's diverse traditional cultures—the many—may participate in the creation of the one, the global evolutionary-ecological ethic. And in that way they may also own it.

#### CONCLUSION

I seek a middle path between claims to absolute truth and universality, on the one hand, and claims of absolute difference and otherness, on the other, and between the politics of hegemony and the politics of identity. I am inspired to seek a middle path by the observation that while we are many people—Chinese people, Kayapó people, Indonesian people—we are also just people, equally and indifferently members of one species. And while we inhabit many cultural worlds—the Confucian world, the Hindu world, the Christian world—we also inhabit one ecologically seamless biosphere, one planet, washed by one ocean, enveloped in one atmosphere. We are many and also one. We are different and also the same. Can we not correspondingly, therefore, have many different culturally specific environmental ethics and one global ecological ethic to unite and orchestrate them? To better blend the one and the many, moreover, the new grand narrative I envision, though grounded in and growing out of contemporary science or natural philosophy, is co-created by all cultures, because in articulating it I suggest we draw on the rich fund of image, simile, and metaphor in indigenous and religious worldviews. Thus, the one globally intelligible and acceptable ecological ethic and the many culture-specific ecological ethics may mutually reflect, validate, and correct one another—so they may exist in a reciprocal, fair, equal, and mutually sustaining partnership.

## ENDNOTES

- <sup>1</sup>Curt D. Meine and George W. Archibald, eds., *The Cranes: Status, Survey, and Conservation Action Plan* (Gland, Switzerland, and Cambridge, U.K.: IUCN [World Conservation Union], 1996).
- <sup>2</sup>For a concise characterization of the difference between the contemporary paradigm in ecology and the classic one informing the popular impression of ecology, see Stewart T. A. Pickett and Richard S. Ostfeld, "The Shifting Paradigm in Ecology," in R. L. Knight and S. F. Bates, eds., *A New Century for Natural Resources Management* (Washington, D.C.: Island Press, 1995), 261–277.
- <sup>3</sup>Michael E. Soulé, "What is Conservation Biology?" *BioScience* 35 (1985): 727–734.
- <sup>4</sup>Darrell Addison Posey, ed. and comp., *Cultural and Spiritual Values of Biodiversity* (London: Intermediate Technology, 1999).
- <sup>5</sup>Stephen A. Forbes, "The Lake as a Microcosm," *Bulletin of the Peoria Scientific Association*, 1887, 77–87; reprinted in Leslie A. Real and James H. Brown, eds., *Foundations of Ecology: Classic Papers with Commentaries* (Chicago: University of Chicago Press, 1991), 14–27. It should be noted that this pattern, if recommended as a model of appropriate intercultural relationships, would constitute an apology for Social Darwinism (as it is unfortunately and ironically labeled); that is not the intention here.
- <sup>6</sup>Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949), 107.
- <sup>7</sup>W. K. C. Guthrie, *A History of Greek Philosophy* (Cambridge: Cambridge University Press, 1962), 446.
- <sup>8</sup>Catherine Larrère, personal communication, 28 March 2000.
- <sup>9</sup>Arturo Gomez-Pompa and Andrea Kaus, "Taming the Wilderness Myth," in J. Baird Callicott and Michael P. Nelson, eds., *The Great New Wilderness Debate* (Athens: University of Georgia Press, 1998), 293–313.
- <sup>10</sup>Ramachandra Guha, "Deep Ecology Revisited," in *ibid.*, 271–279.
- <sup>11</sup>Charles R. Darwin, *The Descent of Man and Selection in Relation to Sex* (London: J. Murray, 1871), 93.
- <sup>12</sup>*Ibid.*, 100–101.
- <sup>13</sup>Leopold, *A Sand County Almanac*, 203–204.
- <sup>14</sup>Ian Brownlie, ed., *Basic Documents on Human Rights*, 2d ed. (Oxford: Clarendon Press, 1981).
- <sup>15</sup><<http://www.earthcharter.org/draft/charter.htm>>.
- <sup>16</sup>Leopold, *A Sand County Almanac*, 223.
- <sup>17</sup>See, for example, Holmes Rolston III, *Conserving Natural Value* (New York: Columbia University Press, 1994).

- <sup>18</sup>John Stephen Lansing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton: Princeton University Press, 1991).
- <sup>19</sup>Loyal D. Rue, *Everybody's Story: Wising Up to the Epic of Evolution* (Albany: State University of New York Press, 2000).
- <sup>20</sup>Brian Swimme and Thomas Berry, *The Universe Story* (New York: HarperCollins, 1992).
- <sup>21</sup>Ralph Waldo Emerson, Essays: First series, vol. 2 of *The Collected Works of Ralph Waldo Emerson*, ed. Alfred R. Ferguson et al. (Cambridge: Belknap Press of Harvard University Press, 1971), 33.
- <sup>22</sup>Edward O. Wilson, *Consilience: The Unity of Knowledge* (New York: Knopf, 1998).
- <sup>23</sup>Susanna B. Hecht and Alexander Cockburn, *The Fate of the Forest: Developers, Destroyers, and Defenders of the Amazon* (New York: Verso, 1989).
- <sup>24</sup>Lansing, *Priests and Programmers*.
- <sup>25</sup>Ilya Prigogine and Isabelle Stengers, *Order out of Chaos: Man's New Dialogue with Nature* (Boulder, Colo.: New Science Library, 1984).
- <sup>26</sup>David Bohm, *Wholeness and the Implicate Order* (London: Routledge and Kegan Paul, 1984).

Only those who are absolutely authentic can fully develop their nature. If they can fully develop their nature, they can then fully develop the nature of others. If they can fully develop the nature of others, they can then fully develop the nature of things. If they can fully develop the nature of things, they can then assist in the transforming and nourishing process of Heaven and Earth. If they can assist in the transforming and nourishing process of Heaven and Earth, they can thus form a trinity with Heaven and Earth.

—*Chung yung*, chap. 22