Mary Evelyn Tucker and John A. Grim

Introduction: The Emerging Alliance of World Religions and Ecology

THIS ISSUE OF *DÆDALUS* brings together for the first time diverse perspectives from the world's religious traditions regarding attitudes toward nature with reflections from the fields of science, public policy, and ethics. The scholars of religion in this volume identify symbolic, scriptural, and ethical dimensions within particular religions in their relations with the natural world. They examine these dimensions both historically and in response to contemporary environmental problems.

Our *Dædalus* planning conference in October of 1999 focused on climate change as a planetary environmental concern.[1] As Bill McKibben alerted us more than a decade ago, global warming may well be signaling "the end of nature" as we have come to know it.[2] It may prove to be one of our most challenging issues in the century ahead, certainly one that will need the involvement of the world's religions in addressing its causes and alleviating its symptoms. The *State of the World 2000* report cites climate change (along with population) as the critical challenge of the new century. It notes that in solving this problem, "all of society's institutions—from organized religion to corporations—have a role to play."[3] That religions have a role to play along with other institutions and academic disciplines is also the premise of this issue of *Dædalus*.

The call for the involvement of religion begins with the lead essays by a scientist, a policy expert, and an ethicist. Michael

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McElroy, chairman of the Harvard University department of earth and planetary sciences, outlines the history of the earth's evolution, thus providing a comprehensive context for understanding the current impact of humans on global climate change. As McElroy observes, while the earth's evolution has occurred over some 4.6 billion years, Homo sapiens sapiens appeared only some 150,000 years ago. Moreover, in the last few hundred years of the industrial revolution, humans have radically altered the nature of the planet—warming its climate, depleting its resources, polluting its soil, water, and air. He cites the cultural historian Thomas Berry and his perspective on the evolutionary story of the emergence of life as providing "our primary revelatory experience of the divine." McElroy observes that to change the global environment irreversibly without concern for the consequences to present or future generations creates a fundamental challenge for the moral principles of the world's religions. Public-policy expert Donald Brown elaborates further on the nature of contemporary climate change and the human impact on this process. He echoes McElroy's call for the ethical involvement of the world's religions in mitigating the human causes and planetary effects of climate change. Environmental ethicist J. Baird Callicott proposes a method to bring together the larger scientific story of evolution outlined in McElroy's essay with the diversity of the world's religions. He describes this as an "orchestral approach" embracing the varied ethical positions of the world's religions in an emerging global environmental ethics.

No definitive attempt is made in this issue to articulate a comprehensive environmental ethics. However, the essays that follow, written by scholars of religion, suggest manifold ways of creatively rethinking human-Earth relations and of activating informed environmental concern from the varied perspectives of the world's religions. The objective here is to present a prismatic view of the potential and actual resources embedded in the world's religions for supporting sustainable practices toward the environment. An underlying assumption is that most religious traditions have developed attitudes of respect, rever-

ence, and care for the natural world that brings forth life in its diverse forms. Furthermore, it is assumed that issues of social justice and environmental integrity need to be intricately linked for creating the conditions for a sustainable future.

Several qualifications regarding the various roles of religion should be mentioned at the outset. First, we do not wish to suggest here that any one religious tradition has a privileged ecological perspective. Rather, multiple perspectives may be the most helpful in identifying the contributions of the world's religions to the flourishing of life for future generations. This is an interreligious project.

Second, while we assume that religions are necessary partners in the current ecological movement, they are not sufficient without the indispensable contributions of science, economics, education, and policy to the varied challenges of current environmental problems. Therefore, this is an interdisciplinary effort in which religions can play a part.

Third, we acknowledge that there is frequently a disjunction between principles and practices: ecologically sensitive ideas in religions are not always evident in environmental practices in particular civilizations. Many civilizations have overused their environments, with or without religious sanction.

Finally, we are keenly aware that religions have all too frequently contributed to tensions and conflict among ethnic groups, both historically and at present. Dogmatic rigidity, inflexible claims of truth, and misuse of institutional and communal power by religions have led to tragic consequences in various parts of the globe.

Nonetheless, while religions have often preserved traditional ways, they have also provoked social change. They can be limiting but also liberating in their outlooks. In the twentieth century, for example, religious leaders and theologians helped to give birth to progressive movements such as civil rights for minorities, social justice for the poor, and liberation for women. More recently, religious groups were instrumental in launching a movement called Jubilee 2000 for debt reduction for poor nations.[4] Although the world's religions have been slow to

respond to our current environmental crises, their moral authority and their institutional power may help effect a change in attitudes, practices, and public policies.

As key repositories of enduring civilizational values and as indispensable motivators in moral transformation, religions have an important role to play in projecting persuasive visions of a more sustainable future. This is especially true because our attitudes toward nature have been consciously and unconsciously conditioned by our religious worldviews. Over thirty years ago the historian Lynn White observed this when he noted: "What people do about their ecology depends on what they think about themselves in relation to things around them. Human ecology is deeply conditioned by beliefs about our nature and destiny—that is, by religion."[5] White's article signaled the beginning of contemporary reflection on how environmental attitudes are shaped by religious worldviews. It is only in recent years, however, that this topic has been more fully explored, especially in the ten conferences on world religions and ecology held at the Center for the Study of World Religions at Harvard Divinity School from 1996–1998.[6] Awareness of this reality has led to the identification, in the published conference volumes, of religious perspectives especially rich in resources for defining principles that may help us preserve nature and protect the earth community.[7]

In soliciting essays for this issue of *Dædalus,* we asked scholars of various religions to address a few key questions: 1) What cosmological dimensions in this tradition help relate humans to nature? 2) How do this tradition and its sacred texts support or challenge the idea of nature as simply a utilitarian resource? 3) What are the core values from this tradition that can lead to the creation of an effective environmental ethics? 4) From within this religious tradition, can we identify responsible human practices toward natural systems, sustainable communities, and future generations? It was considered important that the religion scholars reflect on these broad questions in order to identify those attitudes, values, and practices that might be most appropriate in addressing contemporary environmental problems, especially climate change.

THE CHALLENGE OF THE ENVIRONMENTAL CRISIS

The environmental crisis has been well documented as a plural reality in its various interconnected aspects of resource depletion and species extinction, pollution growth and climate change, population explosion and overconsumption. Thus, while we are using the term "environmental crisis" in a singular form, we recognize the diverse nature of the interrelated problems. These problems have been subject to extensive analysis and scrutiny by the scientific and policy communities and, although comprehensive solutions remain elusive, there is an emerging consensus that the environmental crisis is both global in scope and local in impact. The Worldwatch Institute has been monitoring the global deterioration of the environment over the last two decades in their annual *State of the World* report. In the 2001 report, the concluding article observes: "Despite abundant information about our environmental impact, human activities continue to scalp whole forests, drain rivers dry, prune the Tree of Evolution, raise the level of the seven seas, and reshape climate patterns. And the toll on people and the natural environment and social systems feed on each other."[8]

There is also a dawning realization that the changes we are currently making to planetary systems are comparable to the changes of a major geological era. Indeed, some have said we are closing down life systems on the planet and causing species extinction at such a rate as to mark the end of the Cenozoic era.[9] Others compare the current rate of extinction to earlier geological periods such as the Jurassic (138 million years before the present) and the Permian (245 mybp). While this stark picture of the state of the environment has created pessimism among many and denial among others, it is also increasingly evident that human decisions will be crucial for the survival of many life forms on Earth. The long-term health of both people and the planet is in the balance. As ecosystems deteriorate, as global warming increases, as economic growth proceeds without restraint, technical solutions alone will be insufficient to stem the unraveling of the web of life. Some would say pessimistically, "If current trends continue, we will not."[10] Peter

Ravens of the Missouri Botanical Garden puts it more starkly in an article entitled "We Are Killing Our World." He writes, "The world that provides our evolutionary and ecological context is in serious trouble, trouble of a kind that demands our urgent attention. By formulating adequate plans for dealing with these large-scale problems, we will be laying the foundation for peace and prosperity in the future; by ignoring them, drifting passively while attending to what may seem more urgent personal priorities, we are courting disaster."

The scientist Brian Swimme has indicated that we are making macrophase changes to the planet with microphase wisdom. As Michael McElroy observes, the deleterious consequences of the last two hundred years of the industrial revolution have been monumental for the life systems of the planet. In short, our intervention in ecological systems can now be regarded as a primary determining factor in the future of evolutionary processes. Whether our interventions will ultimately be beneficial or detrimental remains to be seen as we are poised at a critical juncture in the unfolding journey of the earth community. We need to reexamine the nature of progress and development and ask at what cost we continue to destroy the earth's complex ecosystems. A central question before us is what are appropriate roles for humans in relation to present and future life on Earth? As Donald Brown asks, what are the responsibilities of the rich to the poor as ecological conditions deteriorate due to climate change? What does it mean to develop ethical sensibilities to people and species at a distance? What will it mean if twenty-three island nations disappear due to climate change or if Bangladesh, with one hundred million people, is flooded? Do we in fact have obligations to future generations that may transcend our contemporary concerns? One might well ask, if we are not able to encourage the flourishing of life on the planet, are we not then calling into question the very nature of what it is to be human? Or, as Thomas Berry puts it, is it we ourselves who are becoming an endangered species? He notes that while we have developed ethics for homicide, suicide, and genocide, we have yet to articulate a comprehensive ethics for biocide or geocide. In response to these kinds of questions, the authors in this issue reflect on how we might reconceive our

role in light of the world's religions to foster mutually enhancing human-Earth relations.

SIXTH EXTINCTION AND TRANSFORMATIVE BOUNDARIES

We are entering the twenty-first century with a new sense of humility at what humans have wrought as well as with a renewed sense of hope at what we might still achieve. A plaque in the Hall of Biodiversity at the American Museum of Natural History in New York City suggests that we are in the midst of a sixth extinction period for which human activities are largely responsible. Yet it also notes that, depending on our choices, we are still capable of stemming this massive destruction of life forms. It is this critical juncture we are facing between pursuing unbridled "progress" and reconfiguring the relation of economy and ecology for a sustainable future. This constitutes the potential for new transformative boundaries. A major question we confront is: What are the appropriate boundaries for the protection and use of nature? The choices will not be easy as we begin to reassess our sense of rights and responsibilities to present and future generations, and to reevaluate appropriate needs and overextended greed regarding natural resources.

This reevaluation of transformative boundaries has been set in motion by a number of key sectors ranging from grassroots and nongovernmental organizations to national governments and the United Nations. The convergence of efforts fostered by civil society, the nation-states, and international organizations is noteworthy. Business, too, is beginning to play an important role in developing principles and practices for environmentally sensitive cost accounting.[11] For the first time in human history remarkable new initiatives are emerging that struggle to restrain our overextended presence on the planet. The results of these initiatives will be difficult to evaluate immediately, but their cumulative effect will be indispensable in redirecting our current destructive course. Indeed, some have suggested that we are in a new phase of cultural evolution now surpassing biological evolution where human decisions will shape the course of planetary history as was never before possible.[12] This movement toward sustainable human-Earth relations is being led by

individuals and organizations who are developing and implementing alternative energy sources, environmentally compatible technologies and designs, green economic and business systems, sustainable agriculture and fishing initiatives, and environmental education programs.[13] These creative movements are not simply technologically driven but are guided by an understanding of identifying principles and practices that promote the flourishing of the earth community as a whole.

Further evidence of this movement toward a sustainable future has emerged over the last decade with the wide range of international and national conferences that are being held, research that is being published, and policies that are being implemented. Indeed, in the decades since the United Nations Conference on the Environment was held in Stockholm in 1972 and the UN Conference on Environment and Development (also known as the Earth Summit) was convened in Rio in 1992, the United Nations has repeatedly identified the environmental crisis as a critical global challenge. This international political body has highlighted "sustainable development" as a central goal of the earth community. The 1987 Bruntland Commission report, *Our Common Future*, outlined key strategies toward that end. Since the Rio Earth Summit, the United Nations has held various other major international conferences to analyze our global situation and devise strategies for ensuring a sustainable future. These include conferences on social development, habitat, women, population, and food. These UN conferences have been supplemented by the work of literally thousands of nongovernmental and environmental organizations around the world toward formulating more sustainable and just policies and programs for civil society.

Sustainable development has been critiqued by some environmental, labor, and human-rights organizations as often leading toward rampant globalization of capital and the homogenization of cultures. The unintended consequences of globalization in the loss of habitat, species, and cultures make it clear that new forms of equitable distribution of wealth and resources need to be implemented. Indeed, the growing inequities of North and South that are exacerbated by environmental deterioration and climate change remain a leading challenge to the global

community. One significant effort to address this growing inequality around issues of sustainable development is the Earth Charter, which arose out of the 1992 Earth Summit in Rio.[14] The charter was commissioned by the Earth Council, which was established in Costa Rica to carry out the directives of the Earth Summit. The Earth Charter consists of sixteen key principles under four headings: respect and care for the community of life; ecological integrity; social and economic justice; and democracy, nonviolence, and peace. The charter was drafted over a three-year period and subject to intensive review from grassroots organizations and NGOs, international business groups and religious communities. The charter was formally presented to the international community at the Peace Palace in the Hague on June 29, 2000. The intention of the Earth Charter Initiative is to bring the charter to the United Nations General Assembly for endorsement in the year 2002, the tenth anniversary of the Rio Earth Summit.

CALL FOR THE PARTICIPATION OF RELIGIOUS COMMUNITIES

Many organizations and individuals have been calling for greater participation by various religious communities in meeting the growing environmental crisis by reorienting humans to show more respect, restraint, and responsibility toward the earth community. Consider, for example, a statement by scientists, "Preserving and Cherishing the Earth: An Appeal for Joint Commitment in Science and Religion," issued at a Global Forum meeting in Moscow in January of 1990. It suggests that the human community is committing "crimes against creation" and notes that "problems of such magnitude, and solutions demanding so broad a perspective, must be recognized from the outset as having a religious as well as a scientific dimension. Mindful of our common responsibility, we scientists—many of us long engaged in combating the environmental crisis—urgently appeal to the world religious community to commit, in word and deed, and as boldly as is required, to preserve the environment of the Earth." It goes on to declare that "the environmental crisis requires radical changes not only in public policy, but in individual behavior. The historical record makes clear that

religious teaching, example, and leadership are powerfully able to influence personal conduct and commitment. As scientists, many of us have had profound experiences of awe and reverence before the universe. We understand that what is regarded as sacred is more likely to be treated with care and respect. Our planetary home should be so regarded. Efforts to safeguard and cherish the environment need to be infused with a vision of the sacred."[15]

A second important document, "World Scientists' Warning to Humanity," was produced by the Union of Concerned Scientists in 1992 and was signed by more than two thousand scientists, including more than two hundred Nobel Laureates. This document also suggests that the planet is facing a severe environmental crisis: "Human beings and the natural world are on a collision course. . . . Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about."

These changes will require the special assistance and commitment of those in the religious community. Indeed, the document calls for the cooperation of natural and social scientists, business and industrial leaders—and also religious leaders. It concludes with a call for environmentally sensitive attitudes and behaviors, which religious communities can help to articulate: "A new ethic is required—a new attitude towards discharging our responsibilities for caring for ourselves and for the earth. We must recognize the earth's limited capacity to provide for us. We must recognize its fragility. We must no longer allow it to be ravaged. This ethic must motivate a great movement, convincing reluctant leaders and reluctant governments and reluctant peoples themselves to effect the needed changes."[16]

RESPONSES FROM THE WORLD'S RELIGIONS

Although the responses of religions to the global environmental crisis were slow at first, they have been steadily growing over

the last twenty-five years. Several years after the first UN Conference on Environment and Development in Stockholm in 1972, some Christian churches began to address growing environmental and social challenges. At the fifth Assembly of the World Council of Churches (WCC) in Nairobi in 1975, there was a call to establish the conditions for a "just, participatory, and sustainable [global] society." In 1979, a follow-up WCC conference was held at Massachusetts Institute of Technology on "Faith, Science, and the Future."[17] The 1983 Vancouver Assembly of the WCC revised the theme of the Nairobi conference to include "Justice, Peace, and the Integrity of Creation." The 1991 WCC Canberra conference expanded on these ideas with the theme of the "Holy Spirit Renewing the Whole of Creation." After Canberra, the WCC theme for mission in society became "Theology of Life." This has brought theological reflection to bear on environmental destruction and social inequities resulting from economic globalization. In 1992, at the time of the UN Earth Summit in Rio, the WCC facilitated a gathering of Christian leaders that issued a "Letter to the Churches," calling for attention to pressing eco-justice concerns: solidarity with other people and all creatures; ecological sustainability; sufficiency as a standard of distributive justice; and socially just participation in decisions for the common good.[18]

In addition to major conferences held by the Christian churches, several interreligious meetings have been held, and various religious movements have emerged concerning the environment. Some of these include the interreligious gatherings on the environment in Assisi in 1984 under the sponsorship of the World Wildlife Fund (WWF) and under the auspices of the Vatican in 1986. Moreover, the United Nations Environment Programme (UNEP) has established an Interfaith Partnership for the Environment (IPE) that has distributed thousands of packets of materials for use in local congregations and religious communities for more than fifteen years.[19]

The two most recent Parliaments of World Religions—held in Chicago in 1993, and in Cape Town, South Africa, in 1999—both issued major statements on global ethics, stressing environmental issues as well as human rights. The Global Forum of

Spiritual and Parliamentary Leaders held international meetings in Oxford in 1988, Moscow in 1990, Rio in 1992, and Kyoto in 1993—and each time devoted significant attention to environmental issues. Since 1995 a critical Alliance of Religion and Conservation (ARC) has been active in England, while the National Religious Partnership for the Environment (NRPE) has organized Jewish and Christian groups around this issue in the United States. Two member groups of NRPE, the Coalition on Environment and Jewish Life (COEJL) and the National Council of Churches, are helping to mobilize the American Jewish and Christian communities regarding environmental issues, especially global warming. Religious groups have also contributed over the last five years to the drafting of the Earth Charter. And the World Bank has developed a World Faiths Development Dialogue on poverty and development issues with a select group of international religious leaders.[20]

Religious leaders and laypersons are increasingly speaking out for protection of the environment. The Dalai Lama has made numerous statements on the importance of environmental protection and has proposed that Tibet should be designated a zone of special ecological integrity. Rabbi Ishmar Schorsch of the Jewish Theological Seminary in New York has frequently spoken on the critical state of the environment. The Greek Orthodox Patriarch Bartholomew has sponsored several seminars to highlight environmental destruction in the Black Sea and along the Danube River,[21] calling such examples of negligence "ecological sin." From the Islamic perspective, Seyyed Hossein Nasr has written and spoken widely on the sacred nature of the environment for more than three decades. In the Christian world, along with the efforts of the Protestant community, the Catholic Church has issued several important pastoral letters over the last decade. Pope John Paul II wrote a message for the World Day of Peace, on January 1, 1990, entitled "The Ecological Crisis: A Common Responsibility." More recently, John Paul II has spoken of the need for ecological conversion, namely, a deep turning to the needs of the larger community of life.[22] In August of 2000, at a historic gathering of more than one thousand religious leaders at the UN for the

Millennium World Peace Summit of Religious and Spiritual Leaders, the environment was a major topic of discussion. The UN secretary-general, Kofi Annan, called for a new ethic of global stewardship, recognizing the urgent situation posed by current unsustainable trends.[23]

RELIGIONS OF THE WORLD AND ECOLOGY PROJECT

It was in light of these various initiatives that a three-year intensive conference series, entitled "Religions of the World and Ecology," was organized at the Center for the Study of World Religions at Harvard Divinity School to examine the varied ways in which human-Earth relations have been conceived in the world's religious traditions. From 1996–1998 the series of ten conferences examined the traditions of Judaism, Christianity, Islam, Hinduism, Jainism, Buddhism, Daoism, Confucianism, Shinto, and indigenous religions. The conferences, organized by Mary Evelyn Tucker and John Grim in collaboration with a team of area specialists, brought together over seven hundred international scholars of the world's religions as well as environmental activists and grassroots leaders. Recognizing that religions are key shapers of people's worldviews and formulators of their most cherished values, this broad research project informs many of the essays gathered in this issue of *Dædalus*.

Since 1998, an ongoing Forum on Religion and Ecology has been organized to continue the research, education, and outreach begun at these earlier conferences. A primary goal of the forum is to help to establish a field of study in religion and ecology that has implications for public policy. The forum is involved in holding scholarly conferences as well as initiating workshops for high-school teachers, distributing curricular resources for college courses, supporting a journal on religion and ecology,[24] and creating a comprehensive web site (http://environment.harvard.edu/religion).

Just as religions played an important role in creating sociopolitical changes in the twentieth century (e.g., human and civil rights), so now religions are poised in the twenty-first

century to contribute to the emergence of a broader environmental ethics based on diverse sensibilities regarding the sacred dimensions of the natural world.

DEFINING TERMS: RELIGION AND ECOLOGY

Religion is more than simply a belief in a transcendent deity or a means to an afterlife. It is, rather, an orientation to the cosmos and our role in it. We understand religion in its broadest sense as a means whereby humans, recognizing the limitations of phenomenal reality, undertake specific practices to effect self-transformation and community cohesion within a cosmological context. Religion thus refers to those cosmological stories, symbol systems, ritual practices, ethical norms, historical processes, and institutional structures that transmit a view of the human as embedded in a world of meaning and responsibility, transformation and celebration. Religion connects humans with a divine or numinous presence, with the human community, and with the broader earth community. It links humans to the larger matrix of mystery in which life arises, unfolds, and flourishes.

In this light nature is a revelatory context for orienting humans to abiding religious questions regarding the cosmological origins of the universe, the meaning of the emergence of life, and the responsible role of humans in relation to life processes. Religion thus situates humans in relation to both the natural and human worlds with regard to meaning and responsibility. At the same time, religion becomes a means of experiencing a sustaining creative force in the natural and human worlds and beyond. For some traditions this is a creator deity; for others it is a numinous presence in nature; for others it is the source of flourishing life.

This experience of a creative force gives rise to a human desire to enter into processes of transformation and celebration that link self, society, and cosmos. The individual is connected to the larger human community and to the macrocosm of the universe itself. The transformative impulse seeks relationality, intimacy, and communion with this numinous power. Individual

and communal transformations are expressed through rituals and ceremonies of celebration. More specifically, these transformations have the capacity to embrace the celebration of natural seasonal cycles as well as various cultural rites of passage. Religion thus links humanity to the rhythms of nature through the use of symbols and rituals that help to establish moral relationships and patterns for social exchange.

The issues discussed here are complex and involve various peoples, cultures, worldviews, and academic disciplines. Therefore, it is important to be clear about our terms. As it is used here, the term "ecology" locates the human within the horizon of emergent, interdependent life rather than viewing humanity as the vanguard of evolution, the exclusive fabricator of technology, or a species apart from nature. "Scientific ecology" is a term used to indicate the empirical and experimental study of the relations between living and nonliving organisms within their ecosystems. While drawing on the scientific understanding of interrelationships in nature, we are introducing the term "religious ecology" to point toward a cultural awareness of kinship with and dependence on nature for the continuity of all life. Thus, religious ecology provides a basis for exploring diverse cultural responses to the varied earth processes of transformation. In addition, the study of religious ecology can give us insight into how particular environments have influenced the development of cultures. Therefore, one can distinguish religious ecology from scientific ecology just as one can distinguish religious cosmology from scientific cosmology.

This awareness of the interdependence of life in religious ecology finds expression in the religious traditions as a sacred reality that is often recognized as a creative manifestation, a pervasive sustaining presence, a vital power in the natural world, or an emptiness (*sunyata*) leading to the realization of interbeing.[25] For many religions, the natural world is understood as a source of teaching, guidance, visionary inspiration, revelation, or power. At the same time, nature is also a source of food, clothing, and shelter. Thus, religions have developed intricate systems of exchange and thanksgiving around human dependence on animals and plants, on forests and fields, on

rivers and oceans. These encompass symbolic and ritual exchanges that frequently embody agricultural processes, ecological knowledge of ecosystems, or hunting practices.[26]

The study of religion and ecology explores the many ways in which religious communities ritually articulate relationships with their local landscapes and bioregions. Religious ecology gives insight into how people and cultures create both symbolic systems of human-Earth relations and practical means of sustaining and implementing these relations.

METHODOLOGICAL APPROACHES TO THE STUDY OF RELIGION AND ECOLOGY

There is an inevitable disjunction between the examination of historical religious traditions in all of their diversity and complexity and the application of teachings or scriptures to contemporary situations. While religions have always been involved in meeting contemporary challenges over the centuries, it is clear that the global environmental crisis is larger and more complex than anything in recorded human history. Thus, a simple application of traditional ideas to contemporary problems is unlikely to be either possible or adequate. In order to address ecological problems properly, religious leaders and laypersons have to be in dialogue with environmentalists, scientists, economists, businesspeople, politicians, and educators.

With these qualifications in mind we can then identify three methodological approaches that appear in the emerging study of religion and ecology: retrieval, reevaluation, and reconstruction. Each of these methodological approaches is represented in the essays included in this volume.

Interpretive retrieval involves the scholarly investigation of cosmological, scriptural, and legal sources in order to clarify traditional religious teachings regarding human-Earth relations. This requires that historical and textual studies uncover resources latent within the tradition. In addition, interpretive retrieval can identify ethical codes and ritual customs of the tradition in order to discover how these teachings were put into practice.

In interpretive reevaluation, traditional teachings are evaluated with regard to their relevance to contemporary circumstances. Can the ideas, teachings, or ethics present in these traditions be adopted by contemporary scholars or practitioners who wish to help shape more ecologically sensitive attitudes and sustainable practices? Reevaluation also questions ideas that may lead to inappropriate environmental practices. For example, are certain religious tendencies reflective of otherworldly or world-denying orientations that are not helpful in relation to pressing ecological issues? It asks as well whether the material world of nature has been devalued by a particular religion and whether a model of ethics focusing solely on human interaction is adequate to address environmental problems.

Finally, interpretive reconstruction suggests ways that religious traditions might adapt their teachings to current circumstances in new and creative ways. This may result in a new synthesis or in a creative modification of traditional ideas and practices to suit modern modes of expression. This is the most challenging aspect of the emerging field of religion and ecology and requires sensitivity to who is speaking about a tradition in the process of reevaluation and reconstruction. Postcolonial critics have appropriately highlighted the complex issues surrounding the problem of who is representing or interpreting a tradition. Nonetheless, practitioners and leaders of particular traditions may find grounds for creative dialogue with scholars of religious traditions in these various phases of interpretation.

DIVERSITY AND DIALOGUE OF RELIGIONS

The diversity of the world's religions may seem self-evident to some, but it is worth stressing the differences within and between religious traditions. At the same time, it is possible to posit shared dimensions of religions in light of this diversity, without arguing that the world's religions have some single emergent goal. The world's religions are inherently distinctive in their expressions, and these differences are especially significant in regard to the study of religion and ecology.

Several sets of religious diversity can be identified as being integrally related. First, there is historical and cultural diversity within and between religious traditions as expressed over time in varied social contexts. For example, we need to be sensitive to the variations in Judaism between Orthodox, Conservative, and Reform movements, in Christianity between Catholic, Orthodox, and Protestant varieties of the tradition, and in Islam between Sunni and Shiite positions.

Second, there is dialogical and syncretic diversity within and between religions traditions, which adds another level of complexity. Dialogue and interaction between traditions engenders the fusion of religious traditions into one another, often resulting in new forms of religious expression that can be described as syncretic. Such syncretism occurred when Christian missionaries evangelized indigenous peoples in the Americas. In East Asia there is an ongoing dialogue between and among Confucianism, Daoism, and Buddhism that results in various kinds of syncretism.[27]

Third, there is ecological and cosmological diversity within and between religions. Ecological diversity is evident in the varied environmental contexts and bioregions where religions have developed over time. For example, Jerusalem is the center of a sacred bioregion where three religious traditions—Judaism, Christianity, and Islam—have both shaped and been shaped by the environment. These complex interactions illustrate that religions are not static in their impacts on ecology. Indeed, throughout history the relationships between religions and their natural settings have been fluid and manifold.

Religious traditions develop unique narratives, symbols, and rituals to express their relationships with the cosmos as well as with various local landscapes. For example, the body is a vital metaphor for understanding the Daoist relationship with the world: as an energetic network of breathings-in and breathings-out, the body, according to Daoism, expresses the basic pattern of the cosmos. Another example, from Buddhism, of a distinctive ecological understanding involves Doi Suthep, a sacred mountain in the Chiang Mai valley of northern Thailand: the ancient Thai reverence for the mountain is understood as analogous to respect for the Buddhist reliquary, or stupa.

CONVERGING PERSPECTIVES: COMMON VALUES FOR THE EARTH COMMUNITY

This project of exploring world religions and ecology may lead toward convergence on several overarching principles. As many of the essays illustrate, the common values that most of the world's religions hold in relation to the natural world might be summarized as reverence, respect, restraint, redistribution, and responsibility. While there are clearly variations of interpretation within and between religions regarding these five principles, it may be said that religions are moving toward an expanded understanding of their cosmological orientations and ethical obligations. Although these principles have been previously understood primarily with regard to relations toward other humans, the challenge now is to extend them to the natural world. As this shift occurs—and there are signs it is already happening—religions can advocate reverence for the earth and its profound cosmological processes, respect for the earth's myriad species, an extension of ethics to include all life forms, restraint in the use of natural resources combined with support for effective alternative technologies, equitable redistribution of wealth, and the acknowledgement of human responsibility in regard to the continuity of life and the ecosystems that support life.

Just as religious values needed to be identified, so, too, the values embedded in science, education, economics, and public policy also need to be more carefully understood. Scientific analysis will be critical to understanding nature's economy; education will be indispensable to creating sustainable modes of life; economic incentives will be central to an equitable distribution of resources; public-policy recommendations will be invaluable in shaping national and international priorities. But the ethical values that inform modern science and public policy must not be uncritically applied. Instead, by carefully evaluating the intellectual resources both of the world's religions and of modern science and public policy, our long-term ecological prospects may emerge. We need to examine the tensions between efficiency and equity, between profit and preservation, and between the private and public good. We

need to make distinctions between human need and greed, between the use and abuse of nature, and between the intrinsic value and instrumental value of nature. We need to move from destructive to constructive modes of production, and from the accumulation of goods to an appreciation for the common good of the earth community.

As Thomas Berry has observed: "The ethical does not simply apply to human beings but to the total community of existence as well. The integral economic community includes not only its human components but also its natural components. To assist the human by deteriorating the natural cannot lead to a sustainable community. The only sustainable community is one that fits the human economy into the ever-renewing ecosystems of the planet."[28]

This issue of *Dædalus* is dedicated, then, to exploring the ways in which the world's religions can contribute to ensuring the continuity of the earth community, especially in light of the challenge of global climate change. It is intended as a mapping of the contours of possibility that invites further discussion, reflection, and—inevitably—action.

ENDNOTES

[1]It is important to note that the most recent Intergovernmental Panel on Climate Change (IPCC) report noted that climate change is a serious global problem that requires the efforts of the international community to mitigate its growing effects. This report has been endorsed by the National Academies of Sciences of Australia, Belgium, Brazil, Canada, the Caribbean, China, France, Germany, India, Indonesia, Ireland, Italy, Malaysia, New Zealand, Sweden, Turkey, the United Kingdom, and the United States. See <http://www.ipcc.ch>.

[2]Bill McKibben, *The End of Nature* (New York: Random House, 1989; 2d ed. New York: Anchor Books, 1999).

[3]Lester R. Brown, "Challenges of the New Century," in The Worldwatch Institute, *State of the World 2000* (New York: Norton, 2000), 20.

[4]The movement, which began in Britain, has had demonstrable influence on the decisions of the World Bank and other lending organizations to reduce or forgive debts in more than twenty countries. See <http://www.jubilee2000uk.org>.

[5]Lynn White, Jr., "The Historical Roots of Our Ecologic Crisis," *Science* 155 (10 March 1967): 1204.

[6]For more information on the conference series, see <http://www.hds.harvard.edu/cswr/ecology>.

[7]*Buddhism and Ecology* (1997), *Confucianism and Ecology* (1998), *Hinduism and Ecology* (2000),*Christianity and Ecology* (2000), *Indigenous Traditions and Ecology* (2001), and *Daoism and Ecology* (2001). Forthcoming are volumes on Judaism, Islam, Jainism, and Shinto. All are published by the Center for the Study of World Religions at Harvard Divinity School and distributed by Harvard University Press, 1-800-448-2242.

[8]The Worldwatch Institute, *State of the World 2001* (New York: Norton, 2001), 190.

[9]Thomas Berry, *The Great Work* (New York: Bell Towers/Random House, 1999). See also Niles Eldredge, *Life in the Balance: Humanity and the Biodiversity Crisis* (Princeton: Princeton University Press, 1998), and Marjorie Reaka-Kudla, Don Wilson, and Edward O. Wilson, *Biodiversity II: Understanding and Protecting our Biological Resources* (Washington, D.C.: Joseph Henry Press, 1997).

[10]See Daniel Maguire, *The Moral Core of Judaism and Christianity: Reclaiming the Revolution* (Philadelphia: Fortress Press, 1993), 13.

[11]See Robert Massie's work with the Coalition for Environmentally Responsible Economies (CERES) and the work of Herman Daly and Robert Costanza on ecological economics.

[12]Paul Erhlich, *Human Natures* (Washington, D.C.: Island Press, 2001). See his last chapter on "Evolution and Human Values." Gary Gardner, in the concluding article, "Accelerating the Shift to Sustainability," in *State of the World 2001*, writes, "The question facing this generation is whether the human community will take charge of its own cultural evolution and implement a rational shift to sustainable economies, or will instead stand by watching nature impose change as environmental systems break down." Gardner, "Accelerating the Shift to Sustainability," 190.

[13]There are numerous examples of these efforts: Amory and Hunter Lovins for alternative energy, John and Nancy Todd and William McDonough for ecological technology and design, Herman Daly and Robert Costanza for ecological economics, Wes Jackson and Wendell Berry for sustainable agriculture, David Orr and Anthony Cortese for environmental education.

[14]<http://www.earthcharter.org >.

[15]"Preserving and Cherishing the Earth: An Appeal for Joint Commitment in Science and Religion," 1990.

[16]"World Scientists' Warning to Humanity," Union of Concerned Scientists, 1992.

[17]See preparatory readings for the conference in Paul Abrecht, ed., *Faith, Science, and the Future* (Geneva: World Council of Churches, 1978). For Christian ethical reflections from this period see Roger Shinn, *Forced Options: Social Decisions for the 21st Century* (San Francisco: Harper and Row, 1982).

[18]See Wesley Granberg-Michaelson, *Redeeming the Creation: The Rio Earth Summit: Challenges for the Churches* (Geneva: World Council of Churches Publications, 1992). For further background on the role of the WCC see Dieter Hessel, *Theology and Public Policy*, vol. 7, bk. 1 (Washington, D.C.: Churches' Center for Theology and Public Policy, 1995). We are indebted to him for his suggestions for this paragraph on the role of the WCC.

[19]See especially the booklet *Earth and Faith* published by UNEP in 2000 and available from uneprona@un.org or by telephone at (212) 963-8210. In June of 2001, UNEP also organized the Tehran Seminar with the Islamic Republic of Iran on "Religion, Culture, and the Environment."

[20]<http://www.wfdd.org.uk>.

[21]See the account of the extension of this work in John Chryssavgis, "The Halki Ecological Institute: Religion, Science, and the Environment," *Worldviews: Environment, Culture, Religion* 3 (3) (December 1999): 273–278.

[22]In 1988 the Catholic Bishops of the Philippines issued a letter entitled "What is Happening to Our Beautiful Land," and in 1990 the U.S. Catholic Bishops published a statement called "Renewing the Earth." In 2000 the Boston Bishops wrote a pastoral letter entitled "And God Saw That it Was Good," and in February of 2001 the Bishops of the Pacific Northwest published "The Columbia Watershed: Caring for Creation and the Common Good." In June of 2001 the U.S. Catholic Bishops issued a letter called "Global Climate Change: A Plea for Dialogue, Prudence, and the Common Good."

[23]See Kofi Annan, "Sustainable Development: Humanity's Biggest Challenge in the New Century" (statement read at UN International Conference Center, Dhaka, Bangladesh, 14 March 2001).

[24]The journal is entitled *Worldviews: Environment, Culture, Religion* and is published by Brill Academic Publishers.

[25]The term "interbeing" is used in the writings of the Vietnamese monk Thich Nhat Hanh.

[26]See Eugene N. Anderson, *Ecologies of the Heart: Emotion, Belief, and the Environment* (New York and Oxford: Oxford University Press, 1996) and John A. Grim, ed., *Indigenous Traditions and Ecology: The Interbeing of Cosmology and Community* (Cambridge, Mass.: Center for the Study of World Religions, Harvard Divinity School, 2001).

[27]See Judith A. Berling, *The Syncretic Religion of Lin Chao-en* (New York: Columbia University Press, 1980).

[28]Thomas Berry, "Transforming Economic Myths," unpublished manuscript.

George Rupp

Religion, Modern Secular Culture, and Ecology

As an occasional participant in the meetings that led to this issue of *Dædalus*, I have been invited to sketch the historical, religious, and academic context that these deliberations on religion and ecology presuppose. I can summarize that context in two countervailing points: virtually all of our religious and cultural traditions have contributed to the gravity of the ecological threats we face; at the same time, both our religious traditions and our universities can marshal substantial resources for addressing those threats more effectively than has been the case so far. The challenge is to move from point one to point two.

Almost thirty-five years ago, Lynn White wrote an arresting essay entitled "The Historic Roots of our Ecologic Crisis," an article that was published in *Science* and has received widespread attention over the years from scientists as well as humanists. It is worth returning to White's article more than three decades later because it continues to be instructive, not only through its telling insights but also through its equally revealing omissions. White correctly identifies the dominant strain or core structure of Western theism that represents God as transcending the world and humanity as exercising dominion over the natural order. Where White falls short is in failing to notice how other elements in the structure of biblical religion in effect counterbalance the invitation to exercise human sovereignty over nature. Two such elements are crucial: the affirmation of

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creation as the handiwork of God and therefore as good; and the record of humanity's fall and consequent need for redemption.

That nature is God's creation and therefore good calls for respectful care and stewardship. White is aware of what he terms "an alternative Christian view," which he delineates almost exclusively with reference to Saint Francis of Assisi. But he does not interpret the theme of care and stewardship for the divine creation as a central element in the structure of Jewish and Christian religion.

Similarly crucial for counterbalancing the motif of human sovereignty over nature is the biblical story of fall and redemption. The destiny of the faithful is, after all, not to be realized in worldly rulership. Especially in much of Christian piety, the human vocation is to be a pilgrim who is only passing through the fallen world and therefore is to tread lightly over the earth on the way to redemption in heaven.

This otherworldly orientation can, of course, cut both ways. It may lead to a disengagement that is, paradoxically, friendly to the environment from which it is estranged. But it may also result in the exploitation of the fallen world precisely because it is viewed as lacking intrinsic value. Thus, even very traditional Western religious worldviews have a deeply equivocal relationship to our ecological crisis.

What is noteworthy, though, is that the force of the structural elements outlined by White become only more pronounced as increasing numbers of people find the traditional narrative of fall and redemption less and less compelling. If salvation in heaven is not the central goal of human life, then the prospect of sovereignty over the natural world takes on greater urgency. And if the evident evil in worldly affairs is to be overcome apart from any redemptive divine action, then vigorous human effort will be required.

Similarly, if God as creator is believed to have established a general order to nature but is no longer thought to intervene in particular events, then human will and intelligence can seek to understand and in time even attempt to control the natural world. And if even the limited role attributed to this remote deity is no longer attractive or persuasive, then human effort is

all the more crucial. Thus the rise of science and a correlative retreat by traditional theism from at least the late seventeenth century on accentuated precisely the anthropocentric elements that White identifies as characteristic of Jewish and Christian religion.

To put the point bluntly, it is only when the transcendent God of biblical religion is no longer thought to intervene in the world either as creator or as redeemer that the full force of claims for human dominion over nature becomes evident.

In the twentieth century this unrestrained human self-assertion over nature reached what remains its starkest expression in the literary and philosophical movement called existentialism. Like most broad cultural trends, existentialism has many variants that certainly do not agree in all their details. But the early thought of Martin Heidegger exerted enormous influence on the movement as a whole and in many respects illustrates its central tendencies. For Heidegger, the human self is, to use his metaphor, "thrown" into an indifferent universe from which it must seize and shape whatever meaning can be attained. There is no created order to discover. Nor is there any redemptive community. Instead the self-reliant individual must establish authentic existence in stark opposition both to nature and to the mores of any and all forms of conventional social life—in particular the mass culture of modern society.

Existentialism offers a convenient illustration of both the glory and the travail of modern Western individualism. Its summons one to authenticity, to self-actualization over against a conformist society and an indifferent nature; it resonates with the energy and initiative and independence of our most individualistic traditions. But existentialism also exemplifies the willful self-assertion and arrogance that all too frequently characterize Western attitudes both toward nature and toward the cultures of others.

There are, of course, substantial cultural resources for enriching this environmentally inhospitable and religiously impoverished individualism. The essays on religion and ecology in this issue collect and present impressive evidence of the vitality of those resources. Especially noteworthy are the contributions from a remarkable range of Asian traditions—from Hindu,

Buddhist, Taoist, Shinto, and Confucian thought and practice. Indeed, one of the most remarkable achievements of this collection is the depth and variety of representation of those various traditions. But that very achievement at the same time demonstrates how diverse each community is, how disparate its historical impacts have been, and how untenable it is to present any tradition in self-congratulatory terms as consistently and effectively unified in its ecological orientation.

The result is that neither Asian traditions nor the relatively fewer environmentally friendly themes of Jewish, Christian, and Muslim action and reflection nor the orientations of indigenous communities in Africa, Oceania, and the Americas are by themselves adequate for addressing the environmental challenges we face. We cannot select and emphasize only environmentally friendly motifs from multiple traditions. Nor can we simply embrace a unified position that affirms the whole of reality just as it is. Instead we must grapple with the fact that modern Western individualism and its institutional expressions in social, political, and economic life have become major historical forces across cultures—forces that we cannot ignore or wish away but rather must engage and incorporate into an ecologically responsible stance appropriate to the centuries ahead.

One of the settings in which we must grapple with this ecological crisis is our universities. It is scarcely surprising, in view of the history of their development, that modern research universities exemplify an advanced form of the very individualism that we must overcome. This is so not only because individual members of at least Western academic institutions are in their personal styles highly individualistic—though that is certainly often true; more important, it is because universities, in developing academic disciplines as central to the organization of domains of knowledge, exhibit a pattern that parallels the role of individualism in the broader society.

Disciplinary specialization is a significant achievement of the research university. It has been remarkably effective in generating understanding of both specific data and general explanatory hypotheses. But this attainment of analytical rigor has as its correlate a depth of specialization that renders connections

with other disciplinary approaches difficult at a time when we are becoming more and more aware that many challenging intellectual problems, certainly including issues at the heart of our ecological crisis, do not fall neatly within the domain of a single discipline.

This state of affairs predictably has led to calls for interdisciplinary investigation. While completely understandable, such calls are problematic in ways that parallel the invocation of one or another religious or cultural tradition as the answer to our ecological crisis. Just as we cannot simply return to a state of innocence that antedates the historical emergence of modern Western individualism, so we cannot embrace a synthetic interdisciplinary approach that fails to incorporate the analytic strengths and achievements of disciplinary specialization.

What is required is therefore not interdisciplinary study but rather multidisciplinary investigation comparable in rigor and depth to specialized research within single disciplines. Such investigation offers the prospect of moving forward on two crucial fronts. The first requires us to understand and then also to demonstrate in compelling ways how current patterns of advanced industrial societies are not sustainable indefinitely—or even for very long. The second calls for participation in developing alternative technical approaches and economic incentives that allow and encourage movement away from unsustainable current practices.

Progress on both fronts clearly requires joint efforts on the part of scientists and engineers on the one hand and policy professionals on the other. That such joint efforts are being launched is promising. But the interests that favor continuation of current patterns of consumption are extremely powerful. Consequently, any campaign to conserve our environment must be solidly based on compelling scientific evidence and cogently expressed in terms of economic incentives and policy requirements.

Along with marshaling scientific, technical, and policy capabilities for addressing ecological issues, we must also enlist the full range of the world's cultural resources. This process must recognize the extent of pluralism not only among traditions but also within each of them. Because there are multiple voices

within each of a rich variety of communities, effective collaboration across traditions entails greater complexity than has often been supposed—but, paradoxically, may also be more readily attained, at least in partial and stepwise fashion.

Pluralism within traditions testifies to the capacity for change in what remains a continuous line of development. Thus even the communities most inclined to invoke authoritative figures or texts in fact regularly take into account new data and respond creatively to the demands of novel situations. This capacity for change opens up opportunities for collaboration across traditions, as minor or even submerged motifs in one community gain a higher profile through interaction with other communities in which those motifs are more prominent.

To take a critical instance, in seeking to counter the Western tendency toward unrestrained individualism, a major resource is the insistence of many religious and cultural traditions that humans in the end are parts of a larger whole to which their personal interests and ambitions are subordinate. In Western religious and cultural traditions, this holistic affirmation has not been a dominant theme insofar as God has been construed as outside the world, and it has been muted still more as the divine has been relegated to the margins of natural life and human affairs. But even in Western traditions, there is a persistent testimony that God is intimately involved with the world and indeed incorporates the world into the divine life.

This testimony is not confined to Francis of Assisi and a few other revolutionary figures, as Lynn White suggests in referring to "an alternative Christian view." Instead, it is a recurrent even if not dominant motif in the Bible and in Western theology and philosophy. In regard to this theme, Psalm 139 speaks for much Jewish and Christian piety:

> Where can I go from your spirit?
> Or where can I flee from your presence?
> If I ascend to heaven, you are there;
> if I make my bed in Sheol, you are there.
> If I take the wings of the morning
> and settle at the farthest limits of the sea,
> even there your hand shall lead me,
> and your right hand shall hold me fast.

> If I say, "Surely the darkness shall cover me,
> and the light around me become night,"
> even the darkness is not dark to you;
> the night is as bright as the day,
> for darkness is as light to you.
> (Ps. 139:7–12)

And for Christian theology, the central teaching of the incarnation affirms that the divine is integrally related to the human, that a deity who is distant cannot be the God who loves and embraces the world in Christ.

Modern secular appropriations of Western religion illustrate the persistence of this holistic affirmation. Spinoza and Hegel are probably the most influential examples of philosophers who sought to restate the truths of Jewish and Christian religion in secular terms after the erosion of belief in a God outside the world. But instead of retreating to the remote God of Deism, Spinoza and Hegel insisted, each in his own way, that any coherent conception of God must include all of reality in the divine.

This holistic strain in Western traditions may attract attention out of proportion to its historical prominence in the context of interaction among religious traditions, especially once the interaction has moved beyond self-congratulatory representation to a search for common ground. This seeking common ground does not imply an attempt to find a least common denominator to which the various religious traditions can be reduced. Instead, the aim is to enrich and develop further the resources in each community for resisting unrestrained individualism through the affirmation of an inclusive reality into which personal interests and ambitions must be integrated.

We in the West have much to learn from religious and cultural traditions that locate the human within nature and do not authorize the exploitation of nature to serve narrow human interests. At the same time, all of us as humans now confront ecological challenges that require vigorous effort to redirect the environmental impact of our species. Consequently, the energy and imagination that have contributed to the threats we face may also be a major resource for countering those threats.

In this respect, modern Western individualism in both its secular and its religious expressions may play a constructive role in ongoing deliberations on religion and ecology. While the recognition that the human is integral to a larger whole is crucial for cultivating an ecological ethos, this insight alone is not enough. In particular, this holistic affirmation of all that is does not directly address the crucial ethical question of how a more equitable sharing of limited resources may be attained.

Here again, each tradition can bring impressive resources to bear. But along with counterparts from other traditions, Western religious and secular perspectives certainly can and should play a role in the common cause of restoring ecological balance while at the same time advancing toward a more equitable sharing of the earth's scarce resources. Only this joining of environmental concern with a commitment to justice is worthy of the best in each of our diverse traditions.

To integrate an ethos of care for the earth as our common home with an ethic that engages the issue of equity would be an optimal outcome for a series of deliberations on ecology and religion. This volume has certainly not yet achieved that integration. But in marshaling resources both from the academy and from an impressive range of religious traditions, it at least moves in the right direction.

Michael B. McElroy

Perspectives on Environmental Change: A Basis for Action

INTRODUCTION

We live at a unique point in the history of planet Earth. After almost four billion years of evolution, a single species, Homo sapiens sapiens, has evolved with the capacity to think, to contemplate not only its place in the universe but also potentially to control its own destiny and that of other species as well. What sets our species apart is our brains. We have the facility to absorb, process, and organize prodigious amounts of information. With language, written and spoken, we can pass information from person to person, extending knowledge and experience from generation to generation across the ages. With art and literature we can stimulate the imaginations of our fellow humans. With science we can explore the complex processes that developed in the first few seconds of the universe, in the aftermath of the big bang. We can hope to understand the events that led to the production of the elemental subatomic building blocks of matter, the synthesis of the elements, and the eventual accretion of matter in orderly macroscopic structures we identify as planets, stars, and galaxies. We can track the life cycle of a star from birth, to death, to rebirth. We can enumerate the factors that set our planet apart from other bodies of our solar system. We can reconstruct the history of the earth and speculate as to the events that led to the early appearance of life and the forces that shaped its subsequent evolution. We can hope to unravel the principles that

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govern life itself. And soon we may have the capacity to manipulate our genes, perhaps to eliminate disease or at least postpone its onset.

Yet there is a dark underside to this record of accomplishment. The achievements of our science are astounding, the future scarcely imaginable. In a world of specialization there is a risk, though, that we may lose sight of our place in nature, that we may begin to view ourselves as above it all—as supernatural. We have developed an undeniable capacity to transform the earth, to alter, for example, the composition of the atmosphere on a global scale with uncertain but surely inauspicious implications for the climate. We have the power to eliminate in a geological instant species that took billions of years to evolve. The critical question is whether we have the wisdom and ethical maturity to employ our scientific and technological skills with discretion. As the late Roger Revelle remarked, we have embarked on an unplanned global experiment and our ability to predict the consequences is deficient. We need to step back and take stock if we are to avoid serious mistakes. We need a moral compass: there are ethical as well as technical issues to be addressed if we are to chart a responsible course to the future.

Do we have the right to alter the composition of the global atmosphere if we are unable definitively to assess in advance the consequences? If the changes in atmospheric composition for which rich nations are largely to blame result in a change in climate and if the negative effects of this climate change are experienced most acutely by those less advantaged, is there a duty for the responsible parties to provide compensation? Do we have a moral obligation to preserve the diversity of life forms on Earth? If our actions lead to elimination of entire ecosystems on the planet, tropical rain forests for example, should our children unborn have the right to hold us accountable? What are the rules by which we should live and be judged? What is our proper place in nature? If posterity is to serve as jury, to whom do we answer as judge? If there are no penalties, why should we care? Science alone cannot provide answers to these questions. Nor can we expect a definitive response from our colleagues in economics.

For the economist, the value of the rain forest lies in the monetary returns to be reaped by harvesting its resources. Its timber has value. So also have the unique genetic materials it harbors, resources that might be exploited in the future to develop medicines to help combat disease. We could propose to measure the aesthetic worth of the forest by estimating fees tourists would be prepared to pay to enjoy its wondrous diversity and complexity. But surely there is more to the continued existence of the rain forest than a value measured simply in dollars and cents. Thomas Berry argues that the natural world is "our primary revelatory experience." He decries the emphasis by the religious establishment on "verbal revelation to the neglect of the manifestation of the divine in the natural world."[1] To destroy the rain forest, or any other unique feature of the natural world, is, in Berry's perspective, a sin, an insult to the Creator, an impediment restricting permanently our ability to contemplate and communicate with the Divine. It would be difficult to attach a monetary value to such a far-reaching impact.

This essay is concerned specifically with changes in the global environment resulting from diverse forms of modern industrial activity. We begin with an attempt to place the contemporary human influence in a larger historical context. Our human species is a product of close to four billion years of evolution. Only recently, however, in the past century or so, have we developed the capacity to alter the environment on a global scale. We choose to emphasize the challenge posed by the impact of human activity on the climate system. Yet, as we shall indicate, there are other issues that demand attention.

The properties of climate depend to an important extent on the composition of the atmosphere. The atmosphere today is composed mainly of diatomic oxygen and nitrogen. These gases are transparent to sunlight and transparent also to longer wavelength infrared radiation emitted by the surface of the earth. If the atmosphere were composed exclusively of oxygen and nitrogen, the surface of the earth would be freezing cold, incapable of supporting life as we know it. Earth's relatively mild climate results from the presence in the atmosphere of small concentrations of polyatomic gases capable of absorbing infra-

red radiation emitted by the surface. These gases serve to insulate the surface from the cold temperatures of outer space. By loose analogy with the function of glass in a greenhouse, they are referred to as greenhouse gases. Water vapor is the most important of the contemporary greenhouse gases. The supply of water vapor depends, however, on temperature. If Earth were cold, concentrations of water vapor would be too low to have a significant impact on the climate. The presence of a concentration of water vapor sufficient to raise the surface temperature of the earth by a significant amount depends, thus, on the presence of other greenhouse gases, notably carbon dioxide, methane, and nitrous oxide. As we shall see, concentrations of these gases are increasing at a historically unprecedented rate today.

The nature of the disturbances responsible for these changes and the potential implications for the climate are discussed below. A critique of policy options currently underway to address the issue of climate change also follows, highlighting the need for an ethical perspective to complement the contemporary emphasis on science, technology, and economics. As discussed further below, addressing the challenge of global environmental change will require an evolution of social organizations comparable to the physical evolution of Earth and the evolution of life itself. Private parties, governments, educational institutions, religions, and business all have essential roles to play. If we are to be successful, we argue, our actions must be guided not simply by science and economics but also by an abiding sense of universal ethical responsibility.

HISTORICAL CONTEXT

The earth is approximately 4.6 billion years old. It evolved from the spinning mass of gas and dust that constituted the original solar nebula. As it formed, the planet began to heat up, responding in part to energy released during gravitational accretion, in part to the input of heat associated with the decay of radioactive elements such as uranium, thorium, and potassium. Heating of the interior led to instability with lighter material underlying heavy. This resulted in a spontaneous adjustment,

an organized pattern of vertical motion with lighter material rising in some regions to be replaced by heavier stuff sinking elsewhere. Heavier elements such as iron settled to the core. More volatile elements such as hydrogen, carbon, nitrogen, and the noble gases concentrated in the near surface region forming the primitive atmosphere, ocean, and crust. Chemical differentiation, driven by the changes in pressure and temperature accompanying vertical motion, resulted in the formation of the distinct zones identified today with the core, lower and upper mantle, crust, atmosphere, and ocean. Regions of uplift were associated with divergence of crustal materials at the surface; preexisting crustal material was pushed apart as fresh matter reached the surface. Conversely, regions of downward motion were associated with convergence of surface material. Segregation of light from heavy minerals led to the appearance of continents and ocean basins. The lighter minerals that formed the continents floated like rafts on the underlying heavier material composing the mantle. Crustal matter was organized in a number of coherent structures, referred to as plates. As fresh material was added to individual crustal plates by upward motion, old material was removed by compensatory downward motion elsewhere. The configuration of crustal plates evolved significantly over the course of geologic time responding to changes in the strength and spatial pattern of convection. Mountains formed and were eroded by weathering. At times, continental plates were joined in supercontinental structures. At others, they were more broadly dispersed. The juncture of India with Asia, for example, responsible for the formation of the Himalayas and the Tibetan Plateau, is a relatively recent occurrence: it took place about fifty-five million years ago. North and South America joined to form a composite unit as recently as a few million years before present (BP).

Tectonics, the internal dynamics of the earth, not only had an influence on the nature of landforms at the earth's surface, but also almost certainly played a role in the origin and evolution of life. Life was an early arrival on the planetary scene. It developed at least 3.5 billion years ago, arguably earlier. The precise steps that led to the appearance of the first self-replicating organisms are unclear. Some believe that the action oc-

curred in the atmosphere triggered by chemical reactions associated with lightning and ultraviolet solar radiation. Others contend that it arose first in the ocean, in the vicinity of hot springs emanating from regions where fresh material emerges from the interior to interact explosively with cold ocean waters of distinctly different chemical composition. Deep-sea vents, distributed along zones of sea-floor spreading, support a remarkable ecological system at present. Bacteria, drawing energy from oxidation of the sulfur contained in hot spring water, represent the base of a food chain supporting a dense population of worms and clams living in close proximity to the vents. Water emanating from the vents contains a variety of trace metals and other elements essential for life. Nitrate or nitrite formed from acids produced in the primitive atmosphere could have provided the oxidants for synthesis of the earliest forms of life.

The earliest forms of life consisted of simple organisms known as prokaryotes. Bacteria and blue-green algae represent examples of species that existed from the onset and that continue to function as important components of the diverse interactive web of life that characterizes our planet today. Bacteria play an important role in the decomposition of organic matter; they dispose of our garbage, transforming waste to useful matter. Blue-green algae have the remarkable ability to convert inert diatomic nitrogen to biologically available fixed nitrogen, rivaling the capabilities of the expensive energy-intensive fertilizer factories that accomplish the same task today. Prokaryotes dominated life for much of the early history of the earth. Several billion years elapsed before they were joined, roughly 1.5 billion years BP, by more complex life forms, the eukaryotes.

The cells of eukaryotic organisms were vastly more complicated than those of their prokaryotic antecedents. Lynn Margulis suggests that the eukaryotes may have evolved as a result of the fusion of cells of the preexisting prokaryotes.[2] Cells of particular prokaryotes were invaded by cells of others, leading to the appearance of new life forms with greatly enhanced functionality. The development of the eukaryotic cell paved the way for the evolution of more complex multicellular organisms.

Remarkably, almost a billion years elapsed before the appearance of the first multicellular animals, the so-called Ediacara fauna—flat, pancake-shaped, soft-bodied organisms named for the region in Australia where their fossil remains were first detected. The first hard-bodied (shelly) organisms, the Tommatians, named for the region in Russia where they were first discovered, appeared somewhat later, followed by the veritable profusion of life forms identified in the Burgess Shale, the paleontological Rosetta stone discovered high in the Canadian Rockies by C. D. Walcott in 1909.[3]

The diversity of life forms recorded in the Burgess Shale and the subsequent developments that led to the appearance of vascular plants (about 445 million years BP), amphibians (about 300 million years BP), and other life forms are truly remarkable. Life, for most of the early history of the earth, was confined to the ocean. Only later, at about 440 million years BP, did it spread to the land. Progenitors of all the modern phyla are present in the Burgess record, dated at about 550 million years BP, together with a host of other species that failed to survive. The factors that led to the evolutionary developments recorded in the Ediacaran, Tommatian, and Burgess deposits are not well understood. Recent work suggests, however, that a series of dramatic shifts in climate during the Neoproterozoic, between about 750 and 580 million years BP, may have had an influence. On at least four occasions over this period, the earth moved into a deep freeze, a condition referred to by Joel Kirschvink as a Snowball Earth.[4] The evidence suggests that during these periods the earth was frozen over from equator to pole. The ocean was effectively isolated from the atmosphere. Paul Hoffman and his colleagues proposed that the Snowball Earth condition was triggered by a precipitous drop in the concentration of atmospheric CO_2, prompted by a decrease in the release of CO_2 associated with a decrease in global tectonic activity.[5] Environmental changes, specifically changes in the chemistry of the ocean, accompanying these remarkable climate transitions could have provided the stimulus for the burst of evolutionary activity observed at the onset of the Cambrian. Changes in the environment may have been responsible also for the massive extinction events that punctuate the subsequent geologic record.

The Cambrian expansion, for example, was followed a few hundred million years later, at about 225 million years BP, by what Gould termed the "granddaddy of all extinctions," responsible for the elimination of as many as 96 percent of all the marine species alive at that time.[6] A second major extinction took place 65 million years ago, at the boundary of the Cretaceous and Tertiary periods, and was associated with the demise of the dinosaurs. The later event, it is thought, was induced by a change in the environment triggered by the impact of a giant meteorite. The extinction at the Cretaceous-Tertiary boundary paved the way for large mammals and later for the evolution of hominids and our earliest human ancestors.

Mammals developed at the end of the Triassic, about 160 million years BP. As Gould remarks, they spent their first 100 million years as "small creatures living in the nooks and crannies of a dinosaur's world." He suggests that "their 60 million years of success following the demise of the dinosaurs has been somewhat of an afterthought."[7] If afterthought it was, we are the products of this circumstance. To quote Gould again: "in an entirely literal sense, we owe our existence, as large and reasoning animals, to our lucky stars."

Our closest living relatives in the animal kingdom are the great apes (including the gorilla and the chimpanzee). Much of the evolutionary development that led to the eventual appearance of humans is thought to have taken place in Africa beginning about 4 million years ago. The details of the path to modern humans is unclear but is thought to have proceeded along a trajectory that involved, sequentially, Australopithecus africanus, Homo habilis, and Homo erectus. Homo erectus arrived on the scene about 1.7 million years ago and evolved later into Homo sapiens. Human history as we know it took off much more recently, about 50 thousand years ago, in what Jared Diamond termed the Great Leap Forward, with evidence for biologically and behaviorally modern humans in a variety of locations including East Africa, the Near East, and both southeastern and southwestern Europe.[8]

There is some dispute as to where our earliest human relatives originated. Early interpretations of human mitochondrial DNA suggest that we may have a common maternal ancestor,

that she may have lived in Africa about 150 thousand years ago, and that her progeny may have migrated subsequently to the Middle East, Europe, Asia, and Australia, reaching the Americas as recently as twenty to thirty thousand years ago. Others favor a more distributed origin for humans. It is clear in any event that we are recent arrivals on the stage of planetary life. Never before, though, has the earth seen a species with a greater capacity to dominate its environment. As discussed by Diamond, our influence is far-reaching and not always benign.[9]

In the earliest period of their history, our ancestors had relatively little effect on their environment. For food and fiber, they relied on resources available in their immediate vicinity. They hunted wild animals and harvested wild plants for food. Human populations were relatively low, and supplies of food were adequate to meet the needs of these early nomads. With the passage of time, the hunter-gatherer life-style became increasingly more difficult. Depletion of wild animal stocks and sources of plants suitable for human consumption, exacerbated by increases in the human population, may have contributed to the difficulty, prompting the first great human social adjustment: the transition from the nomadic existence of the hunter-gatherers to the more sedentary life-style of the first agricultural communities. The advance that made this possible involved the domestication of plants and animals. Rather than searching in the wild for plants to eat or animals to slaughter, it was easier to cultivate the land in one place, sow and reap the most desirable crops, store crop surpluses, and tame available animals to serve needs for food, fiber, fertilizer, and labor. The transition to agriculture and animal husbandry occurred first, it appears, in southwest Asia about ten thousand years ago, in the region known as the Fertile Crescent occupied today by Jordan, Israel, Syria, Iraq, and parts of Turkey. It was accompanied by the evolution of new social structures, facilitated by the availability of food surpluses. No longer was it necessary for all members of a community to engage in an unending search for food. Human functions became more specialized. An artisan class developed, and later chiefs, philosophers, priests, warriors, and eventually nation-states, setting the scene for the evolution of science, religion, and other features of modern life.

These early social structures led to the first serious conflicts between man and nature. John Perlin recounts the problems encountered as a result of the unsustainable exploitation of locally available sources of timber. Wood, he points out, was the "foundation on which early societies were built."[10] It provided, among other functions, the fuel for fire and thus the means to convert clay to pottery and to extract metal from rocks, as well as the material to fabricate the implements of industry and agriculture and to construct ships, permitting societies to forage for resources far from native shores. Deforestation led to the decline and fall of the great civilizations that flourished five thousand years ago in Mesopotamia. Perlin attributes the demise of Sumerian civilization, for example, to a precipitous drop in agricultural production occasioned by excessive accumulation of salt in the previously rich alluvial soils of the region. The salt responsible for this problem originated in the salt-rich sedimentary rocks that formed the mountains to the north. The increase in salt carried by rivers draining these mountains and its accumulation in the alluvial plains was attributed to removal of the protective forest cover in the upstream region prompted by the inexhaustible demand for timber. Perlin argues that much of modern history, dating from Greek and Roman times but extending toward the present, can be attributed to actions taken by societies to ensure adequate sources of timber. Deforestation is not a recent phenomenon. It has existed from the beginning. It is spreading now to regions previously immune, such as the tropical rainforests, and it is this that draws our attention. Paradoxically, the development since the industrial revolution of economies based on fossil sources of energy rather than wood offers the opportunity to reverse the trend toward global deforestation.

THE CHALLENGES OF THE PRESENT

We turn our attention now to problems of the present. To this point, we have sought to provide a broad context to define the place of humans in nature. It is difficult, however, to comprehend the significance of events that unfold on time scales mea-

sured in billions of years. It is instructive to recast the history of our planet on a more comprehensible time scale.

Assume for the moment that the 4.5-billion-year history of the earth is compressed into a single year. Formation of Earth from the primitive solar nebula begins in this case on January 1. The early prokaryotes are established by February 17. Almost seven months elapse before the eukaryotes appear in early September. The expansion of life recorded in the Burgess Shale takes place in mid-November. Mammals arrive on December 18, while dinosaurs meet their untimely demise on the evening of December 26. Humans make a late appearance at about 9 p.m. on the evening of December 31. The industrial revolution begins about two seconds before midnight on December 31. And we are grappling now with events that will unfold over the next few tenths of a second.

The industrial revolution marked a pivotal turning point in human history. It resulted in a host of inventions, including the heat pump, the steam engine, the internal combustion engine, the means to generate and distribute electricity, the railroad, the automobile, the airplane, the radio, the telephone, and the television. Advances in medical science extended life expectancies, resulting in a rapid growth of human populations. The population of the world in 1750 at the dawn of the industrial revolution was estimated at about 720 million. It had surpassed a billion by the end of the first quarter of the nineteenth century, rising to two billion by 1925, climbing above five billion by 1990.[11] The benefits of the industrial revolution are not, however, evenly distributed. Disparities between rich and poor countries have increased, as has the gap between rich and poor within countries. Mechanization has reduced the demands for human labor required for the manufacture of new products: the contributions of the scientist, engineer, financier, politician, and manager are thus valued more highly than those of the laborer. To an increasing extent in an economically integrated world, rich countries turn to others less advantaged for cheap labor and for the natural resources required to supply the demands of their industry. Only now are we beginning to confront the consequences.

The industrial revolution was fueled initially by coal, replacing diminishing reserves of wood. Concentration of coal-fired factories and residences in cities had immediate and serious implications for local and regional air quality and public health. Criticism of these consequences was initially muted. For a long time the problems were accepted as an inevitable price of progress. Attitudes changed in the late 1940s and 1950s, when a series of air-pollution disasters in Donora, Pennsylvania, and London caused large numbers of people to get sick and thousands to die. It was relatively easy to deal with the problem of visibly dirty air. The solution was to burn cleaner fuels, to remove particles from smokestacks, or to build higher stacks and send the problem elsewhere. But the smogs of Donora and London were merely the harbingers of more serious problems to come—acid rain, photochemical smog, and now, most perplexing of all, the threat of global climate change.

There is a troubling pattern to our response to problems relating to the use of fossil fuels: the issues are often identified long after the technologies responsible for the problems have been widely employed. When we installed high smokestacks to disperse emissions from coal- and oil-fired factories, we were unaware of the phenomenon of acid rain. When we began our love affair with the automobile, we did not suspect that the interaction of sunlight with hydrocarbons and oxides of nitrogen could stimulate the production of ozone at levels harmful not only to humans but also to plants and animals. Given the enormous investment in infrastructure dependent on fossil fuels—roads, cities, industry—it is easier to look for piecemeal solutions, to search for technological fixes to specific problems rather than environmentally more friendly alternatives to our current, unfettered, use of fossil fuels. The potential for climate change associated with emissions of carbon dioxide, the end product of fossil-fuel combustion, brings the problem into even sharper focus.

Air-quality problems associated with the early use of fossil fuel were largely confined to regions where industrial activity was concentrated. Those responsible for the problems bore the brunt of the consequences and had an obvious self-interest in

seeking improvement. Installation of high smokestacks spread the impact over a much larger region, requiring national and indeed international approaches to remediation. Problems, however, were still reasonably confined. A European initiative could address the problem of acid rain in Scandinavia arising as a consequence of emissions of sulfur and nitrogen oxides in Britain, Germany, and Poland. Likewise, a cooperative arrangement involving Mexico, the United States, and Canada could deal with the problem of emissions in North America. The climate issue, however, is global in scope and requires a global response.

Combustion of fossil fuels—coal, oil, and natural gas—accounts today for global emission of carbon dioxide equivalent to more than six billion tons of carbon per year (more than twenty billion tons of CO_2). Deforestation, mainly in the tropics, contributes an additional source of about two billion tons of carbon per year, offset by an uptake of roughly comparable magnitude due to regrowth of vegetation at mid-latitudes of the northern hemisphere. Approximately half of the carbon added to the atmosphere since the beginning of the industrial revolution persists in the atmosphere today, with the balance incorporated in the ocean. Carbon dioxide is the largest single waste product associated with modern society. Emissions on a per capita basis amount to more than a ton of carbon per person per year. The developed world is largely to blame. The United States, with a little more than 5 percent of the world's population, is responsible for close to 22 percent of global emissions. But the future will depend in large measure on what happens in developing countries such as China, India, Brazil, and Indonesia.

Emission of CO_2 in such large quantities has resulted in a significant rise in the concentration of CO_2 in the atmosphere. Carbon dioxide accounts for about 360 parts per million of the atmosphere today. It has increased by about 30 percent since the beginning of the industrial revolution and is expected to more than double if we continue to rely on fossil fuels for energy and if we fail to reverse current practices resulting in the destruction of tropical forests. The concentration of CO_2 is higher now than it has been at any time over the past 450

thousand years (we know this from measurements of gases trapped in ancient ice preserved in Antarctica). Given current trends, it is likely soon to exceed levels not seen since dinosaurs roamed the earth 65 million years ago. And CO_2 is not the only constituent of the atmosphere that is changing. Comparably large increases are observed for methane, produced by cattle and other ruminants and also as a by-product of rice cultivation and mining of fossil fuels, and nitrous oxide, emitted in conjunction with the decay of human and animal waste and the transformation of nitrogen-based fertilizers applied to stimulate agricultural production. Human activity has an undisputed effect on the composition of the atmosphere. The critical question concerns the details of the implications for the climate.

The climate system is extremely complex. A change in the radiative properties of the atmosphere associated with an increase in the concentration of greenhouse gases may be expected to trigger an initial adjustment in temperatures at the surface of the earth and in lower regions of the atmosphere, accompanied by changes in patterns of evaporation and precipitation, cloud cover, and the distribution of the primary greenhouse gas, water vapor. Variations in cloud cover and water vapor will lead to additional feedbacks resulting in both warming and cooling of the atmosphere, prompting changes in the circulation of the atmosphere and ocean with implications for vegetation and for snow and ice cover. The ultimate effect will depend on the composite effects of an interactive web of multifaceted disturbances. Diagnosing the implications for climate requires a realistic simulation of the coupled, interactive dynamics of the atmosphere, ocean, biosphere, soil, hydrosphere, and cryosphere (the ice world), a task of considerable complexity. There is no certain way to predict the future. The best we can do is to take the results of the most realistic computer models as a guide as to what might ensue and plan accordingly.

The evolving state of climate science has been reviewed over the past decade in a series of reports prepared under the auspices of the Intergovernmental Panel on Climate Change (IPCC). The IPCC was established in 1988 by the World Meteorological

Organization (WMO) and by the United Nations Environment Programme (UNEP) to advise on the likelihood that human activities could lead to significant changes in climate, to evaluate the impacts of these changes, and to identify options for possible policy responses. In its first report, the IPCC concluded that "there is a natural greenhouse that keeps the Earth warmer than it would otherwise be," that "emissions resulting from human activities are substantially increasing the concentrations of greenhouse gases," and that "these increases will enhance the greenhouse effect, resulting in additional warming at the Earth's surface."[12] Results from sixteen different computer models of future climate were reviewed in a second IPCC report published in 1996.[13] Despite differences in detail, these models confirmed the conclusion of the earlier report: that emissions of greenhouse gases, should they continue at current rates, may be expected to result in significant warming of the earth with important if uncertain implications for regional climate. Results from a recent study by the United Kingdom Hadley Center provide an instructive indication of the changes that might ensue.

Assuming "business as usual"—that is to say, in the absence of steps to curtail emissions—the Hadley model suggests that the global average surface temperature will increase by about 2°C over the next fifty years. The increase in temperature expected over continental regions is almost twice as large: about 4°C by 2050, rising to 6°C by 2100. Increases in temperature are greatest for high latitudes in winter. Surprisingly, though, the model anticipates a significant change in climate also in the tropics, warming by as much as 4°C over Brazil by 2050, accompanied by a marked decrease in precipitation. A change of climate of this magnitude would signal the demise of the Brazilian rain forest, which would be replaced by savanna. Elsewhere, in India, Africa, and portions of North America, tropical grasslands would be transformed to either temperate grasslands or deserts. Results of the Hadley model should not be taken as definitive but may provide a wake-up call as to the gravity of the changes that are possible. They suggest that disturbances to ecosystems could be extreme and that implica-

tions for human societies, while difficult to quantify, could be serious, especially for populations lacking the economic resources required for an efficacious response.

POLICY RESPONSES

The initial IPCC report influenced the deliberations of the Second World Climate Conference that convened a few months later in Geneva. It was responsible for the inclusion of the climate issue on the agenda for the United Nations Conference on Environment and Development that met two years later in Rio de Janeiro. This so-called Earth Summit attracted a remarkable twenty-five thousand delegates, including a large fraction of the world's political leaders. The conclusions of the summit were summarized in a document formally titled "The United Nations Framework Convention on Climate Change." The convention was "to enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession." This milestone was passed on March 21, 1994, after Portugal became the fiftieth country to register ratification on December 21, 1993. As of December 10, 1999, the convention had been ratified by 181 countries, including the United States.

The specific policy response of the international community to the climate issue was elaborated in a milestone protocol developed at the third Conference of the Parties to the Convention (COP-3) in Kyoto, Japan, in December of 1997. In advance of the conference, the European Union opted for a Europe-wide coordinated strategy to reduce emissions by 2008–2012 relative to 1990 by 16 percent. Under this arrangement, Germany and Britain agreed to assume the lion's share of the European obligation, thus permitting less affluent members of the EU such as Greece and Spain to grow their emissions by modest amounts consistent with overall plans for economic development in the Union. This accommodation was possible as a consequence of events in Europe quite unrelated to the climate issue. Emissions in Germany declined precipitously in the early 1990s, reflecting elimination of economically inefficient highly polluting industries in the former German Democratic Republic following

German reunification. Emissions in Britain decreased over the same period as a consequence of the politically motivated demise of the coal industry orchestrated by Margaret Thatcher and the replacement of coal by North Sea oil and gas as the fuel of choice for the British economy. In contrast, emissions in the United States had risen rapidly over the 1990s, by close to 10 percent, reflecting the ebullient state of the U.S. economy. It was judged impossible for the United States to meet the targets proposed by Europe, and President Clinton instructed U.S. representatives to negotiate for a target of zero growth rather than the 16 percent reduction proposed by Europe, arguing also for flexibility in means to achieve this objective. Largely as a result of a personal intervention by Vice President Gore at the end of the first week of the meeting in Kyoto, the parties arrived at a compromise: countries of the European Union agreed to reduce emissions by a collective 8 percent; the United States and Japan accepted reductions of 7 and 6 percent, respectively; the Russian Federation was allowed to maintain emissions at the level that applied in 1990; and emissions from Australia were permitted to grow by 8 percent. Overall, if implemented, the protocol would reduce emissions by a group of developed countries by 5 percent by 2008–2012 relative to emission levels that applied in 1990. Thus did COP-3 interpret the instruction of the Convention to define "common but differentiated responsibilities."

The protocol was an extraordinarily complicated document. It sought to curb emissions of four gases (CO_2, CH_4, N_2O, and SF_6) and two classes of industrial compounds (hydrofluorocarbons and perfluorocarbons). It adopted an accounting scheme based on the potential of individual gases to alter the climate, placing all of these gases on a common carbon-equivalent scale. It incorporated a series of flexibility mechanisms included largely at the behest of the United States in response to President Clinton's direction to the U.S. negotiators. These included an option allowing parties to claim credit for sinks, offsetting charges for sources of prescribed gases, and a provision by which Annex 1 parties could buy and sell rights to emissions, a so-called carbon-trading mechanism. It authorized a scheme by which Annex 1 parties could claim credit for reductions in emissions achieved by developing countries as a result of trans-

fers of technology or financial resources from Annex 1 parties, an option known as the Clean Development Mechanism (CDM). The flexibility provisions are controversial, viewed by some as a device by which the United States could avoid politically difficult requirements to reduce its emissions by altering patterns of domestic consumption, an option to use economic muscle to shift the burden to others. To an extent, the criticism is valid. The carbon-trading provision offers an opportunity for parties having difficulty in meeting their obligations by domestic action to purchase relief by acquiring rights to emissions allowed but unused by the Russian Federation and other former Soviet republics. Given the economic problems of these countries, it is likely that a significant surplus of their emission rights will be available for trade. Such an arrangement, however, would result in no net reduction in Annex 1 emissions. It would constitute what the European Union has referred to as a license to trade "hot air." The CDM option is similarly controversial. While the underlying objective in this case is laudable—to encourage the transfer of resources from developed to developing countries—it is difficult to see how it would function effectively in practice. The deal struck in Kyoto should not be considered, however, as the last word. It should be viewed rather as an initial step in a continuing process to deal with an issue of extraordinary complexity involving multifaceted dimensions of science, economics, and ethics, posing challenges that will require at least in some instances a subjugation of narrow national interest in favor of a larger if uncertain global good.

In advance of the meeting in Kyoto, the U.S. Senate passed a unanimous (though technically non-binding) resolution instructing U.S. negotiators (a) not to enter into an agreement that would adversely affect the economy of the United States and (b) not to enter into an agreement that would not involve a commitment by developing countries to reduce their emissions of greenhouse gases. The instruction flatly contradicted terms of the convention ratified earlier by the Senate, which decreed that "parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differ-

entiated responsibilities and respective capabilities"; that "developed countries should take the lead in combating climate change and the adverse effects thereof"; and that a group of developed countries and countries from the former Soviet economic zone, identified collectively as Annex 1 parties, should take the initiative in addressing these objectives. Recognizing that the protocol negotiated in Kyoto could not be ratified by the required two-thirds majority of the U.S. Senate, the Clinton administration elected not to submit the agreement for ratification, passing the problem to its successors.

While suggesting that the underlying science might be more uncertain than was generally acknowledged, candidate Bush, in the 2000 U.S. presidential campaign, agreed that the climate issue was important and that it required a response. He proposed that it could be addressed, at least in part, using legislation embodied in the Clean Air Act to limit emissions of CO_2. This suggestion later came back to haunt him as President when his newly appointed administrator of the Environmental Protection Agency, Christine Todd Whitman, referred to the campaign promise, assuring fellow environmental ministers at a meeting in Europe that the United States would act domestically to reduce emissions of CO_2. In retrospect, it appears that the campaign commitment may have been based on a misunderstanding, a confusion of CO_2 with CO: the latter is a pollutant regulated under the Clean Air Act; the Clean Air Act is mute as to emission of the former, though whether or not it could be covered under the broad definition of pollution encompassed by the Act is a matter of some controversy. In any event, Administrator Whitman's widely publicized remarks led to an immediate clarification of the new administration's views on Kyoto.

In a letter addressed to Senators Hagel, Helms, Craig, and Roberts on March 13, 2001, President Bush began by noting that "my Administration takes the issue of global climate change very seriously." He went on to say, however, that "I oppose the Kyoto Protocol because it exempts 80 percent of the world, including major population centers such as China and India, from compliance, and would cause serious harm to the U.S. economy." He referred to "the incomplete state of scientific knowledge of the causes of, and solutions to, global climate

change and the lack of commercially available technologies for removing and storing carbon dioxide." Paradoxically, he concluded that "we will continue to fully examine global climate change issues—including the science, technologies, market-based systems, and innovative options for addressing concentrations of greenhouse gases in the atmosphere," and that he was "very optimistic that, with the proper focus and working with our friends and allies, we will be able to develop technologies, market incentives, and other creative ways to address global climate change." The letter to the senators was greeted with dismay by the international community, interpreted as a signal that the Bush administration had elected to withdraw from the process initiated in Kyoto.

In a subsequent action, the administration requested what amounted to an independent review of the IPCC analyses by the U.S. National Academy of Sciences. The Academy report affirmed the general conclusions of the treatment of human-caused climate change presented in the IPCC Working Group I report while offering a somewhat more qualified assessment of uncertainties. President Bush, in a speech delivered in the Rose Garden of the White House on June 11, 2001, reiterated his opinion that "the Kyoto Protocol was fatally flawed in fundamental ways." He acknowledged that the United States accounts "for almost 20 percent of the world's man-made greenhouse emissions" but went on again to argue that developing countries, notably China and India, must also assume responsibility. He indicated that the targets defined by Kyoto "were arbitrary and not based upon science" and that "for America, complying with those mandates would have a negative economic impact, with layoffs of workers and price increases for consumers," and that "when you evaluate all these flaws, most reasonable people will understand that [the Kyoto protocol] is not sound public policy." On a more hopeful note, he stated that "America's unwillingness to embrace a flawed treaty should not be read by our friends and allies as any abdication of responsibility," that his administration "is committed to a leadership role on the issue of climate change," that "we recognize our responsibility and will meet it—at home, in our hemisphere, and in the world." The speech concluded with the enigmatic

statement that "we will make commitments we can keep, and keep the commitments that we make." As this essay goes to press, the nature of the Bush administration's commitments to the climate challenge have yet to be defined pending the outcome of a comprehensive review currently underway under the leadership of the Secretary of Commerce.

ETHICAL CONSIDERATIONS

It is instructive to note the extent to which the climate debate in the United States has been dominated by considerations of science and economics. Questions of ethics have been largely ignored. Despite the uncertainties noted by the National Academy of Sciences, the scientific facts are relatively clear. There is no doubt that we are changing the composition of the atmosphere on a global scale. While it is difficult to predict in detail the consequences for the climate, there is a reasonable expectation, as discussed above, that they will be serious and that the impact may be felt most severely by less advantaged members of the global community.

As discussed earlier, the concentration of atmospheric CO_2 is greater now than at any time over the past 450,000 years, and given current practices it is likely to rise over the next few decades to levels not seen since the era of the dinosaurs. There is no dispute that consumption of coal, oil, and gas and the elimination of tropical rain forests are largely responsible for the increase in CO_2. A variety of different human practices is implicated in the similarly unprecedented increases in CH_4 and N_2O. Destruction of tropical rain forests is responsible not only for significant emissions of CO_2; it is a contributor also to the precipitous recent decline in planet-wide species diversity. A recent study by the United Nations suggests that as much as 25 percent of species living in tropical forests today may be doomed to extinction over the next few decades if current trends in deforestation are not reversed.

Do we have the right to change the composition of the atmosphere globally when we are unsure of the ultimate consequences, even though the best scientific studies suggest that they could be serious and persistent? The God of the Old

Testament as recorded in the message of Genesis gave man "dominion over the fish of the sea and over the birds of the air and over every living thing that lives on the earth." Nowhere, though, did he give man the right to destroy for no good reason. Dominion, for most biblical scholars, implies stewardship, not domination. No less an authority than Pope John Paul II is on record with a statement of the underlying principles. In a message delivered on January 1, 1990, referring specifically to the "depletion of the ozone layer and the related greenhouse effect [that] has now reached crisis proportions as a consequence of industrial growth, massive urban concentrations and vastly increased energy needs," he stated that:

> Theology, philosophy and science all speak of a harmonious universe, of a cosmos endowed with its own integrity, its own internal, dynamic nature. This order must be respected. The human race is called to explore this order, to examine it with due care and to make use of it while safeguarding its integrity.

How can this message be reconciled ethically with a decision to do nothing in response to the range of human-induced threats to the global life-support system discussed here? There is only one possible justification: a conviction that the problem is not real. But even the most recalcitrant skeptic must accept the possibility—I would say probability—that the threats are serious and conceivably even understated. We do not, I conclude, have the right to place the balance of the global life-support system at risk when there are sensible actions that can be taken at least to slow the pace of human-induced change. The answer to the question posed at the beginning of this paragraph, for me at least, is an unequivocal no.

How should we view the attitude expressed by the U.S. Senate, endorsed by President Bush, that the United States should not act to reduce its greenhouse gas emissions until such time as the large developing economies such as China and India are prepared to make a similar commitment? Energy consumption, measured on a per capita basis, in the developing world is more than ten times less than it is in the developed world. With approximately 5 percent of the world's population, the United States is responsible for more than 20 percent of global emis-

sions of CO_2. Is there not an ethical imperative for the rich to take the first step? The New Testament extols the responsibility of the rich to help the poor. The Gospel of Mark teaches that "it is easier for a camel to pass through the eye of a needle than for a rich man to enter the kingdom of God" and indicates as the Second Great Commandment that "you shall love your neighbor as yourself." Is it not appropriate, and indeed ethical, for we who have enjoyed for so long the benefits of unsustainable energy consumption to take the first steps? For me at least, the answer is yes. And there is also a practical reason to take the lead. A commitment on the part of the United States to reduce domestic emissions of CO_2 could stimulate development of new energy-efficient technologies that would find applications not only in the developed world but also in countries of the developing world. It is clear that we could accomplish much of what we do today with less energy. Expanded use of hybrid vehicles, for example, could increase the efficiency of energy use in the transportation sector. Advances in fuel-cell technology offer promising opportunities to curtail demand for fossil fuels. Wind power is already competitive with fossil-fuel-generated electric power in some regions. With additional investment, solar energy could make a contribution, and, despite current difficulties, the potential for safe nuclear power in the future should not be ignored. The key is to provide incentives. These are largely lacking in an era when gasoline is cheaper than bottled water and the costs of waste disposal are invisible.

THE WAY FORWARD

President Bush is correct in his general conclusion that the Kyoto protocol is unworkable in its present form. The response, however, should not be simply to walk away but to develop an alternate approach and to work with the international community to bring this into effect.

A primary difficulty with the existing protocol relates to the time line. It is unrealistic to expect countries such as the United States to meet their presently defined commitments by 2008–2012. Emissions in the United States are now more than 12 percent higher than they were in 1990. It would be helpful to

extend the time horizon, to, say, 2030, while at the same time stiffening requirements. This would acknowledge the reality that it will take time to effect an economically efficient transition to a more sustainable industrial order. Large amounts of capital are invested today, especially in developed countries, in systems rooted in the past—in an age of cheap fossil energy. Rather than relegate productive investments of the past to a premature scrap heap, it would seem sensible that they be phased out gradually as they reach the end of their useful life, permitting a more orderly transition to a less carbon-intensive future. We need a long-range plan and incentives to encourage an effective transition.

The Bush administration has proposed an ambitious plan to address future energy needs of the United States. The plan includes incentives for conservation, for development of more efficient hybrid vehicles, for energy systems based on environmentally friendly fuel cells, for renewable sources of energy, and for a new generation of nuclear power plants. It recognizes the need for a strategy for safe disposal of nuclear wastes and proposes important investments in so-called clean coal technology. It would be useful if the plan could be integrated with the strategy currently under consideration to address the climate issue. By emphasizing the need to ensure the energy security of the United States while at the same time minimizing emission of undesirable pollutants, the administration could take an important step in the formulation of a comprehensive blueprint that would ensure not only the economic future of the United States but also a more sustainable future for the less advantaged citizens of the global society.

The choice of 1990 as a reference point in the Kyoto protocol against which to gauge targets for greenhouse gas reductions was arbitrary. As noted earlier, it works unduly to the advantage of the European Union in that events unrelated to the climate issue were responsible for an unusual decline in European emissions in the immediate post-1990 period. It would be useful to adjust the reference point to provide a more realistic representation of emissions by parties in the recent past. An alternative standard could be based on average levels of emissions for the decade of the 1990s.

In its present form, the protocol addresses the emissions of a suite of greenhouse gases. It might be preferable, initially at least, to focus on one, the major culprit, CO_2. Our understanding of the factors responsible for the increase in the concentrations of a number of the other gases, notably CH_4 and N_2O, is deficient. Sources are related to a variety of disparate activities ranging from leaky gas lines to animal husbandry to waste disposal to rice cultivation. It is difficult to quantify emissions from any particular activity. In contrast, it is relatively easy to define the contributions to CO_2.

President Bush is correct that a successful strategy to address the challenge of the climate issue will require a commitment not just by developed countries but also by the global community, specifically by the larger developing economies such as China, India, Brazil, and Indonesia. Inclusion of the latter two is important in that these countries host the bulk of the world's dwindling reserve of tropical forests and a disproportionate share of the planet's biological diversity. They are responsible also for major sources of CO_2; emission of CO_2 associated with tropical deforestation is estimated to contribute at present a source of CO_2 equal to as much as 30 percent of that derived from worldwide combustion of fossil fuels. It is important, though, that developing countries be engaged in a manner consistent with the agreement defined by the Framework Convention, that "developed countries should take the lead." Extension of the time line to 2030 would allow time for diplomatic initiatives to define an equable basis for participation by the developing world and for developed countries to demonstrate their bona fides.

Decisions should not simply be left to governments. Private foundations, nongovernmental organizations, businesses, academic institutions, and religious organizations all have important roles to play in advancing the goal of a sustainable, equitable, global society and in protecting the irreplaceable legacy of 4.5 billion years of planetary evolution. Private foundations are increasingly important players on the international stage, responding to priorities defined by socially conscious sponsors. Free of the political constraints limiting actions by governments, they have taken the lead in recent years, addressing a

variety of socially important issues in the developing world ranging from immunization of children against infectious disease to the provision of small loans to encourage empowerment of women and other disadvantaged members of the global society. Nongovernmental organizations made their presence felt at the Earth Summit in Rio de Janeiro and more recently at meetings of the World Trade Organization and the International Monetary Fund, as well as at the gathering of the so-called G8, the leaders of the world's most developed economies. Answering only to their members, these organizations are emerging as a powerful new force in international affairs. Investments and decisions by multinational corporations regulate flows of capital across borders, affecting the lives of countless millions of people around the world. Academic institutions, offering insights into nature and the human condition, also have an important role to play and can contribute to a more equitable global society by fostering a deeper understanding of human problems while at the same time identifying creative strategies for their solution. Religious institutions have a special responsibility. They can help set the ethical agenda. To be effective, though, they must be dynamic and must clearly enunciate their view of the place of humanity in nature. Where necessary, doctrines rooted in the past must be updated to incorporate insights from modern science.

We must appreciate that human society, like nature itself, is dynamic. We need a global vision to recognize that there is a unity to life on Earth, that we are part of nature, not independent, that we have the potential to change our environment but that we must exercise this power with discretion. We need a deeper appreciation for ourselves and for nature, drawing on insights not only from science but also from the intellectual heritage codified in the world's great philosophical and religious traditions. This collection of essays represents an important step toward addressing this objective.

ENDNOTES

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[3]For an account of the Burgess discovery and a discussion of its implications, the reader is referred to a masterly, fascinating treatment of the subject by Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: W. W. Norton and Company, Inc., 1989).

[4]J. L. Kirschvink, "Late Proterozoic Low-Latitude Glaciation: The Snowball Earth," in *The Proterozoic Biosphere*, ed. J. William Schopf and Cornelius Klein (Cambridge and New York: Cambridge University Press, 1992).

[5]P. F. Hoffman, A. J. Kaufman, G. P. Halverson, and D. P. Schrag, "A Neoproterozoic Snowball Earth," *Science* 281 (1998): 1342–1346.

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[9]Ibid.

[10]John Perlin, *A Forest Journey: The Role of Wood in the Development of Civilization* (Cambridge, Mass.: Harvard University Press, 1989).

[11]Joel E. Cohen, *How Many People Can the Earth Support?* (New York: W. W. Norton and Company, Inc., 1995).

[12]Intergovernmental Panel on Climate Change (IPCC), *Climate Change: The IPCC Scientific Assessment: Report prepared by Working Group 1* (New York: Cambridge University Press, 1990).

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14. You should not burn [the vegetation of] uncultivated or cultivated fields, nor of mountains and forests.
18. You should not wantonly fell trees.
19. You should not wantonly pick herbs or flowers.
36. You should not throw poisonous substances into lakes, rivers, and seas.
47. You should not wantonly dig holes in the ground and thereby destroy the earth.
53. You should not dry up wet marshes.
79. You should not fish or hunt and thereby harm and kill living beings.
95. You should not in winter dig up hibernating animals and insects.
97. You should not wantonly climb in trees to look for nests and destroy eggs.
98. You should not use cages to trap birds or [other] animals.
100. You should not throw dirty things in wells.
101. You should not seal off ponds and wells.
109. You should not light fires in the plains.
116. You should not defecate or urinate on living plants or in water that people will drink.
121. You should not wantonly or lightly take baths in rivers or seas.
125. You should not fabricate poisons and keep them in vessels.
132. You should not disburb birds and [other] animals.
134. You should not wantonly make lakes.

—One Hundred and Eighty Precepts
(*Yibaibashi Jie*)

Donald A. Brown

The Ethical Dimensions of Global Environmental Issues

INTRODUCTION

In 1950, the world's population was 2.5 billion people. By the year 2050 it is expected to have grown to between nine and ten billion people. During this time of dramatic population growth, the human impact on the planet has increased significantly, not only because of the huge increase in our numbers, but also because of the new technical power to dig deeper, cut faster, build larger, and traverse more quickly great distances in automobiles, trucks, and planes. As a result, serious new environmental problems have emerged on a global scale. These problems include global climate change; worldwide loss of biodiversity, forests, and wetlands; long-range transport of toxic substances; decline of coastal ocean quality; and degradation of the world's freshwater and ecological systems.[1]

These new threats raise critical new ethical questions for the human race. Yet even some of the most obvious ethical dimensions of emerging global environmental problems are only dimly seen by most; rarely are they part of the public debate. In a 1999 *New York Times* op-ed piece on climate change entitled "Indifferent to Planet Pain," Bill McKibben, wondering why the ethical dimensions of global warming were not more widely understood, writes:

> I used to wonder why my parents' generation had been so blind to the wrongness of segregation; they were people of good conscience, so why had inertia ruled so long? Now I think I understand better.

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> It took the emotional shock of seeing police dogs rip the flesh of protestors for white people to really understand the day-to-day corrosiveness of Jim Crow. We need that same gut understanding of our environmental situation if we are to take the giant steps we must take soon.[2]

Yet there is little evidence that global environmental problems feel urgent to most Americans. There are several reasons why this is so.

Unlike the brutal television images of dogs and police attacking defenseless civil rights marchers that galvanized the public in the early 1960s, there is little direct visible evidence that demonstrates how human suffering is being caused in the rest of the world by the profligate use of fossil fuels in the United States. To understand the climate change problem well enough to trigger deep moral concern, one must understand things that are not immediately evident to the naked eye, such as how the burning of fossil fuels in the United States may affect distant people—and an even more distant and abstract posterity. We must learn to see that the amount of coal and oil burning in one country may affect temperatures in many others. We must be able to visualize concretely how the use of certain pesticides in one part of the world is threatening, through long-range air transport, human health and the environment in other places on the globe. We must see that high levels of consumption of paper in the developed world is leading to the destruction of forests in the developing world.

Most ethical systems and our intuitive ethical sensitivity are focused on our responsibilities to people who are close by and can be directly affected by our actions. The technical power that humans now have to affect adversely people they will never meet is a challenge for such ethical systems. Still, global environmental problems raise very serious ethical issues: for example, a global climate change will hurt the poorest on the planet, seriously reduce the quality of life for future generations, and threaten plants and animals around the world. Is this right or just, particularly if those who are most harmed are least responsible for the problem?

Vested interests have in addition often diverted public debate from ethical reflection by focusing on what appear to be "value-

neutral" issues of cost-benefit analysis, risk assessment, and scientific uncertainty. The debate appears to revolve around "facts" and thus hides a host of dubious ethical assumptions.

This essay will look at a few emerging environmental problems, such as climate change and diminishing biodiversity, in order to identify some of the more important ethical issues often hidden in the public debate about these matters. As Michael McElroy has pointed out, public analysis of these problems is often limited to scientific and economic concerns. Yet the ethical aspects of environmental problems need to become much more central in public discussions. For one reason, the failure to consider the ethical aspects means that decisions will be made that are inadvertently unjust or unethical; the current generation in the developed world will treat unfairly the interests of future generations and poor people who do not have a say in environmental policy. Second, solutions to our most pressing environmental problems will require concerted action involving almost all of the nations on Earth; most nations are unlikely to agree to such concerted action unless they believe that they are being treated fairly and ethically.

CLIMATE CHANGE

The Problem

As Michael McElroy has explained, both natural forces and human activities are influencing the global climate. The greenhouse effect, which allows incoming solar radiation to pass through the earth's atmosphere but prevents much of the outgoing infrared radiation from escaping into outer space, is a natural process. Natural greenhouse gases include water vapor, carbon dioxide, ozone, and other trace gases. Without the greenhouse effect, life on Earth as we know it would not exist.

Emissions of some greenhouse gases are a result of human activities, and these create an enhanced greenhouse effect. These anthropogenic (human-induced) greenhouse gases include carbon dioxide, methane, nitrous oxide, and ozone-depleting substances. Human activities have altered the chemical composition of the atmosphere; as a result, the earth's climate is changing. Over the past two hundred years, emissions from

cars, power plants, and other human inventions have led to about a 30 percent increase in the natural concentration of carbon dioxide and more than a 100 percent increase in the atmospheric concentration of methane. Globally, the average temperature of the earth has warmed over 0.55^0C since the mid-nineteenth century, when measurements began.

The Intergovernmental Panel on Climate Change (IPCC), an organization created by the United Nations to study global warming, concluded in a 1995 scientific assessment that "the balance of evidence suggests a discernible human influence on global climate." In another, more recent assessment, the IPCC has concluded that there is "new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities."[3] In other words, humans have already begun to change Earth's climate. It is already too late to prevent some damage to the climate system. Continued addition of greenhouse gases to the atmosphere will further alter the global climate and cause increasing temperatures as well as changes in rainfall and other weather patterns.

The IPCC concluded that unless the world takes steps to reduce emissions of greenhouse gases, global temperatures could rise between 1.4 and 5.8^0C by 2100.[4] Although there are still some scientific uncertainties about the timing, magnitude, and regional impact of such changes, there is strong evidence that they will have significant consequences for humanity and the environment. On the assumption that the climate system responds without sudden nonlinear surprises to greenhouse gas buildup, the projected planetary effects of increased warming include:

- Higher average global precipitation, with some parts of the earth becoming dryer while others become wetter.
- A rise in sea level of 0.09 to 0.88 meters by 2100.
- Changes in regional climate and vegetation.
- Changes in the productivity of agricultural lands.
- Increases in the intensity and severity of tropical storms.[5]

Models show that the effects of climate change are not distributed equally around the world. Actual temperature differ-

ences will likely vary greatly according to location, with projected increases much smaller in the tropics than in regions near the poles. Decreases in precipitation are expected in some areas, while precipitation is expected to increase in others.

Climate models show that the poorest people around the world are the most vulnerable to climate change. This is so for the following reasons:

The ecological systems of many of the poorest nations are most at risk. Human-induced climate change represents an important additional stress to the many ecological and socioeconomic systems already affected by pollution, increasing resource demands, and nonsustainable management practices. The vulnerability of human health and socioeconomic systems—and, to a lesser extent, ecological systems—depends upon economic circumstances and institutional infrastructure. This implies that systems typically are more vulnerable in developing countries where economic and institutional circumstances are less favorable.[6]

The poorest nations are most vulnerable to storms, flooding, and a rising sea level. Estimates put about 46 million people per year currently at risk of flooding due to storm surges. In the absence of safety measures, and without taking into account anticipated population growth, a 50-centimeter sea-level rise would increase this number to about 92 million; a 1-meter sea-level rise would raise it to about 118 million.[7] Studies using a 1-meter projection show a particular risk for small islands and deltas. Some small island nations and other countries will be more vulnerable because their existing sea and coastal defense systems are less well established. Countries with higher population densities will be more vulnerable. Storm surges and flooding could threaten entire cultures. For these countries, a sea-level rise could force an internal or international migration of populations.[8]

Bangladesh, to take an example, is a densely populated country of about 120 million people located in the complex delta region of the Ganges, Brahmaputra, and Meghna Rivers. About 7 percent of the country's habitable land (with about 6 million people) is less than 1 meter above sea level, and about 25

percent (with about 30 million people) is below the 3-meter contour.[9] Bangladesh is already extremely vulnerable to damage from storm surges. Storm surges in November of 1970 and in April of 1991 are believed to have killed over 250,000 and 100,000 people, respectively. In addition to raising the vulnerability of such regions to catastrophic flooding, climate change increases the threat that tropical storms will be harmful.[10]

The health of the poor worldwide is at greatest risk from global warming. Climate change is expected to cause significant loss of life in the poorest nations. Direct health effects include increases in cardiorespiratory mortality and illness due to an anticipated increase in some regions in the intensity and duration of heat waves.[11] Indirect effects of climate change, which are expected to predominate, include potential increases in the transmission of vector-borne infectious diseases (e.g., malaria, dengue, yellow fever, and some viral encephalitis) resulting from extensions of the geographical range and season for vector organisms.[12] Models project that malaria incidence could rise by 50–80 million additional annual cases, relative to an assumed global background total of 500 million cases. Some increases in nonvector-borne infectious diseases—such as salmonellosis, cholera, and giardiasis—also could occur as a result of elevated temperatures and increased flooding. Limited supplies of fresh water and nutritious food, as well as the aggravation of air pollution, will also have human health consequences.[13]

The food supplies of the poor are especially at risk from global warming. Many of the poorest nations are in arid regions of Africa, Asia, and Central and South America. Relatively small changes in temperature and precipitation, together with the nonlinear effects on evapotranspiration and soil moisture, can result in relatively large changes in runoff, especially in arid and semi-arid regions.[14] Many of the world's poorest people—particularly those living in subtropical and tropical areas and those dependent on isolated agricultural systems in semi-arid and arid regions—are most at risk of increased hunger. Global food supplies during the next century may become

increasingly inadequate to meet projected consumption due to both climatic and nonclimatic factors.[15]

The poorest nations have the least financial and institutional ability to adapt to climate change. The poorest nations are the least prepared to spend money on strategies that might allow them to adjust to hotter and drier climates, more violent storms, rising sea levels, degraded agricultural resources, and increased burdens on human health organizations. Many countries cannot afford food imports, irrigation systems, large-scale public works to prevent flooding, or costly health protection strategies. In the poorest nations, the capacity for research, analysis, and policy development is generally weak. Yet it is precisely the poor who will be most vulnerable to the unanticipated shocks of climate change.

Ethical Issues Raised by Global Warming

There are a number of ethical questions raised by human-induced climate change.

How much degradation from human-induced climate change should be tolerated by the international community? To solve the climate change problem, governments will eventually have to agree at what level to stabilize greenhouse gases in the atmosphere. Under the United Nations Framework Convention on Climate Change (UNFCCC), governments have agreed to take action to stabilize greenhouse gases at a level that "prevents dangerous anthropogenic interference with the climate system."[16] Yet neither the UNFCCC nor subsequent negotiations have been able to agree on a level that is "dangerous." The level at which greenhouse gases are stabilized will ultimately determine how much damage to human and nonhuman interests is tolerated. For instance, nations could agree to stabilize greenhouse gases at a level that protects human health but allows significant damage to endangered species and ecological systems. Therefore, the decision about the ultimate level of stabilization raises serious ethical questions about what the duties of human beings are to other forms of life, as well as our duties to future generations and to those in poverty, who will suffer the most from human-induced climate change.

At the third Conference of the Parties to the Convention in Kyoto in 1997, the developed nations agreed to reduce greenhouse gas emissions by 5 percent on average below 1990 levels. But this is only a small percentage of what will be needed to stabilize greenhouse gases in the atmosphere. The international community has yet to face the issue of setting an ethically defensible level for these gases.

Is the absence of scientific certainty about the consequences of human-induced climate change a valid excuse for not taking protective action? Those opposing U.S. intervention often argue that no action should be taken on climate change until scientific uncertainties about the impact of climate change are resolved. This American insistence on eliminating uncertainties violates the UNFCCC, a document ratified by the United States, in which the signatories agreed not to use scientific uncertainty as an excuse for not taking action.[17] Although there are still some scientific uncertainties about the timing and magnitude of climate change, many facts are not in dispute. We know, for instance, how naturally occurring greenhouse gases warm the planet, how these greenhouse gases absorb infrared radiation, that humans are releasing large amounts of greenhouse gases into the atmosphere, that greenhouse gases are accumulating in the atmosphere in proportion to their human use, and that there has always been a strong correlation in the historical record between levels of greenhouse gases and temperature. The most recent IPCC assessment identifies numerous additional areas where scientific uncertainties have been entirely resolved, or where uncertainties persist but adverse global consequences are highly likely.[18] We know that human-induced changes in greenhouse gases in the atmosphere will change the climate in a way that will cause great damage. What we do not know with certainty, given nonlinear feedback mechanisms in the climate system, is the actual timing and magnitude of the change.

This situation poses an important ethical question: is scientific uncertainty about the timing and magnitude of climate change a valid excuse for not taking action? Those who argue that nations have an ethical responsibility to act now can list a number of good reasons for their position:

- The adverse potential impacts on human health and the environment from human-induced climate change are enormous;
- The effects on the poorest people of the world are disproportionate;
- The real potential for very harsh climate surprises is much greater than indicated by the often-quoted predictions that rely on assumptions of linear responses to climate change;
- Much of the science of the climate change problem has never been in dispute;
- Some damage from human activities is likely already taking place;
- The likelihood is strong that serious and irreversible damage will be experienced before all the uncertainties can be eliminated;
- Delay runs risks of its own. The longer nations wait to take action, the more difficult it will be to stabilize greenhouse gases at levels that do not create enormous damage.

Should cost-benefit analysis of climate-change programs be used as a prescriptive tool for national policy? Some in the United States who oppose government action on climate change argue that action is not justified because the costs to the United States of reducing greenhouse gas emissions outweigh the benefits to the United States of preventing global warming. This use of cost-benefit analysis as a prescriptive tool raises several ethical issues, most of which are hidden in public-policy debates. The questions raised by a cost-benefit analysis include:

- Whether costs to the United States alone can justify lack of action by the United States to reduce greenhouse gases, which could cause harm in other nations;
- Whether an analysis that relies on a market-based "willingness-to-pay" method of determining the value of damages to plants, animals, ecosystems, or humans distorts other ways of valuing nature;
- Whether a mode of analysis that omits questions of distributive justice or duties to future generations is ethically defensible.

Do the developed nations have special responsibilities to act before the poorer nations? Another standard objection to American action on climate change is the argument that the United States should take no action until the developing world agrees to reduce greenhouse gas emissions. This argument rests on the fact that the United States cannot solve the problem of climate change by itself, and some nations in the developing world continue to contribute to the problem. If the United States acts and the developing world does not, so goes this argument, climate change will still happen and American industry will put itself at a competitive disadvantage. For this reason, there has been strong opposition to the Kyoto Protocol provisionally signed by the Clinton administration in December of 1997. In response, the Clinton administration announced it would not seek Senate ratification of the Kyoto Protocol until it obtained firmer commitments to reduce emissions from the developing world. In the meantime, the U.S. Congress would not approve any government action to reduce greenhouse gases, arguing that such action would amount to a back-door ratification of Kyoto. Although the George W. Bush administration has recently announced that it will reject the Kyoto Protocol, on several occasions it has stated that developing-world commitments will be a cornerstone of its approach to an international regime created to reduce greenhouse gas emissions.

Yet the United States emits a disproportionate share of greenhouse gases. With 4 to 5 percent of the world's population, it emits 22 percent of the world's greenhouse gases. The United States has also contributed mightily to the magnitude of the existing problem. Given the historical contributions of developed nations like the United States and the current imbalance in per capita emissions, those who argue for immediate action by the developed nations make their argument on grounds of equity. They argue that those who have caused most of the existing problem and have the resources to finance reduction strategies have a special duty to reduce emissions immediately.

Is it legitimate for any nation to refuse to take action until all nations agree on "least-cost" solutions? The third argument against the United States' taking immediate action is based on

the idea that the United States has a right to insist upon an international regime that will reduce U.S. costs. Many have argued that the United States should not unilaterally reduce greenhouse gases until the details of a worldwide system for trading carbon are agreed to. At the UNFCCC in Kyoto, the United States successfully promoted various market-based mechanisms to trade property rights in carbon reductions. Although the general framework of these trading mechanisms was agreed to in Kyoto in 1997, many of the details are still contentious. Yet the United States insists on waiting until an international trading regime is in place before taking domestic action. To establish such a regime, a large number of complex issues will need to be worked out:

- How to develop an international baseline for carbon sources;
- How to avoid cheating from projects that do not actually reduce greenhouse gases;
- How to keep track of whether carbon reductions have occurred;
- How to avoid giving credit for improvement that would happen without climate change programs;
- How to measure credit for carbon sequestration projects in forests and agriculture when it is not clear what carbon reductions will permanently be achieved from such projects;
- How to decide if a rich country like the United States should be allowed to achieve all of its legally required reductions by buying credits from poor nations that will sell them.

Because of the complexities entailed by any scheme to implement a trading regime, insisting that all the details be worked out in advance could delay for years any agreement on reductions. Given that the United States is currently the nation emitting the most greenhouse gases, it is ethically dubious for it to make universal agreement on trading rules a precondition for American action to reduce emissions. One of the most important ethical issues entailed by the trading controversy, therefore, is whether a nation that is emitting large amounts of a pollutant that is likely to cause great damage can use as a

valid excuse for not taking action the fact that other nations will not agree to a trading regime that might reduce costs.

There are, finally, several other ethical issues raised by the American approach to establishing a trading regime. They include questions of whether the atmosphere's capacity to absorb safely some amount of greenhouse gases should be divided up into property rights that can be brought and sold, and whether a trading regime based upon an inequitable allocation among nations is just.

What national targets for reducing greenhouse gases are equitable? In addition to the dubiousness of allowing efficiency to trump ethical concerns, the trading regime suffers from another potentially serious ethical problem: it can only be ethically benign if the preliminary allocation is just.[19] Before trading can take place, nations must agree on a fair allocation of emissions allowances that will become the baseline of the system. Because the United States has between 4 and 5 percent of the world's population but emits 22 percent of the greenhouse gases, its final share of allowable emissions ought to take into consideration its disproportionate responsibility for the problem.

In Kyoto in 1997, the United States agreed to a 7-percent reduction below 1990 levels. This was a first step toward reducing greenhouse gases, but only a small step: far greater levels of reduction will be needed to stabilize greenhouse gases in the atmosphere at safe levels. To achieve that goal, all the world's nations will need to reduce emissions by 50 to 80 percent below the level of emissions in 1990. Given the variations in historical and cumulative emissions, current total and per capita emissions, and factors such as wealth, energy structures, and resource endowment, what are equitable national caps for greenhouse gas emissions? Some developing nations have argued that distributive justice demands that national allocations be based on a per capita calculation. The United States has resisted discussions of an equitable basis for determining national responsibilities, despite the fact that in ratifying the UNFCCC the United States agreed that each nation should reduce its emissions according to equitable criteria.[20]

LOSS OF BIODIVERSITY

The Problem

Another global threat is the worldwide loss of biodiversity, a term that describes nature's variety. Biodiversity is usually analyzed at three different levels: genetic diversity, species diversity, and ecosystem diversity.[21]

Although species extinction has existed since life first emerged on Earth, worldwide concern about rapid loss of biodiversity has been steadily increasing. Current rates of extinction are probably much greater than they have been at any time in history, except at periods of cataclysmic destruction. Rates of species extinction have increased dramatically as human numbers and technological power have increased.

The actual rates of species extinction are not known, because relatively few species have been identified. Although scientists have been cataloging species for over two centuries, only 1.8 million have been identified out of a total 3 to 30 million estimated species worldwide. While a great deal is known about higher-level species, such as mammals, birds, and some plants, less is known about insects and microorganisms. Because so many species have not been identified, scientists worry that many will become extinct before they are ever discovered and properly cataloged.

Given known rates of extinction, it is clear that humans are accelerating these rates as their impact on the planet increases. Scientists can account for the extinction worldwide of 75 mammals and over 1,600 birds, resulting in a loss rate of one species every four years up until the end of the nineteenth century. Between 1900 and 1980 another 75 mammals and birds became extinct, and the loss rate accelerated to one species a year. In 1993, the estimates for mammal and bird extinction were between one and three species a year.

Although mammals and birds receive most of the public's attention, lower species such as insects often play a vital role in the web of life. The most optimistic scientific estimates suggest that depletion rates for all species currently run from one to three species a day. Some of these projected losses are to

species such as pollinating insects that may play important roles in maintaining ecosystems.

Scientists estimate species loss rates by making projections from known rates of habitat loss and comparing these with known species losses in similar ecosystems that have lost habitat. Based on these projections, a recent United Nations report projects that between 2 and 25 percent of the world's tropical forest species will become extinct in the next 25 years.

Worldwide, the major threats to biodiversity are nonnative species introduction, habitat destruction, and hunting or other acts of deliberate extermination. Habitat destruction is caused by land development, by degradation caused by pollution or vegetative removal and erosion, and by fragmentation of ecosystems.

The Ethical Problems Entailed in Protecting Biodiversity

We have a duty to protect biodiversity. Loss of biodiversity raises the ethical question of human responsibility to protect plants and animals. Utilitarian, deontological, biocentric, ecocentric, and feminist ethical ways of thinking about biodiversity loss may lead to different conclusions about duties to preserve plants, animals, and ecosystems. Some argue that the duty to protect plants and animals stems from their value for human uses; those who base the value of plants and animals on human use often attempt to quantify that value by measuring their potential market value in the form of food, pharmaceuticals, fibers, and petroleum substitutes. Yet others argue that plants and animals have intrinsic value and should be treated as sacred objects rather than as material for human consumption. If biodiversity has a value that cannot be quantified in market transactions, it should not be treated as a commodity in a cost-benefit analysis.

Who should pay for protection of biodiversity? The greatest losses of biodiversity are occurring in species-rich tropical areas and in other places inhabited by many of the world's poorest peoples. In many places, poor people threaten biodiversity by clearing forests to grow food. As a result, if richer nations do not assist the poorer nations, a great degree of the world's

biodiversity will be lost. Moreover, other species-rich areas in poorer nations are threatened by activities such as logging. In order to relieve grinding poverty, poorer nations have been encouraged by richer nations to exploit natural resources for export. For this reason there is an indirect causal link between the use of resources in the developed world and their exploitation in the developing world. Although the richer nations have provided limited funds to protect biodiversity in poorer nations, the richer nations often deny that they have any special responsibility to protect biodiversity. Many international meetings on biodiversity have been marked by bitter disagreement between rich and poor nations about who should pay for this protection.

OTHER EMERGING GLOBAL ENVIRONMENTAL PROBLEMS

The Problems

There are several other serious global environmental problems:

- Worldwide evidence is growing of threats to ecosystems and human health caused by long-range air pollution. There is particular concern about a class of chemicals generally referred to as persistent organic pollutants (POPs). POPs are receiving international attention because they are toxic to humans and animals, do not degrade readily in the environment, tend to bioaccumulate, and often change from a solid to gaseous phase and thereby travel long distances in the air before being redeposited in the environment. Scientific evidence is mounting that some POPs cause a variety of genetic, reproductive, and behavioral abnormalities in wildlife and humans, and may be associated with increased incidence in humans of cancer and neurological deficits.[22]
- Marine ecosystems in coastal areas around the world are being seriously threatened by urbanization and the aquatic pollution it creates. Recent losses of coral reefs around the world are of particular concern. Humans are also endangering marine food supplies by overexploiting fish stocks.[23]
- The world's fresh water supply is under great threat from overuse, expanding populations, and pollution. Almost a billion people do not have adequate drinking water, and dimin-

ishing fresh water supplies especially threaten poor people who are trying to grow crops on arid land.[24]

- About 40 to 50 percent of the land on Earth has been irreversibly transformed (through change in land cover) or degraded by human action.[25]
- Natural forests continue to disappear at a rate of 14 million hectares per year.[26]

Ethical Responsibilities

These environmental problems, like the problems of human-induced climate change and loss of biodiversity, raise the ethical question of our human duty to protect animals and plants from destruction by human behavior and of the responsibilities of the developed world to the developing world. The use of organic chemicals in any nation can cause damage elsewhere. Both ocean and fresh-water degradation are being caused in part by a climate change that is largely caused by the developed nations. For these and several other environmental problems, there is a direct causal link between activity in the developed world and damage in the developing world. For other problems, the causal connection is indirect. For instance, some of the damage to coastal areas and water supplies in the developing world is being caused by manufacturing and resource extraction in poorer nations to meet high levels of consumption in richer nations. Moreover, the costs of mitigating toxic, ocean, and fresh-water problems is much more onerous for developing nations. Progress on solving these problems depends on deciding who should pay for the protection of global environmental resources—and this is an issue of distributive justice.

CONCLUSION

Given the obviousness of some of the ethical questions raised by global environmental problems, the failure to address these questions seems odd. One reason is that vested interests have consciously attempted to "reposition" the issues so that apparently "value-neutral" issues supplant ethical debate. Concerned persons should resist this marginalization of moral issues. Most

recently, disputes about international distributive justice have become the largest blocks to international negotiations on global environmental issues; for instance, at the five-year review of the Rio de Janeiro Earth Summit, bitter fights between rich and poor nations blocked progress on moving the international environmental agenda. If we are going to prevent serious global environmental damage, concerned people must speak out about the value of nature, and also the value of international distributive justice.

ENDNOTES

[1]This paragraph and several others in this essay are rewrites of material written by the author in *Emerging Global Environmental Issues*, United States Environmental Protection Agency, January 1997, Document 160–K–97–001.

[2]Bill McKibben, *New York Times*, 4 September 1999.

[3]Intergovernmental Panel on Climate Change (IPCC), Working Group II, *Summary for Policymakers, Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Third Assessment Report, February 2001, <http://www.usgcrp.gov/ipcc/wg2spm.pdf>.

[4]Ibid.

[5]Ibid.; and Intergovernmental Panel on Climate Change (IPCC), Working Group I (Science), *Summary for Policymakers*, Third Assessment Report, February 2001, <http://www.ipcc.ch/pub/spm22-01.pdf>.

[6]Ibid.

[7]Intergovernmental Panel on Climate Change (IPCC), *IPCC Second Assessment Synthesis of Scientific-Technical Information relevant to interpreting Article 2 of the UN Framework Convention on Climate Change*, <http://www.ipcc.ch/pub/sarsyn.htm>.

[8]Ibid.

[9]John Houghton, *Global Warming, The Complete Briefing* (Cambridge: Cambridge University Press, 1997), 111.

[10]Ibid.

[11]IPCC, Working Group I (Science), *Summary for Policymakers*.

[12]Ibid.

[13]Ibid.

[14]Ibid.

[15]Ibid.

[16]United Nations Framework Convention on Climate Change (UNFCCC), Rio de Janeiro, 1992, Article 2. See <http://www.unfccc.de/resource/conv/>.

[17]Ibid., Article 3.

[18]IPCC, Working Group II, *Summary for Policymakers, Climate Change 2001*; IPCC, Working Group I (Science), *Summary for Policymakers*.

[19]Mark Sagoff, "Controlling Global Climate: The Debate Over Pollution Trading," *Report from the Institute for Philosophy & Public Policy* 19 (1) (Winter 1999).

[20]UNFCCC, Article 3.

[21]Brown, *Emerging Global Environmental Issues*.

[22]Ibid.

[23]Ibid.

[24]Ibid.

[25]Edward Ayensu et al., "International Ecosystem Assessment," *Science* 286 (5440) (22 October 1999): 685–686.

[26]Ibid.

J. Baird Callicott

Multicultural Environmental Ethics

INTRODUCTION

One main approach to a theory of environmental ethics is "anthropocentricism"—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.[1] 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.[2] 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."[3] 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.[4] 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.[5]

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.[6] 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.[7]

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."[8]

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."[9]

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."[10] 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-

dation 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.'"[11]

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."[12]

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."[13]

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.[14] 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."[15] Leopold called such noninstrumental value "value in the philosophical sense . . . something far broader than mere economic value."[16] Contemporary environmental philosophers, as Brown indicates, call it "intrinsic value."[17]

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.[18]

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."[19] There is a scientific "Gaia hypothesis" and "universe story."[20] 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.[21] 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."[22] 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.[23] 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.[24] 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.[25] Even less likely to be popular is physicist David Bohm's idea of an "implicate order," a holistic interconnectedness of matter and energy.[26] 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

[1]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).

[2]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.

[3]Michael E. Soulé, "What is Conservation Biology?" *BioScience* 35 (1985): 727–734.

[4]Darrell Addison Posey, ed. and comp., *Cultural and Spiritual Values of Biodiversity* (London: Intermediate Technology, 1999).

[5]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.

[6]Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949), 107.

[7]W. K. C. Guthrie, *A History of Greek Philosophy* (Cambridge: Cambridge University Press, 1962), 446.

[8]Catherine Larrère, personal communication, 28 March 2000.

[9]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.

[10]Ramachandra Guha, "Deep Ecology Revisited," in ibid., 271–279.

[11]Charles R. Darwin, *The Descent of Man and Selection in Relation to Sex* (London: J. Murray, 1871), 93.

[12]Ibid., 100–101.

[13]Leopold, *A Sand County Almanac*, 203–204.

[14]Ian Brownlie, ed., *Basic Documents on Human Rights*, 2d ed. (Oxford: Clarendon Press, 1981).

[15]<http://www.earthcharter.org/draft/charter.htm>.

[16]Leopold, *A Sand County Almanac*, 223.

[17]See, for example, Holmes Rolston III, *Conserving Natural Value* (New York: Columbia University Press, 1994).

[18]John Stephen Lansing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton: Princeton University Press, 1991).

[19]Loyal D. Rue, *Everybody's Story: Wising Up to the Epic of Evolution* (Albany: State University of New York Press, 2000).

[20]Brian Swimme and Thomas Berry, *The Universe Story* (New York: HarperCollins, 1992).

[21]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.

[22]Edward O. Wilson, *Consilience: The Unity of Knowledge* (New York: Knopf, 1998).

[23]Susanna B. Hecht and Alexander Cockburn, *The Fate of the Forest: Developers, Destroyers, and Defenders of the Amazon* (New York: Verso, 1989).

[24]Lansing, *Priests and Programmers*.

[25]Ilya Prigogine and Isabelle Stengers, *Order out of Chaos: Man's New Dialogue with Nature* (Boulder, Colo.: New Science Library, 1984).

[26]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

Hava Tirosh-Samuelson

Nature in the Sources of Judaism

INTRODUCTION

ALONG WITH CHRISTIANITY, JUDAISM has been indicted as one cause of our current environmental crisis. In his famous essay, Lynn White Jr. alleged that the anthropocentrism of the Judeo-Christian tradition "made it possible to exploit all nature in a mood of indifference to the feelings of natural objects."[1] According to White, the biblical command "to fill the earth and subdue it" (Genesis 1:28) is *the* proof that the Judeo-Christian tradition puts humans above the rest of creation and regards all other forms of life as subordinate. The many environmentalists who endorsed White's views have thus charged that Judaism and Christianity are directly responsible for the kinds of human conduct that have brought about the depletion of the planet's natural resources.

Christian thinkers have arisen to defend Christianity against this challenge, thereby articulating a Christian-based environmental ethics.[2] The Jewish response to White's charges emerged at the same time, but environmentalism has generally remained a marginal concern of Jewish thinkers.[3] In the second half of the twentieth century, the physical and spiritual survival of the Jewish people, rather than the survival of the planet, have been paramount for Jews.

Nonetheless, since the early 1980s a small group of Jewish environmental activists, educators, religious leaders, and theologians have placed clean water, nuclear waste, biological diversity, climate change, and sustainable development on the

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Jewish agenda.[4] As a result of their efforts, the Jewish ideal of *tikkun olam* ("repair of the world"), the Jewish passion for justice, and the Jewish ethics of responsibility have been extended to the physical environment in an attempt to protect humans and other species from environmental degradation. The Jewish environmental movement has yet to produce a systematic environmental ethics and philosophy, but it has already made a cogent case that Judaism can inspire sound environmental policies and that Jewish religious life can be enriched through sensitivity to ecological concerns.[5]

The very existence of a Jewish environmental movement suggests that the blame for the current environmental crisis cannot be simply placed at the door of Judaism or the so-called Judeo-Christian tradition. A much more nuanced and informed discussion is needed in order to do justice to the diversity of attitudes toward the natural world in the religious sources of Judaism and in the history of the Jewish people. The Jewish tradition, this essay argues, can be part of the solution to the current environmental crisis, because its deepest religious beliefs are consistent with environmental protection. However, it would be a mistake to assume that Judaism is "environmentally correct," or to treat the Jewish sources apologetically.[6] An honest examination of the Jewish tradition does suggest that Judaism harbors a genuine tension in regards to nature that can be traced to the relationship between two of Judaism's central beliefs: the belief that God created the universe, and the belief that God's will was revealed to Israel in the form of Law, the Torah.[7] This essay highlights the dialectical relationship between the doctrines of creation and revelation in the Jewish tradition. It argues that while the beliefs of the Jewish tradition are consistent with environmental protection, the Jewish understanding of the place of humans in the created order conflicts with some convictions of secular environmentalists.

CREATED WORLD VERSUS REVEALED WORD

Judaism is grounded in the belief that God is the sole creator of the universe. How exactly God brought the universe into existence remains beyond the ken of human knowledge, but that the

world as we know it through our senses can teach us something about the creator is taken for granted in the Jewish tradition. The doctrine of creation facilitates an interest in the natural world that God brought into existence. In fact, the more one observes the natural world, the more one comes to revere the creator, because the natural world manifests the presence of order and wise design in a world in which nothing is superfluous.[8] Psalm 19:1 expresses this point poetically: "the heavens are telling the glory of God / and the firmament proclaims his handiwork." Psalm 147 (vv. 7–9; 16–18) illustrates how human awareness of the regularity of nature leads to thanksgiving, while according to Psalm 148 (vv. 8–10), all of creation is engaged in praising God and recognizing God's commanding power over nature. Awareness of nature's orderliness, regularity, and beauty, however, never leads the Psalmist to revel in nature for its own sake. In the Psalms, as in the rest of the Jewish tradition, nature is never an end in itself. It always points to the divine creator, who governs and sustains nature.[9]

Although the details of the creative act remain inscrutable, the act itself is broadly understood to be one in which God willfully imposed order by separating the heavens from the earth, dry land from water, animate from inanimate things, the human from other animals. In Scripture and in post-biblical Judaism, the act of establishing boundaries serves as the rationale for the distinction between the sacred and the profane, the permitted and the forbidden. Thus the prohibitions on mixing different seeds in the same field, the interbreeding of diverse species of animals, the wearing of garments of mixed wool and linen (Lev. 19:19; Deut. 22:11), and the differentiation between clean and unclean foods are all traced back to the setting of boundaries at the moment of creation.[10] The emphasis on orderliness of creation explains why in Judaism we do not find glorification of wilderness (so cherished by the environmental movement), and why the cultivated field is the primary model for the created universe in the Bible.[11] Humans are commanded by God to cultivate the earth as a way to preserve and care for what ultimately belongs to God.

The Jewish tradition affirms that God created an orderly world and that God continues to sustain the world through

benevolent care and attention to the needs of its inhabitants. Even miracles, in which God directly intervenes in the created order, are understood to exhibit both the orderliness of God's creation and God's control over the created order.[12] The greatest miracles of all, however, are to be found not in the natural world but in the way God operates in human history, especially in the history of the Chosen People. Divine intervention in human affairs, culminating in the revelation of the Torah at Sinai, is the utmost expression of God's creative power and benevolence. Yet it is this revelation of God's will that posits the Torah of God as above and beyond nature.

In the created order, the human being is given a privileged place. The human species alone was created "in the image of God" (*zelem elohim*) (Gen. 1:26), even though the human species was also fashioned from the dust of the earth to which the human returns at death. The precise meaning of creation in the divine image was debated by Jewish theologians in the Middle Ages. The rabbis made it clear that the superiority of human beings over other animals does not entail a license to subdue and exploit. Rather, creation in the image of God entails human responsibility for the whole of creation. Midrash Ecclesiastes Rabba 7:13 expresses human responsibility toward nature as follows: "the Holy Blessed One took the first human and passing before all the trees of the Garden of Eden said: 'See my works, how fine and excellent they are? All that I created, I created for you. Reflect on this and do not corrupt or desolate my world; for if you do, there will be no one to repair it after you.'" This Midrash makes clear that humans must neither be indifferent to nature nor bring about its destruction; they must protect nature through their own effort, thereby becoming partners of God, although not co-creators.[13] In other words, the belief that the world and all things in it belong to God is consistent with the notion of human stewardship over the earth, which in turn can be translated into conservationist policies.[14] Precisely because the natural world is God's creation, the value of nature in Judaism cannot be simply utilitarian: the natural world does not belong to humans, but to God, and the world was created not for the sake of human needs, but for God's sake. On the basis of Isaiah 43:7 the rabbis expressed this point

succinctly when they stated that "Whatever God created, He created for His own glory" (Avot 6:12; Yoma 38a).

Whereas the doctrine of creation evokes awe and reverence toward the natural world, the belief that God revealed God's will in the form of Law to Israel assumes a certain distance between the believer and the nonhuman natural world (even though the doctrine does not entail such distance). From the priestly reforms that produced the Book of Deuteronomy, through the Pharisaic interpretation of Judaism during the Second Temple, and into the rabbinic Judaism of the Talmudic period, Judaism treated the Torah as the sacred medium for communication between God and Israel. The framers of Judaism called on all Jews to make the Torah the exclusive object of love, devotion, and veneration. To worship God, Israel should study the Torah and behave according to its commandments as expounded by the authoritative interpreters of the Torah, the rabbinic sages and their heirs through the generations. In rabbinic Judaism, then, the exclusive study of the Torah and the acts that follow from it stand in some tension with the worship of nature. Mishnah Avot 3:7 summarizes the tension between the life of the Torah and the appreciation of nature when it states in the name of Rabbi Jacob: "he who travels on the road while reviewing what he has learned, and interrupts his study and says: 'How fine is that tree, how fair that field'! Scripture regards him as if he committed a grave sin." The admiration of nature, then, distracts the believer from devotion to God's revealed Torah, which the teachers of Judaism regarded as the sole preoccupation of the ideal Jew.

Rabbinic Judaism views the world that God had created as good, but the world itself is neither perfect nor holy. To become perfect and holy, the created world requires the intentional acts of humans, who follow God's commands by performing prescribed rituals. Through observance of religious rituals, the recipients of divine revelation consecrate themselves and the natural order, and thereby enter into an intimate relationship with God.

The notion that nature can be sanctified through human acts thus bridges the gap between the doctrines of creation and revelation. By the second century B.C.E., we find the notion that

God's wisdom, manifest in the orderliness of the universe, coincides with the primordial, preexistent Torah, which served as a blueprint for the creation of the world. As we shall see below, medieval philosophers and Kabbalists would explore the correspondence between the Torah and the created world. But already in rabbinic Judaism, the revealed Torah (both written and oral) was understood to complete and perfect the created world. It is through the revelation of God's will, as interpreted by the authoritative tradition, that one can know how to conduct oneself in the world, including behavior toward the physical environment.

Rabbinic Judaism posed an elaborate program for the sanctification of nature. In daily prayers, the Jewish worshipper sanctifies nature by expressing gratitude to the Creator "who in his Goodness creates each day." The prayers recognize the daily changes in the rhythm of nature—morning, evening, and night—and recognize the power of God to bring these changes about. Similarly, the blessings that Jews are required to utter when they witness a storm or observe a tree blossoming bear witness to God's power in nature. Even more poignantly, the observant Jew blesses God for the natural functions of the human body and for the food that God provides to nourish the human body. By means of these blessings, all acts from which the worshipper derives either benefit or pleasure are consecrated to God. To act otherwise is considered a form of theft.[15]

A Jewish life punctuated by blessings is thus not divorced from events in nature and involves the natural functions of the human body. Yet it is the consecration of the natural order to God that endows all activities with proper religious meaning.

THE SANCTIFICATION OF NATURE—THE COVENANTAL MODEL

The Jewish tradition views the giving of the Torah to the people of Israel as a historic event that established an eternal covenant between God and Israel, the Chosen People. The covenant expresses the unconditional free love of God and Israel for each other and the mutual obligations that flow from it, including obligations toward the earth. These obligations are best seen in regard to the land of Israel, the paradigm of proper manage-

ment of the earth in Judaism. Given by God to the people of Israel, the land of Israel is viewed as collateral in the eternal covenant. To ensure that God's land flourishes, the people must observe God's commands. When Israel conducts itself according to the laws of the Torah, the land is abundant and fertile, benefiting its inhabitants with the basic necessities of human life—grain, oil, and wine. But when Israel sins, the blessedness of the land declines and it becomes desolate and inhospitable (Lev. 26:32; Deut. 11:13–21). When the alienation from God becomes egregious and injustice overtakes God's people, God removes them from the land of Israel. The flourishing of the land and the quality of the people's life, then, are causally linked, and both depend on obeying God's will. The proper management of the land of Israel illustrates the close link between the sanctification of space, time, the human body, and social relations in Judaism.

Sanctification of Space

The various land-based commandments in the Bible express the belief that "God is the owner of the land of Israel and the source of its fertility, while the Israelites working the land are God's tenant-farmers. The tenants are obligated to return the first portion of the land's yield to the owner in order to insure the land's continuing fertility and the farmer's sustenance and prosperity."[16] Accordingly, the first sheaf of the barley harvest, the first fruit of produce, and two loaves of bread made from the new grain are to be consecrated to God. In the Mishnah (codified about 200 C.E.) these gifts are to be made only from produce grown by Israelites in the land of Israel, in contrast to all other cereal offerings and animal offerings, which may be brought to the Temple also from outside the land (Mishnah Men. 8:1; Mishnah Parah 2:1). Some of the consecrated produce is to be given to the priests and Levites, whereas others are to be eaten by the farmer himself.

Scripture likewise regulates the cultivation of trees. Leviticus 19:23 commands: "When you come into the land and plant all kinds of trees for food, then you shall regard their fruit as forbidden." During the first three years of growth, the fruits of newly planted trees or vineyards are not to be eaten (*orlah*),

because they are considered to be God's property. Deuteronomy 20:19 articulates the principle of *bal tashit* (literally: "do not destroy") that governs conduct toward trees during wartime: "If you besiege a town for a long time, making war against it in order to take it, you must not destroy it in order to take it, you must not destroy its trees by wielding an ax against them. Although you may take food from them, you must not cut them down."[17] While this law is undoubtedly anthropocentric, it also suggests that Scripture recognizes the interdependence between humans and trees, on the one hand, and the capacity of humans to destroy natural things, on the other. To ensure the continued fertility of the land, human destructive tendencies are curbed by Scriptural law. In the Talmud and later rabbinic sources, the biblical injunction of "do not destroy" is extended to cover "the destruction, complete or incomplete, direct or indirect, of all objects that may be of potential benefit to man."[18] Applying the principle to numerous nonmilitary situations, as the Talmud does, may serve as a useful guideline to prevent all forms of harmful conduct toward the physical environment.[19]

While the Jewish tradition places the responsibility for the well-being of God's earth on humans, the tradition is not insensitive to the well-being of nonhuman species. Proper management of the created order is a human responsibility, and the Torah itself specifies how humans should take care of other species. Deuteronomy (5:14, 14:21, 22:6, 22:10) requires sensitivity to the needs of animals, and with these verses in mind the rabbis articulated the principle of *tza'ar ba'aley hayim* ("distress of living creatures").[20] Humans are forbidden to cause needless pain to animals, enjoined instead to exercise mercy. The rabbis prohibited the eating of a meal before giving food to the animals, and prohibited the purchase of any animal or bird, tame or wild, unless the purchaser had first made adequate provision for feeding the animal. The concern for unnecessary suffering of animals underscores the precaution Jewish law takes about slaughtering animals for human consumption; all are meant to minimize pain. Though the tradition allows for the slaughtering of animals fit for human consumption, it forbids a "destructive act that will cause the extinction of species even though it has permitted the ritual slaughtering of that spe-

cies."[21] In short, Judaism prescribes a sensitivity to all of God's creatures as part of the command to confer dignity on all things created by God.

Sanctification of Time

Ancient Israel was an agrarian society that lived in accord with the seasons and celebrated the completion of each harvest cycle by dedicating the earth's produce to God. Yet already in the Bible the agricultural festivals were given a different meaning when they were situated in the linear, sacred history of the Jewish people and its covenantal relationship with God. For example, Sukkot (Feast of Booths) originally celebrated the end of the summer harvest and the preparation for the rainy season in the land of Israel; it was later associated with the redemption of Israel from Egypt. In Leviticus 23:42 Israel was commanded to dwell in booths for seven days so "that your generations may know that I made the people of Israel dwell in booths when I brought them out of the land of Egypt." Removed from the protection of their regular dwelling, the temporary booth compelled the Israelites to experience the power of God in nature more directly and become even more grateful to God's power of deliverance. In addition to dwelling in a sukkah, the Israelites were commanded "to take the fruit of the goodly tree, palm branches, foliage of leafy trees, and willows of the brook and you shall rejoice before your God for seven days" (Lev. 23:40). In this manner, nature became a means for Israel's fulfillment of the commandment to rejoice before God. After the destruction of the Temple, the complex rituals of this pilgrimage festival could no longer be carried out in the Temple.[22] Not surprisingly, the rabbis elaborated the symbolic meaning of the sukkah, viewing it as a sacred home and the locus for the divine presence. They homiletically linked the "Four Species" to parts of the human body, ideal types of people, the four patriarchs, the four matriarchs, and to God.[23] Nature's "eternal return" thus received a different historical and ethical meaning in Judaism.

The ritual transformation of nature is also evident in another Jewish festival that celebrated the rhythms of nature. First mentioned in the Mishnah (Rosh Hashanah 1:1), the fifteenth day of the month of Shevat, which coincides with the beginning

of bloom of almond trees after the period of dormancy during winter, was celebrated as "the new year for trees." The celebration apparently originated in the secular activity of paying taxes on fruit trees, but it received a religious meaning when the day was interpreted as God's judgment of trees, analogous to the judgment of people at the beginning of the Jewish year.[24] Interestingly, during the Middle Ages, when the Jews no longer dwelled in the land of Israel, the festival assumed a new symbolic meaning, with new prayers and new customs. Fruits grown in the land of Israel were eaten by diaspora Jews and a special set of Psalms was added to the daily liturgy. The most elaborate ritual for the holiday was constructed by Kabbalists in the sixteenth century, for whom the land of Israel was no longer merely a physical place, but rather a spiritual reality. Modeled after the Passover service, the Kabbalistic ritual for the "new year for trees" endowed it with the capacity to restore the flow of divine energy to the broken world. The very fact that for the Kabbalists everything in the world was a symbol of divine reality facilitated the creation of new rituals and endowed natural objects with a new spiritual meaning. Nature was absorbed into the sacred narrative of Judaism.

Sanctification of the Human Body

The covenantal model posited the ideal that Israel must become "holy, as I the Lord am holy" (Lev. 11:45). To live in the holy land, the holy people must conduct themselves in a holy manner first and foremost in regard to their own bodies. The commandments regarding the land ensured the production of food pure enough for consumption by the people of God. The production and consumption of holy food was especially important for the priests, who came into more direct contact with God than ordinary Israelites. A code of permitted and forbidden foods was established by the priestly class during the First Temple period and further elaborated by the Pharisees during the Second Temple period and the rabbinic sages who perpetuated their traditions. The Pharisees, who began as an exclusive table fellowship, extended the purity code beyond the precincts of the Temple to the household and the marketplace, and expected all Jews, and not only those who belonged to priestly families, to

abide by it.[25] Over time, the Pharisaic conception of purity would become normative in Judaism.

In addition to taking extreme care in the production, preparation, and consumption of food, ritual cleanliness governed all other aspect of the human body, especially sexual activity. Detailed laws governed the emission of bodily fluids (such as semen and blood), and prescribed specific modes of purification for various types of ritual pollution. Immersion in water and the sacrifice of animals were the major ritual means of removing pollution. Likewise, all sexual activities were carefully governed in rabbinic Judaism, in order to assure the purity of the human body. Only a ritually cleansed body could serve as the proper abode for the soul, which by the rabbinic period was believed to be a separate, noncorporeal substance. At death, it was believed, the body and the soul were separated: whereas the former disintegrated into its natural components, the soul continued to live in an eternal abode, provided the individual had observed the commandments of God and devoted life to the study of the Torah, to worship, and to acts of loving kindness. The body and the soul will be reunited in the final redemption of Israel, an eschatological drama that will include the resurrection of the dead. In short, the natural human body itself has to be carefully managed and properly sanctified to God, so that Israel can remain a proper partner in God's covenant.

Sanctification of Social Relations

What makes the Jewish approach to nature most distinctive is the links it establishes between the human treatment of God's earth and social justice. Since not all members of the community own land, those who do have the moral and religious obligation to support those who do not. Parts of the land's produce—the corner of the field (*peah*), the gleanings of stalks (*leket*), the forgotten sheaf (*shikhekhah*), the separated fruits (*peret*), and the defective clusters (*olelot*)—are to be given to those who do not own land: the poor person, the widow, the alien resident, and the Levite. By observing these particular commandments, the soil itself becomes holy, and the person who obeys these commandments ensures the religio-moral purity necessary for residence on God's land. A failure to treat

other members of the society justly, so as to protect the sanctity of their lives, is integrally tied to acts extended toward the land.[26]

The connection between land management, ritual, and social justice is most evident in the laws regulating the Sabbatical year (*shemittah*).[27] It was a year of prescribed rest analogous to the Sabbath. According to the earliest mention of the Sabbatical year (Ex. 23:10–11), the Israelites must let the land lie fallow and the vineyards and olive groves untouched so that the poor people and wild beasts may eat of them. In Leviticus (25:1–7; 18–22), the fallow year is referred to as "the Sabbath of the Lord," a year of complete rest for the land, promising the divine blessings on the crop of the sixth year to those who suspend their work on the seventh. Deuteronomy 15:1–11 commands the Israelites to observe every seventh year as "year of release" when debts contracted by fellow countrymen are to be remitted. In the Jubilee year, all slaves are to be freed and returned to their families (Lev. 25:11). While people and debts are to be released in the Jubilee, Scripture insists on God's eternal ownership of the land: "The land shall not be sold forever; for the land is mine. For you are strangers and sojourners with me" (Lev. 25:23).

Regardless of how the laws of the Sabbatical and Jubilee year were interpreted and adapted during the Second Temple period, one aspect of these law remained unchanged: the Torah enjoined human beings to allow nature a period of rest and regeneration. As Shlomo Riskin puts it: "Shemitta is to the world of space what the Sabbath is to the world of time."[28] As Israel "tastes" the possibility of transcendence each week in the celebration of the Sabbath, so does the land enjoy the possibility of renewal in the Sabbatical year. By returning the earth to God, nature's vitality is restored and protected from human use and abuse.[29]

In sum, the sanctification of space, time, the human body, and human relations is illustrated in the relationship between the people of Israel and the land of Israel, the token of God's covenant with the Chosen People. These laws and prescribed attitudes demonstrate clearly that the Jewish religious tradition is especially sensitive to the well-being of the natural environ-

ment and upholds a special human responsibility for its proper management. God's covenant specified how humans should protect God's created world and how they should ensure their own purity. To live on God's land requires the residents to be holy by observing ritual and moral prescriptions. Only those who live by God's will can properly enjoy the bounty and beauty of God's earth.

COSMOLOGICAL ASSUMPTIONS: RATIONALIST PHILOSOPHY AND KABBALAH

Rabbinic Judaism was developed after the destruction of Jerusalem and its temple in 70 C.E. With the loss of the Temple, communication with God was severely disrupted and Jewish theodicy dictated that the responsibility for the catastrophe be placed on human actions. Human sins, especially the sin of "senseless hatred," brought about the exile of the people from God's land. The Judaism of the rabbis was a comprehensive program for repairing the broken relationship with God. Ironically, it was the comprehensiveness of rabbinic Judaism that enabled the Jews to live meaningfully outside the land of Israel and defer the return to the Holy Land to a remote messianic future. In exile, the Jews continued to hope for their return to the Promised Land. The land itself became an ideal, a spiritual reality. And the possibility of eventually returning to the land became one of the key hopes that sustained Jews who lived outside the Holy Land.

The primacy of the land of Israel in Jewish self-understanding and the historical conditions of the Jews in exile help explain the relatively little attention paid to the physical environment by Jewish thinkers in the premodern period. For example, heavy land taxes levied on Jews as second-class, protected subjects in Islam, and restrictions on Jewish ownership of land in most of medieval Christendom, transformed the Jews from agricultural people to urban dwellers who derived their livelihood from commerce, trade, finance, and crafts. To the extent that premodern Jews were interested in the natural world, it was a purely theoretical interest that reflected theological and cosmological concerns. In the Middle Ages, two theological

programs—rationalist philosophy and theosophic Kabbalah—theorized about nature in an attempt to specify the connection between creation, revelation, and redemption. As ideal paths for religious perfection, rationalist philosophy and theosophic Kabbalah flourished simultaneously, cross-fertilizing each other.[30] While rationalist philosophers and theosophic Kabbalists developed distinctive conceptions of the natural world (which in turn makes it difficult to generalize about nature in the sources of Judaism), it is only in these sources that the term "nature" (*teva*) appears as an abstract concept.[31]

Rationalist Jewish philosophers speculated about nature in two main contexts: reflections about the origin of the world (viz., whether the world is created out of nothing or out of something),[32] and reflections on the origins of morality (viz., whether the moral code is part of the created order, or revealed by God).[33] Jewish rationalist philosophers did not agree on these issues, but in general they regarded nature as the manifestation of God's wisdom. Since God is absolutely one, in God there is no distinction between what God knows and what God does. Divine activities in the physical environment manifest divine wisdom and God's continued care for the world, that is, divine providence. The philosophers studied the natural world in order to understand the mind of God, emphasizing the orderliness, stability, and predictability of nature. The human ability to understand how God works in nature was ascribed to the human capacity for reason, which the philosophers equated with the "image of God" mentioned in Genesis.[34] By virtue of reason, humans are able to understand the orderliness and purposefulness of nature, which Jewish rationalist philosophers interpreted in accord with medieval Aristotelian cosmology and physics. The study of nature by means of the human sciences, culminating in metaphysics, was thus understood as a religious activity: the better one understood the laws by which God governed the world, the closer one might come to God.

The worldview of medieval philosophy was hierarchical: all beings were arranged within the Great Chain of Being, each occupying its natural place and acting in accord with its inherent *telos*. The hierarchical order of existence ranged from the most spiritual of beings—God—to the most material. Human

beings stood just below God in this schema. The main task of the thoughtful human being was to contemplate and comprehend the structure of reality on the basis of empirical observation. The greatest of the medieval Jewish philosophers—Levi ben Gershom (1288–1344)—designed an instrument to measure the relative distance of celestial objects so as to gain a better understanding of the laws of nature.[35] For most medieval Jewish philosophers, however, the focus of philosophical activity was not astronomy but the human body itself. Often deriving their livelihood from the practice of medicine, the Jewish rationalist philosophers sought to explain the interdependence of the body and the soul.[36] Human well-being, they maintained, could be attained only when one followed the commands of God explicit and implicit in the Torah. Their interest in the natural world was decidedly subordinate to their interest in the health of humans.

During the early modern period, Jewish philosophers became increasingly more interested in the flora and fauna of their natural environment. Jewish philosophical texts from this period abound with information about minerals, plants, and animals, but such information is still framed by the theological assumptions of the older rationalist tradition. Natural phenomena are to be understood in the light of the Torah, since the Torah is the blueprint of creation.[37] Observation of natural phenomena must be consistent with a correct reading of the biblical text. For the medieval and early modern Jewish philosophers, there was no division between nature and Scripture: each made manifest an aspect of divine activity.

The Torah and nature were similarly interpreted in tandem by the Kabbalists. But whereas the rationalist philosophers stressed the regularity of nature's laws, the Kabbalists focused on the linguistic aspect of the creative act. Scripture, of course, depicts creation as an act of divine speech. In late antiquity, the anonymous Jews who composed *Sefer Yetzirah* (The Book of Creation) and its cognate literature identified the "building blocks" of the created world with the letters of the Hebrew alphabet.[38] Understood as units of divine energy, the various permutations of the Hebrew letters accounted for the diversity of nature. All created things were various manifestations of

linguistic information.[39] Nature itself was viewed as a text that could be decoded and manipulated by anyone who grasped its grammar, so to speak. The code itself was known only to an initiated few, because of the dangers inherent in possessing such knowledge: the one who knows how to decode nature can manipulate not only physical phenomena but the inner life of God. Esoteric knowledge about the Torah assumed magical and theurgic dimensions.

Kabbalah produced two distinct approaches to the natural world. On the one hand, the textualization of the natural world made all references to natural phenomena a hermeneutical activity. Indeed, most Kabbalists (unlike the philosophers) had little interest in collecting empirical data about nature. Though the Kabbalists often employed references to nature in their symbolic interpretations of the Torah, the very textualization of nature removed these premodern Jews from any close study of nature as it actually existed. For this reason, the Kabbalists could view the world of nature as a battleground between divinity and the forces of evil (*Sitrah Ahra*). On the other hand, some sixteenth-century Kabbalists highlighted the capacity of human beings to manipulate the forces of nature. A Kabbalist who knew the linguistic formulas that governed all life could claim to draw spiritual energy into the corporeal world by bringing down rain when needed, by healing the sick, and by easing childbirth.[40] These forms of "practical Kabbalah" manifest a "hands-on" approach to nature; it is an activist attitude that closely aligned Kabbalah with magic and alchemy. Such wisdom was considered effective only because the Kabbalists claimed to possess the knowledge of invisible, occult forces of nature created by divine speech. Thus, since the Kabbalists affirmed the human capacity to activate a divine energy that pulsates throughout the universe, they remained committed to the primacy of humans in the created order.

Medieval philosophy and Kabbalah were transformed in the early modern period. The gradual dissolution of medieval Aristotelianism eventually made the medieval synthesis of Greek philosophy and Judaism untenable. Though Jews did not participate in the scientific revolution of the seventeenth century in a significant way, eventually the secularization of Western

culture and the emancipation of the Jews led to the emergence of modern Jewish scholars who no longer looked at the natural world through the prism of the Torah. When the liberal professions and the universities opened to Jews in the nineteenth century, many Jews flocked to study the natural sciences, and many were at the forefront of new discoveries in the fields of chemistry, physics, biology, botany, and others. The scientific study of nature by born Jews, however, had little to do with Judaism. In fact, for many of them, the scientific study of nature was thought to be in conflict with the Jewish religious tradition and often provided modern Jews an ideological context in which they could be modern without being practicing Jews.

Kabbalah, by contrast, continued to underscore the traditional understanding of the Torah, giving rise to East-European Hasidism in the eighteenth century. Here nature played a different role. Based on the principles of sixteenth-century Lurianic Kabbalah, Hasidic theology treated all natural phenomena as ensouled: divine sparks enlivened all corporeal entities, and not just human beings. The divine sparks sought release from their material entrapment.[41] Through ritual activity, the Hasidic master (a modern version of the Kabbalistic *magus* of words) attempted to draw closer to the divine energy, the liberation of which will result not only in the sanctification of nature but also in the redemption of reality and its return to its original, noncorporeal state. The worship of God through the spiritualization of corporeal reality became a major Hasidic value, complementing the general deemphasis on formal Torah study in Hasidism. Hasidic tales were situated in natural rather than urban settings, encouraging the Hasidic worshipper to find the divine spark in all created beings. This is not to say, however, that all Hasidic masters were concerned with the well-being of the natural environment, or with the protection of nature. In fact, to reach their desired spiritual goals, Hasidic meditative practices attempted to dissolve the corporeality of existing reality (*bittul ha-yesh*) and to eliminate the selfhood of the one who meditates on nature (*bittul ha-ani*).[42] The spiritualizing tendencies of Hasidism, therefore, are quite contrary to any concrete concern with the natural environment, even though Jewish environmentalists can find in Hasidism a profound re-

spect for all living creatures and an awareness of their intrinsic sacredness. In so doing, they would follow in the footsteps of Martin Buber, who correctly understood the kinship between his own philosophy of dialogue and the teaching of Hasidism.[43] If we were to treat the natural environment as a "Thou" rather than an "It," as Buber suggested, perhaps we could halt or slow down the degradation of our natural surroundings.[44]

JUDAISM AND THE CONTEMPORARY ECOLOGICAL CRISIS

As the preceding account shows, the Jewish religious tradition is rich and varied; anyone so inclined will find plenty of support in sacred sources for sound environmental policies. Above all, the principle of "do not destroy" can provide religious support for a range of environmental policies, such as conservation of natural resources, prevention of water pollution, reforestation, proper disposal of waste products, energy conservation, recycling, and reduction of material consumption.[45] All of these policies highlight human responsibility toward the physical environment.[46] In this regard, Judaism can be part of a solution to the contemporary environmental crisis.

However, the primacy of learning in Judaism, the bookish culture it produced, the idealism inherent in the Jewish prescriptive approach to life, and the economic reality of Jewish life in the premodern period have also all combined to give rise to a religious lifestyle that is either indifferent to nature or consciously aspires to transcend it. How one wishes to interpret Judaism in regard to ecology thus becomes a matter of personal choice, resulting in an ideological diversity that is the hallmark of the Jewish condition today.

Still, if Jews wish to ground their approach to ecology in Jewish sources, they must come to terms with the fact that certain assumptions, widely taken for granted by secular environmentalists, conflict with Jewish tradition. For example, a Jewish environmental philosophy and ethics cannot be based on a simplistic version of pantheism that acknowledges only the world and nothing beyond the world. From a Jewish perspective, "biocentrism" is just another form of paganism that must result in idolatrous worship of nature.[47] An environmental phi-

losophy that merely reveres what is, while ignoring what should be, is not viably Jewish. To speak authentically from the sources of Judaism, one must affirm that God created the world and that divine revelation is possible.[48] It is precisely because humans are created with the capacity to transcend nature that they are commanded by God to protect nature. Therefore, a Jewish environmental philosophy and ethics cannot give up the primacy of the human species in the created order, notwithstanding the fact that "species-ism" is now regarded as an unacceptable view by some proponent of Deep Ecology. In a view true to Jewish teaching, human beings must first love and respect themselves, if they are going to be able to love and respect other species. But the love of one's fellow human beings goes hand in hand with human responsibility toward other species created by God.

Similarly, Jewish environmentalism cannot simplistically preach zero population growth. The obligation to procreate is unambiguously articulated in Genesis, and has become a necessity after the Holocaust. Of course, it is possible to interpret the injunction "to be fruitful and multiply and fill the earth" to mean "to reach the maximum population sustainable at an acceptable standard of living but do not exceed it."[49] But it is the prior commitment to environmentalism that dictates such an interpretation of the traditional sources, not the sources themselves.

A Jewish "ethics of responsibility" does make plausible an ethic of "stewardship" over natural resources.[50] While this ethic has been criticized as "shallow ecology,"[51] it seems to me that "stewardship" is not a useless idea. A sense of responsibility toward other species need not be dismissed as mere condescension and arrogance. To exist and to thrive, humans must take note of the needs of other species without losing sight of human distinctiveness and the obligations that flow from it.

The obligation to respond to the needs of the other is at the core of the covenantal model, the foundation of Judaism. The covenantal model establishes the everlasting relationship between God, Israel, and the land of Israel. If extended to the earth as a whole, a covenantal model would spell out the obligations of humanity toward the earth and its inhabitants as

one manifestation of humanity's obligations to God.[52] Minimally, this might mean that humanity is obligated to perpetuate the diversity of other species created by God. Does that mean that human beings must never harm individual members of other species? I do not think so. There are many cases in which harming members of other species is necessary from a human perspective, the only perspective available to humans. But since that perspective also includes awareness of other species, humans are obliged to ensure the perpetuation and thriving of other species, to the best of their ability. Biological diversity and human distinctiveness are not mutually exclusive, but the justification for their reconciliation should be based on the covenantal notion of obligation rather than the "biotic rights" of animals, soil, and water.[53]

The covenantal model asserts the causal connection between the moral quality of human life and the vitality of God's creation. The Jewish covenantal model in this way provides a religious justification for social ecology. The corruption of society is closely linked to the corruption of nature. In both cases, the injustice arises from human greed and the failure of human beings to protect the original order of creation. From a Jewish perspective, the just allocation of nature's resources is indeed a religious issue of the highest order. The principles that should guide contemporary deliberations are stated in Scriptural legislation about the treatment of the marginal in society. Concomitantly, the rabbinic values of loving kindness, humility, moderation, and self-control can all offer valuable inspiration for policies that take into consideration both the needs of humans and the needs of nonhuman beings. This is the meaning of "Eco-Kosher," a concept advanced by Arthur Waskow to illustrate the connection between the care of others, the endorsement of a simple lifestyle, and the rejection of greed and possessiveness.[54]

In sum, from a Jewish perspective the current failure to interact respectfully with the physical environment is symptomatic of a deeper human failure to accept the existence of a creator and recognize the created status of all beings, including human beings. Human hubris has inflicted considerable damage on the environment, but humans also have the capacity to

heal the damage. The Jewish tradition places the responsibility for the well-being of the environment on humans while asserting the dependence of humans on their physical environment. The Jewish tradition, however, does not worship the natural world for its own sake, and does not accept what is given as the end of human life. Jewish life is shaped by a long list of duties and obligations that encompass all aspects of life. Still, it is possible and desirable to treat ecology in accordance with the deepest values of Judaism and, thereby, ensure the well-being of God's created world and its preservation for generations to come.

ENDNOTES

[1]Lynn White Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155 (1967): 1205.

[2]For an overview of the Christian response to Lynn White and the history of Christian thinking about the environment consult Roderick Nash, "The Greening of Religion," in *This Sacred Earth: Religion, Nature, Environment,* ed. Roger S. Gottlieb (New York and London: Routledge, 1996), 194–229.

[3]Norman Lamm, a leader of modern orthodoxy and the president of Yeshivah University, was among the first Jewish respondents to White's charges. See Norman Lamm, *Faith and Doubt: Studies in Traditional Jewish Thought* (New York: Ktav Publishing House, 1972), 162–185. Although Lamm identified all the pertinent elements of a Jewish perspective on environmentalism, his work did not give rise to a Jewish environmental movement. Jewish environmentalism emerged a decade later as part of the so-called Jewish Renewal movement. It brought Jews who were already committed environmentalists to anchor their ecological sensibility in the sources of the Jewish tradition.

[4]At the forefront of this movement is Ellen Bernstein and the organization she founded, Shomrei Adama (The Keepers of the Earth). For a sample of Jewish environmental writings consult Ellen Bernstein, ed., *Ecology and the Jewish Spirit: Where Nature and the Sacred Meet* (Woodstock, Vt.: Jewish Lights Publishing, 1998). In 1993 the Coalition on the Environment and Jewish Life (COEJL) was founded to educate Jews about environmental concerns and inspire them to lead an environmentally sound life, based on Jewish values as expressed in the sacred sources of Judaism.

[5]For an overview of Jewish responses to the contemporary environmental crisis, consult Eric Katz, "Judaism and the Ecological Crisis," in *Worldviews and Ecology: Religion, Philosophy, and the Environment*, ed. Mary Evelyn Tucker and John A. Grim (Maryknoll N.Y.: Orbis Books, 1994), 55–70; Eilon Schwartz, "Judaism and Nature: Theological and Moral Issues to Consider while Renegotiating a Jewish Relationship to the Natural World," *Judaism* 44 (1995): 437–448.

[6]A typical example of both these approaches can be found in Aubrey Rose, ed., *Judaism and Ecology* (New York: Cassell, 1992).

[7]This tension, and hence the tenuous relationship of Judaism to environmentalism, was pointed out by Steven S. Schwartzchild, "Unnatural Jew," *Environmental Ethics* 6 (1984): 347–362.

[8]Babylonian Talmud, Shabbat 77b.

[9]For a fuller discussion of the representation of nature in the Book of Psalms, consult Gerald Blidstein, "Nature in 'Psalms,'" *Judaism* 13 (1964): 29–36.

[10]See Edward L. Greenstein, "Biblical Law," in *Back to the Sources: Reading the Classic Jewish Texts,* ed. Barry W. Holtz (New York: Summit Books, 1984), 90–96.

[11]Many have noted the etymological connection between the Hebrew word *adam* (human beings) and the word *adamah* (land). However, it is important to note that the word *adamah* refers to arable land and is identified with land that humans farm to survive (Gen. 3:17–19). See Theodore Hiebert, *The Yahwist's Landscape: Nature and Religion in Early Israel* (New York: Oxford University Press, 1996), 35. Conversely, the word *midbar* does not mean "wilderness" (as it is normally translated) but a "rugged land of seasonal pasturage unfit for cultivation." See Jeanne Kay, "Concepts of Nature in the Hebrew Bible," *Environmental Ethics* 10 (1988): 309–327, esp. 325. The Bible does not despise wilderness but it clearly links the aridity of the desert with divine punishment and the dialectics of blessing and curse. The successfully cultivated land manifests the presence of God in the life of the people, and, conversely, disloyalty to God incurs divine punishment in the form of loss of life's necessities.

[12]Babylonian Talmud, Shabbat 53b; the relevant passage is cited in Lamm, *Faith and Doubt,* 167.

[13]On humans as co-creators see Philip Hefner, "The Evolution of the Created Co-Creator," in Ted Peters, ed., *Cosmos as Creation: Theology and Science in Consonance* (Nashville: Abingdon Press, 1989), 211–233.

[14]See Jonathan Helfand, "The Earth Is the Lord's: Judaism and Environmental Ethics," in Eugene C. Hargrove, ed., *Religion and Environmental Crisis* (Athens: University of Georgia Press, 1986), 38–52.

[15]Mishnah Berakhot 6:3: "Rav. Judah said in the name of Samuel: To enjoy anything of this world without a *berakhah* is like making a personal use of things consecrated to heaven."

[16]Richard Sarason, "The Significance of the Land of Israel in the Mishnah," in *The Land of Israel: Jewish Perspectives,* ed. Lawrence A. Hoffman (Notre Dame, Ind.: University of Notre Dame Press, 1986), 114. For a modern reworking of this biblical view see Samuel Belkin, "Man as Temporary Tenant," in *Judaism and Human Rights,* ed. Milton R. Konvitz (New York: Norton, 1972), 251–258.

[17]For further analysis on this principle in Talmudic literature consult "Bal Tashchit," *Encyclopedia Talmudit,* vol. 3, 335–337.

[18]Jonathan I. Helfand, "Ecology and the Jewish Tradition: A Postscript," *Judaism* 20 (1971): 332.

[19]Several rabbinic sources speak specifically against harming trees, especially fruit trees. See Yosef Orr and Yossi Spanier, "Traditional Jewish Attitudes towards Plant and Animal Conservation," in Rose, ed., *Judaism and Ecology,* 54–60.

[20]A comprehensive analysis of this principle is provided by Noah J. Cohen, *Tza'ar Ba'ale Hayim: The Prevention of Cruelty to Animals, Its Bases, Development and Legislation in Hebrew Literature,* 2d. ed. (New York: Feldheim Publishers, 1976).

[21]Nahmanides, Commentary on Deuteronomy 22:6. See Helfand, "Ecology and the Jewish Tradition," 333.

[22]Jeffrey L. Rubinstein, *The History of Sukkot in the Second Temple and Rabbinic Periods* (Atlanta, Ga.: Scholars Press, 1995).

[23]For a full discussion see Arthur Schafer, "The Agricultural and Ecological Symbolism of the Four Species," *Tradition* 20 (1982): 128–140.

[24]See Ellen Bernstein, "A History of Tu B'Sh'evat," in Bernstein, ed., *Ecology and the Jewish Spirit,* 139–152.

[25]For an overview of the Pharisaic transformation of Judaism, consult Jacob Neusner, *From Politics to Piety: The Emergence of Pharisaic Judaism* (Englewood Cliffs, N.J.: Prentice-Hall, 1973).

[26]This biblical principle is the foundation of contemporary Jewish social ecology. An example is Richard G. Hirsch, *The Way of the Upright: A Jewish View of Economic Justice* (New York: Union of American Hebrew Congregations, 1973).

[27]For an overview of these laws consult Gerald Blidstein, "Man and Nature in the Sabbatical Year," *Tradition* 8 (4) (1966): 48–55; reprinted in Martin D. Yaffe, ed., *Judaism and Environmental Ethics* (Lanham, Md.: Lexington Books, 2001).

[28]Sholmo Riskin, "Shemitta: A Sabbatical for the Land," in Rose, ed., *Judaism and Ecology,* 72.

[29]The Sabbatical Law could not be observed during the extended period of exile but its observance was renewed in the modern state of Israel. See Benjamin Bak, "The Sabbatical Year in Modern Israel," *Tradition* 1 (2) (1959): 193–199. For a contemporary reflection on the relevance of biblical legislation see Arthur Waskow, "From Compassion to Jubilee," *Tikkun* 5 (2) (1990): 78–81.

[30]On the interdependence of philosophy and Kabbalah in the Middle Ages consult Elliot R. Wolfson, "Jewish Mysticism: A Philosophical Overview," *History of Jewish Philosophy,* ed. Daniel H. Frank and Oliver Leaman (London and New York: Routledge, 1997), 450–498; Hava Tirosh-Rothschild, "Jewish Philosophy on the Eve of Modernity," in ibid., 499–573.

[31]The meaning of the concept of nature in medieval philosophy and Kabbalah requires a more extensive discussion than space allows. The pertinent issues

are explored in the essays by Shalom Rosenberg, Lenn E. Goodman, and Elliot Wolfson in Hava Tirosh-Samuelson, ed., *Judaism and Ecology* (Cambridge, Mass.: Harvard University Press and Harvard Center for the Study of World Religions, forthcoming).

[32]Consult Norbert M. Samuelson, *Judaism and the Doctrine of Creation* (Cambridge: Cambridge University Press, 1994).

[33]See Abraham Melamed, "Natural Law in Medieval and Renaissance Jewish Philosophy" [Hebrew], *Daat* 17 (1986): 49–66; Melamed, " Natural, Human, Divine: Classification of the Law among Some Fifteenth and Sixteenth Century Italian Jewish Thinkers," *Italia* (1985): 59–93; David Novak, "Natural Law, Halakhah and Covenant," *Jewish Law Annual* 7 (1988): 45–67; idem, *Natural Law in Judaism* (Cambridge: Cambridge University Press, 1998).

[34]Moses Maimonides, *Guide for the Perplexed*, trans. Shlomo Pines (Chicago: University of Chicago Press, 1963), I:2.

[35]On the scientific activity of Levi ben Gershom, also called Gersonides, consult Gad Freudenthal, ed., *Studies on Gersonides: A Fourteenth-Century Jewish Philosopher-Scientist* (Leiden: E. J. Brill, 1992).

[36]Maimonides (*Guide for the Perplexed,* II:40; III:27) best articulated the interplay between the well-being of the body and the well-being of the soul that was the foundation of medieval philosophical ethics.

[37]See Hava Tirosh-Samuelson, "Theology of Nature in Sixteenth-Century Italian Jewish Philosophy," *Science in Context* 10 (4) (1997): 529–570.

[38]The dating of *Sefer Yetzirah* is disputed among historians of the Jewish mystical tradition. While it is reasonable to assume that some of the material is as early as the second century, the redacted text that came down to us is of a much later, medieval vintage.

[39]On the textualization of nature in *Sefer Yetzirah* and its cognate literature, consult Moshe Idel, *Golem: Jewish Magical and Mystical Traditions on the Artificial Anthropoid* (Albany: State University of New York Press, 1990), 9–26.

[40]Consult David B. Ruderman, *Kabbalah, Magic and Science: The Cultural Universe of a Sixteenth-Century Jewish Physician* (Cambridge, Mass.: Harvard University Press, 1988).

[41]The relationship between God and the world in Hasidism is by no means easy to define, since Hasidic thought is very rich and diverse. The dominant view in Hasidism is panentheism, namely, the claim "that the world exists within the divine being, as part of its substance. The panentheistic view assumes that the Divinity is both immanent in the world, its substance dwelling within it, and also transcendent in relation to it and beyond it." See Yoram Jacobson, *Hasidic Thought* (Tel Aviv: MOD Press, 1998), 23. Hasidism, however, has often been understood to advocate a pantheistic view (namely, a view that identifies divinity with the totality of the world itself), and thus comes dangerously close to the position that rabbinic Judaism recognizes as an idolatrous form of paganism. For a contemporary critique of Hasidism's presumed pantheism consult Lamm, *Faith and Doubt,* 175–180.

[42]On this dialectic see Rachel Elior, "The Paradigms of Yesh and Ayin in Hasidic Thought," in *Hasidism Reappraised,* ed. Ada Rapoport-Albert (London and Portland, Oreg.: The Littman Library of Jewish Civilization, 1997), 168–179.

[43]On Buber's approach to Hasidism consult Moshe Idel, "Martin Buber and Gershom Scholem on Hasidism: A Critical Appraisal," in ibid., 389–403.

[44]Buber's dialogical philosophy has inspired many contemporary, non-Jewish environmentalists. A typical example is found in Brian J. Walsh, Marianne B. Karsh, and Nik Ansell, "Trees, Forestry and the Responsiveness of Creation," in Gottlieb, ed., *This Sacred Earth*, 423–435. While the distinction between the two paradigms of human relations—the "I-Thou" and "I-It"—has been commonly employed in environmental literature in regard to nature, a systematic analysis of Buber's own philosophy in regard to nature is yet to be undertaken.

[45]For a specific program for action to Jewish individuals and institutions consult Vicky Joseph, "Action on the Environment: A Practical Guide," in Rose, ed., *Judaism and Ecology,* 119–127.

[46]An example of such application by Jewish environmentalists is articulated by Ellen Bernstein and Dan Fink, "Bal Tashchit," in Gottlieb, ed., *This Sacred Earth,* 549–569. The essay illustrates the kind of educational activities Jewish environmentalists must do in their attempt to bring ecological concerns to the awareness of contemporary Jews.

[47]On that tension see Schwartz, "Judaism and Nature."

[48]Many secular Jews do not endorse these claims, because they regard them, perhaps mistakenly, to stand in conflict with the truths about the world that contemporary science teaches. A Jewish environmental philosophy and ethics needs to be articulated within the contemporary dialogue between science and religion.

[49]Norman Solomon, "Judaism and the Environment," in Rose, ed., *Judaism and Ecology,* 40.

[50]The point is well taken by David Ehrenfeld and Philip J. Bentley, "Judaism and the Practice of Stewardship," *Judaism* 34 (3) (1985): 301–311. For a Christian formulation of the principle consult Bruce R. Reichenbach and V. Elving Anderson, *On Behalf of God: A Christian Ethic for Biology* (Grand Rapids, Mich.: William B. Eerdmans, 1995), 40–109.

[51]See Arne Naess, "The Shallow and the Deep, Long Range Ecology Movements," in George Sessions, ed., *Deep Ecology for the Twenty-First Century: Readings in the Philosophy and Practice of the New Environmentalism* (Boston: Sambhala, 1995), 151–155. That Arne Naess's eco-philosophy is deeply indebted to Spinoza should not be cited as an example for a Jewish influence on Deep Ecology. It was precisely because Spinoza rejected the revealed status of the Bible and severed the connection between creation and revelation that his philosophical monism could inspire the principles of Deep Ecology.

[52]This is by no means an original idea; many Jewish authors have noted that the attitude toward the land of Israel is to be understood as the paradigm for the appropriate attitude toward the earth as a whole. See Evert Gendler, "On the

Judaism of Nature," in *The New Jews,* ed. James Sleeper and Alan L. Mintz (New York: Vintage Books, 1971), 233–243; Monford Harris, "Ecology: A Covenantal Approach," *CCAR Journal* 23 (1976): 101–108.

[53]See Peter Singer, "All Animals Are Equal," in *Environmental Philosophy: From Animal Rights to Radical Ecology,* ed. Michael E. Zimmerman et al. (Upper Saddle River, N.J.: Prentice Hall, 1998), 26–40.

[54]See Arthur Waskow, "What is Eco-Kosher," in Gottlieb, ed., *This Sacred Earth*, 297–302.

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New House Rules: Christianity, Economics, and Planetary Living

INTRODUCTION

Is the environment a religious issue? Many do not think so. For most Americans, the problems with our deteriorating planet can be fixed by science, managed with new technology.[1]

Let us hope that this is so, that science and technology *can* solve the looming environmental crisis. But it may not be that simple. Lynn White's oft-quoted 1967 essay laid the blame for environmental deterioration at the feet of religion, specifically Christianity.[2] If Christianity has been capable of doing such immense damage, then surely the restoration of nature must also lie, at least in part, with Christianity. I believe it does, but also with other world religions as well as with education, government, economics—and science. The environmental crisis is a "planetary agenda," involving all people, all areas of expertise—and all religions.

This is the case because the environmental crisis is not a "problem" that any specialization can solve. Rather, it is about how we—all of us human beings and all other creatures—can live justly and sustainably on our planet. It is about the "house rules" that will enable us to do so. These house rules include attitudes as well as technologies, behaviors as well as science. They are what the *oikos,* the house we all share, demands that we think and do so there will be enough for everyone. The words for these house rules are "derivatives" of *oikos*—ecumenicity, ecology, and economics—facilitating the manage-

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ment of the resources of planet Earth so that all may thrive indefinitely.

How does religion, and specifically Christianity, fit into this picture? Christianity fits where all religions do: as a worldview supporting the house rules. It fits at the level of the deeply held and often largely unconscious assumptions about who we are in the scheme of things, and how we should act.[3] While "anthropology" is not the only concern of religions, it is a central one and, for the purposes of the ecological crisis, the one that may count the most.

This essay will make the case that Christianity—at least since the Protestant Reformation, and especially since the Enlightenment—has, through its individualistic view of human life, implicitly and sometimes explicitly, supported a neoclassical economic paradigm and a consumer culture that has devastated the planet and widened the gap between the rich and the poor.[4] It will also suggest that Christianity, given its oldest and deepest anthropology, should support an alternative ecological model, one in which our well-being is seen as interrelated and interdependent with the well-being of all other living things and earth processes.[5]

Religions, and especially Christianity in Western culture, have a central role in forming who we think we are and what we have the right to do. It is the claim of this author that an individualistic anthropology is presently supported in the West not only by Christianity but also by government and the contemporary economic system.[6] When these three major institutions—religion, government, and the economic system—present a united front, a "sacred canopy" is cast over a society, validating the behavior of its people. It is difficult to believe that science and technology alone can solve an ecological crisis supported by this triumvirate, for these institutions as presently constituted legitimate human beings continuing to feel, think, and act in ways that are basically contrary to the conservation and just distribution of the world's resources.

NEOCLASSICAL AND ECOLOGICAL ECONOMICS

Neoclassical and ecological economics offer two dramatically different anthropologies, with different "house rules." The first

model sees human beings on the planet as a collection of individuals drawn together to benefit each other by fully exploiting natural resources. The second model sees the planet as a community that survives and prospers only through the interdependence of all its parts, human and nonhuman. The first model rests on assumptions from the eighteenth century: it sees human beings as individuals with rights and responsibilities, and the world as a machine, a collection of individual parts that are only externally related to one another. The second model rests on assumptions from postmodern science: it sees human beings as conscious and radically dependent parts of a larger whole, and the world as an organism, internally related in all its parts.

Both are models, interpretations, of the world and our place in it: neither is a description. This point must be underscored because the first model seems "natural"—indeed, "inevitable" and "true"—to most middle-class Westerners, while the second model seems novel, perhaps even utopian or fanciful. In fact, both come from the assumptions of different historical periods; both are world-pictures built on these assumptions, and each vies for our agreement and loyalty.

We need to assess the "economy" of both models, their notions of the allocation of scarce resources to family members, to determine which view of the "good life" is better. In this essay, I suggest that the machine model is injurious to nature and to poor people, while the organic model is healthier for the planet and all its inhabitants.

The reason economics is so important, why it is a religious and ecological issue, is that it is not just a "matter of money"; rather, it is a matter of survival and flourishing. Economics is an issue of values. In making economic decisions, the "bottom line" is not the only consideration. Many other values come into play, from the health of a community to its recreational opportunities; from the beauty of other life-forms to our concern for their well-being; from a desire to see our children fed and clothed to a sense of responsibility for the welfare of future generations.

Contemporary neoclassicists generally deny that economics is about values.[7] But this denial is questionable. The key feature of market capitalism is the allocation of scarce resources by

means of decentralized markets: allocation occurs as the result of individual market transactions, each of which is guided by self-interest.[8] At the base of neoclassical economics is an anthropology: human beings are individuals motivated by self-interest. The value by which scarce resources are allocated, then, is the fulfillment of the self-interest of human beings. The assumption is that each will act to maximize his or her own interest, and by so doing will eventually benefit all—the so-called invisible hand of Adam Smith's classical theory.

But what of other values? Two key ones, if we have the economics of the entire planet in mind, are the just distribution of the earth's resources, and the capacity of the planet to sustain our use of its resources. However, these matters—distributive justice to the world's inhabitants, and the optimal scale of the human economy within the planet's economy—are considered "externalities" by neoclassical economics.[9] In other words, the issues of who benefits from an economic system and whether the planet can bear the system's burden are not part of neoclassical economics.

In sum, the worldview or basic assumption of neoclassical economics is surprisingly simple and straightforward: the crucial assumption is that human beings are self-interested individuals who, acting on this basis, will create a syndicate or corporation, even a global one, capable of benefiting all eventually. Hence, as long as the economy grows, individuals in a society will sooner or later participate in prosperity. These assumptions about human nature are scarcely value-neutral. They indicate a preference for a certain view of who we are and what the goal of human effort should be: the view of human nature is individualism and our goal is growth.

When we turn to the alternative ecological economic paradigm we see a different set of values. Ecological economics claims we cannot survive unless we acknowledge our profound dependence on one another and the earth. Human need is more basic than human greed: we are relational beings from the moment of our conception to our last breath. The well-being of the individual is inextricably connected to the well-being of the whole.

These two interpretations of who we are and where we fit in the world are almost opposites of each other. Neoclassical economics begins with the unconstrained allocation of resources to competing individuals, on the assumption that if everyone acts in this way, issues of fair distribution and sustainability will eventually work themselves out. Ecological economics begins with the health of the whole planet, on the assumption that only as it thrives now and in the future will its various parts, including human beings, thrive as well. In other words, ecological economics *begins* with sustainability and distributive justice, not with the allocation of resources among competing individuals. Before all else, the community must be able to survive (sustainability), which it can do only if all members have the use of resources (distributive justice). Then, within these parameters, the allocation of scarce resources among competing users can take place.

Ecological economics does not pretend to be value-free; its preference is evident—the well-being and sustainability of our household, planet Earth. Ecological economics is the management of a community's physical necessities for the benefit of all, a human enterprise that seeks to maximize the optimal functioning of the planet's gifts and services for all users. Ecological economics, then, is first of all a vision of how human beings *ought* to live on planet Earth in light of the perceived reality of *where* and *how* we live. We live in, with, and from the earth. This story of who we are is based on contemporary science, not on an eighteenth-century story about social reality.

NEOCLASSICAL OR ECOLOGICAL ECONOMICS: WHICH IS GOOD FOR PLANET EARTH?

Can neoclassical economics as currently understood sustain the planet? In the neoclassical economic view the "world" is a machine; presumably, then, when some parts give out they can be replaced with substitutes. If, for instance, our main ecological problem is nonrenewable resources (oil, coal, minerals, etc.), then human ingenuity might well fill in the gaps when they occur. Since the earth is considered an "externality" by neo-

classical economics, then "good for the planet" can only mean good for human beings to use. Sustainability is not the major priority.

At the beginning of the new millennium, however, our planet faces more than the loss of nonrenewable resources. It also faces an accelerating loss of *renewable* resources, such as water, trees, fertile soil, clean air, fisheries, and biodiversity. If our planet is more like an organism than a machine, with all its parts interrelated and interdependent, then as its various parts lose vitality, it will, like any "body," become sick to the point of not functioning any longer. Unable to sustain itself, it will die.

This is called the synergism of planetary operation. When the various members of an ecosystem are healthy, they work together to provide innumerable "free services" that none could provide alone, and that we take for granted: materials production (food, fisheries, timber, genetic resources, medicines), biological control of pests and diseases, habitat and refuge, water supply and regulation, waste recycling and pollution control, educational and scientific resources, recreation.[10] These services are essential to our survival and well-being; they can continue only if we sustain them. This "list" of services should be seen as a "web": none of them can function alone; each of them depends on the others. These services are the "commons" that we hold in trust for future generations.

The most important services are not necessarily the most visible ones. For instance, in a forest it is not only the standing trees that are valuable, but also the fallen ones (the "nurse logs" on which new trees grow), the habitat the forest provides for birds and insects that pollinate crops and fight diseases, the plants that provide biodiversity for food and medicines, the forest canopy that breaks the force of winds, the roots that reduce soil erosion, and the photosynthesis of plants that helps stabilize the climate. The smallest providers—the insects, worms, spiders, fungi, algae, and bacteria—are critically important in creating a stable, sustainable home for humans and other creatures. If such a forest is clear-cut to harvest the tress, everything else goes as well. All these services disappear. A healthy ecosystem—complex and diverse in all its features, both large

and small—is resilient, like a well-functioning body. A simplified, degraded nature, supporting single-species crops in ruined soil with inadequate water and violent weather events, results in a diminished environment for human beings as well. "The bottom line is that for humans to be healthy and resilient, nature must be too."[11]

As we have seen, nature becomes unhealthy gradually and in particular parts and places. But when particular aspects are degraded beyond a certain point, the destructive effects on the whole can be dramatic.

An excellent example of such negative synergism is global warming. I choose this example not only because it is among the top three planetary problems (the other two being loss of biodiversity and uncontrolled growth in human population and consumption), but also because it illustrates how these problems interact.

Global warming is the result of emissions from the burning of fossil fuels; this has occurred because of the size of the human population and also the high energy consumption of industrialized societies. Global warming affects not only human beings, but also plants and other animals. Since the weather is the largest and most sensitive system influencing the planet, its state is a barometer of the earth's health.

Middle-class Westerners produce three to five times more of the carbon dioxide largely responsible for global warming than do people living in developing countries.[12] Automobiles are the single greatest producer of carbon dioxide emissions, but a consumer lifestyle in general is the culprit. While other countries such as China and India may equal or surpass the West in greenhouse gas emissions in the future, Westerners have been the preachers of consumerism as the good life. We have not only produced the vast majority of emissions to date, but we export the ideology of consumerism around the world as the heartbeat of every nation's prosperity. Neoclassical economics, with its twin values of individual insatiability and economic growth, is the engine behind global warming.

It is the growing consensus among the world's weather experts that by the year 2050 we can expect a 2.5°C increase in the worldwide temperature, and that this increase will be due

largely to human activity, especially the burning of fossil fuels.[13] The results are predicted to be devastating from a human point of view: desertification of the chief grain-producing lands, a growing scarcity of fresh water, loss of trees, flooding of coastal areas and islands, the spread of tropical diseases, an increase in violent weather events, a likely shortage of food, and so on. Global warming will change life as we know it and has already begun to do so. Through our consumer lifestyle we have triggered fearful, though still largely unknown, consequences for the most important and sensitive system within which we and everything else exist.

The prospect of global warming is not science fiction. According to projections made by our best scientists, the question is no longer "What if global warming comes?" but "How bad will it be?" At both the United Nations Conference on the Environment and Development in Rio in 1992 and at the follow-up conferences since, the industrial countries agreed in principle to stabilize and eventually cut back carbon dioxide emissions. However, little if any practical progress has been made, in large part because the neoclassical economic worldview is so dominant. In countries like the United States, there has been little public discussion of the consequences of consumerism. *All* of us are collaborators in this silence. We enjoy the consumer lifestyle; in fact, most of us are addicted to it, and, like addicts, we cheerfully live in a state of denial. But we need to overcome our denial. The prospect of global warming should disturb our complacency. Unless we change our ways, the future will be very grim. Global warming is the canary in the mine, whose death is a clue that our lifestyle goes outside the planet's house rules.

CHRISTIANITY AND THE ECOLOGICAL ECONOMIC MODEL

One way to change our ways is to begin to think differently about economics. In metaphorical terms, ecological economics invites us to picture ourselves not as isolated individuals but as housemates. The ecological model claims that housemates must abide by three main rules: take only your share, clean up after yourselves, and keep the house in good repair for future occu-

pants. We do not own the house; we do not even rent it. It is loaned to us for our lifetime, with the proviso that we obey the above rules so that the house can feed, shelter, nurture, and delight those who move in after us. These rules are not laws that we can circumvent or disobey; they are the conditions of our harmonious coexistence, and they are constitutive of our happiness.

If we were to follow these rules, we would be living within a different vision of the good life, the abundant life, than the one that is current in our consumer culture and that is destroying the planet. We would begin to accept what ecological economist Robert Costanza calls our greatest calling:

> Probably the most challenging task facing humanity today is the creation of a shared vision of a sustainable and desirable society, one that can provide permanent prosperity within the biophysical constraints of the real world in a way that is fair and equitable to all of humanity, to other species, and to future generations.[14]

Now, given these two economic worldviews—the neoclassical and the ecological—which should Christianity support? Presently, Christianity is supporting the neoclassical economic paradigm to the degree that it does not speak against it and side publicly with the ecological view. Does this evident indifference matter? Yes, it does, if one accepts the assumption of this essay that worldviews matter. While there is no direct connection between believing and acting, thinking and doing, there is an implicit, deeper, and more insidious one: when a worldview seems "natural" and "inevitable," it becomes a secret source of our decisions and actions.

Moreover, a persuasive case can be made that there is an intrinsic connection between the ecological economic model and Christianity. Distributive justice and sustainability, as goals for planetary living, are pale reflections, but reflections nonetheless, of what Jesus meant by the kingdom of God.[15] Let us look at the vivid portrait of Jesus by New Testament scholar John Dominic Crossan.[16] "The open commensality [i.e., table] and radical egalitarianism of Jesus' Kingdom of God are more terrifying than anything we have ever imagined, and even if we can never accept it, we should not explain it away as something

else."[17] For Jesus, the kingdom of God was epitomized by *everyone* being invited to the table; the kingdom is radically egalitarian at the level of satisfying bodily needs. Crossan regards the Parable of the Feast as central to understanding what Jesus means by the kingdom of God. This is a shocking story, trespassing society's boundaries of class, gender, status, and ethnicity—as its end result is inviting *all* to the feast. There are several versions of the story (Matt. 22:1–13; Luke 14:15–24; Gospel of Thomas, 64), but in each one a prominent person invites a number of other people to a banquet, only to have them decline the invitation. One chooses instead to survey a land purchase, another to try out some new oxen, a third to attend a wedding. The frustrated host then tells his servants to go out into the streets of the city and bring whomever they can find to dinner: the poor, the maimed, the blind, the lame, the good, and the bad (the list varies in the three versions). The shocking implication is that everyone—*anyone*—is invited to share in God's bounty. As Crossan remarks, if beggars come to your door, you might give them food or even invite them into the kitchen for a meal, but you do not ask them to join the family in the dining room or invite them back on Saturday night for supper with your friends.[18] But that is exactly what happens in this story. The kingdom of God, according to this portrait of Jesus, is "more terrifying than anything we have imagined" because it demolishes all our carefully constructed boundaries between the worthy and the unworthy, and it does so at the most physical, bodily level.

For first-century Jews, the key boundary was purity laws: an observant Jewish man did not eat with the poor, with women, with the diseased, or with the "unrighteous." For us, the critical barrier is economic laws: we are not called to sustainable and just sharing of resources with the poor, the disadvantaged, the "lazy." To cross these barriers in both cultures is improper, not expected—in fact, shocking. And yet, in both cultures, the issue is the most basic bodily one: who is invited to share the food—in other words, who lives and who dies? In both cases, the answer is the same: everyone, regardless of status, is invited. This vision of God's will for the world does not specifically

mention just, sustainable planetary living—but it is surely more in line with that worldview than it is with the blind satisfaction of individual consumer desires.

Unlike our first-century Mediterranean counterparts, North American middle-class Christians are not terrified by the unclean; but we are terrified by the poor. There are so many of them—billions! Surely we cannot be expected to share the planet's resources justly and sustainably with all of them. Yet the Jesus of the parable appears to disagree: he is not, it seems, interested so much in "religion," including his own, as in human well-being, beginning with the body: feeding the hungry and healing the suffering. Moreover, his message, according to Crossan, had less to do with what he did for others than with what others might do for their neighbors:

> The Kingdom of God was not, for Jesus, a divine monopoly exclusively bound to his own person. It began at the level of the body and appeared as a shared community of healing and eating—that is to say, of spiritual and physical resources available to each and all without distinctions, discrimination, or hierarchies. One entered the Kingdom as a way of life and anyone who could live it could bring it to others. It was not just words alone, or deeds alone, but both together as life-style.[19]

The body is the locus: how we treat needy bodies gives the clue to how a just society will be organized. It suggests that correct "table manners" are a sign of a just society, the kingdom of God. If one accepts this interpretation, then the "table" becomes not just the bread and wine of communion, but also the public meals of bread and fishes that one finds throughout Jesus' ministry.[20] At these events, all are invited to share in the food, whether it be meager or sumptuous. Were such an understanding of the Eucharist to infiltrate Christian churches today, it could be mind-changing—and maybe world-changing, too.

Is it also absurd, foolish, and utopian? Perhaps, but, as I have suggested, there appears to be a solid link, a degree of continuity, between this reconstruction of society—the kingdom of God—and what I have described as the ecological economic worldview. Perhaps just, sustainable planetary living is a foretaste, a glimmer, an inkling of the kingdom of God.

If this is the case, then for middle-class North American Christians it may well be that *sin* is refusing to acknowledge the link between the kingdom and the ecological economic worldview, explaining it away because of the consequences for our privileged lifestyle. Sustainability and the just distribution of resources are concerned with human and planetary well-being *for all*. This, I suggest, is the responsible interpretation of the Parable of the Feast for North American Christians today. By paying attention to those invited to the feast and those excluded, this interpretation demands that we look at the systemic structures separating the haves and the have-nots in our time. And it demands that we name these structures for what they are: evil. They are the collective forms of our "sin." They are the institutions, laws, and international bodies of market capitalism (often aided by the silence of the church) that allow a few to get richer while most become poorer.

NEXT STEPS: A CHRISTIAN RESPONSE TO THE ENVIRONMENTAL CRISIS

In order to dislodge the neoclassical economic worldview and Christianity's complicity with it, three steps are needed.

The first step is to become conscious of neoclassical economics as a model—not a description—of how to allocate scarce resources. There are other ways to live, other ways to divide things up, other goals for human beings to pursue. "Economics" is always necessary, but not necessarily neoclassical economics: ecological economics is an alternative.

The second step is to suggest some visions of the good life that are not consumer-dominated, visions that are just and sustainable. The good life is not necessarily the consumer life; rather, it could include providing the basic necessities for all, universal medical care and education, opportunities for creativity and meaningful work, time for family and friends, green spaces in cities, and wilderness for other creatures. We need to ask what *really* makes people happy, and which of these visions are most just to the world's inhabitants and most sustainable for the planet.

The third step is to rethink what a different worldview—the ecological economic one—would mean for the basic doctrines of Christianity: God and the world, Christ and salvation, human life and discipleship. While this last task is beyond the scope of this essay, I would like to end with a few brief comments about God and the world, because this is at the heart of who we think we are and what we should do. Since our interpretive context, the ecological economic model, is about the just and sustainable allocation of resources among all planetary users, the framework for speaking of God and the world becomes worldly well-being. To phrase it in terms of a gloss on Irenaeus of Lyons: "The glory of God is every creature fully alive." Dietrich Bonhoeffer called it "worldly Christianity": he said that God is neither a metaphysical abstraction nor the answer to gaps in our knowledge—God is neither in the sky nor on the fringes, but at "the center of the village," in the midst of life, both its pains and its joys.[21] An ecological economic model means an earthly God, an incarnate God, an immanental God.

The general outline of this theology is basically different from the theology implied by the neoclassical model of economics. A "worldly Christianity" entails a movement toward the earth: from the otherworldly to this world; from above to below; from a distant, external God to a near, immanental God; from soul to body; from individualism to community; from mechanistic to organic thinking; from spiritual salvation to holistic well-being; from anthropocentrism to cosmocentrism. The ecological model means a shift not from God to the world, but from a distant God related externally to the world to an embodied God who is the source of the world's life and fulfillment. The neoclassical economic model assumes that God, like the human being, is an individual—in fact, the superindividual who controls the world through laws of nature. This God is like a good mechanic who has produced a well-designed machine that operates efficiently. This God is present at the beginning (creation) and intervenes from time to time to influence personal and public history, but is otherwise absent from the world. An ecological theology, on the contrary, claims that God is radically present in the world, as close as the breath, the

joy, and the suffering of every creature. The two views of God and the world, then, are very different: in the one, God's power is evident in God's distant control of the world; in the other, God's glory is manifest in God's total self-giving to the world.

In closing, I will note that these two pictures of God and the world suggest two different answers to the questions of who we are and what we should do. In the first, we are individuals responsible to a transcendent God who rewards or punishes according to our merits and God's mercy. In the second, we are beings in community living in the presence of God who is the power and love in everything that exists. In the first, we should do what is fair to other individuals while taking care of our own well-being. In the second, we should do what is necessary to work with God to create a just and sustainable planet, for only in that way will all flourish. This is the great work of the twenty-first century. Never before have we had to think of everyone and everything all together. We now know that if we are to survive and if our planet is to flourish, we will do so as a whole or not at all. But we do not have to do this alone: "the earth is the Lord's and all that is in it, the world, and those who live in it."[22]

ENDNOTES

[1]In a special issue of *Dædalus* entitled "The Liberation of the Environment," the lead essay, by Jesse Ausubel, opens with the claim that the liberator of the environment will be human culture, whose "most powerful tools are science and technology." *Dædalus* 125 (3) (Summer 1996): 1. The tone throughout the essay as well as others in the issue is optimistic, as Ausubel notes in closing by quoting the epitaph inscribed on the U.S. National Academy of Sciences in Washington, D.C.: "To science, pilot of industry, conqueror of diseases, multiplier of the harvest, explorer of the universe, revealer of nature's laws, eternal guide to truth." Ibid., 15.

[2]Lynn White, Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155 (10 March 1967): 1203–1207.

[3]Marcus J. Borg describes this well: "A root image is a fundamental 'picture' of reality. Perhaps most often called a 'world-view,' it consists of our most taken-for-granted assumptions about what is possible. . . . Very importantly, a root image not only provides a model of reality, but also shapes our perception and our thinking, operating almost unconsciously within us as a dim background affecting all of our seeing and thinking. A root image thus functions as both

an image and a lens: it is a picture of reality which becomes a lens through which we see reality." Marcus J. Borg, *Jesus in Contemporary Scholarship* (Valley Forge, Penn.: Trinity Press International, 1994), 127.

[4]The literature on the neoclassical economic model and its alternative—what I am calling the ecological economic model—is large and growing. Some of the works I found most helpful are as follows: Lester R. Brown et al., *State of the World* annual reports (New York: W.W. Norton, 1984–); Robert Costanza et al., *An Introduction to Ecological Economics* (Boca Raton, Fla.: St. Lucie Press, 1997); David A. Crocker and Toby Linden, eds., *Ethics of Consumption: The Good Life, Justice, and Global Stewardship* (Lanham, Md.: Rowman and Littlefield, 1998); Herman E. Daly and John B. Cobb, Jr., *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future,* 2d ed. (Boston: Beacon Press, 1994); Herman E. Daly, *Beyond Growth: The Economics of Sustainable Development* (Boston: Beacon Press, 1996); Neva R. Goodwin, Frank Ackerman, and David Kirion, eds., *The Consumer Society* (Washington, D.C.: Island Press, 1997); Steven C. Hackett, *Environmental and Natural Resources Economics: Theory, Policy and the Sustainable Society* (Armonk, N.Y.: M. E. Sharpe, 1998); Larry L. Rasmussen, *Earth Community Earth Ethics* (Maryknoll, N.Y.: Orbis Books, 1996); Joerg Rieger, ed., *Liberating the Future: God, Mammon, and Theology* (Minneapolis, Minn.: Fortress Press, 1998); United Nations, *Human Development Report,* issued annually (New York: Oxford University Press, 1990–); Michael Zweig, ed., *Religion and Economic Justice* (Philadelphia: Temple University Press, 1991).

[5]By the oldest and deepest anthropology, I am referring to what George Hendry calls the "cosmological" and "political" understandings of God and the world rather than the more recent and narrow "psychological" view. George Stuart Hendry, *Theology of Nature* (Philadelphia: Westminster Press, 1980), chap. 1. The latter, which supports individualism, has arisen in the last several hundred years; but the other two, one emphasizing the whole creation and the other the community of all human beings, are grounded in the Hebrew Scriptures as well as in the New Testament and early theology (especially Irenaeus and Augustine).

[6]The evidence supporting this claim would take considerable space to lay out. Suffice it to say here that both the born-again and New Age versions of popular religion do so; the Declaration of Independence's "life, liberty, and the pursuit of happiness" does; and Adam Smith's description of the human being as a creature of insatiable greed makes a significant contribution. All focus on the rights, desires, and needs of individuals.

[7]Milton Friedman's distinction between "positive" and "normative" economics is typical: "Normative economics is speculative and personal, a matter of values and preferences that are beyond science. Economics as a science, as a tool for understanding and prediction, must be based solely on positive economics which 'is in principle independent of any particular ethical position or normative judgments.'" Milton Friedman, *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), 4.

[8]Hackett, *Environmental and Natural Resources Economics,* 33.

[9]See Daly, *Beyond Growth,* 50ff.

[10]Janet N. Abramowitz, "Valuing Nature's Services," *State of the World 1997,* ed. Lester R. Brown et al. (New York: W.W. Norton, 1977).

[11]Ibid., 109.

[12]Bangladesh, a country that may well be flooded through global warming, produces a yearly average of 183 kg of carbon dioxide per capita versus an average of 11,389 kg per capita in the industrialized countries. United Nations Development Programme, *Human Development Report 1998* (New York: Oxford University Press, 1988), 57.

[13]*Intergovernmental Panel on Climate Change: Second Assessment—Climate Change 1995,* published by the world Meteorological Organization and the United Nations Environmental Programme. It should be noted that this report was the consensus of 2,500 weather scientists and was published without a dissenting minority report. Since that time, its results have been confirmed by recent studies.

[14]Costanza et al., *An Introduction to Ecological Economics,* 179.

[15]If all contemporary understandings of Christ should be grounded in historical judgments about Jesus of Nazareth—if there should be continuity between the Jesus of history and the Christ of faith—then we need to see if the ecological economic context is an appropriate one for interpreting Christ and Christian discipleship for the twenty-first century. I am not suggesting that a Christian's faith is based on the state of historical Jesus research at any particular time; nonetheless, Christianity has always claimed continuity with its founder. Recent research, which has moved out of narrow church contexts of interpretation to sociological, cultural, and political ones of first-century Mediterranean society, has reached a remarkable consensus on some broad outlines of Jesus' life: most notably, that he was a social revolutionary opposed to the structures of domination and domestication of his day. This consensus is expressed in different ways by New Testament scholars such as E. P Sanders, Burton Mack, Elisabeth Schüssler Fiorenza, Marcus Borg, John Dominic Crossan, and Richard Horsley. For an overview of the scholarship, see Borg, *Jesus in Contemporary Scholarship*.

[16]John Dominic Crossan, *Jesus: A Revolutionary Biography* (San Francisco: HarpersSanFrancisco, 1994).

[17]Ibid., 73–74.

[18]Ibid., 68.

[19]Ibid., 113–114.

[20]See ibid., 79–81.

[21]See letter of 30 April 1944 in Dietrich Bonhoeffer, *Letters and Papers from Prison* (London: Collins, 1960), 90ff.

[22]Psalm 24:1.

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Islam and Ecology: Toward Retrieval and Reconstruction

A CONSIDERATION OF THE QUESTION of Islam and ecology ought to begin with one fundamental observation of a historical kind: in the construction of what we call the modern world, Islam has had only an indirect role to play. To be sure, one cannot possibly imagine, nor meaningfully speak of, the phenomenon generally known as the scientific revolution, or that which we refer to as the Renaissance, without keeping in view the formidable intellectual influence of Islam on Latin Christendom. But this legacy was appropriated—and here we see the complexities and ironies of the historical process—in ways that often were alien to the world of Islam itself. The reception in both the Islamic and Christian worlds of the work of the towering giant Alhazen (Ibn al-Haytham, d. 1038), or that of the great Avicenna (Ibn Sīnā, d. 1037), constitutes a case in point. Alhazen, who revolutionized the field of optics, was ignored in the Islamic world even as he became a central scientific figure in the West. Avicenna, an outstanding philosopher and physician, was *the* medical authority in Europe well into the early seventeenth century; but his system was developed on highly abstract mystical-spiritual lines in Islam, where he was often seen more as a "Visionary Reciter"[1] than a Hellenized rational thinker. Indeed, it is the Latin career of these figures that endured in the modern world, not the elaboration of their thought by latter-day Muslims.

I use the term "modern world" in its standard sense—signifying both the world-system and the worldview that began

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their joint career in Western culture after the passage of the European Dark Ages, and which, after going through a highly complex process of development, came to full maturity during what we call the Enlightenment. This modern world is marked not only by a set of spectacular scientific and technological achievements, all of which were cultivated and produced in the Western milieu; it is marked also by a set of attitudes, a *Weltbild*, that has become in our era the dominant global framework of our collective life, the only framework we recognize as defining the terms of our contemporary discourse. This *Weltbild* has given us its views of human nature, its economic theories, its governmental system, its lifestyles, and its secular ideology.

At the same time, there always lurk on the horizon of the modern worldview politically charged questions of power and control: this *Weltbild*, it has been feverishly argued, was coercively imposed upon the larger part of the globe we call the developing world. Here, operating in a strictly historical rather than moral perspective, one phenomenon ought to be thrown into sharp relief: we do see disappearing from the developing world practically all indigenous systems and institutions—a disappearance brought about in the recent past largely by direct European colonization, effected as a matter of deliberate colonial policy, and sometimes attended by fierce local resistance. These days, the destruction of indigenous systems is largely a result of Western market forces whose reach has now acquired staggering global dimensions. The developing world's military apparatus and technique, the dress and lifestyle of its majority, its industries, economy, banking and finance, system of education, public-health practices, bureaucratic agencies and organs of government, and, above all, its print and electronic media—all these entities and institutions have, in general, been taken from the Western world or have been constructed in emulation of Western models.

The dependence of the developing societies on the Western world inevitably raises the overwhelming question of sheer survival. Take, for example, the issue of public health. We note not only that indigenous institutions of health and healing have either died or been irrevocably marginalized; we note as well that modern life has brought with it illnesses, epidemics, and

injuries that could not possibly be handled by these institutions as they stood, or as they stand on the periphery today. This means that the developing world desperately depends on Western pharmaceutical industries and medical establishments; and this in turn means a need for hard currency to buy drugs and equipment and to train doctors and health professionals; and this then weaves an intricate web of need, dependence, frustration, fatalities, and political machinations.

All these issues rap at our doors when we take up the question of Islam and ecology. In the Islamic world a whole range of attitudes has developed in response to what is generally referred to as Western hegemony, a highly loaded term. In the social spectrum of the contemporary world of Islam—whose rulers and high officials typically belong to a small Western-educated elite—one finds crude apologetic attitudes on the one extreme, bitter resentment against whatever is perceived as Western on the other, and all manner of Islamic revivalist and reformist tendencies lying somewhere in the middle.[2] Thus, much literature is found among contemporary Muslims claiming that all intellectual achievements of modernity, all successful present-day scientific theories and technological ideas, in their *most minute detail* are to be found in the Qur'ān, if only Muslims were to search. Considering Islamic and Western societies to be incommensurable, this literature teaches that the environmental problems of today's world result from the hegemony of the West—the control of the world fell into the wrong hands. At the same time, other Muslim writers place the blame of the ecological crisis squarely upon Western science and technology, entities conceived to be *distinct* from Islamic science and technology, distinct both in substance and in morphology. This second line of argument, compared to the first, is relatively moderate; but it happens to be intractably problematic nonetheless.

Here lies a profound irony. Some seventy years ago, Sir Hamilton Gibb articulated a fundamental historical fact: Islam in its foundations belongs to and is an integral part of the larger Western society. He put it strongly: "Islam cannot deny its foundations and live."[3] In other words, a conscious recognition of the fundamental fact of Islam's community with the West is

essential to its very survival. Like al-Bīrunī in the twelfth century, and reflecting the spirit of the Islamic modernist movement of the nineteenth and twentieth centuries, Gibb argued that Islam stands side by side with the Western world, in contrast to what he called the "true" oriental societies, those of India and East Asia.[4] This was because Islam had found itself—and had creatively and consciously made itself—heir to Classical Civilization. Moreover, in many ways that are nontrivial, Islamic culture can indeed be characterized legitimately as embodying Hellenism. Sir Hamilton had expressed it more picturesquely—the two civilizations of Islam and Europe, he wrote, were "nourished at the same springs, breathing the same air . . . , [only] artificially sundered at the Renaissance."[5]

Notwithstanding the specific details of Hamilton Gibb's thesis, we have here an outline of a constructive methodology; in fact, it is a methodology that flows from the ideas of many a modern Muslim thinker. So we note that even though Islam's role in the construction of the modern world is indirect, in its historical foundations this world descends directly from an Islamic intellectual milieu. It is more obscuring than illuminating to suppose that there is an inherent incompatibility between Islam and the Christian West, or a total historical break between them. But once the intellectual community between Islam and the modern world is acknowledged, we may recognize the Islamic roots of contemporary ideas, preoccupations, and institutions. At the same time—and this speaks to a more urgent need—we may see that the intellectual resources for understanding some of today's pressing global concerns can be found in the Islamic tradition itself. Indeed, given the durability of the classical Islamic civilization that Gibb's thesis brings into focus, one may legitimately seek ideas from Islam to guide the struggle against the environmental problems that threaten our globe today.[6]

We face an enormous task. It requires, *inter alia*, a grasp of both the complexities of the contemporary world and the substance and the historical context of the Islamic legacy; and it involves much reconstruction, adjustment, and revision. In the case at hand, the task becomes all the more daunting due to its real as compared to purely theoretical nature.[7] The issue cannot

be handled meaningfully if its real dimensions are glossed over in the glow of a sophisticated theoretical discourse. The questions of power and control, distributive justice, economics and finance, the currents of market forces, policy-making and tactical politics, lifestyles and social values—these are all directly relevant here. And this means that the issue belongs in a complex manner to several disciplinary domains at once: social sciences, ethics, and religion among them.

Still, it ought to be noted that this essay is essentially concerned with theoretical matters; and even in this domain, it is concerned narrowly with the normative sources of the Islamic religious tradition. Indeed, its scope is narrower still: it undertakes only to reconstruct doctrinally certain Qur'ānic concepts, to expound certain imperatives of what is known as the Prophetic Tradition, and to articulate briefly certain Islamic legal categories—a reconstruction, exposition, and articulation carried out with a view to recovering Islamic religious material that might serve to illuminate how Islamic culture regards our current global environmental concerns and guide Islamic thinking about them. But what is most interesting, in the internal context of traditional Islam, is that this enterprise, *by its nature,* would be considered not a partial but a comprehensive task, since religion is claimed, literally, to be all-embracing. For traditional Islam, examining religious sources means examining the universal canopy under which fall *all* aspects of life—since all aspects are religious aspects.

THE NATURE OF THE NORMATIVE SOURCES

It should be understood at the very outset that the Qur'ān, believed to be the actual speech of God revealed through an angel, is not a book of laws, or a manual of procedures, or a collection of tales; nor is it a systematic treatise meant to convey ethical doctrines or principles. As the experts say, the Qur'ān has to be received on its own terms—that is, as a genre unto itself.[8] A striking feature of this sacred Islamic text is its highly stylized cadence, its rhetorical structure, its literary diction, and its elegant use of language with "semantic depth, where one meaning leads to another by a fertile fusion of

associated ideas."[9] Thus, scholars have characterized the Qur'ān not so much as a doctrinal textbook but "more valuably as a rich and subtle stimulus to religious *imagination*."[10] If this text is to yield a concrete system, it requires an imaginative reconstruction on the part of the reader; in principle, this reconstruction cannot claim epistemological finality, even though it may stand firm on grounds of overwhelming community consensus. This is precisely the position of classical Islam.

With regard to the question of the cosmos and its relationship to human beings, one notes that the Qur'ān moves at three levels simultaneously—metaphysical, naturalistic, and human. But when one examines these levels in the totality of the Qur'ān, they turn out to interdigitate: on the one hand, the Qur'ānic notion of the natural world and the natural environment is semantically and logically bound up with the very concept of God; on the other hand, this notion is linked with the general principle of the very creation of humanity. The three levels of Qur'ānic discourse, therefore, do not manifest any independent conceptual self-sufficiency of, or a conceptual discontinuity between, the three realms of the divine, of nature, and of humanity. Indeed, this linkage is of fundamental importance to our concerns, for in our reconstruction of the cosmology of the Qur'ān, we can see that the historical-naturalistic is linked to the transcendental-eternal, and this means that there is no ontological separation between the divine and natural environments. At the human, psychological level, all this generates a particular attitude to the world as a whole.

As we shall see, the Qur'ān emphasizes the transcendental significance of nature. Because nature cannot explain its own being, it stands as a sign (*āya*, plural *āyāt*) of something beyond itself, pointing to some transcendental entity that bestows the principle of being upon the world and its objects. Nature, then, is an emblem of God; it is a means through which God communicates with humanity. One may legitimately say that insofar as the Islamic tradition allows for God's entry into the flow of history at all—that is, in the realm bounded by space and time—nature embodies one of the two modes of this entry, the other mode being God's Word, namely, the Qur'ān itself. Most significantly, the verses of the Qur'ān are also called *āyāt*,

signs, and in the same emblematic vein—and this means that the objects of the natural world and the Qur'ānic verses are metaphysically on a par with each other.

On the naturalistic plane, the Qur'ān speaks of the cosmos as an integral system governed by a set of immutable laws that embody God's command (*amr*, plural *awāmir*). The phenomena of nature in the general run of things follow a strict system marked by regularity and uniformity, since nature cannot violate its *amr*, that is, its immutable laws. In this naturalistic vein, we find the Qur'ān teaching that the cosmos exists to nourish, support, and sustain the process of life—all of life, and in particular human life. Though human life does have centrality in the Qur'ānic system, it is a centrality mediated and reigned in by a set of moral and metaphysical controls; this we shall examine in more detail as we proceed.

A remarkable fact about the genesis story in the Qur'ān is that it speaks of God announcing to the angels that he is about to create a *khalīfa* (vicegerent) *on the earth*—in other words, Adam and his "equal half" (*zauj*)[11] were bound for Earth even *before* they committed the transgression. Life on Earth is here an integral part of the very concept of the human being, not a punitive fall from glory; the human being does not exist in a state of disgrace in the world of nature, nor is nature in any sense unredeemed.[12] To expound the Qur'ānic position summarily, the very principle of the vicegerency of God (*khilāfa*) made human beings his servants (*'abd*, plural *'ibād*), custodians of the entire natural world. Human beings exist by virtue of a primordial covenant (*mīthāq*) whereby they have testified to their own theomorphic nature, and by virtue of a trust that they have taken upon themselves in pre-eternity. There is a due measure (*qadr*) to things, and a balance (*mīzān*) in the cosmos, and humanity is transcendentally committed not to disturb or violate this *qadr* and *mīzān*; indeed, the fulfillment of this commitment is the fundamental moral imperative of humanity.

The three dimensions of the Qur'ānic discourse—metaphysical, naturalistic, and human—are thus mutually related in a complex manner, and any one of them cannot be understood in isolation from the others. Nature in its Qur'ānic conception is *anchored in* the divine, both metaphysically and morally. The

expression is strong: "But to God belongs all things in the heavens and on the earth; And He it is who encompasseth (*Muḥīṭ*) all things" (4:126); note that the word *Muḥīṭ* can also be translated legitimately as "environment."[13] So we see that when the Qur'ān's notion of nature is reconstructed in the larger framework of this supreme Islamic source, it appears inherently connected with its notions of God and humanity—and all these notions, as we have seen, have their roots in the transcendental realm and then issue forth in the moral-historical field.

When we come to the Ḥadīth literature, the corpus often referred to as Prophetic Traditions, we are in a different atmosphere altogether. Here we have a vast body of collections of formally authenticated reports about the words and actions of the Prophet of Islam, and sometimes of his companions who enjoy a derivative authority. The collection and authentication of Ḥadīth was an enormous undertaking aimed at articulating Islam *as a function*, and for this purpose God's Way (*sharī'a*) had to be translated into a viable body of concrete codes of action and laws. Indeed, one material source for the understanding (*fiqh*) of *sharī'a* was the established tradition of the prophetic way (*sunna*). An authenticated Ḥadīth was legally binding.

But the impressive discipline called the Science of Ḥadīth (*'Ilm al-Ḥadīth*) did not develop until more than two hundred years after the death of the Prophet, and in the meantime a whole corpus of fabricated Ḥadīth had come into being. It was only in the middle of the ninth century that the first Correct (*Ṣaḥīḥ*) collection of Ḥadīth appeared; this was established after much sifting, systematizing, and a rigorous process of authentication. Five more massive *Ṣaḥīḥ* collections were compiled during the following hundred years. But given the very size of the corpus of these transmitted reports and the inherent complications in the very nature of the chain of transmitters (*isnād*), even the six Correct collections vary widely in authenticity and content. Note that in Ḥadīth authentication, as a general rule, practically all attention was paid to the *isnād* rather than to the actual content (*matn*) of what was transmitted.

It is for reasons such as these that the use of Ḥadīth material in reconstructing the Islamic position on the environment and ecology is not a straightforward task. Ḥadīth collections are manuals of what one may in a qualified sense describe as a body of case law. An *isolated* and independent ecological concern is not to be found here—this is a present-day development—but spread all over the body of Ḥadīth, one does find reports concerning the general status and meaning of nature, and concerning land cultivation and agriculture, construction of buildings, livestock, water resources, animals, birds, plants, and so on. In addition, one notes the remarkable fact that the Ḥadīth corpus also contains the two fateful doctrines of *ḥimā* and *ḥaram*, land distribution and consecration. These two related notions were indeed developed by Muslim legists who articulated them particularly in their environmental dimensions, designating some places as protected sanctuaries. *Ḥimā* and *ḥaram* developed into legislative principles of land equity on the one hand, and of environmental ethics on the other, and were subsequently incorporated into the larger body of the Islamic legal code. Note that ethical questions and environmental questions are here moving hand in hand; they are interconnected.

The most systematic source of codified Islamic religious norms is that of *fiqh*-law, developed on the foundations of the Qur'ān and Ḥadīth. One may legitimately say that *fiqh*-law is the comprehensive blueprint for the whole of Muslim life, covering the minutest detail of external human conduct, both public and private. Within this enormous body of legal regulations—which have now acquired a dogmatic character since the *fiqh* discipline is now practically dormant—the principle of *ḥimā* is particularly well developed in the Mālikī school, one of the four legal schools followed by the vast majority of Muslims. But we note in the formally articulated and generally codified Islamic legal writings several other environmental concepts derived directly from the two primary material sources (*uṣūl*), the Qur'ān and Ḥadith.

One such concept is that of *mawāt*, literally "wasteland." Some *fiqh*-legists have worked on *mawāt* in great detail; the

concept typically appears in the extensive discussions on rivers, canals, and other water resources, their distribution and maintenance, rights and control. Similarly, for example, arising directly out of the moral and conceptual ethos of the two *uṣūl* are *fiqh* rules governing the hunting, treatment, welfare, and use of animals, including birds. Once again, note how Islamic law is meant to implement Islamic ethics—legal and moral concerns belong to one and the same functional framework.

HUMAN NATURE AND THE NATURAL WORLD: QUR'ĀNIC EXCURSUS

Moving on the transcendental plane, the Qur'ān presents in its seventh *sūra* that famous sonorous verse known to embody the primordial covenant between humanity and its creator: "And when your Lord extracted from the children of Adam, from their spinal cord, their entire progeny and made them witness upon themselves, saying, Am I not your Lord? And they replied, No doubt You are, we bear witness!"[14] So powerful is the narrative here, and so deeply entrenched in the Muslim consciousness is the expression *alastu bi-rabbikum* (Am I not your Lord?), that the interrogative *alastu* has reverberated in the mystical and poetic chambers of Islam until this day. We see here that humanity in the very *principle of its being* has testified to the lordship of God. In other words, human nature is essentially theomorphic. To recognize God is to be in a natural state. Indeed, God had made human beings in the *best* of forms;[15] and, furthermore, to this supreme creature, to human beings, he subjected (*shakhkhara lakum*, "He subjected to you") *all* that is in the heavens and the earth.[16]

But, then, in the next breath the Qur'ān links this metaphysical exaltation to a weighty moral burden. Humankind's superiority lies not in its enjoying any higher power or control or authority among created beings; it lies rather in the fact that it is accountable before God, such as no other creature is. This accountability arises out of the trust (*al-amāna*) that human beings accepted at their transcendental origin. It should be observed at once that this *amāna* entails a kind of global trusteeship, and this reading does no offense to the Qur'ānic

concept of trust: "We did indeed offer the Trust to the Heavens and the Earth and the mountains—but they refused to carry it, being afraid of it. But the human being carried it: Ho! humankind is unfair to itself and foolhardy."[17]

Note here the cosmological ethos of a transcendental narrative. And note also the last sentence—so enormous was the burden that the Qur'ān recognizes it by way of what Rahman called a "tender rebuke," calling human beings unfair to themselves and foolhardy.

We see here the moral-naturalistic dimension of human theomorphism. Humanity cannot arrogate to itself absolute power or unbridled control over nature: in the *very principle* of its being, humanity was committed to following God's *sharī'a*, his Way. Furthermore, this *sharī'a* was not given to humanity as a fully articulated body of laws; rather, it was spread all over God's signs (*āyāt*) in the form of indicators with probative value (*adilla*). Recall that the term *āyāt* designates both the verses of the Qur'ān as well as the phenomena and the objects of the natural world. Thus the natural world is a bona fide source for the understanding (*fiqh*) of *sharī'a*, and therefore cannot be considered subservient to human whims. Indeed, as we have noted, for human beings to be on the earth is part of the divine plan; to be human is by definition to be in the flow of history. There is, then, no justification in the Qur'ānic context to consider human existence in historical time a curse, or to deem nature as something opposed to grace, or to consider salvation as a process of the humbling of the natural by the supernatural. Echoing Mircea Eliade, one may say that all nature, indeed, is capable of revealing itself as cosmic sacrality.

Quite evident too is the ethical thrust of the frequent Qur'ānic declaration that God has made the natural world "subject to" human beings. This clearly does not mean that nature is subject to man's unbridled, exploitative powers—for it is God's command (*amr*), not that of the human being, that nature obeys (see below). We note that the expression *sakhkhara lakum* ("he made subject to you . . .") appears *always* with its attending moral dimension. So: "It is all from Him. . . . And He hath made subject to you whatsoever is in the heavens and whatsoever is in the earth—It is all from Him. Lo! herein indeed are portents

for those who reflect."[18] The point is made frequently and with overwhelming rhetorical force:

> He has made subject to you the night and the day, the sun and the moon, and the stars—they are in subjection by His command (*amr*): Surely, in this are signs for those who reflect!
>
> And the things on this earth which He has multiplied in colors diverse—indeed, in this is a sign for those who recollect!
>
> It is He Who had made the sea subject [to His law], that ye may eat thereof flesh, tender and fresh, and that ye may extract therefrom ornaments to wear—See, how the ships plough the waves! So ye seek of the bounty of God: Perhaps ye shall be grateful![19]

Nature's intelligibility to the human intellect, on the one hand, and its quality of yielding itself to human works and sustaining human life, on the other, both flow from the same principle of *amr:*

> Seest thou not that by His command (*amr*) God has made subject to you all that is on the earth? And that by His command He has made subject to you the ships that sail through the sea? He withholds the sky from falling on the earth—but for His leave. For God is Most Compassionate and Most Merciful to humankind.
>
> It is He Who gave you life, and then He will cause you to die, and then He will bring you back to life again: Ah, humankind is most ungrateful![20]

In this natural-transcendental linkage, the moral question is fundamental. The Qur'ān promulgates what one may call a cosmology of justice, a cosmology that takes into its fold two realms at once, the human and the cosmic—or, rather, the human *within* the cosmic. As for the human realm, a concern for social justice runs throughout the Qur'ānic text, even in its chronologically earlier verses whose focus is on metaphysical issues such as the oneness of God, the Beginning and the End, and the finitude of the world. The dignity of the disabled,[21] the rights of the indigent and particularly of orphans,[22] honesty in trade dealings,[23] feeding of the poor,[24] condemnation of greed, and admonishment against hoarding wealth[25]—all these concerns are to be found from the earliest of the Qur'ānic verses, which are, by general scholarly consensus, the most powerful and the most sublime in their stylistic embellishment.

But these concerns operate within the universal field of cosmic justice; human relations thus acquire their meaning by virtue of their location at the very core of natural law. This effectively forges a conceptual link between natural law and moral law—natural law *is* never violated as things run their customary course; moral law *ought not* to be violated. The Qur'ān speaks of the existence of a cosmic balance (*mīzān*) and declares that everything except God is "measured out" (*qadar, qadr, taqdīr*)—that is, everything is given its natural principle of being and its place in the larger cosmic whole—and this is precisely the meaning of the *amr* (command) of an entity, a concept I shall take up again a little later. The same message is expressed in a moral language: "God intends no injustice to any of His creatures. To Him belongs all that is in the heavens and the earth."[26]

The dread of humankind "corrupting the earth" (*fasād fi'l-arḍ*), the catastrophe such transgression will unleash, and exhortations against it loom so large that they hang like a backdrop in the Qur'ānic cosmology of justice. The creation of the world was not a frivolous or trivial act: "And We have not created the heavens and the earth and what is therein purposelessly—that is the view of those who reject [the truth] or who are ungrateful."[27] Created with divine deliberation, nature is so coherently interconnected and integrated, and works with such regularity and order, that it is God's prime miracle: if good is done to it or in it, good will return; if evil is wrought to it or in it, what accrues is sheer terror:

> And you see mountains and think them solid [and stationary] but they are fleeting like clouds—such is the artistry of God Who has well-completed [the creation] of everything. He is well acquainted with all that you do.
>
> If any do good, good will accrue to them therefrom; and they will be secure from the terror of the Doom. And if any do evil, their faces will be thrown headlong into the Fire.[28]

It ought to be recognized that the Qur'ān does contain verses that *prima facie* give the impression that the natural world and all its creatures exist for the sake of human beings, but it would be a gross oversimplification to view such declarations in a

moral vacuum. "In considering all these verses," wrote the outstanding jurist of medieval Islam Ibn Taymiyya (d. 1328), "it must be remembered that God in his wisdom brought into being these creatures for reasons *other than serving human beings*. In these verses God only explains the [human] benefits of these."[29] It is interesting to note in this context that among the three grand monotheistic faiths, Islam does not have to carry the burden of any scriptural imperative to "subdue" the earth and seek to establish "dominion" over the natural world. There is a clear and explicit answer to the question as to where and to whom belongs the dominion over the natural world, an answer so obvious in the overall drift of the Qur'ān that it is expressed rhetorically: "Knowest thou not that to God belongeth the dominion of the heavens and the earth!?[30] And again: Yea, to God belongs the dominion of the heavens and the earth. And to God is the final goal [of all].[31]

Ironic though it may seem, human superiority—humans being created in the best of forms (*fī aḥsani taqwīm*), and humans being considered in the Islamic tradition the noblest of creatures (*ashraf al-makhlūqāt*)—turns out to be a supremely humbling quality. And the Qur'ān does humble humanity by saying that the creation of the rest of the cosmos is a matter *greater than* the creation of people: "Assuredly the creation of the heavens and the earth is [a matter] greater than the creation of human beings: Yet most people understand not!"[32] We do not have exclusive claim to the earth, for "the earth He has assigned to all living creatures."[33] And all living creatures are natural communities, with their own habitat, their own laws, and their inviolable natural rights: "And there is no animal in the earth nor bird that flies with its two wings but that they are communities like yourselves."[34]

One is here reminded of a medieval Arabic fable found in the famous *Rasā'il* (Epistles) collectively written in the tenth century by the fraternity that called itself *Ikhwān al-Ṣafā'* (Brethren of Purity). This colorful and dramatically constructed fable is about a company of animals who present their case before the king of the *jinn* (genies), raising the question of whether human beings are superior to animals, and if so in what respect. The verdict is "natural and inevitable":[35] human beings are

superior to the animals—but not because they enjoy any higher moral or functional status. They are superior because of their heavy moral burden, of being the custodians of the earth. As God's regents on the earth (*Khalīfat Allāh fi'l-Arḍ*), they are accountable for their acts; nonhuman animals are not. The verdict, handed down by a nonhuman creature, reads further:

> Let man not imagine . . . that just because he is superior to the animals they are his slaves. Rather it is that we are all slaves of the Almighty and must obey His commands . . . Let man not forget that he is accountable to his Maker for the way in which he treats all animals, just as he is accountable for his behavior towards his fellow human beings. Man bears a heavy responsibility. . . .[36]

QUR'ĀNIC NATURALISM AND THE NATURE-PROPHECY PARALLEL

If one makes an analytical excursion into the Qur'ānic discourse on the created world, three defining characteristics of nature fall into sharp perspective: first, that natural phenomena have regularity, internal coherence, and elegance, and that they are self-sustaining; second, that nature as a whole has, within its own being, no logical or metaphysical warrant to exist; and, finally, that nature is an embodiment of God's mercy, or, more fully, that God's mercy is expressed through the creation of nature. These defining characteristics, one notes, do not appear in the Qur'ānic narrative in a doctrinal or even textual isolation from one another—they are frequently spoken of in the same breath, in the same passages, and in the same vein; together, they make a conceptual whole.

The principle of autonomy of nature—that it is regulated by its own laws—manifests itself forcefully in the fact that whenever the Qur'ān speaks of the *actual cosmological processes* of natural phenomena—and it does so quite often—it speaks in naturalistic terms. Thus, the human being was a natural creation: Adam was fashioned out of baked clay (*ṣalṣāl*), from mud molded into shape (*ḥamā' masnūn*);[37] from dust (*turāb*);[38] from a blood clot (*'alaq*);[39] from earth (*ṭīn*)[40] that produced through a confluence of natural processes an extract, *sulāla*, that functions as reproductive semen.[41] In fact, there exists a fully biological account:

> Humankind We did create from a reproductive extract of clay. Then We placed it as a drop of sperm in a receptacle, secure. Then we made the sperm into a clot of congealed blood. Then of that clot We made a fetus lump. Then We made out of that lump bones and clothed the bones with flesh . . . So blessed be God, the Best of Creators![42]

References to nature, natural forces, natural phenomena, and natural beings abound in the Qur'ān; out of its 114 sūras some 31 are named after these. In all cases, the physical world in its *real* operation is described in a naturalistic framework, in the framework of physical forces and processes that occur uniformly and with regularity. Thus, we see here the contours of a theistic naturalism:

> Why! do they not look at the sky above them? How We have built it and adorned it and there are no gaps in it?
>
> And the earth—We have spread it out, and set thereon mountains, standing firm, and produced therein all manner of beautiful growth. This, for the observation and commemoration of every created being who reflects.
>
> And We send down from the sky rain, charged with blessings. And We produce therewith gardens and grains for harvests. And tall and stately palm trees with shoots of fruit stalks, piled over one another—as provision for God's servants. And We give new life therewith to the land dead. . . .[43]

In an even more robust expression of naturalism, the refrain re-emerges:

> And the earth—We have spread it out, set thereon mountains firm and immovable, and produced therein all kinds of things in due balance (*mauzūn*). And We have provided therein livelihood (*ma'āyish*)—for you and for those whose sustenance (*rizq*) does not depend on you. And there is not a thing but its bountiful sources are with Us; and nought do We send down unless it be in due and knowable measure (*bi-qadrim ma'lūm*).
>
> And We send down winds to fertilize vegetation in abundance, then cause the rain to descend from the sky, therewith providing you with water in plenty—though you are not the guardians of its sources. . . .[44]
>
> We fashioned humankind out of baked clay, from mud molded into shape. And, in the time preceding, We had fashioned the *jinn* from the fire of scorching winds.[45]

The Qur'ān, then, admits the principle of natural causation, avowing the sum total of natural processes as the proximate, autonomous, efficient causative forces operating in the world. It is the fertility of the earth, we see, and the natural qualities of water, and favorable winds—in other words, certain natural phenomena themselves—that causally but proximately explain all vegetation; it was rain that revived dead and uncultivable land, and it was clay that constituted the substratum for the human animal as a natural entity. Besides, in what is to be legitimately considered an anthropological vein, all this in its turn is causally related to human livelihood (*ma'āyish*) and actual subsistence of the human community—the narrative here brings into clear view activities and processes such as land cultivation, harvest, fertility, production of gardens, yielding of fruits and grains; it speaks of real, as distinct from metaphysical, human provision (*rizq*), with its attending economic and social ramifications.

It is the dual principle of cosmic justice, which we have examined earlier, and this thoroughgoing naturalism that explains a central doctrine of Qur'ānic ethics—that of *ẓulm al-nafs* (self-injury).[46] Indeed, this doctrine embodies a moral tenet that seems to carry the seeds of a comprehensive ecological philosophy. As I have said elsewhere,[47] in the actual world as it exists in the immediate palpable reality, human beings are *part* of nature; they are a *natural* entity, subject fully to the laws of nature just like any other entity, participating as an integral element in the overall ecological balance (*mīzān*) that exists in the larger cosmic whole. And this means that to damage, offend, or destroy the balance of the natural environment is to damage, offend, or destroy *oneself*. Any injury inflicted upon "the other" is *self*-injury, *ẓulm al-nafs*—and this is a prime doctrinal element in the foundations of Qur'ānic ethics: "Whoever transgresses the bounds of God has done wrong but to himself";[48] and again: "God wronged them not, but themselves they wronged."[49] The rule is that wrongdoing ultimately recoils back upon the perpetrator—for when the balance is willfully disturbed, this disturbance takes the culprit too into its fold.[50]

On the other hand, the naturalistic posture of the Qur'ān is attended by an epistemological posture that has fundamental

heuristic and methodological consequences for the human search for natural knowledge. There is nothing in the cosmos that does not possess a due balance (*mauzūn*), and nothing that is not fully differentiated and measured out in a way that it is beyond the comprehension of the human intellect; everything, we read, exists in a *knowable* measure (*bi-qadrim ma'lūm*), and the cosmos is thus, in principle, intelligible. The epistemological point is compelling: there exist immutable laws to regulate nature, these laws are both uniform and subject to systematic cognition, and they are captured when human reason casts its net. Indeed, in the Qur'ānic narrative we find virtually countless exhortations for the use of reason, appearing often in the pathos of the subjunctive: "Perhaps you may exert your mind!" or "They might perchance reflect!" or "May you not see?" or "Would you not exercise your intellect?" or "What! Would you not reason out?" So, heuristically, we have here a Qur'ānic anchorage for a scientific exploration of the cosmos, an exploration with which humanity has been squarely charged.

This links our discourse with both the second defining characteristic of nature as it appears in the Qur'ān and the methodological implications of its epistemological stance, which we just examined. Throughout, I have been pointing out a fundamental feature of the Qur'ānic narrative—namely, that it identifies the *locus* and *ground* of the real and the temporal in the transcendental and the eternal, constantly forging a link. And so the second defining element of nature we already noted: nature is nonultimate, for within its own being it has no logical or metaphysical warrant to exist. Nature exists only because God had bestowed existence upon its being. A plant did not bring about its own existence; it *received* existence and thus became a sign (*āya*) of something beyond itself. And again, it was through an act of divine mercy (*raḥma*) that humankind *found itself* in existence, for within itself lay no inherent principle to cause this existence. The ontological point is that the existence of nature in historical time is a flowing process of a cosmic observance of God's *amr*.

Let me take up the Qur'ānic notion of *amr* again. Recall that the word literally means "command." At the mechanistic level, one may consider *amr* to be a denotation of a universal opera-

tive principle whereby every created natural entity plays its assigned role and takes its assigned place as an integral element in the larger cosmic whole. Thus, *amr* is the specific principle of being of each thing in *relation to that of all other things*, inhering in it according to the command it uniquely receives from God. This can be put in another way: laws of nature express God's commands, commands that nature cannot possibly violate—and this explains why the entire world of phenomena is declared *muslim* by the Qur'ān: "Do they, then, seek an obedience other than that to God, while it is to Him that everyone [and everything] in the heavens and the earth submits (*aslama*)?"[51] So once again, we have here an integral conceptual system in which the transcendental is coherently linked to the naturalistic, the temporal. Nature originates in and ultimately recoils back into the transcendental.

But at the operational level—and here is the methodological point—*amr* can be viewed legitimately to be a system of independent, self-governing, and self-sustaining laws of nature. Thus it was the *amr* of a mango seed to grow into a mango tree; and that of an egg to hatch into a bird; and that of sperm to develop into an embryo; and that of the oceans to sustain a multiplicity of life in their bosom; and that of the sun to rise from the far horizon. In the scientific investigation of the physical world, then, in this process of the human intellect's discovery of natural laws as such, no nonnaturalistic, no nonrational principle need be invoked. But there is a caveat: such investigation is without reference, and therefore meaningless, if it remains suspended without being anchored ultimately in the transcendental from which issues forth moral imperatives—that is, moral law, God's *sharī'a*.

And this leads us finally to the third defining characteristic of nature given by the Qur'ān: nature is an embodiment of God's mercy. Indeed, given that God's will is not bound by any other will, and given further that God is omnipotent, he could well have chosen the chasm of utter nothingness as opposed to the creation of a full plenitude of being. That he chose the latter is a manifestation of his mercy (*raḥma*). Louis Gardet once observed that in the totality of the Qur'ānic teaching God's mercy and his omnipotence are inseparable: "These two perfections,"

he wrote, "are the two poles of divine action, at the same time contrasted and complementary."[52] God's creative action is a special expression of his mercy—for not only did he bestow being upon his creation; he also provided sustenance for that creation, and sent guidance for that creation; and made himself the very end (*al-Ākhir*)[53] to which the entire created world was commanded by him to return finally.

Plentiful in the Qur'ān are references to the bounty of nature as an unfalsifiable expression of God's mercy. Indeed, this is the very refrain of the chapter *al-Raḥman*, The Merciful, a collection of verses unique in the codex for its stylistic beauty, its rhythm and rhyme and cadence, and its lush imagery. Speaking eloquently of nature's bounty and the naturalistic cosmic order as constituting divine favors and blessings, and asking rhetorically how they can possibly be denied, the Qur'ān says:

> The sun and the moon follow courses exactly computed. And the stars and the trees, both alike bow in adoration. And the Firmament—God has raised it high, and set the Balance . . . It is He Who has spread out the earth for His creatures: Therein is fruit and date palms, with their clusters sheathed. Also corn, with its leaves and stalk for fodder, and sweet-smelling plants. . . .

From this arises the resounding question that serves here as the refrain: "So, which of the favors of your Lord will you deny?" Again, turning back to the world in a naturalistic vein: "He created human beings from sounding clay, like the potter's . . . He let free the two seas that meet together, between them is a barrier that they do not transgress . . . Out of them come pearls and coral. . . ." Then comes the finale: "Of God seeks [its sustenance] every creature in the heavens and on the earth. Every day in a new splendor does He shine!" The undercurrent of the intervening refrain flows on: "So which of the favors of your Lord will you deny?"[54]

But this vast plenitude of being we call the cosmos was also an embodiment of God's *tanzīl* (sending down) of guidance (*hidāya*) to humanity. The *sharī'a*, we have already noted, is not given ready-made in the form of a systematic, fixed, and fully spelled-out corpus of divine instructions for the creation of a moral order. Rather, it is up to humankind to exercise its

moral and intellectual faculties, its *amr*, and perpetually construct and reconstruct God's *sharī'a* through an understanding (*fiqh*) of the guiding signs (*adilla*) that are provided in two modes—one of them the *āyāt* constituting the natural world. Thus, by virtue of what I would refer to as the Qur'ānic dynamics of *tanzīl*, nature is accorded the status of a legitimate source for the very knowledge of *sharī'a*—a status that is divinely sanctioned. And a dynamic process of ever-new *sharī'a* constructions it is, since human knowledge could never claim, nor is it capable of acquiring, epistemological certainty or finality.

But then God's guidance also came in a direct *tanzīl* in a clear and articulate language (*bayān*); this second mode of sending down *adilla* was the Qur'ān, that is, the Speech (*Kalām*) of God himself. Given this, we have here a remarkable metaphysical equivalence between natural entities and revelation, and thereby between nature and prophecy. Indeed, in numerous Qur'ānic passages the creation of nature is coupled with the revelation of the verses of the Qur'ān, and this has led many medieval Muslim sages to speak of an intimate connection and ontological parallel between the two; they spoke even of the identity of the two.[55] So just as nature represents the inexhaustible *logoi* of God,[56] so does the Qur'ān, but even more so—since, in fact, while the former is referred to as *āyāt*, the latter is the clarification (*tabyīn*)[57] of these *āyāt*, the bringing home of these *āyāt* (*nuṣarrifu'l-āyāt*),[58] and the detailing of these *āyāt* (*faṣṣalna'l-āyāt*).[59] The verses of the Qur'ān are often said to be clear *āyāt* (*āyāt bayyyināt*), or, simply, clarifications or manifestations (*bayyyināt*). Note that this last expression is never applied to nature, and this creates a hierarchy of God's signs—a hierarchy in which the Qur'ān remains epistemologically prior.

Just as natural entities exist in the form of real-historical objects, so God's revelation is delivered by a real-historical Prophet, a human apostle who is no god and no supernatural being but is "from amongst yourselves."[60] And just as nature is a guide, so is the Prophet a guide (*hādī*)[61] *par excellence*. Just as nature receives and follows God's *amr*, so does the Prophet receive "a spirit from (God's) *amr*"[62] that the Prophet himself and the rest of humanity *ought to* follow. And just as natural entities, God's *āyāt*, express and manifest God's mercy, so was

Prophet Muḥammad, the one chosen to receive God's speech, his *āyāt*, "nothing but a mercy (*raḥma*) to all beings."[63]

Given the uncompromising and radical monotheism of Islam, nature can never acquire divine status. Any idea of nature worship would crack the very core of Islam. But with this in view, one notes a further and delicate parallelism between nature and prophecy. The Qur'ān does speak of obeying the Prophet, his authority deriving from God. In juxtaposition to this, we place an interpretation of the great fourteenth-century Qur'ān commentator Ibn Kathīr: When the Qur'ān calls God "the Lord of the worlds (*Rabb al-'Ālamīn*),"[64] it means the Lord of *different kinds of creatures*, says Ibn Kathīr. Muslims affirm, he points out, that they submit to the Creator who made them and who made all other worlds. But, then, the commentator adds: "Muslims also submit themselves to the *signs* of the existence of the Creator and his unity. This secondary meaning exists because the word *'ālamīn* (worlds) comes from the same root [out of which stems the word *'alam*, which means 'sign']." Note that Ibn Kathīr is not alone in looking at the matter in this way.[65] So one may say that while the Qur'ān teaches obedience to the Prophet as God's delegated commander, it also teaches obedience to the laws of nature. This generates an attitude of tremendous respect for the cosmos, and also implies, *inter alia*, a divine stricture prohibiting the destruction or injury of the natural environment.

PRACTICAL ISSUES: MODELS OF CONDUCT AND ISLAMIC LAW

In the famous Correct (*Ṣaḥīḥ*) Ḥadīth collection of al-Bukārī (d. 870), we read the elegant saying of the Prophet: "The earth has been created for me as a mosque (*masjid*) and as a means of purification."[66] Indeed, to declare the whole earth not only pure in itself, but also purifying of that which it touches, is to elevate it both materially and symbolically. The word *masjid* literally means a place of prostration, and prostration involves *touching* the ground. Thus, by virtue of this Ḥadīth, the earth in its entirety acquires and manifests sacrality. And here we have a standard situation: an elaboration and extension of a Qur'ānic principle, which in this particular case appears in 5:6. It is, in

effect, a bringing of a Qur'ānic rule into the human fold of action and conduct.

In one important sense, Ḥadīth, as a discipline, can of course be described simply as a practical enterprise: it is a phenomenon of translating broad and general principles of the Qur'ān into detailed rules for the actual practice of the community. One may say that Ḥadīth brings metaphysics into the domain of history. But more than that, it has an independent status too, for Ḥadīth adds new practical issues to those found in the Qur'ān, sometimes even amending them or choosing between differing Qur'ānic positions on the same question. But it remains a practical enterprise nonetheless—the life of the Prophet, his established tradition (*sunna*), is a perfect model for all Muslims to follow; indeed, emulation (*ittibā'*) of this model is a *requirement* for the Muslim.

As a standard feature, Ḥadīth collections are corpora of authenticated reports of prophetic traditions, thematically classified; the body of reports under a single broad theme constitutes a Book (*Kitāb*), and these books strung together constitute the whole collection. In the Sunnī Islamic world—and to this belong the vast majority of Muslims—the most authoritative of Ḥadīth collections are held to be the "Six Corrects" (*Ṣiḥāḥ Sitta*),[67] among which the cited "Correct of al-Bukhārī" enjoys primacy; the Bukhārī corpus has 88 Books. The range of subjects covered in these collections is enormously wide, since Ḥadīth is aimed at comprehending universally all aspects of private and public, individual and collective life. Diffused throughout the body of a single Ḥadīth collection one finds concerns, expressed with a degree of urgency, pertaining to the natural environment, its status, its relation to human life, and what we may call environmental ethics. These concerns do not appear as isolated issues in their own right, to be sure; rather, they are fully integrated into a host of naturalistic, moral, and practical principles that form the core of righteous conduct.

Typically, among its many parts the Bukhārī collection includes separate books on animal sacrifice, agriculture and land cultivation, medicine, hunting, and water and irrigation. The "Book of Agriculture" is rich in material concerning the environment, speaking of the nobility of *sustainable* cultivation of

land and encouraging it with moral force. Issues of land irrigation and the strict law of equal sharing of water are found in the "Book of Distribution of Water," of course, but also in the "Book of Ablution"; the report I cited at the beginning of this section comes from the "Book of *Tayammum*" (ritual ablution performed with earth). Also, spread all over one finds a very large number of reports concerning the treatment of animals and pastures, as well as what one may call animal rights. And in the "Book of Generalities" (*al-Jāmi'*) of the famous collection *al-Muwaṭṭā'* of Mālik ibn Anas (d. 795), the Master of the Mālikī school of law, one finds a reference to the important principle of *ḥimā*—land protection and consecration—which is there linked, in its very essence, to the question of social and economic justice. So we see that much relevant material exists in Ḥadīth collections, but this material exists as such, without having received any theoretical treatment in the framework of a system of environmental or ecological ethics. All we have is a body of classified reports, like case law collections, and this is what Ḥadīth is.

But in the Islamic legal writings the principles contained in Ḥadīth reports are identified and subjected to a highly sophisticated processing into a rigorous body of legal theory. These legal writings, often considered the *summum bonum* of the literary output of the Islamic intellectual culture, embody the discipline of *fiqh*, a word that literally means "understanding," as we have already noted. *Fiqh*, or the Islamic science of jurisprudence, is a systematic and fully structured theoretical search for God's *sharī'a*, or Way, that had to be gleaned from and constructed out of the myriad *adilla* (here, legal indicators) provided for reflection throughout God's *āyāt*. In concrete disciplinary terms, *fiqh* is the determination of the legal status (*ḥukm*) of an act, a determination arrived at through the application of *correct*, though not epistemologically certain, procedural rules (*uṣūl*). These rules of correct procedure had been established by the middle of the ninth century, with the formal structure of logical inferences from the sources of law (*uṣūl al-fiqh)* fully articulated. The supreme material source of *fiqh*-law was, of course, the Qur'ān—but next to that, and sometimes parallel to and in addition to it, was the *sunna* (custom) of the

Prophet, which was by then available in authenticated Ḥadīth collections. Again, true to Islam's claim that it is a complete way of life, *fiqh*-laws are as a whole meant to be universal in scope—that is, comprehending all conceivable human acts. One may say, then, that *fiqh* is the structured articulation of the totality of Islam in its external functional manifestation.

The case of *ḥimā* constitutes a pertinent example. As I have already indicated, this principle appears in the *Muwaṭṭā'*; it is reported as a Ḥadīth of the Prophet's rather well-known companion and the second Rightly Guided (*Rāshid*) caliph 'Umar ibn al-Khaṭṭāb, his word having derivative prophetic authority:

> 'Umar ibn al-Khaṭṭāb said to his freedman . . . whom he had placed in charge of *ḥimā*, "Beware of the cry of the oppressed for it is answered. Do admit to *ḥimā* the owners of small herds of camel and sheep . . . By God! this is their land for which they fought in pre-Islamic times and which was included in their terms when they became Muslims. They would certainly feel that I am an adversary [for having declared their land *ḥimā*]— but, indeed, had it not been for the cattle to be used in the cause of God, I would never make a part of people's land *ḥimā*."[68]

It is clear from this report that the principle of *ḥimā*, which I shall explicate further, is at once an ecological issue as well as one of distributive justice and fairness. This twin significance of the principle is amply illustrated by the fact that it is explicitly invoked in the "Book of Business Transactions" of the highly respected *Mishkāt al-Maṣābīḥ* (Niche for Lamps), a manual of Ḥadīth deriving from a work of one al-Baghawī (d. *c.* 1116);[69] the book in question is concerned with the ethics of trade and commercial dealings. In the *Ṣaḥīḥ* of Bukhārī too it is found in a chapter with the same title,[70] as well as in the "Book of [Equitable and Fair] Distribution of Water."[71] All this further reinforces the point: *ḥimā* is both an environmental concern and an ethical issue of fair public policy.

But it remained up to the *fiqh* legists to develop the *ḥimā* principle systematically into a legal entity amenable to legislation, and this process is carried out, by definition, in the framework of practical ethics. In fact, *ḥimā* had a long history of abuse. The word, literally meaning "protected, forbidden place,"

names a pre-Islamic institution whereby some powerful individual or a ruling chief declared a piece of fertile land forbidden to the public or out of bounds. This was generally an exploitative act of dispossession and land confiscation. By virtue of *ḥimā*, those in power arrogated to themselves exclusive grazing, watering, and cultivation rights within the area the ground covered. Islam abrogated this practice and transformed the institution. Thus we read in the Qur'ān, "O my people, this is the camel of God, which is for you a sign (*āya*). Leave it to graze on the land of God."[72] And in the Bukhārī we have the Ḥadīth: "Nobody has the right to declare a place *ḥimā* except God and His Messenger."[73] In this way, *ḥimā* became a symbol of redress and restoration of justice and gradually acquired a status close to that of *ḥaram* (see below), in that it denoted a sanctuary, with its flora and fauna receiving special protection.[74]

But the environmental dimensions of the institution of *ḥimā* are readily apparent, and the Mālikī school of law, in particular, has developed these dimensions, preserving their intimate connection with social and ethical balance. Thus, four conditions were to be met for a piece of land to qualify as a possible *ḥimā*: First was the condition of need and fairness. *Ḥimā* was to be governed not by the whim or greed of some powerful individual or group, but by people's generally felt need to maintain a restricted area; that is, it had to be an act *pro bono*. Second, under the condition of what we may call ecological proportion, the area to be declared as *ḥimā* could not be too large, for this would be disproportionate. Third was the condition of environmental protection—the area under the *ḥimā* protection was not to be built upon or commercialized, nor was it to be cultivated for financial gain. Fourth was the condition of social welfare; the overriding aim of *ḥimā* was the economic and environmental benefit of the people.[75] This provides the outline of a concrete environmental policy concerning protected areas.

A similar institution articulated by the legists is that of *ḥaram* (or *ḥarīm*)—sacred territory, inviolable zone, sanctuary. Mecca was a *ḥaram* by the decree of God Himself.[76] Here, for example, no animal of the game species is ever put to death. By

extension *ḥaram* became an environmental institution; it is often discussed in the section devoted to wasteland in legal works. Izzi Deen writes, "The *ḥarīm* is usually found in association with wells, natural springs, underground water channels, rivers and trees planted on barren lands or *mawāt* [wasteland]. There is [in some parts of the Islamic world] a careful administration of the *ḥarīm* zones based on the practice of the Prophet Muḥammad and the precedent of his companions as recorded in the sources of Islamic law."[77]

It is quite striking that there exits in the Ḥadīth corpora an abundance of reports concerning plants and trees, land cultivation and irrigation, crops, livestock, grazing, water distribution, water sources and their maintenance, wells and rivers, water rights—all this is most promising material for our contemporary environmental concerns. Thus, in a report in Bukhārī's *Ṣaḥīḥ*, the Prophet is quoted as saying, "There is none amongst the believers who plants a tree, or sows a seed, and then a bird, or a person, or an animal eats thereof, but is regarded as having given a charitable gift [for which there is great recompense]."[78] So praiseworthy and noble is the task of a *sustainable* cultivation of land that even in Paradise (*al-Janna*, which significantly means "the Garden"), existing beyond the physical world, it does not come to an end. So we read the Prophet telling his companions:

> One of the inhabitants of Paradise will beseech God to allow him land cultivation. God will ask him, "But are you not in your desired state of being"? "Yes," he will say, "but I would still like to cultivate land" . . . When the man will be granted God's leave for this task, he will sow seeds, and plants will soon grow out of them, becoming ripe and mature, ready for reaping. They will become colossal as mountains. God will then say: "O Son of Adam, gather"![79]

In another place, the Prophet is reported to have said: "When doomsday comes, and someone has a palm shoot in his hand, he should plant it."[80] This saying accords a prophetic sacrality to all life: the bounty of nature is a good *in itself*, even at Doom—a good beyond any immediate or conceivable benefits that one may draw from it.

In the Bukhārī's section on issues concerning the use, ownership, management, and distribution of water, one finds a meaningful play on the word *faḍl*, which means both "excess" and "grace": "[Among the] . . . three types of people with whom God on the Day of Resurrection will exchange no words, nor will He look at them," the Prophet is said to have declared, ". . . [is] the one who possesses an excess of water but withholds it from others. To him God will say, 'Today I shall withhold from you my grace (*faḍlī*) as you withheld from others the superfluity (*faḍl*) of what you had not created yourself.'"[81]

Note the moral principle here linking the real to the transcendental: it was not humankind that created water; God is the creator. Indeed, while in its legal developments the question of the ownership of wells, rivers, and other natural drinking and irrigation sources became a complex one, one thing remained abundantly clear on the moral plane: water must be shared *equally*, as the Prophet is consistently and insistently reported to have taught. This egalitarian ethical principle yields far-reaching ecological consequences: by virtue of this principle, no living individual, and this includes animals, can be deprived of water if it is available; likewise no piece of cultivable land, irrespective of its ownership, can be left without irrigation if water resources have the capacity. Again, and even more strongly, the "Book of Business Transactions" of the *Mishkāt* quotes the Prophet's solemn declaration of a fundamental rule: "Muslims share alike in three things—water, herbage, and fire."[82]

One is astounded to see how a large number of these Ḥadīth principles were developed in their most minute detail, layer after layer, point by point, in the writings of *fiqh*-jurists, and woven into the vast legal fabric of normative ethics. A monumental example of such work is the *Hidāya* of the twelfth-century jurist al-Marghinānī, held to be the most authoritative single work of the Ḥanafī school of law, followed by the majority of Muslims. In this grand manual, already translated into English in the eighteenth century,[83] one finds detailed discourses on wasteland (*mawāt*) and, in this connection, systematic discussions of water rights and resources and their maintenance.

The *Hidāya* contains an extensive "Book on the Cultivation of Waste Lands" with sections on the definition of *mawāt*, the rights of cultivating it, the treatment of adjacent territories, the status of adjacent territories, water courses in *mawāt*, matters related to aqueducts running through the *mawāt*, and so on. There is a large section here on waters, including issues of control and direction of flow, a large section on digging canals, on rivers, their kinds and cleaning, and rules with respect to drains and water courses. There is, furthermore, a whole section on water rights, which discusses the right to alter or obstruct water courses, dams, the digging of trenches, the construction of water engines or bridges, water vents—the minutiae here are daunting.[84]

Even more striking than the abundance of Prophetic reports on vegetation and irrigation is the existence in the Ḥadīth corpora of a large body of traditions, admonitions, rules, and stories concerning animals, their treatment, rights, natural dignity, and even their unique individual identities. Contained in the "Book of Striving" (*Jihād*) of the *Muwaṭṭā'* is the resounding tradition about horses: "In the forehead of horses," the Prophet is quoted as saying, "are tied up welfare and bliss until the Day of Resurrection."[85] Such compassion and care for animals is reflected in the same book in an account of the Prophet wiping the mouth of his horse with his personal cloth. Asked why, he replied: "Last night I was rebuked [by God] for not looking after my horse."[86] Again, in Bukhārī's "Book of Water," we have this report:

> The one to whom his horse is a source of reward is the one who keeps it in the path of God, and ties it by a long rope in a pasture or a garden. Such a person will get a reward equal to what the horse's long rope allows it to eat in the pasture or the garden. And if the horse breaks its rope and crosses one or two hills, then all marks of its hoofs and its dung will be counted as good deeds for its owner. And if it passes by a river and drinks from it, then that will also be regarded as a good deed on the part of its owner. . . .[87]

Appearing in the "Book of Jihād" in the *Mishkāt* is a set of rules that the Prophet pronounced concerning the treatment of

camels. "When you travel in fertile country," he said, "give the camels their due from the ground, and when you travel in time of drought make them go quickly. When you encamp at night keep away from the roads, for they are where beasts pass and are the resort of insects at night."[88] It is remarkable that a sensitive concern for animals does not disappear from the horizon even during military engagements. In the same book, there exists a particularly stern admonishment against animal abuse—"Do not treat the back of your animals as pulpits, for God the most high has made them subject to you only to convey you to a place which you could not otherwise reach without much difficulty."[89]

Likewise we have a fable from the Prophet in Bukhārī's "Book of Agriculture": "While a man was riding a cow, it turned toward him and said, 'I have not been created for this purpose [of riding]; I have been created for plowing.'"[90] Here we have the Qur'ānic principles of *amr* and *qadr*, effectively the principles of natural and moral law and ecological balance, translated into practical ethics. And again, in the "Book of Jihād" of another *Ṣaḥīḥ* (Correct) Ḥadīth collection, the *Sunan* of Abū Dā'ūd (d. 888), one tradition clearly implies—and note that this implication is recognized by Muslim commentators—that each animal is to be considered *as an individual*, since the tradition speaks of animals being given proper names ("a donkey called 'Afīr").[91] Quite remarkably, this individuation effectively admits a *unique* identity on the part of each and every member of a given animal species. One wonders, then, if Islam constitutes an exception to the "speciesism" of the classical world—as I have said elsewhere, this would indeed be a highly fruitful question to pursue.[92]

Rather well-known in the Islamic world is the Ḥadīth story of a woman who was condemned to hellfire "because of a cat which she had imprisoned, and it died of starvation. . . . God told her, 'You are condemned because you did not feed the cat, and did not give it water to drink, nor did you set it free so that it could eat of the creatures of the earth.'"[93] This Ḥadīth story forms the basis of the *fiqh*-legislation that the owner of an animal is legally responsible for its well-being. If such owners are unable to provide for their animals, jurists further stipulate,

then they should sell them, or let them go free in such a way that they can find food and shelter, or slaughter them if eating their flesh is permissible. Given the requirement that animals should be allowed as far as possible to live out their lives in a natural manner, keeping birds in cages is deemed unlawful.[94]

Large sections, or books, devoted exclusively to the hunting of animals and game, and animal sacrifice, are a standard feature of the Ḥadīth corpora. All of this is treated with an ethical focus, underlying which is a particular conception of the natural environment that ultimately derives from the Qur'ān. At the same time, this ethical treatment of the issue generates both a philosophical and a moral attitude to the physical world that is uniquely Islamic, an attitude that manifests itself as an actual fact of the practices of Islamic societies. It is most instructive to recall E. W. Lane noting in his famous nineteenth-century work *Manners and Customs of the Modern Egyptians*: "I was much pleased at observing their humanity to dumb animals." But Lane found that the Egyptians had subsequently lost some of their traditional sensitivity to animals, and he explains: "I am inclined to think that the conduct of Europeans has greatly conduced to produce this effect, for I do not remember to have seen acts of cruelty to dumb animals except in places where Franks either reside or are frequent visitors."[95]

The Egyptians' "humanity to animals" appears to be the moral harvest of Prophetic teachings with its numerous ecological ramifications. In fact, there is in the *Mishkāt* the saying of the Prophet, "If anyone wrongfully kills [even] a sparrow, [let alone] anything greater, he will face God's interrogation."[96] We read in the same collection how vehemently the Prophet condemned the practice of branding animals; the story is narrated that he saw a donkey branded on the face, and it upset him so much that he invoked God's curse: "God curse the one who branded it!" In fact, it is explicitly stated here that "God's messenger forbade striking the face of an animal or branding on its face." Similarly, he is reported to have forbidden all forms of blood sports, including inciting living creatures to fight with one another, or using them as targets—"The Prophet cursed those who used a living creature as targets."[97] The unusual intensity of this condemnation is to be gauged by the

fact that these accounts speak of the Prophet cursing, and this is an exceptional feature of his character as it is portrayed in the tradition. In the same vein and with clear ecological dimensions, we have a story in Abū Dā'ūd's *Sunan*: "Once a companion of the Prophet was seen crumbling up bread for some ants with the words, 'They are our neighbors and have rights over us.'"[98]

Islam does not prescribe vegetarianism and, of course, killing of certain kinds of animals for food is permitted, but only if the animal is killed in a specified manner *and*—in order to prevent cruel and arrogant tendencies from developing—God's name is pronounced over it. Islamic tradition has it that it is precisely the prevention of human arrogance and the inculcation of an ecological sensitivity in which lies the wisdom (*ḥikma*) of the whole idea of *Dhabḥ* (lawful killing of animals for food). Thus, there exist in Ḥadīth collections exceedingly detailed instructions concerning animal slaughtering. A report in the *Mishkāt* has the Prophet saying, "God who is blessed and exalted has decreed that everything should be done in a good way, so when you kill [an animal] use a good method, and when you cut an animal's throat you should use a good method, for each of you should sharpen his knife and give the animal as little pain as possible."[99] It is declared reprehensible by the Prophet to let one animal witness the slaughtering of another, or to keep animals waiting to be slaughtered, or sharpening the knife in their presence—"Do you wish to slaughter the animal twice: once by sharpening your blade in front of it and another time by cutting its throat?"[100]

The jurist Marginānī, whom we have already met, has a whole chapter on *Dhabḥ* in his *Hidāya*; elaborating the matter in the finest of its details, as it was his manner, he writes:

> IT is abominable first to throw the animal down on its side, and then to sharpen the knife; for it is related that the Prophet once observing a man who had done so, said to him, "How many deaths do you intend that this animal should die? Why did you not sharpen your knife before you threw it down?" IT is abominable to let the knife reach the spinal marrow, or to cut off the head of the animal. The reasons . . . are, FIRST, because the Prophet has

> forbidden this; and, SECONDLY, because it unnecessarily augments the pain of the animal, which is prohibited in our LAW.—In short, everything which unnecessarily augments the pain of the animal is abominable . . . IT is abominable to seize an animal destined for slaughter by the feet, and drag it . . . IT is abominable to break the neck of the animal whilst it is in the struggle of death. . . .[101]

We have already noted the rule of equal sharing of water, and this rule makes no distinction between human beings and animals. Thus, for example, in the "Book of Ablution" of the Bukhārī corpus, as well as in other corpora, there is the account of a man

> who was walking along a road and felt thirsty. Finding a well, he lowered himself into it and drank. When he came out he found a dog painting from thirst and licking at the earth.
>
> He therefore went down again into the well and filled his shoe with water and gave it to the dog. For this act God Almighty forgave him his sins. The Prophet was then asked whether man had a reward through animals, and he replied: "In everything that lives there is a reward."[102]

"In everything that lives there is a reward" may be considered a broad central principle of Islam's environmental ethics.

So we see the richness of Islamic material relevant to the question of the environment and ecology, and we also note the sophistication of treatment this material received in the Islamic culture, but the question is complex and larger. To capture a fuller sweep of the question of Islam and ecology, we will have to cast a much wider net—this essay does not even claim to contribute a smaller net; if anything, it offers some of its twine.

ENDNOTES

[1]See Henry Corbin, *Avicenna and the Visionary Recital* (New York: Pantheon Books, 1960).

[2]Some samples of the first attitude are to be found in Ziauddin Sardar, ed., *The Touch of Midas* (Manchester: Manchester University Press, 1984); on resentment toward all things Western, see the discussion of "Westoxification" in John Esposito, *Islam and Politics* (Syracuse, N.Y.: Syracuse University Press,

1984). In the third view one would place the ideas of some of those called Modernists; see Esposito, *Islam and Politics*; also Fazlur Rahman, *Islam* (Chicago: The University of Chicago Press, 1979).

[3]Hamilton Gibb, *Whither Islam?* (London: Victor Gollancz Ltd., 1932), 376.

[4]Ibid., 377–378.

[5]Ibid., 376.

[6]See ibid., 377.

[7]Seyyed H. Nasr is one of the pioneers who have undertaken this exercising task. See Nasr, "Islam and the Environmental Crisis," *The Islamic Quarterly* 34 (4) (1991): 217–234; and Nasr, *The Encounter of Man and Nature* (London: Allen and Unwin, 1978).

[8]Cf. Hanna E. Kassis, *A Concordance of the Qur'ān* (Berkeley: University of California Press, 1983).

[9]George F. Hourani, *Reason and Tradition in Islamic Ethics* (Cambridge: Cambridge University Press, 1985), 86.

[10]Ibid., 86; my emphasis.

[11]The literal meaning of *zauj* is, indeed, "equal half"; in the creation story in the second chapter (verse 35) of the Qur'ān, this is the word used for the human being recognized by the tradition as Eve (*Ḥawwā*).

[12]For Thomas Aquinas, nature was unredeemed.

[13]This is pointed out by Nasr, "Islam and the Environmental Crisis," 219.

[14]7:72. Translations of the Qur'ān used for this essay are *The Holy Qur'ān*, trans. Abdullah Y. Ali (Brentwood, Md.: Amana Corporation, 1989); and *The Qur'ān Interpreted,* trans. Arthur J. Arberry (New York: Macmillan Publishing Company, 1955). Commentaries include Ibn Kathīr, *Tafsīr*, in Muhammad A. al-Sabuni, ed., *Mukhtaṣar Tafsīr ibn Kathīr* (Beirut: Dar al-Qur'ān al-Karīm, 1981).

[15]15:1–4.

[16]2:22; 13:17; 14:32–33; 16:5–16; 16:80–81; 17:70; 21:31–32; 23:18–22; 43:10–12; 45:12–13; 55:1–78; 78:6–16.

[17]33:72.

[18]45:13.

[19]16:12–14.

[20]22:65–66.

[21]80:1–9.

[22]93 (entire); 89:17–18.

[23]83:1–13.

[24]89:17–23.

[25]89:19; 100:6–11.

[26]3:108–109.

[27]38:27; cf. 3:191.

[28]27:88–90.

[29]*Majmū' Fatāwā*, quoted in Mawil Yousuf Izzi Deen (Samarri), "Islamic Environmental Ethics," in *Ethics of Environment and Development*, ed. J. Ronald Engel and Joan Gibb Engel (Tucson: The University of Arizona Press, 1990), 190; my emphasis.

[30]2:107.

[31]24:42.

[32]40:57.

[33]55:10.

[34]6:38.

[35]Denys Johnson-Davies, *The Island of Animals, Adapted from an Arabic Fable* (Austin: University of Texas Press, 1994), viii.

[36]Ibid., 75.

[37]15:26, 28, 33.

[38]22:5.

[39]96:1.

[40]6:2; 7:12, etc.

[41]Fazlur Rahman, *Major Themes of the Qur'ān* (Minneapolis: Bibliotheca Islamica, 1989), 17. This work is a highly learned excursus on Qur'ānic themes by one of the finest modern scholars of our times.

[42]23:13–14.

[43]50:15–11.

[44]15:19–22.

[45]15:26–27.

[46]On *ẓulm al-nafs* see Hourani, *Reason and Tradition in Islamic Ethics*.

[47]See my chapter "Islam" in *A Companion to Environmental Philosophy* (Blackwell Companions to Philosophy series), ed. Dale Jamieson (Oxford: Blackwell, 2001). It ought to be noted here that this was the first articulation of my ideas on the question of Islam and ecology, and readers will note some parallels in the present essay; this is inevitable since the core of the primary normative sources remains constant.

[48]65:1.

[49]16:33.

[50]The Qur'ān is replete with the verbal form of the root word *ẓalama* (to do wrong) along with several other verbal and nominal forms that morphologically arise out of it. But for *ẓulm al-nafs* see particularly 2:231; 3:135; 7:23; 11:101; 27:44; 28:16; 34;19; 43:76.

[51]3:83.

[52]L. Gardet, "God in Islam," *Encyclopedia of Religion,* ed. Mircea Eliade (New York: Macmillan, 1987), 30.

[53]57:3.

[54]55:5–29.

[55]Rahman, *Major Themes*, 71.

[56]See 18:109–110.

[57]See 2:118, 219, 266; 3:118; 5:75.

[58]6:65. I draw upon Rahman's *Major Themes* here.

[59]6:97–98.

[60]9:128.

[61]13:7.

[62]45:52.

[63]21:107.

[64]1:1.

[65]See Izzi Deen (Samarri), "Islamic Environmental Ethics," 95.

[66]*Ṣaḥīḥ al-Bukhārī*, ed. and trans. M. Muhsin Khan (Chicago: Kazi Publications, 1976–1979), I:331.

[67]These are named after the masters who compiled them, thus: al-Bukhārī, Muslim (d. 875), Abū Dā'ūd (d. 888), al-Tirmidhī (d. 892) al-Nasā'ī (d. 916), and Ibn Māja (d. 886).

[68]*Muwaṭṭā'* of Mālik ibn Anas, trans. Muhammad Rahimuddin (Lahore: Sh. Muhammad Ashraf, 1985), no. 1830.

[69]*Mishkāt al-Maṣābīḥ*, trans. James Robson (Lahore: Sh. Muhammad Ashraf, 1990), 592.

[70]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:267.

[71]Ibid., 3:558.

[72]11:64.

[73]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:558.

[74]See J. Chelhold, "Ḥimā," in *Encyclopaedia of Islam,* new ed., vol. 3, ed. H. A. R. Gibb et al. (Leiden: E. J. Brill, 1971), 393.

[75]Wahba al-Zuhailī, *al-Fiqh al-Islamī wa Adillatuhu*, vol. 5 (Islamic Law and Its Material Foundations) (Damascus: Dar al-Fikr, 1984), 23–24; 571–575; quoted in Izzi Deen (Samarri), "Islamic Environmental Ethics," 196.

[76]17:91.

[77]Izzi Deen (Samarri), "Islamic Environmental Ethics," 190.

[78]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:513.

[79]Ibid., 3:538.

[80]*Sunan al-Baihaqī al-Kubrā*, quoted in Izzi Deen (Samarri), "Islamic Environmental Ethics," 194.

[81]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:557.

[82]*Mishkāt al-Maṣābīḥ*, trans. Robson, 640.

[83]*Hidāya of al-Marghnānī*, trans. Charles Hamilton (London: T. Bensley, 1791); cited here is the reprint from the 2d ed. of 1870 (Lahore: Premier Book House, 1957).

[84]Ibid., 4:609–618.

[85]*Muwaṭṭā'* of Mālik ibn Anas, trans. Rahimuddin (Lahore: Sh. Muhammad Ashraf, 1985), no. 990.

[86]Ibid., no. 993.

[87]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:559.

[88]*Mishkāt al-Maṣābīḥ*, trans. Robson, 826.

[89]Ibid., 829; translation slightly amended.

[90]*Ṣaḥīḥ al-Bukhārī*, ed. and trans. Khan, 3:517.

[91]*Sunan Abī Dā'ūd*, trans. Wahid al-Zamân (Urdu) (Lahore: Islamic Academy, 1983), 308–312.

[92]Haq, "Islam," 123.

[93]*Ṣaḥīḥ al-Bukhārī,* ed. and trans. Khan, 3:553.

[94]Johnson-Davies, *The Island of Animals*, xii.

[95]Quoted in ibid., xv, from the 1836 publication.

[96]*Mishkāt al-Maṣābīḥ*, trans. Robson, 874.

[97]Ibid., 872.

[98]Quoted in Johnson-Davies, *The Island of Animals*, xvii.

[99]*Mishkāt al-Maṣābīḥ*, trans. Robson, 872.

[100]Quoted in Johnson-Davies, *The Island of Animals*, ix.

[101]*Hidāya,* trans. Hamilton, 4:558.

[102]Johnson-Davies, *The Island of Animals*, ix.

Indeed every thing in the heavens and the earth belongs to Him, and all are obedient to God.

Creator of the heavens and the earth from nothingness, He has only to say when he wills a thing: "Be," and it is. (2:116–117)

There is nothing that moves on the earth,
no bird that flies on its wings,
but has a community of its own like yours. (6:38)

It is He who made you trustees of the earth,
And exalted some in rank above others
In order to try you
By what He has given you.
Indeed your Lord's retribution is swift,
Yet he is forgiving and kind. (6:165)

Do you see how all things in the heavens and the earth, the sun, the moon, the stars, the mountains, trees and beasts, and men in abundance, pay homage to God? (22:18)

—the Qur'ān

Vasudha Narayanan

Water, Wood, and Wisdom: Ecological Perspectives from the Hindu Traditions

FROM THE CRADLE that is a baby's first bed to the cremation pyre that is the last resting place for the body in many Hindu traditions, wood is an integral part of Hindu lives. From home hearths to religious sacraments, wood and fire are conspicuously present. Hindu weddings take place in front of a sacred fire that is considered to be an eternal witness; at death, the bodies are consigned to the fire.

The ashes of the cremated body are immersed in holy waters—the same rivers that feed and irrigate paddy fields; the same water that cooks the rice and bathes the dead before cremation. From cradle to cremation, Hindus have long had a palpable, organic connection with nature. But today they must also face the reality of environmental disaster. With the population hovering around a billion in India (with eight hundred million Hindus), the use, abuse, and misuse of resources is placing India on the fast track to disaster. What, if anything, can Hindu tradition say about this looming environmental crisis? Are there any resources in the Hindu religious and cultural traditions that can inspire and motivate Hindus to take action?[1]

While in the Western world one has to argue for the significance and relevance of religion in everyday life, in India the interest and involvement in religion is tangible; religious symbols are ubiquitous. The traditional mantra heard among Hindus, "Hinduism is more than a religion; it is a way of life," is more than a trite saying. There is a deep relationship between religion and ingrained social structures and behavioral pat-

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terns. The characters featured in the various Puranas, or ancient texts about the Hindu deities, are known and loved by the masses. People never seem to tire of these stories. Only vernacular cinema seems to rival the epic and Puranic narratives in popular influence.

But do the many Hindu philosophies and communities value nature and privilege the existence of plants, trees, and water? Although the short answer is "yes," Hindus have answered this question in many different ways that have been documented in excellent texts.[2] Plants and trees are valued so highly in Hindu sacred texts that their destruction is connected with doomsday scenarios. The Puranas and epics such as the *Ramayana* and the *Mahabharata* give detailed narratives of the periodic and cyclic destruction of the world. There are four aeons in each cycle, and by the beginning of the third aeon, things are perceptibly going awry. As the *Kurma Purana* puts it, "then greed and passion arose again everywhere, inevitably, due to the predestined purpose of the Treta [Third] Age. And people seized the rivers, fields, mountains, clumps of trees and herbs, overcoming them by strength."[3] The epic *Mahabharata* (c. 500–200 B.C.E.) graphically depicts the events at the end of the fourth—and worst—aeon, and what happens after a thousand such aeons:

> At the end of the Eon the population increases . . . and odor becomes stench, and flavors putrid. . . . When the close of the thousand Aeons has come and life has been spent, there befalls a drought of many years that drives most of the creatures, of *dwindling reserves* and starving to their death. . . . The Fire of Annihilation then invades . . . [and] burns down all that is found on earth. . . . Wondrous looking huge clouds rise up in the sky. . . . At the end of time all men—there is no doubt—will be omnivorous barbarians. . . . All people will be naturally cruel. . . . Without concern *they will destroy parks and trees* and the lives of living will be ruined in the world. Slaves of greed they will roam this earth. . . . All countries will equally suffer from drought. . . . [It] will not rain in season, and the crops will not grow, when the end of the Eon is at hand.[4]

What we note almost immediately is that these destructions are portrayed as cyclical and periodic. The first quotation about

the third aeon evokes the inevitable, predestined nature of such events. One wonders if human beings are powerless against such cosmic configurations. But even if we were to take these epics seriously, we have quite a while to wait. According to very conservative Hindu almanacs and reckoning, the end of *this* aeon—the fourth—is not expected before 428,898 C.E.

We also notice in the Hindu texts a close correlation between *dharma* (righteousness, duty, justice; from *dhr*, or that which sustains) and the ravaging of Earth. When *dharma* declines, human beings despoil nature. There is, however, no Hindu text focusing on *dharma* that advises us to be passive and accept the end of the world with a life-negating philosophy. Many Hindu texts are firm in their view that human beings must enhance the quality of life. A popular blessing uttered in many Hindu temples and homes focuses on human happiness in this life, on this earth: "May everyone be happy, may everyone be free of diseases! / May everyone see what is noble / May no one suffer from misery!"

Despite this unequivocal ratification of the pursuit of happiness, Hindus of every stripe have participated in polluting the environment. In this essay, we will look at the resources and limitations within the many Hindu traditions to see how the problem of ecology has been addressed. Before we look at these resources, a few caveats and qualifications are in order.

The first important issue to be aware of is that there are many Hindu traditions, and there is no single book that all Hindus would agree on as authoritative. In this essay, I will cite many texts from a spectrum of sources. The second point to note is that the many texts within Hindu traditions have played a limited role in the *history* of the religion. Although works like the *Ramayana,* the *Mahabharata,* and the many Puranas have been generally influential, philosophical works like the Upanishads are not well known by the masses. The texts on right behavior (*dharma shastras*) have been only selectively followed, and popular practice or custom has had as much weight as religious law. All these texts, along with Puranic and epic narratives, have been the carriers and transmitters of *dharma* and devotion (*bhakti*).

Dharma is all-important in Hindu communities, but the texts that define and discuss *dharma* were known only by a handful of Brahman men. Instead, notions of *dharma* were communicated through stories from the epics and Puranas, and such moral tales were routinely retold by family or village elders. Like Aesop's fables—or MTV today—these narratives shaped notions of morality and acceptable behavior. The exaggerated reliance on texts of law is a later development and can be traced to the period of colonization by the British.[5] With the intellectual colonization by the West and the advent of mass media, Hindus today, especially in the diaspora, think of texts alone—rather than oral tradition or community customs—as authoritative. Many Hindu temples in India now hold classes and study circles on the *Bhagavadgita* ("the Song of the Lord;" a text composed circa second century B.C.E. that is part of the epic *Mahabharata*). The Ramakrishna and Chinmaya missions publish theological books and tapes with translations and commentaries to explain their canonic texts to an educated middle-class public.

Finally, I do not speak about these resources for anyone except those who in some manner belong to one of the Hindu traditions. Gerald Larson has alerted us to the dangers of indiscriminate use of philosophical texts as a generic resource for environmental philosophy, and one has to be mindful of these warnings.[6] Still, given the increasing popularity of sacred texts among many sectors of Hindu society in the late twentieth century, I feel comfortable in using many Hindu texts as resources in this essay. We will see shortly that some Hindu institutions are citing esoteric passages on *dharma* from sacred texts in order to raise the consciousness of people about contemporary social issues. The regulation of *dharma* with a dual emphasis on text and practice has given it a flexibility that we can use to our advantage today.

The resources from which the Hindu traditions can draw in approaching environmental problems are several and diverse: there are texts, of course, but also temples and teachers. Hindu sacred texts starting with the Vedas (c. 1750–600 B.C.E.) speak extensively about the sanctity of the earth, the rivers, and the

mountains. The texts on *dharma* earnestly exhort people to practice nonviolence toward all beings; other texts speak of the joys of a harmonious relationship with nature. Temples are large economic centers with endowments of millions. Many have had clout for over a millennium; devotees, pilgrims, and politicians (especially after an election) donate liberally to these centers. Finally, there are gurus. Teachers like Sathya Sai Baba can influence millions of devotees around the world and divert enormous resources to various projects.

These vast and varied religious resources can undoubtedly be used to raise people's consciousness about environmental problems. In this essay, I will explore some of the resources in the Hindu traditions that may be relevant to the environmental crisis, discuss a few cases of environmental mobilization that have sprung from religious sensibilities, and finally assess some of the other strands in the Hindu traditions that often impede the translation of philosophies into action.

THE NARRATIVE, RITUAL, AND PHILOSOPHICAL TRADITIONS

In most Hindu traditions, Earth is to be revered, for she is our mother. Mother Earth, known by one of her several names (Bhu, Bhumi, Prithvi, Vasudha, Vasundhara, Avni) is considered to be a *devi,* or a goddess. She is seen in many temples together with Lord Vishnu ("all-pervasive") in South India and is worshiped as his consort. She is to be honored and respected; classical dancers, after pounding on the ground during a concert, touch the earth reverentially to express their esteem for the earth. The earliest sacred texts, the Vedas, have inspiring hymns addressed to Earth.[7]

The ethical texts have many injunctions that are directly relevant to environmental problems. Many of them stress the importance of nonviolence toward *all* creatures. Nonviolence in thought, word, and deed is considered to be the highest of all forms of righteousness, or *dharma*.[8] Normative nonviolence, if followed, would inevitably promote biodiversity.

Nor are other, more specific, ethical injunctions lacking in Hindu traditions. Manu, the law giver, said around the begin-

ning of the Common Era, "Impure objects like urine, feces, spit; or anything which has these elements, blood, or poison should not be cast into water."[9]

Ritual and devotional resources that privilege the natural environment abound in the Hindu tradition. The protection of groves and gardens, as well as pilgrimage to sacred and pure places, is recommended by some Hindu communities and mandated by others. The Puranas and the epics mention specific places in India as holy and charged with power. Many Hindu texts say that if one lives or dies in the holy precincts of a sacred place, one is automatically granted supreme liberation. There are lists of such cities and villages. Many lists are regional, but some are pan-Indian and span the subcontinent, creating networks of sacred spaces and consolidating the various Hindu communities.

In the time of the *dharma shastras* around the beginning of the Common Era, the description of the sacrality of the land was confined to the northern part of India. Manu says:

> That land, created by the gods, which lies between the two divine rivers Sarasvati and Drishadvati [is] . . . Brahmavarta. . . .
>
> . . . the tract between those two mountains which extends between the eastern and western oceans, the wise call Aryavarta (the country of the noble ones).
>
> The land where the black antelope naturally roams, one must know to be fit for the performance of sacrifices; [this land] is different from the country of the barbarians.[10]

Later, the sacred lands were extended beyond the land between the Himalaya and Vindhya mountains to cover the whole subcontinent.

More recently, India personified as the mother (Bharata Mata) has been important in political thinking. Mayuram Viswanatha Sastri (1893–1958), a musician who participated in the struggle to free India from colonial rule, composed a song popular among all South Indian classical singers, called "Victory, Victory to Mother India" (*jayati jayati bharata mata*). In this and many such songs, India is personified and extolled as a compassionate mother-goddess filled with forests, filled with sanctity that should not be violated.

While India is personified as a mother and considered holy, most Hindus localize the sanctity and go regularly to the regional temple or a sacred place that has been important to their families for generations. The whole town surrounding any temple is said to be sacred. Every tree, every stream near the precincts of the temple exudes this sense of sacredness. Bathing in the sea, river, stream, or pond of water near the temple is said to grant salvation. Hindus are beginning to use these notions of sacrality and rituals of pilgrimage as one inspiration for ecological cleanups.[11]

The philosophical visions of the various Hindu traditions portray the earth, the universe, and nature in many exalted ways. Nature is sacred; for some schools, this Prakriti ("nature," sometimes translated as "cosmic matter") is divine immanence and has potential power. These links have been explored in a quest for indigenous paths to solving the environmental crisis.[12] In a related way, the five elements of nature—earth, water, fire, ether/space, and air—are sacred. Rivers are particularly revered.[13] The philosophical images of Prakriti are often awe-inspiring. Consider just one of these images: central to the *Bhagavadgita* is the vision of the universe as the body of Krishna, an incarnation of Vishnu. While the first consequence of this vision in its narrative context is to convince the warrior Arjuna of the supremacy of God, many theologians, including Ramanuja (traditional dates 1017–1137), have understood these passages, as well as several in the Upanishads, as depicting the correct relationship between the Supreme Being and creation. Ramanuja and his followers equally emphasize the immanence and the transcendence of the Supreme Being. The elaboration of this philosophy is found in the many texts of Ramanuja's disciples, the members of the Sri-Vaishnava community.[14]

According to Ramanuja, the universe, composed of sentient matter (*chit*) and nonsentient matter (*achit*), forms the body (*sarira*) of the Vishnu. Just as a human soul (*chit*) pervades a nonsentient body (*achit*), so, too, does Vishnu pervade all souls, the material universe, and time. The name Vishnu, in fact, means "all pervasive." Vishnu-Narayana is inseparable from Sri-Lakshmi, the Goddess. According to the Sri Vaishnava theologian Vedanta Desika (1268–1368), both Vishnu and Sri per-

vade the universe together; the universe is their body. It is important to note that in this philosophy, it is *not* the case that the material universe is female and the transcendent god is male; together, the male and female deities create and pervade the universe, and yet transcend it. We—as part of the universe—are the body of Vishnu and Sri; we are owned by them and are supported by them. Vishnu is the personal name given to the Supreme Being, or Brahman; the two are identical. In his famous work *Summary of the Teachings of the Veda* (*Vedartha Sangraha*), Ramanuja says that Brahman is purity, bliss, and knowledge. The sentient and nonsentient beings form the body of Brahman. Before creation, they are undifferentiated in name and form from Brahman. By the will of the Supreme Being it becomes manifest as the limitless and diversified world of moving and nonmoving beings. At any given time, therefore, the universe is one with this Brahman, both before and after creation.[15]

All of creation has the Supreme Being as its soul, its inner controller and support. All physical forms have Brahman or the Supreme Being as their ultimate Self or soul. Ramanuja makes this identification clear through a process of "signification," or pointing:

> Therefore all terms like gods, men, yaksa [a celestial being], demon, beast, bird, tree, creeper, wood, stone, grass, jar and cloth, which have denotative power, formed of roots and suffixes, signify the objects which they name in ordinary parlance and through them they signify the individual selves embodied in them and through this second signification, their significance develops further till it culminates in Brahman, the highest Self dwelling as the inner controller of all individual selves. Thus all terms are denotative of this totality.[16]

While Ramanuja's argument is based on language and grammar in this passage, he argues for the reality of all of creation and its divinity based on scriptural passages. The reality of all of creation is pulsating with divinity. This vision of organic connection between the Supreme Being and all other created beings invites us to look at the world with wonder and respect. If the entire universe is divine, how can we bring ourselves to

pollute it? Ramanuja's is only one of the many philosophical visions of the universe that has bearing on the ecological enterprise.

ONE TREE IS EQUAL TO TEN SONS: *DHARMA* AND *ARTHA* TEXTS AND PRACTICES AS RESOURCES FOR ECOLOGY

The many texts that focus explicitly on *dharma*, or righteous behavior, were composed in the first few centuries of the Common Era. In addition to these, many sections of the epics *Ramayana* and *Mahabharata* and the Puranas are also focused on *dharma*. Other scriptures have encouraged the planting of trees, condemned the destruction of plants and forests, and said that trees are like children.

In this context, a passage from the *Matsya Puranam* is instructive. The goddess Parvati planted a sapling of the Asoka tree and took good care of it. She watered it, and it grew well. The divine beings and sages came and told her: "O [Goddess] . . . almost everyone wants children. When people see their children and grandchildren, they feel they have been successful. What do you achieve by creating and rearing trees like sons . . . ? Parvati replied: "One who digs a well where there is little water lives in heaven for as many years as there are drops of water in it. One large reservoir of water is worth ten wells. One son is like ten reservoirs and one tree is equal to ten sons (*dasa putra samo druma*). This is my standard and I will protect the universe to safeguard it. . . ."[17]

The words of Parvati are relevant today. Trees offer more than aesthetic pleasure, shade, and fruit. They are vital to maintain our ecosystem, our planet, our well-being, and Parvati extols them by saying they are comparable to ten sons. The main Puranas, texts of myth and lore, composed approximately between the fifth and tenth century C.E., have wonderful passages on trees. The *Varaha Purana* says that one who plants five mango trees does not go to hell, and the *Vishnu Dharmottara* (3.297.13) claims that one who plants a tree will never fall into hell.[18] The *Puranas* differ in the number and description of hells in the universe, and one may perhaps take the liberty of inter-

preting "hell" as symbolic of various levels of suffering, including a steamy planet where we keep poking holes in the ozone layer. The *Matsya Purana* also describes a celebration for planting trees and calls it the "festival of trees."[19]

Just as the planting of trees was recommended and celebrated, cutting them was condemned by almost all the *dharma shastras*. Kautilya's *Arthashastra* (c. fourth century B.C.E.) prescribes varying levels of fines for those who destroy trees, groves, and forests. Kautilya says:

> For cutting off the tender sprouts of fruit trees, flower trees or shady trees in the parks near a city, a fine of 6 panas shall be imposed; for cutting off the minor branches of the same trees, 12 panas, and for cutting off the big branches, 24 panas shall be levied. Cutting off the trunks of the same shall be punished [with a fine between 48–96 panas]; and felling of the same shall be punished with [a fine between 200–500 panas]. . . . For similar offenses committed in connection with the trees which mark boundaries, or which are worshipped . . . double the above fines shall be levied.[20]

Despite these exhortations, the twentieth century has seen a massive destruction of trees. In the deforestation that has occurred in the Himalayas and in the Narmada basin, there has been a tragic transgression of *dharma*. Temples are now in the forefront of reforestation movements, urging devotees to plant saplings.

We have looked at some of the narrative, ritual, philosophical, and ethical resources in the Hindu traditions that could help us fashion a respectful and reciprocal relationship with the natural world. We know that the environmental problems facing India are tremendous, but there is also no doubt that religion is a potential resource for raising people's consciousness about these problems. Of course, Hindus, like people of other faiths, have been delightfully selective in the ways in which they have used scripture, practices, and modern technology. Pointing out the scriptural resources does not mean they will be incorporated into an effective worldview. In what follows, I will therefore examine more closely how specific Hindu groups have successfully used particular Hindu beliefs and texts to encourage eco-friendly actions.

"Trees, When Protected, Protect Us"

Many of the stories and narratives in Hindu texts focus on the value of trees and plants. One of the most successful attempts at reforestation in recent years has been through the initiative of the large temple at Tirumala-Tirupati. Billboards with statements like "A tree protects: Let us protect it" or "Trees, when protected, protect us" greet visitors to the sacred pilgrimage town of Tirumala-Tirupati, in Andhra Pradesh, South India. The statement is obviously adapted from the Laws of Manu, which say that *dharma,* or righteousness, when protected, protects us.

In response to the ecological crisis in India, the Venkateswara ("Lord of Venkata Hills," a manifestation of Lord Vishnu) temple at Tirumala-Tirupati began what is called the *Vriksha* ("tree") *Prasada* ("favor") scheme. Whenever a pilgrim visits a temple in India, he or she is given a piece of blessed fruit or food to take home. This is called a *prasada* or "favor" of the deity. Some temples in India are known for their preparation of sweets; the Tirupati temple, for instance, is well known for making and selling *laddus,* a confection the shape and size of a tennis ball. Although small quantities of *prasada* in most temples are free, *laddus* are also sold for a small fee. Approximately 80,000 to 125,000 are sold daily by the temple kitchens.[21] Ingesting *prasada* is a devotional and mandatory ritual; by eating what is favored and blessed by the deity, divine grace is said to course through one's body. The Tirumala-Tirupati temple, which is located at an elevation of 3,000 feet, was once surrounded by heavy forests. In an effort to honor the beauty of its original setting, the temple has established a large nursery and encourages pilgrims to take home tree saplings as *prasada.* This temple is the richest shrine in India and carries with it a great deal of *dharmic* and financial clout, both in India and with the "NRI" ("non-Resident-Indian") temples of Hindus in the diaspora. The wealth of the temple is legendary; in 1996, the reported annual income was upward of U.S. $35.6 million a year. This does not include the gold and silver contributions (around 300 kgs of gold and 1,880 kgs of silver in 1996) or the income from investments. This temple has about 12 major temples under its care, and its initiatives are emulated elsewhere.

The plants sold as *prasada* are inexpensive; they cost about the equivalent of five cents each. The saplings cultivated are suitable for the soil in various parts of India, and by planting them at home one can have a piece of the sacred place of Tirumala wherever one lives. At the same time, officials at the temple have since 1981 run a "bioaesthetic" program under the name of Sri Venkateswara Vanabhivriddhi. In this program, a devotee donates money for the purchase and planting of trees and plants. The donor is honored by being granted special *darshan* (viewing of the deity in the inner shrine), accommodations on Tirumala (normally very hard to get), and public acknowledgment of the gift (strategically placed boards list the names of donors and the amount of their donations). This initiative has apparently been successful: over 2,500,000 indigenous trees are said to have been planted on India's hills and plains.[22]

Sacred Trees in Temples

Almost every temple in South India dedicated to the gods Shiva or Vishnu, or to a manifestation of the goddess, has a *sthala vriksha,* a special tree regarded as sacred to that area. This "official" tree is usually a grand old specimen, surrounded by a path used for circumambulation by pilgrims and devotees. The *sthala vriksha* symbolizes all trees and reminds pilgrims that all trees are worthy of respect.

The Trees of Badrinath. Badrinath, a major pilgrimage center in the Himalayas, was a victim of overuse. A handful of pilgrims would go to the temple, high in the forested mountains. Located at 3,130 meters, it used to be surrounded by heavy forests. Now, with new roads, over 400,000 pilgrims visit the temple every year. Through the joint efforts of the director of the G. B. Pant Institute of India's Himalayan Environment and Development, the chief priest of the temple, and the residents of the town, thousands of trees were planted in 1993. The Institute supplied the plants; the priest blessed them and urged the pilgrims to plant the trees as a sign of religious devotion. The priest told the story of how the Goddess Ganga (the river) would not come to Earth until Lord Shiva promised to break her fall. Shiva's matted hair contained her and she did not flood the

plains. The priest likened the forests to the matted hair of Shiva. The trees are now cut; in summer the Ganga floods the land and landslides destroy the local villages. The priest urged the pilgrims: "Plant these seedlings for Lord Shiva; you will restore his hair and protect the land." The religious leader who supervised the planting efforts said that "We all have a duty to plant trees: they give shade and inspire meditation." And the village headman remarked, "These are sacred trees that we will do our best to protect."

Many of the plants died during the winter that followed. In response, the G. B. Pant Institute established a nursery at Hanumanchatti to acclimatize seedlings. It also designed special metal covers to prevent snow from breaking the soft tips of the plants. Scientists determined the most promising native trees for planting and preserving biodiversity—Himalayan birch, oak, maple, spruce, and juniper, as well as other species. As a consequence, survival rates improved dramatically, and some plants have reached a height of two meters.[23]

The Paradise of Vrindavana. Vrindavan, the pastoral home of Lord Krishna in the Puranas, is the site of major environmental initiatives.[24] The International Society of Krishna Consciousness (ISKCON) is working with the World Wide Fund for Nature (WWF), Eco-corps, and Environ, a U.K.-based agency, to plant trees, clean the holy Yamuna River, and stop the dumping of toxic waste in the area. The World Vaisnava Association is actively involved in this project. The "patron saint," as it were, is Balarama, the elder brother of Krishna. Many of the unemployed young people now work with BAL (Balaram Eco Sena, or the Ecological Army of Balaram). Organizers have urged the local population to join the movement, telling them that Lord Balaram "is calling every one of us for Dham Seva (service to the holy land.)"[25] As we see in the story of Vrindavana, it is not just trees and groves but also the mighty rivers of India that are considered to be sacred.

Rivers: Physically Polluted Moral Purifiers

By bathing in the great rivers of India, one is said to be morally cleansed of sins *and* to acquire merit or auspiciousness. A story popular in oral tradition makes the point: A king goes to sleep

on the banks of the River Ganga. When he wakes up in the middle of the night, he sees some women covered in filth taking a dip in the holy river. They emerge from the river cleansed and then disappear. The king returns on several nights and sees the same thing. Eventually he asks them who they are; they reply that they are the embodiments of the rivers of India. Every day, they tell him, human beings bathe in the rivers and their sins are absolved by that act. The rivers—embodied as women—absorb the moral dirt and then come to the Ganga, the grand purifier, to purify themselves. Variations on the story describe where the Ganga goes to get herself purified, although it is generally assumed that she needs no purification.[26]

The generic version of the story distinguishes between two kinds of dirt. Moral dirt or sin, known as *papa* in Sanskrit, is perceptible as physical dirt in the bodies of the river. The story, therefore, makes a direct connection between morality and physical pollution. In addition to moral purity and physical purity, one may also note that in other Hindu contexts there is a third kind of purity: ritual purity.[27] Bathing in rivers and other bodies of water ritually purifies the pilgrim and his or her clothes. Ritual purity encompasses physical purity, but all that is physically clean is not ritually pure.[28] Even if a person is physically and ritually clean, the mere association with people and garb deemed ritually unclean or impure may be contagious enough to "pollute" him or her.

Given the pollution of India's rivers, the traditional story about the River Ganga and the need of other rivers to purify themselves in its waters is particularly poignant. Rapid industrialization has produced dangerous levels of toxic waste in many of India's rivers. The sacred rivers are often being used as latrines, despite the injunctions in the *dharma* texts against such a practice. The rivers that are to supposed to purify stand stagnant, reflecting the rancid countenance of *adharma,* unrighteous behavior.

Veer Bhadra Mishra, a priest and engineer, works to keep his "Mother Ganga" free from more pollution. A *mahant* (spiritual and administrative head) of the second-largest temple in Varanasi, he educates people on why and how the holy River Ganges should be kept free of bacterial pollution. He notes that corpses,

not quite burnt from the funeral pyre, are dropped into the Ganga. "These people," says Mishra bitterly, "are trying to kill my Mother."[29] Mishra avers that there is a saying that Ganges grants us salvation; he added: "this culture will end if the people stop going to the river, and if the culture dies, the tradition dies, and the faith dies." It has been observed that "Mishra's blend of culture tradition and faith with science and technology could be what ultimately saves the Ganges."[30]

Devotion and law have also come together in the saving of the Yamuna River. The Yamuna River is one of the most sacred in India, beloved for its close association with the life of Krishna. When Krishna was born, his father carried him across the river to a place of safety; growing up on the banks of this river, Krishna played with the cowherd girls and stole their clothes while they were bathing in the river. It was on the banks of the Yamuna that he played his magic flute and danced through the moonlit nights. And yet this is today one of the most polluted rivers in India, with tons of industrial dyes, sewage, and other pollutants being dumped into the sacred waters. Gopishwar Nath Chaturvedi, a traditional ritual leader for pilgrims and a resident of Mathura (the birthplace of Lord Krishna), has taken the lead in trying to save the river. Leading a group of pilgrims to the river for a ritual bath in 1985, he saw the water colored red and green from industrial dyes that had been dumped from the nearby mills. Dead fish covered the ground, and birds were picking at their flesh. This scene struck him as a desecration of his mother, the river Yamuna. Since then, Chaturvedi has been working to "save his mother" by filing several "Public Interest Litigation" (PIL) briefs in the Allahabad High Court. The legal counsel in these cases was M. C. Mehta, an attorney who has been at the forefront of cases dealing with the environment. After the court found in Sri Chaturvedi's favor, an Additional District Magistrate was appointed in Mathura to implement the court decision.[31]

One may also reflect briefly on the gender of the rivers. Though there are some exceptions, most of the rivers of India are considered to be female, while mountains are generally male. Rivers are perceived to be nurturing (and sometimes judgmental) mothers, feeding, nourishing, quenching, and when

angered flooding the earth. Rivers are also personified as deities; Ganga is sometimes portrayed as a consort of Lord Shiva. In the plains of Tamilnadu, Kaveri Amman (Mother Kaveri) is seen as a devotee and sometimes the consort of Lord Vishnu, and several temples (like Terazhundur, near Kumbakonam) have a striking image of this personified river in the innermost shrine. In the pre-eighth-century Vishnu temple at Tirucherai, a small village near Kumbakonam, the River Kaveri is seen as in a maternal posture with a child on her lap. When the Kaveri is swollen after the early monsoon rains, I have heard the residents of Srirangam (a large temple town on an island in the middle of the river) say she was pregnant. This is a wonderful celebration of her life-giving potential: the surging river, rich with the monsoon waters, sweeps into the plains, watering the newly planted crops in the Thanjavur delta, and giving birth to the food that will nourish the population. On the feast of *patinettam perukku,* the eighteenth day in the Tamil month of *Adi* (July 15–August 14), all those who live on the banks of Kaveri in the Tamilnadu celebrate the river's "pregnancy food cravings." They take a picnic to the banks of the river and eat there; Kaveri Amman is the guest at every picnic. Just as the food cravings of pregnant women are indulged by the family, Kaveri Amman's extended family celebrates her life-giving potential by picnicking with her. In some families, the oldest woman of the family "[leads] the festival and [throws] a handful of colored rices to satisfy the *macakkai* [food cravings during pregnancy] of the swiftly flowing Kaveri . . . as she hastened to the Lord's house."[32] According to oral tradition and local *sthala puranams* (pamphlets that glorify a sacred place), bathing in the river Kaveri during a specific month of the year (generally held to be the Tamil month of *Aippasi,* October 15–November 14) washes away one's sins and gives a human being supreme liberation. Thus, according to some Hindu traditions, only Lord Vishnu or Mother Kaveri can give one both nourishment and salvation.

Women and Ecology

The despoliation of rivers in recent years is sometimes compared to the denigration of women at various times in many

civilizations. In India, the situation is complicated; there have been powerful women whose names are known as poets, patrons, performers, and philosophers; on the other hand, there have also been some androcentric texts and practices in which the lot of women has not been good. Although one cannot make a general statement that women have been dominated by men in the history of the Hindu tradition and that this corresponds to man's domination of nature (as is seen in many ecofeminist studies), it is hard not to draw a comparison between the rivers and the plight of women who are the target of crimes of greed and power.

At the same time, a number of Indian women have become active around ecological issues. In many parts of India, women are involved in the Chipko movement, which promotes the protection of trees.[33] Women are also involved in communicating the tragedy of ecological disasters, sometimes using such art forms as Bharata Natyam, a traditional Indian dance. The theory and practice of classical dance in India (*natya shastra*) is seen as a religious activity. In other words, dance—indeed, most performing arts—is a path to salvation within some Hindu traditions. Mallika Sarabhai, a noted dancer and feminist communicator, presents the story of the Chipko (or "tree-hugging") movement in her dances entitled *Shakti: The Power of Women.*

Sujatha Vijayaraghavan's compositions on ecological themes are choreographed by Rhadha, a well-known dance teacher in Channai, and regularly performed by Suchitra Nitin and Sunanda Narayanan. One of Vijayaraghavan's pieces is particularly striking in this context. The song refers to a myth in which the God Shiva drank poison to save the universe. When the gods and the demons were churning the ocean of milk, using the serpent Vasuki as a rope, the snake spit out poisonous fumes, which overwhelmed the participants. Shiva saved them by consuming the poison and his neck turned blue. He is known as Nilakantha—the blue-throated one. The following song is set in the pattern of Karnatic music in the raga *Begada*:

> O Nilakantha, lord, come here!
> You have your work cut out for you;
> I understand you consumed poison that day,

but will it do just to sip
a tiny bit of poison in your palm?

We have spread potent poison
all over this earth,
the waters of the sea, the air, everywhere.
O Shiva, be a sport, O Shiva, be a sport
—if you suck this poison out
you too will turn blue all over like Vishnu![34]

Notice that the references here are not to philosophical texts, but to a story from the Puranas that many Hindus would know. The tone of the song is teasing—a mood adopted in many classical Bharata Natyam songs, in which the young girl flirts with a god, frequently in a romantic situation. Here, Shiva is told that the sipping of a little poison at the time that the cosmic ocean of milk was churned is not enough; he is to suck out the poison from the whole world. The traditional context is preserved, but the message has been modified to draw attention to the poison that we have spread through our earth, water, and air. The mythic context enables the writer to use the strong word "poison," rather than a more muted word like "pollution."

The audience for these ecologically aware dance recitals is diverse. It includes the very government workers, industrialists, and management executives who are responsible, either directly or indirectly, for regulating pollution. Mallika Sarabhai dances in urban and rural areas where she is able to get the attention of multiple audiences. A particular strength of dance as a medium is its subtlety: without being strident, the songs and expressions convey a message that lingers long after the performance is over. To a large extent, I would argue, the performance does the work that theological texts once did: that of reshaping and transforming attitudes and perspectives in the Hindu context.

Sathya Sai Baba and Clean Water Supply

Sathya Sai Baba is one of the most influential gurus in modern India. After he became aware that some parts of Rayalseema in Andhra Pradesh, India, had suffered drought conditions for

years, the guru announced in 1994 that a "Water Supply Project" would be undertaken by his Sathya Sai Central Trust. He drew the attention of the people and the prime minister to the forty-five-year-old water problem. Sai Baba clearly draws connections between the rivers, religion, and morality. He is quoted as saying: "Rivers are the gift of God. In rivers like the Krishna, the Godavari, a lot of water is allowed to flow into the sea. . . . If there is constraint of finance, I am prepared to meet the cost even if it is 100 or 200 crores [one crore is ten million] for fulfilling this dire need of the Rayalaseema people. The devotees are prepared to make any sacrifice but I have not stretched my hands to anyone."[35]

In attributing the lack of water to the decline of morality, Sai Baba also stated: "Water is getting scarcer every day. What is the reason? Because of the decline of morality among men, water is getting scarce in the world. For human life morality is the life breath. Morality makes humanness blossom. Because morals have been lost, water is getting scarce."[36]

The Water Project covers 20,000 square kilometers and includes 750 villages without water. Mobilizing his devotees and financial resources, Sai Baba has allegedly been able to increase the region's supply of safe drinking water. His devotees regard the project as a gesture of Sai Baba's "love and compassion"—as well as an implicit indictment of the government. Although the ecological impact of Sai Baba's activities can be debated, the power of the teacher is undisputable. Gurus like Sai Baba may ultimately have in their hands the power to change the behavior of devotees.

Limitations and Constraints

Some environmental philosophers have argued that Western religious traditions encourage dominion and control over nature, and thus bear a special burden of responsibility for the tragic state of our natural environment today. Such environmental philosophers sometimes turn to Eastern traditions to seek spiritual resources to help Westerners abjure and embrace eco-friendly policies. But if Eastern traditions, including Hinduism, are so eco-friendly, why do the countries in which these

religions have been practiced have such a lamentable record of ecological disasters and rampant industrialization?

The answers are, obviously, complex. Rich as the devotional and *dharmic* resources have proven in India, Hinduism can be a source of complacency as well. Some Hindu values may impede ecological activism. Moreover, for Hindus, some texts are more effective than others in inspiring action. Articles on environmental philosophy furthermore often assume that there is a direct link between Hindu worldviews and practice. But in fact, there are competing forces that determine behavior within the Hindu tradition. Recent academic scholarship tends to blame Western thought and actions for the devastation of land in Third World countries. J. Baird Callicott and Roger T. Ames have suggested that Western intellectual colonization is responsible for the failures we see in eastern and southern Asia.[37] This view is also held by some Indian authors, like Vandana Shiva, an important figure in India's environmental movement. In evaluating her position, however, Lance Nelson notes that she "focuses almost entirely on the West, and the Third World's experience of colonialism, modernization, modernist developmentalism, and so on, as the root of her country's environmental devastation. She thus tends to ignore the pre-colonial aspects of the problem. . . . She also tends to give idealized readings of the environmental implications of certain aspects of Hindu thought."[38]

The responsibility and blame, I believe, has to be spread around. There are passages and texts within the Hindu religious traditions that encourage the acquisition of wealth in certain contexts. One must keep in mind that in the Hindu hierarchy, Bhu-Devi/Prithvi (the Earth Goddess) is of less importance than Sri/Lakshmi, the goddess of wealth and good fortune. Lakshmi has traditionally had a far greater hold on people's faith and aspirations than the Earth Goddess, and the quest for wealth seems to be more intense than reverence for the earth. In a world where good fortune seems to depend on consumer spending and industrial growth, the Earth Goddess faces some very stiff competition.

There are other strands in Hindu religious traditions that have helped contribute to the current ecological crisis. One is

the Hindu conviction that rivers like Ganga are so inherently pure that nothing can pollute them.[39] Others have quite correctly pointed to the notion of sacred space as contributing to pollution. If certain spots like Vrindavana are inherently sacred and ought to be kept clean, one may pollute the "profane earth which is not sacred, which is not attached to Puranic or devotional narratives."[40]

And then there is the focus on "individuality" in some of the Hindu traditions. Anil Agarwal notes: "Hinduism's primary focus lies on the self, one's immediate family, and one's caste niche, to the neglect of the larger society and community. . . . Whereas the private sphere is carefully scripted in Hindu tradition, public life in India borders on and often descends into chaos. . . . A Hindu may go down to the Ganges River to purify himself or herself. The next moment, the same person will flush the toilet and discharge effluent into the very same sacred river. . . ."[41] While this is more true in some Hindu communities than others, the emphasis on the "self" has to be noted, at least in some traditions.

TEXTS ON *DHARMA* AND TEXTS ON THEOLOGY: BIMORPHIC WORLDVIEWS

Classical Hindu texts in the beginning of the Common Era enumerate the goals—or matters of value—of a human being. These are *dharma, artha* (wealth, power), *kama* (sensual pleasure), and *moksha* (liberation from the circle of life and death).[42] While *dharma,* wealth, and sensual pleasure are usually seen as this-worldly, *moksha* is liberation from this world and the repeated rebirths of a soul. There are texts that deal with *dharma,* wealth, sensual pleasure, and liberation. The multiple Hindu traditions do differ from other world religions in having this variety of goals and the array of texts that accompany them. This means that Hinduism presents adherents with several competing conceptual systems, intersecting but distinct.

The texts that deal with *moksha,* or liberation, are generally concerned with three issues: the nature of reality, including the supreme being and the human soul; the way to the supreme goal; and the nature of the supreme goal. Generally the nature

of reality is called *tattva* (truth) and corresponds with the term "theology." These texts do not focus much on ethics or righteous behavior in this world; that is the province of *dharma* texts.

The theological texts or sections that deal with *tattva* focus on weaning a human being from the earthly pursuit of happiness to what they consider to be the supreme goal of liberation (*moksha*) from this life. It is important to keep this taxonomy in mind, because theological doctrines that are oriented to liberation do not necessarily trickle down into *dharmic* or ethical injunctions; in many Hindu traditions, in fact, there is a disjunction between *dharma* and *moksha*.

Indeed, J. A. B. van Buitenen says that there is a fundamental opposition between them: "*Mokṣa,* 'release,' is release from the entire realm which is governed by *dharma*. . . . It stands, therefore, in opposition to *dharma*. . . . *Mokṣa,* however, is the abandonment of the established order, not in favor of anarchy, but in favor of a self-realization which is precluded in the realm of *dharma*."[43] While Daniel Ingalls disagrees on the sharp nature of the cleavage described by van Buitenen, he does acknowledge that "[a]lways there were some men, and a few of them among India's greatest religious leaders, who insisted on the contradiction between *dharma* and *moksha*."[44] *Dharma* texts promote righteous behavior on Earth, and *moksha* texts encourage one to be detached from such concerns. A few texts like the *Bhagavadgita* have tried to bridge *dharma* and *moksha* paradigms.

Thus, a theology that emphasizes the world as a body of God, a pervasive pan-Indian belief that Goddess Earth (Prithvi, Vasundhara, Bhu Devi) is also a consort of Vishnu, or the notion that the Mother Goddess (Amba, Durga) is synonymous with Nature (*prakriti*) does not necessarily translate to eco-friendly behavior. Likewise, renunciation, celibacy, and detachment are laudable virtues for one who seeks liberation from the cycle of life and death, but the texts on *dharma* say that begetting children is necessary for salvation. These bimorphic worldviews have to be kept in mind if we are to see the relevance for the Hindu traditions of Western viewpoints

such as deep ecology. On another front, the dissonance between *dharma* and *tattva/moksha* texts also accounts in part for the fact that while some Hindu traditions hold the Goddess to be supreme, women may not necessarily hold a high position in society.

It is quite correct to say that some theological/*tattva* texts speak of certain kinds of "oneness" of the universe and, in some cases, the "oneness" of all creation. Some, though not most, *tattva* texts speak of the absolute identity between the supreme being and the human soul (*atman*)—an identity that in fact transcends the concept of equality of many distinct souls. This philosophical system of nonduality is discussed by Western philosophers as an important resource in ecology. Eliot Deutsch writes, ". . . what does it mean to affirm continuity between man and the rest of life? Vedanta would maintain that this means the recognition that fundamentally all life is one, that in essence everything is reality, and that this oneness finds its natural expression in a reverence for all things."[45] The main thrust of the arguments made by Deutsch, Callicott, and others is to show that Hindu philosophy emphasizes that all creation is ultimately Brahman, or the supreme being, and therefore, if we hurt someone we hurt ourselves.

While the "oneness" doctrine and its ecological implications are underscored by Callicott, Lance Nelson has recently argued that the *advaita* ("non-dualism") conceptual system does *not* promote eco-friendly behavior.[46] Nelson shows how the doctrine developed by the Hindu philosopher Shankara (c. seventh century) actually *devalues* nature. He concludes that non-dualistic Vedanta philosophy "is not the kind of non-dualism that those searching for ecologically supportive modes of thought might wish it to be."[47]

The philosophies of Shankara and Ramanuja are relevant to those who seek liberation, but not to those seeking moral rules to govern everyday behavior. Hindu communities and customs are established not on the sense of oneness or equality found in *moksha*, but on many differences and hierarchies based on gender, caste, age, economic class, and so on. With all their limitations and richness, therefore, we have had to deal with

the texts, narratives, and traditions of *dharma* rather than the rule of *moksha* for actions leading to prosperity of the earth.

What I am urging is a shift in our perspective from the *tattva*/*moksha* texts to the resources that have a more direct relevance to worldly behavior. These are the popular practices embodied in the *dharmic* tradition and in the *bhakti*/devotional rituals. *Dharma* texts and narratives are in some ways like law codes in other countries: sometimes followed, sometimes flouted, sometimes ignored, sometimes evaded—and sometimes taken to heart as the right thing to do to maintain social stability. In addition to *dharma* texts, devotional (*bhakti*) exercises seem to be the greatest potential resource for ecological activists in India. As we have seen, devotion to Krishna or to Mother Ganga or Yamuna has impelled some people to take action to supply safe drinking water, plant and protect trees, and clean up rivers.

What can we learn from such success stories? Clearly, some Hindu texts, traditions, and rituals can inspire eco-friendly behavior. Narratives like the story of Shiva and Ganga, Parvati and the saplings seem to have more impact than talking about the universe as the body of God. The sanctity of rivers as Mother Goddesses has evoked great passion and inspired the cleaning up of the Ganga and Yamuna rivers; other rivers, one hopes, will be taken care of soon. Gurus and teachers can mobilize awareness and organize action, and these teachers may hold the key to avoiding ecological tragedy. It is when leaders, whether they are from the priestly families like Chaturvedi and Mishra, or gurus, or heads of environmental institutions like Dr. Purohit, team up with temples, scientists, and lawyers that Hindu ecological activists have the greatest potential for success.

Stories, gurus and goddesses, hagiographic literature, and *dharmic* models will all have to be pressed into service before we can make further progress. Prithvi Devi, or Mother Earth, can protect us if we protect her. If she is abused, she can transform herself from a nourishing mother into a wrathful deity.

One of the goals of the Hindu texts is to encourage human beings to seek enlightenment. Vairamuthu, a composer and

poet popular in South India, recently wrote a song on the beauty of a tree. In the last line, he urges us to have the right attitude toward the tree. Every tree, he says, is a Bodhi tree. The Buddha was enlightened under the Bodhi tree: now every tree in the world can enlighten us about the burden on Mother Earth.

ENDNOTES

[1]Some paragraphs in this essay appeared in an earlier paper of mine, "'One Tree is Equal to Ten Sons': Some Hindu Responses to the Problems of Ecology, Population and Consumption," *Journal of the American Academy of Religion* 65 (2) (June 1997): 291–332.

[2]Two of the most important books that have highlighted the many answers to this question are Lance Nelson, ed., *Purifying the Earthly Body of God: Religion and Ecology in Hindu India* (Albany, N.Y.: State University of New York Press, 1998) and Christopher Key Chapple and Mary Evelyn Tucker, eds., *Hinduism and Ecology: The Intersection of Earth, Sky and Water* (Cambridge: Center for the Study of World Religions, Harvard Divinity School, 2000). For an overview of early Indian literature, see Purushottama Bilimoria, "Environmental Ethics of Indian Religious Traditions," at <http://www.emory.edu/COLLEGE/RELIGION/faculty/bilimoria/paper.htm>.

[3]*Kurma Purana,* 1.27.16–57. Cornelia Dimmitt and J. A. B. van Buitenen, *Classical Hindu Mythology: A Reader in the Sanskrit Puranas* (Philadelphia: Temple University Press, 1978), 39.

[4]J. A. B. van Buitenen, trans., *The Mahabharata: The Book of the Forest* (Chicago: The University of Chicago Press, 1978), 586–589, 595–596; emphasis added.

[5]Richard Lariviere, "Justices and *Paṇḍitas*: Some Ironies in Contemporary Readings of the Hindu Legal Past," *Journal of Asian Studies* 48 (4) (1989): 757–769.

[6]Gerald J. Larson, "Conceptual Resources in South Asia for 'Environmental Ethics,'" in *Nature in Asian Traditions of Thought: Essays in Environmental Philosophy*, ed. J. Baird Callicott and Roger T. Ames (Albany, N.Y.: State University of New York Press, 1989), 267–277.

[7]For a typical hymn of this genre and its connection to environmental ethics, see O. P. Dwivedi, "Dharmic Ecology," in Chapple and Tucker, eds., *Hinduism and Ecology,* 10–11. Christopher Key Chapple summarizes the literature on ecology and the Vedas in his article "Towards an Indigenous Indian Environmentalism," in Nelson, ed., *Purifying the Earthly Body of God.*

[8]"Ahimsa paramo dharma" ("Nonviolence is the highest form of *dharma*" *Mahabharata*, Anusasana Parva 115.1.). "Lack of malice to all beings in

thought, word, and deed; this is the essence of the eternal faith." *Mahabharata*, Shanti Parva, quoted in Pandurang Vaman Kane, *History of Dharmaśāstra* (*Ancient and Mediaeval Religious and Civil Law*) (Poona, India: Bhandarkar Oriental Research Institute, 1958).

[9]*Manu Smriti,* 4:56.

[10]*Manu Smriti*, 2:17–23; adapted from Georg Buhler, *The Laws of Manu* (New Delhi: Motilal Banarsidass, 1964), 32–33.

[11]See David Kinsley, "Learning the Story of the Land: Reflections on the Liberating Power of Geography and Pilgrimage in the Hindu Tradition," in Nelson, ed., *Purifying the Earthly Body of God*, 225–246.

[12]See, for instance, Vandana Shiva, *Staying Alive: Women, Ecology and Survival in India* (New Delhi: Kali for Women), 1988, and Kapila Vatsyayan, *Prakriti: The Integral Vision,* 5 vols. (New Delhi: Indira Gandhi National Center for the Arts), 1995. For a revisionistic Tantric view, see Rita DasGupta Sherma, "Sacred Immanence: Reflections of Ecofeminism in Hindu Tantra," in Nelson, ed., *Purifying the Earthly Body of God,* 89–132.

[13]K. Seshagiri Rao, "The Five Great Elements (*Pañcamahābhūta*): An Ecological Perspective," in Chapple and Tucker, eds., *Hinduism and Ecology,* 23–38.

[14]John Carman, *The Theology of Ramanuja* (New Haven, Conn.: Yale University Press, 1974), 124–133.

[15]S. S. Raghavachar, trans., *Vedārtha Saṅgraha of Sri Rāmānujācārya* (Mysore: Sri Ramakrishna Ashram, 1968), 11, 13.

[16]Ibid., 14.

[17]*Matsya Puranam*, chap. 154, 506–512. Adapted from "A Taluqdar of Oudh," *Matsya Puranam*, pt. 2 (Allahabad: Surendra Natha Vasu of Bhuvaneswari Asrama, Bahadurganj, 1917).

[18]Kane, *History of Dharmaśāstra (Ancient and Mediaeval Religious and Civil Law),* vol. V, pt. 1, 415–416.

[19]Ibid., 415.

[20]Shamasastry, trans., Kautilya's *Arthasastra* (Mysore: Mysore Printing and Publishing House, 1967), 225.

[21]Choodie Shivaram, "Court Decree Retires Tirupati Temple's Hereditary Priests," *Hinduism Today* 18 (6) (1996): 1.

[22]Pamphlet of T. T. Devasthanam, n.d., available in the information office of T. T. Devasthanam. For general information see <http://www.tirumala.org/vana_schemes_p7htm>.

[23]Edwin Bernbaum, "Badrinath's Trees: Local Forests Being Restored as Pilgrims Now Plant Trees as Offering to God," *Hinduism Today*, May 1999, and at <http://www.hinduismtoday.com/1999/5/#gen382>. G. B. Pant Institute of Himalayan Environment and Development is located at Kosi-Kat Armal, Almora, Uttar Pradesh, India.

[24]For discussions on the involvement of the International Society of Krishna Consciousness with ecological schemes and the philosophical background, see Ranchor Prime, *Hinduism and Ecology: Seeds of Truth* (Delhi: Motilal Banarsidass, 1994), and Michael A. Cremo and Mukunda Goswami, *Divine Nature: A Spiritual Perspective on the Environmental Crisis* (Los Angeles: Bhaktivedanta Book Trust, 1995). The ecological efforts in Vrindavana and the textual sources that inspire such activities are also discussed in Bruce M. Sullivan's detailed article "Theology and Ecology at the Birthplace of Krsna," in Nelson, ed., *Purifying the Earthly Body of God*, 247–267.

[25]Swami BV Parivrajak, "Where is 'That' Vrindavan?" (15 January 1999) in VINA (Vaishnava Internet News Agency) at <http://www.vina.org/articles/where_is_that_vrindavan.html>.

[26]Professor Diana Eck, Harvard University, personal communication.

[27]Vasudha Narayanan, "The Two Levels of Auspiciousness in Srivaisnava Ritual and Literature," *Journal of Developing Societies* 1 (1) (1985): 57.

[28]Kelly D. Alley, "Idioms of Degeneracy: Assessing Ganga's Purity and Pollution," in Nelson, ed., *Purifying the Earthly Body of God.*

[29]Meenakshi Ganguly, "Veer Bhadra Mishra: Holy War for 'My Mother,'" *Time Magazine,* 2 August 1999, 81.

[30]Robert Sanders, "Saving the 'Mother of India': Berkeley Technology May Clean Up Ganges River," <http://www.berkeley.edu/news/berkeleyan/1998/1118/india.html>.

[31]I am indebted to David Haberman for this information. Professor Haberman's work on the Yamuna River will be published in his forthcoming book, *Yamuna: River of Love in an Age of Pollution.*

[32]V. Sadagopan, personal communication.

[33]Vandana Shiva, *Staying Alive: Women, Ecology, and Development* (London: Zed Books, 1988); J. Baird Callicott, *Earth's Insights: A Survey of Ecological Ethics from the Mediterranean Basin to the Australian Outback* (Berkeley, Calif.: University of California Press, 1994), 220–221; Bart Gruzalski, "The Chipko Movement: A Gandhian Approach to Ecological Sustainability and Liberation from Economic Colonisation," in *Ethical and Political Dilemmas of Modern India,* ed. Ninian Smart and Shivesh Thakur (New York: St. Martin's Press, 1993), 100–125. See also Mark Shepard, "'Hug the Trees!': Chandi Prasad Bhatt and the Chipko Movement," at <http://www.markshep.com/nonviolence/GT_Chipko.html>.

[34]Sujatha Vijayaraghavan, "Neelakanthare Varum Ayya," song in *Begada* raga, unpublished, personal communication.

[35]*Sanathana Sarathi*, December 1994, 323; quoted in "The Sathya Sai Water Project: The Acute Need for Water," at <http://members.aol.com/introsai/works/water.htm>.

[36]"The Sathya Sai Water Project," as above.

[37]J. Baird Callicott and Roger T. Ames, *Nature in Asian Traditions of Thought: Essays in Environmental Philosophy* (Albany, N.Y.: State University of New York Press, 1989), 281.

[38]Nelson, "The Dualism of Non-Dualism," in *Purifying the Earthly Body*, 82–83, n. 16.

[39]See the excellent article by Kelly Alley, "Idioms of Degeneracy: Assesing Ganga's Purity and Pollution," in Nelson, ed., *Purifying the Earthly Body of God*, 297–330.

[40]David Kinsley, "Learning the Story of the Land: Reflections on the Liberating Power of Geography and Pilgrimage in the Hindu Tradition," in Nelson, ed., *Purifying the Earthly Body of God,* 242.

[41]Anil Agarwal, "Can Hindu Beliefs and Values Help India Meet its Ecological Crisis?" in Chapple and Tucker, eds., *Hinduism and Ecology*, 174.

[42]Kane, *History of Dharmaśāstra (Ancient and Mediaeval Religious and Civil Law),* vol. II, pt. 1, 2d ed. (Poona, India: Bhandarkar Oriental Research Institute, 1974), 8–9.

[43]J. A. B. van Buitenen, "Dharma and Mokṣa," *Philosophy East and West: A Journal of Oriental and Comparative Thought* 7 (1) (1957): 33–40; 7 (2) (1957): 37.

[44]Ingalls, "Dharma and Mokṣa," in ibid., 48.

[45]Eliot Deutsch, quoted in J. Baird Callicott, *Earth's Insights: A Survey of Ecological Ethics from the Mediterranean Basin to the Australian Outback* (Berkeley: University of California Press, 1994), 49.

[46]Callicott, *Earth's Insights,* 50; Nelson, "The Dualism of Non-Dualism."

[47]Nelson, "The Dualism of Non-Dualism," 65.

Christopher Key Chapple

The Living Cosmos of Jainism: A Traditional Science Grounded in Environmental Ethics

IN THE ARISTOTELIAN SYSTEM of defining life, animals are grouped into genus and species. According to Aristotle, "Of animals, some resemble one another in all their parts, while others have parts wherein they differ. . . . By 'genus' I mean, for instance, Bird or Fish; for each of these is subject to difference in respect of its genus, and there are many species of fishes and of birds."[1] For several hundred pages, Aristotle goes on to describe the many particular varieties of animals, providing an encyclopedic collection of information.

Jainism views animals and life itself in an utterly different light, reflecting an indigenous Asian scientific analysis that yields a different definition of the soul, the human person, the structure of the cosmos, and ethics. This alternate vision of reality, as will be explained below, results in the perception of a living cosmos and inspires an ecologically sensitive response on the part of adherents to the Jaina faith.

This essay will focus on two primary aspects of Jaina teachings in light of two contemporary Western ecological thinkers.[2] The first is its unique cosmology, which will be compared to the cosmological insights of contemporary science as presented by Brian Swimme. The second is the Jaina assertion that the seemingly inert, nonsensate world abounds with sensuousness. The Jainas posit that all the myriad living beings, from a clod of dirt or a drop of water to animals and humans themselves, possess one commonality: the capacity for tactile experience. This "living world" perspective will be discussed in light of Thomas

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Berry's call for understanding the earth as a "communion of subjects, not a collection of objects." By animating the universe, the Jaina story of science lends itself to an enhanced personal concern for the larger environment or ecosystem.

The Jaina definition of life extends far beyond the standard dictionary usage of "that property of plants and animals which makes it possible for them to take in food, get energy from it, grow, adapt themselves to their surroundings, and reproduce their kind: it is the quality that distinguishes a living animal or plant from inorganic matter or a dead organism."[3] The Jaina religion holds that the manifold parts of the world, including the elements themselves, contain "touch, breath, life, and bodily strength."[4] This view can lead to a deeper appreciation of human reciprocity with the things of the world through the senses.

JAINA COSMOLOGY: A UNIVERSE PERMEATED WITH LIFE

Stories of cosmology ground the human person within the world. They explain the place of the individual within the larger context of social and physical realities. In ancient India, as articulated in the *Rgveda*, the person or *purusa* was regarded as a reflection of the world itself in its great immensity: eyes were said to correspond to the sun; the mind was correlated with the moon; breath with the wind; feet with the earth. This particular cosmology asserts a link between the microphase and the macrophase; by seeing the universe as reflective of and relating to body functions, one sees oneself not as an isolated unit but as part of a greater whole. The Jaina tradition developed a parallel story of the structure of the cosmos, complete with the image of a great female whose body symbolizes the entire system. However, whereas the texts of the early Vedic tradition remain somewhat vague about the place of individual life force in this process, Jainism develops an intricate accounting for the journey of each life force (soul or *jiva*), which is said to be eternal, not created by any deity, and ultimately responsible for its own destiny.

Jainism provides one of India's most thorough attempts to encapsulate a comprehensive worldview or cosmology that

integrates the place of the human person within the continuum of the universe. The philosopher Umasvati, who lived in the second or third century C.E., developed a cosmological system that is accepted by both major branches of Jainism, the Digambaras and the Svetamabaras. It attempts to explain the place of the human being in a great continuous reality. Jaina cosmology describes a storied universe in the shape of a female figure. The earthly realm or middle world (*manusya loka*) consists of three continents and two oceans. Animals, including humans, can be found there. Below the earth are seven hells. Above the earth, eight heavenly realms are arrayed. The ultimate pinnacle of the Jaina system, symbolized at the top of the head of the cosmic person, consists of the state of liberation, the *siddha loka*. Human beings who have successfully led a religious life achieve this through the release of all karmic bondage. One cannot attain this state from the heavenly or hellish realms; only through a human birth and a life lived well according to spiritual precepts can this final abode be gained.

According to Umasvati's *Tattvartha Sutra*, 8,400,000 different species of life exist.[5] These beings are part of a beginningless round of birth, life, death, and rebirth. Each living being houses a life force or *jiva* that occupies and enlivens the host environment. When the body dies, the *jiva* seeks out a new site depending upon the proclivities of karma generated and accrued during the previous lifetime. Depending upon one's actions, one can either ascend to a heavenly realm, take rebirth as a human, animal, elemental, or microbial form, or descend into one of the hells as a suffering human being or a particular animal, depending upon the offense committed.

The taxonomy of Jainism, which will be discussed in greater detail below, places life forms in a graded order starting with those beings that possess only touch, the foundational sense capacity that defines the presence of life. These include earth, water, fire, air bodies, microorganisms (*nigodha*), and plants. The next highest order introduces the sense of taste; worms, leeches, oysters, and snails occupy this phylum. Third-order life forms add the sense of smell, including most insects and spiders. Fourth-level beings, in addition to being able to touch, taste, and smell, also can see; these include butterflies, flies, and bees.

The fifth level introduces hearing and is further divided into categories of those nonsentient and sentient. Birds, reptiles, mammals, and humans dwell in this life realm.[6]

Jainism posits a cosmological view that at first glance seems similar to that put forth in Ptolemy's theory of the spheres and Dante's *Divine Comedy*. At the base of this cosmos can be found various regions of hell. In the central realm is the surface of the planet, on which reside the five elements (earth, water, fire, air, space), living beings, and humans. Above this realm extends a sequence of heavenly worlds. At the pinnacle of this cosmos exists a domain of liberated beings who have risen above the vicissitudes of repeated birth in the lower, middle, and higher realms. In spatial orientation and its theory of moral consequences, it seems to evoke Dante's system of hell, purgatory, and heaven. Depending on one's actions, one earns a berth in one of the three domains.

However, if we look more closely at this system, its theories of space, time, and matter are more subtle than may first seem apparent. First, Jainism identifies two primary categories of reality: living and nonliving. Living reality, or *jiva,* is broadly defined as dynamism and suffuses what in precontemporary physics would be considered inert. Each *jiva* is said to contain consciousness, energy, and bliss. Earth, water, fire, and air bodies (which comprise material objects such as wood or umbrellas or drops of water or flickers of flame or gusts of wind) all contain *jiva*, or individual bodies of life force. The category of nonliving "things" includes properties such as the flow of time and space and the binding of matter known as karma or *dravya* onto the *jiva*. The nature of this karma determines the course of one's embodiment and experience. Negative karma causes a downward movement, both in this present cycle of birth and death and in future births. Positive karma releases the negative, binding qualities of karma and allows for an ascent to higher realms, either as a more morally pure human being or as a god or goddess. Ultimately, the Jaina path of purification through its many strict ethical precepts may culminate in joining the realm of the perfected ones, the *siddhas*. These liberated souls have released themselves from all karma, particularly due

to their commitment to total harmlessness (*ahimsa*), and dwell in a state of eternal consciousness, energy, omniscience, and bliss.

In this cosmological system, one's station in life can be understood in terms of one's degree of effort in following ethically correct patterns of life as taught by the Jaina Tirthankaras, or spiritual leaders. The world of nature cannot be separated from the moral order; even a clod of earth exists as earth because it has earned its particular niche in the wider system of life processes. A human's experience includes prior births as various animals, microorganisms, elemental entities, and perhaps as a god or goddess. To see, recognize, and understand the world is to acknowledge one's past and potential future. Though the Jaina insistence on the uniqueness of each individual soul does not lend itself to an ultimate vision of interconnected monism, it nonetheless lays the foundation for seeing all beings other than oneself with an empathic eye. In past or future births, one could have been or could become a life form similar to any of those that surround one in the vast cosmos.

THE STORY OF CONTEMPORARY COSMOLOGY

The contemporary story of the universe as told by physicists and cosmologists is complex and varied, requiring an understanding of higher mathematics and a reliance on sophisticated instruments such as electron microscopes and telescopes that penetrate deep into distant galaxies. Though many interpreters of science such as Stephen Hawking and Carl Sagan have summarized various theories about the origins and structure of the universe, few have attempted to create a world of meaning from this raw data. However, Brian Swimme, a noted scientist, has attempted to make sense of the insights of modern physics and examine the implications of this newly discovered world order for human behavior.

In their observations of the behavior of matter and energy, planets and galaxies, Einstein and Hubble calculated that the universe flared into existence some fifteen billion years ago. From that time and point of origin, all things blasted away from one another. The stuff of stars continues to move apart and,

over the course of fifteen billion years, as-yet uncounted galaxies continue to move outward. Simultaneously, everything retains a part of the original being while it continues to move from the point of origin.

Furthermore, the space that separates all these discrete masses of atomic material continues to generate evanescent particulate matter that constantly emerges and then dissolves. Even empty space is not empty but carries what Swimme describes as the "all-nourishing abyss." As he describes it,

> The usual process is for particles to erupt in pairs that will quickly annihilate each other. Electrons and positrons, protons and antiprotons, all of these are flaring forth, and as quickly vanishing again. Such creative and destructive activity takes place everywhere and at all times throughout the universe. The ground of the universe then is an empty fullness, a fecund nothingness. Even though this discovery may be difficult if not impossible to visualize, we can nevertheless speak a deeper truth regarding the ground state of the universe. First of all it is not inert. The base of the universe is not a dead, bottom-of-the-barrel thing. The base of the universe seethes with creativity, so much so that physicists refer to the universe's ground state as 'space-time foam.'[7]

This account of the materiality of the cosmos abounds in mystery, unpredictability, and dynamism. Like the Jaina system of transmutation of life forms, this primal energy constantly seeks new expression.

Both the story of contemporary cosmology and that of Jainism allow for awe and respect for materiality. According to Swimme, our deadened view of the material has led to the blight of consumerism, in which ultimate meaning in life is mistakenly sought in the accumulation of things. This has resulted in lives of loneliness, depression, and alienation. He writes:

> Consumerism is based on the assumption that the universe is a collection of dead objects. It is for this reason that depression is a regular feature in every consumer society. When humans find themselves surrounded by nothing but objects, the response is always loneliness. . . .[8]

For Swimme, the remedy for this angst can be found in a rediscovery of awe through appreciation of the intricacy and

beauty of the material world, from the complexity of the meadow to the splendid grandeur of the Milky Way. Swimme writes:

> Each person *lives* in the center of the cosmos. Science is one of the careful and detailed methods by which the human mind came to grasp the fact of the universe's beginning, but the actual origin and birthplace is not a scientific idea; the actual origin of the universe is where you live your life. . . . "The center of the cosmos" refers to that place where the great birth of the universe happened at the beginning of time, but it also refers to the upwelling of the universe as river, as star, as raven, as you, the universe surging into existence anew.[9]

In this vision of the human place within the cosmos, each individual, each context holds ultimate meaning in its immediacy and its ongoing participation in the process of co-creation. As centers of creativity, all beings, all particles, play an important, integral role in the greater scheme of things. While retaining a unique and unencroachable perspective, each point of life holds a commonality with all others as a result of their shared moment of origin fifteen billion years ago.

In some ways, this vitalistic account of creation and reality bears similarities to the Jaina tradition, as well as notable differences. The fundamental disagreement lies in the premise that the world began in the single moment of the Big Bang or Flaring Forth.[10] Jainism, like Buddhism, asserts the eternality of the universe and rejects the notion of an initial creation moment. However, just as Swimme contends that the consumerist obsession with "dead" objects leads to depression, in Jainism the abuse and manipulation of materiality leads to a thickening of one's karmic bondage, guaranteeing a lower existence in this and future lives. Swimme suggests that the things of the world be regarded as a celebration of the originary moment of creation, that people turn their attention to the beauty and mystery of creation as an antidote to the trivialization of life brought about by advertisements and the accumulation of material goods. Jainism similarly asserts that things share a commonality in their aliveness, which must be acknowledged and protected. Through respect for life in all its forms, including microorganisms and the elements, one can ascend to a higher state of spiritual sensitivity.

Traditional Jaina cosmology and contemporary scientific accounts of the workings of the universe have implications for the development of ecological theory. Both systems place value on the natural order. Both systems have the potential to evoke the affective dimension of human responsiveness. Both systems develop an ethical view that calls for greater awareness of one's immediate ecological context. Swimme's system offers a prophetic critique of unbridled consumerism and its consequent trivialization and deadening of the material world. Jainism develops a specific code of behavior that seeks to respect the life force in its various forms, including its material manifestations.

Swimme's summary explanations of contemporary cosmology present the central notions of Hubble's cosmological discoveries in a succinct and poignant manner, not unlike the Sutra style employed by Umasvati to provide a Jaina account for the structure of reality. These two systems as presented by Swimme and Umasvati carry an inherent ethical and perhaps teleological message. Swimme explains the universe in an attempt to wrest humans from their blind allegiance to a numbing materialism that regards the things of the universe as dead and inert. Jainism explains the universe through a theology of spiritual liberation. Both provide an occasion to view the world as a living, dynamic process that, in the contemporary context of environmental degradation, requires protection and care. The particularities of Jaina biology might be used to enhance one's sense of the universe as a living process of multiple subjectivities rather than as a chaotic assemblage of inert materiality.

THE HIERARCHY OF LIFE IN JAINA TRADITION

The *Acaranga Sutra,* the earliest known Jaina text, describes a world suffused with life. In relating the life story of Mahavira, the twenty-fourth great teacher, or Tirthankara, who lived in the fourth or fifth century B.C.E., the text states that "Thoroughly knowing the earth-bodies and water-bodies, and fire-bodies and wind-bodies, the lichens, seeds, and sprouts, he comprehended that they are, if narrowly inspected, imbued with life."[11] From this perception of the vitality of all things as

articulated by Mahavira, Jainism developed an extensive theory of karma to account for the existence of various life forms. According to Jaina karma theory, each life form will eventually take on a new existence as part of the ongoing process of *samsara,* to be halted only when one, as a human being, attains spiritual liberation *(kevala*).

Mahavira laid out a series of rules to assist one along the path to liberation. These rules were designed to minimize and eliminate karma through a careful observance of nonviolent behavior. Mahavira instructs his monks and nuns to avoid harming life in its myriad forms through various methods. These include explicit instructions for when and what and how to eat; when and how to travel; where and when to defecate; and from whom to accept food, as well as lists of various activities, including attendance at wedding ceremonies, to be avoided.[12] All these rules, as well as the various preferred professions for laypersons, are to be observed in order to prevent harm to living beings. In fact, Mahavira even exhorts his monks and nuns not to gesture or point because "the deer, cattle, birds, snakes, animals living in water, on land, in the air might be disturbed or frightened, and strive to get to a fold or refuge, thinking 'the Sramana [monk] will harm me.'"[13] This profound respect for the natural world distinguishes Jainism among the world's religious traditions as potentially the most eco-friendly.

In the second part of the *Acaranga Sutra,* Mahavira addresses his monks and nuns on the topic of forest preservation. This brief meditative advice encapsulates what could be seen as a textual foundation for the development of an activist Jaina environmentalism. It also shows the timelessness of human greed and exploitation of the natural world. Mahavira tells the monks and nuns to "change their minds" about looking at big trees. He says that rather than seeing big trees as "fit for palaces, gates, houses, benches . . . , boats, buckets, stools, trays, ploughs, machines, wheels, seats, beds, cars, and sheds" they should speak of trees as "noble, high, round, with many branches, beautiful and magnificent."[14] This indicates that Mahavira regarded trees as inherently valuable for their beauty, strength, and magnificence and that he advised his followers to turn their

thoughts from materiality by reflecting on the greater beauty of sparing a tree from the woodsman's ax.

In later Jaina literature, various authors describe the living world with a great deal of care and precision. For instance, Santi Suri, a Svetambara Jaina writer of the eleventh century, provides elegant descriptions of living beings, beginning with the earth beings and concluding with various classes of deities and liberated souls. In the *Jiva Vicara Prakaranam,* a text of fifty verses, he lists types of life and frequency of appearance, and cites an approximate lifespan for each. For instance, he states that hardened rock can survive as a distinct life form for twenty-two thousand years; "water-bodied souls" for seven thousand years; wind bodies for three thousand years; trees for ten thousand years; and fire for three days and three nights.[15] Each of these forms demonstrates four characteristics: life, breath, bodily strength, and the sense of touch.[16]

The attention to detail given to the elemental realm of one-sensed beings distinguishes the medieval Jainas as closely observant scientists. Their descriptions include fundamental information regarding geology, meteorology, botany, and zoology. Santi Suri describes the one-sensed realm with great precision, extending from the earth through water and fire and air to the plant kingdom. For the *Prthivi Kayika Jivas,* or Earth Body Souls, he offers the following description:

> Crystalline quartz, jewels, gems, coral, vermilion, orpiment, realgar, mercury, gold, chalk, red soil, five-colored mica, hard earth, soda ash, miscellaneous stones, antimony, lava, salt, and sea-salt are the various forms taken by the earth-body souls.[17]

The numerous types of stone and soil listed indicate that the Jainas were keen observers of geological formations, careful to distinguish the characteristics of color, density, and hardness.

Santi Suri's descriptions of the various forms of water are similarly perspicuous, listing "underground water, rainwater, dew, ice, hail, water drops on green vegetables, and mist as the numerous varieties of Water-bodied Souls."[18] Santi Suri similarly provides an exhaustive list of various forms taken by Fire-bodied Souls: "Burning coals, flames, enflamed cow dung, fire reflected in the sky, sparks falling from a fire or from the sky,

shooting stars, and lightning constitute Agnikaya Jivas."[19] The various wind bodies are listed as follows: "Winds blowing up, winds blowing down, whirlwinds, wind coming from the mouth, melodious winds, dense winds, rarefied winds are the different varieties of Vayu Kayika Jivas."[20] Descriptions of various plant genres then follow, with precise detail given for plants with fragrance, hard fruits, soft fruits, bulbous roots, thorns, smooth leaves, creepers, and so forth. Lists are offered to restrict or endorse the use of specific plants, with special attention paid to avoiding undue harm to plants that harbor the potential for even greater production of life forms.

Two-sensed beings, possessing touch and taste, are said to live twelve years and include conches, cowries, gandolo worms, leeches, earthworms, timber worms, intestinal worms, red water insects, and white wood ants, among others.[21] Three-sensed beings live for forty-nine days and include centipedes, bedbugs, lice, black ants, white ants, crab-lice, and various other kinds of insects.[22] These beings add the sense of smell. Four-sensed beings, which add the sense of sight, live for six months[23] and include scorpions, cattle-bugs, drones, bees, locusts, flies, gnats, mosquitoes, moths, spiders, and grasshoppers.[24] At the top of this continuum reside the five-sensed beings, which add the sense of hearing and can be grouped into those that are deemed "mindless" and those who are considered to be sentient. This last group includes the denizens of hell, gods, and humans. Various life spans are cited for five-sensed beings, which Santi Suri describes in great detail: land-going, aquatic, sky-moving, and so forth. The detailed lists by Santi Suri and his later commentators present a comprehensive overview of life forms as seen through the prism of Jainism.

The Jaina worldview cannot be separated from the notion that the world contains feelings and that the earth feels and responds in kind to human presence. Not only do animals possess cognitive faculties including memories and emotions, but the very world that surrounds us can feel our presence. From the water we drink, to the air we inhale, to the chair that supports us, to the light that illumines our studies, all these entities feel us through the sense of touch, though we might often take for granted their caress and support and sustenance.

According to the Jaina tradition, humans, as living, sensate, thinking beings, have been given the special task and opportunity to cultivate increasingly rarefied states of awareness and ethical behavior to acknowledge that we live in a universe suffused with living, breathing, conscious beings that warrant our recognition and respect.

Various authors within the Western biological, philosophical, and psychological disciplines have similarly argued for the possibility that animals possess cognition and that the world itself cannot be separated from our cognition of it. Few have committed themselves to the very radical Jaina notion that the elements possess consciousness, though some environmental thinkers (such as Christopher Stone) have argued for the legal standing of trees. But, as discussed in the following section, Thomas Berry has argued that a heightened responsiveness to the earth is essential for the full development of human consciousness.

THE NEW STORY OF THOMAS BERRY: A CALL FOR SENSITIVITY TO LIFE

Thomas Berry has advocated the telling of a new story that allows us to reinhabit the earth with a greater awareness of the fragile balance of life systems. He writes:

> The human species has emerged within this complex of life communities; it has survived and developed through participation in the functioning of these communities at their most basic level. Out of this interaction have come our distinctive human cultures. But while at an early period we were aware of our dependence on the integral functioning of these surrounding communities, this awareness faded as we learned, through our scientific and technological skills, to manipulate the community functioning to our own advantage. This manipulation has brought about a disruption of the entire complex of life systems. The florescence that distinguished these communities in the past is now severely diminished. A degradation of the natural world has taken place.[25]

Berry suggests that, with the waning of traditional creation stories and functional cosmologies, we must develop a new story that can effectively replace them and introduce a new

integrated worldview. This worldview must account for the workings of the universe, inspire awe at its grandeur, and prompt the earth's citizens into an appropriate response to enhance the sustainability of the earth. Drawing from the pioneering insights of the Jesuit geologist and theologian Pierre Teilhard de Chardin, Berry suggests an embrace of the cosmological story emerging from the new science. In his focus on the notion of a fixed point of creation and his orientation toward an almost eschatological prophetic voice, Berry's work seems well grounded in the Jewish/Christian/Islamic tradition. Yet in other ways, it is similar to and clearly informed by various aspects of Asian, African, and tribal traditions.

For the past twenty years, Thomas Berry has written and lectured on the topic of the emerging ecozoic age. Taking note of the tremendous harm caused to the environment during the twentieth century, he observes that we have lost touch with the natural world, that we have become callous toward the magnificent universe that supports and nurtures us. During a plenary address to the American Academy of Religion in 1993, Berry stated:

> We hardly live in a universe at all. We live in a city or nation, in an economic system, or in a cultural tradition. We are seldom aware of any sympathetic relation with the natural world about us. We live in a world of objects, not in a world of subjects. We isolated ourselves from contact with the natural world except in so far as we enjoy it or have command over it. The natural world is not associated with the very meaning of life itself. It is little wonder that we have devastated the planet so extensively.[26]

The causes of the rift between humans and nature are numerous, layered, and storied. As noted by Lynn White, the religious traditions of the West find their roots in an entrenched anthropocentricism that places emphasis on dominion over nature. As Berry has written, the concern with redemption in Western religious traditions leaves little room for an appreciation of the natural world, which is seen as subsidiary to the interests of human comfort. The exploitive mentality of New World settlement, the rise of industrialization in the eighteenth century, and the explosion of consumerism and technology in

the twentieth century propelled the human into a new relationship with nature. Berry writes:

> Here it is necessary to note that planet Earth will never again in the future function in the manner that it has functioned in the past. Until the present the magnificence splashed throughout the vast realms of space, the luxuriance of the tropical rainforests, the movement of the great whales through the sea, the autumn color of the eastern woodlands; all this and so much else came into being entirely apart from any human design or deed. We did not even exist when all this came to be. But now, in the foreseeable future, almost nothing will happen that we will not be involved in. We cannot make a blade of grass, but there is liable not to be a blade of grass unless we accept it, protect it, and foster it.[27]

We have entered into a new phase of Earth-human relations, wherein the human effectively has conquered nature. The now submissive earth relies upon the human for its continuance. The earth has been bruised by the abundance of radioactive waste and the ever-present threat of nuclear conflagration. The sky has been fouled with emissions from automobiles and factories. Human and industrial waste have polluted our rivers and lakes. Life itself has become imperiled.

As this separation takes place, humans lose their intimacy with the natural world and themselves. With this loss of intimacy comes a deadening indifference to the natural world, which results in further exploitation and destruction. To reverse this process, one needs to recapture a sense of beauty and appreciation for the natural world, a sense of the wholly real materiality of things, not for the sake of consumption and manipulation, but for the very being indicated by its presence.

In an earlier study, I explored a comparative analysis between Gaia theory and the Jaina theory of the all-pervasiveness of eternal *jiva*.[28] David Abram, alluding to Gaia theory, similarly suggests that the living-ness of things as articulated by the philosopher Merleau-Ponty in fact has a scientific basis:

> We have at least come to realize that neither the soils, the oceans, nor the atmosphere can be comprehended without taking into account the participation of innumerable organisms, from the lichens that crumble rocks, and the bacterial entities that decompose organic detritus, to all the respiring plants and animals

> exchanging vital gases with the air. The notion of earthly nature as a densely interconnected organic network—a "biospheric web" wherein each entity draws its specific character from its relations direct and indirect, to all the others—has today become commonplace. . . .[29]

Whether seen as a continuity of interchangeable life forms or as a succession of discrete incarnations, the weblike nature of both contemporary biology and traditional Jaina cosmology merits our attention. Both views require us to see the world as a living, breathing, sensuous reality, from its elemental building blocks of earth, water, fire, and air, through its microbial expressions, right up to its array of complex insects and mammals, including primates. In the Jaina tradition, this has led to a careful observance of the principle of nonviolence (*ahimsa*). In the world of contemporary ethics, it has led to the introduction of animal-rights language, the argument for legal standing for trees, and most recently the Great Ape Project, which advocates that full rights be accorded to chimpanzees, gorillas, and other high-functioning primates.

CONCLUSION

Thomas Berry and Brian Swimme propose a new story based on scientific explanations regarding the origin and nature of the universe. In part, this approach depends on a starting point (the Flaring Forth or Big Bang) and the idea of an implied if not explicit sense of teleology. The Jaina system does not include a fixed origin point in either assumed fact or metaphor, but rather assumes the eternality of the world. It will not work as a conventional story, since it has no defined beginning, middle, or probable end. Rather, the Jaina system seeks to sacralize all aspects of worldly existence. By seeing all that surrounds us as suffused with life and worthy of worship, Jainism offers a different sort of picture, one that decentralizes and universalizes ethics, thus taking away overly anthropocentric concerns, and brings into vivid relief the urgency of life in its various elemental, vegetative, and animal forms. The key to Jainism might well be its evocation of immediacy and care, rather than any narrative myth or set of externally imposed ethical values.

At first glance, the Jaina tradition might seem to be inherently ecologically friendly. It emphasizes *ahimsa* (nonviolence). It reveres all forms of life. It requires its adherents to engage only in certain types of livelihood, presumably based on the principle of *ahimsa*. Jainism's earth-friendly attitudes have been celebrated in L. M. Singhvi's *Jain Declaration on Nature,* in Michael Tobias's video *Ahimsa* and its companion volume, *Life Force*, in the proceedings of the Ladnun conference on Ecology and Jainism, and in my own book *Nonviolence to Animals, Earth, and Self in Asian Traditions*. However, if we look at the ultimate intention of the Jaina faith as well as the actual practices of some Jaina business enterprises, we might detect a need for the sort of in-depth critical analysis that Thomas Berry has proposed. For instance, Jainas have long avoided using animal products in their many business operations; lists of "green-friendly" materials could be developed by Jainas to be used in manufacturing processes. The Jaina programs of environmental education could be expanded to prepare future leaders to be more familiar with environmental issues. Jainas could actively support air-pollution reduction initiatives by making certain that their own automobiles in India conform to legal standards.

In some respects, however, environmental activism can win a secondary place at best in the practice of the Jaina faith. The observance of *ahimsa* must be regarded as ancillary to the goal of final liberation, or *kevala*. Ultimate meaning is not found in the perfection of nonviolent (in this case eco-friendly) behavior but in the extirpation of all fettering karma. Although the resultant lifestyle for monks and nuns resembles or approximates an environmentally friendly ideal, its pursuit focuses on personal, spiritual advancement, not on a holistic vision of the interrelatedness of life. In terms of the lifestyle of the Jaina layperson, certain practices such as vegetarianism, periodic fasting, and eschewal of militarism might be seen as eco-friendly. However, some professions adopted by the Jainas as a result of their religious commitment to refrain from harming all but one-sensed beings might in fact be environmentally disastrous, such as strip-mining for granite or marble, unless habitat restoration accompanies the mining process. Likewise, how many Jaina industries contribute to air pollution or forest destruction or

result in water pollution? The development of a Jaina ecological business ethic would require extensive reflection and restructuring.

As Thomas Berry has noted, the task of ecological repair requires an ongoing dialogue between the political, economic, scientific, and religious communities. Adherents of Jainism, given their ethic of nonviolence and their deep involvement with the governmental structures of India and the business community worldwide, are well positioned to initiate such a dialogue. The story of human superiority over nature has been told throughout the world, even by the Jainas who seek to rise above nature. And this story has been realized, as seen in the success of consumer culture worldwide. Native habitats continue to be destroyed as industrialization expands. As this happens, entire species of animals, insects, and plants disappear, never to return. Yet humans proliferate, taking up more space worldwide with their houses and condominiums and farmland, encroaching on and destroying the wild, isolating humans within fabricated landscapes that separate the human from the pulse of nonhuman life.

A shift in consciousness must take place that values life in its myriad forms. Telling a different story may help in bringing about this shift. The cosmological views of Jainism, the insights of contemporary science, and the growing perception of the beauty and fragility of the natural order all can contribute to this essential change in perspective.

ENDNOTES

[1]Jonathan Barnes, ed., *The Complete Works of Aristotle* (Princeton, N.J.: Princeton University Press, 1984), 774.

[2]A fuller version of this essay will appear in *Jainism and Ecology*, edited by the author, to be published by the Center for the Study of World Religions, Harvard Divinity School.

[3]Victoria Neufeldt, ed., *Webster's New World Dictionary* (New York: Webster's New World, 1988), 846.

[4]Santi Suri, *Jiva Vicara Prakaranam along with Pathaka Ratnakara's Commentary,* ed. Muni Ratna-Prabha Vijaya, trans. Jayant P. Thaker (Madras: Jain Mission Society, 1950), 163; hereafter abbreviated as *JVP*.

[5]Umasvati, *That Which Is (Tattvartha Sutra): A Classic Jain Manual for Understanding the True Nature of Reality,* trans. Nathmal Tatia (San Francisco: HarperCollins, 1994), 53.

[6]Ibid., 45–46.

[7]Brian Swimme, *The Hidden Heart of the Cosmos: Humanity and the New Story* (Maryknoll, New York: Orbis Books, 1996), 93.

[8]Ibid., 33.

[9]Ibid., 112.

[10]See Brian Swimme and Thomas Berry, *The Universe Story: From the Primordial Flaring Forth to the Ecozoic Era: A Celebration of the Unfolding of the Cosmos* (San Francisco: HarperSanFrancisco, 1992).

[11]*Jaina Sutras, Part I: The Akaranga Sutra, The Kalpa Sutra,* trans. Hermann Jacobi (New York: Dover, 1968; 1st ed., 1884), I:8.I.11–12; hereafter abbreviated as *AS.*

[12]See R. Williams, *Jaina Yoga: A Survey of the Mediaeval Sravakacaras* (London: Oxford University Press, 1964).

[13]*AS,* II:3.III.3.

[14]*AS,* II.4.2.11–12.

[15]*JVP,* 34.

[16]Ibid., 163.

[17]Ibid., 24.

[18]Ibid., 26.

[19]Ibid., 28.

[20]Ibid., 33.

[21]Ibid., 66.

[22]Ibid., 69–70.

[23]Ibid., 144.

[24]Ibid., 71.

[25]Thomas Berry, *The Dream of the Earth* (San Francisco: Sierra Club Books, 1988), 164.

[26]Thomas Berry, "Religion in the Ecozoic Era," plenary address to the American Academy of Religion, Washington, D.C., 1993, 2.

[27]Ibid., 18.

[28]Christopher Key Chapple, *Nonviolence to Animals, Earth, and Self in Asian Traditions* (Albany, N.Y.: State University of New York Press, 1993), chap. 4.

[29]David Abram, *The Spell of the Sensuous: Perception and Language in a More-Than-Human World* (New York: Pantheon Books, 1996), 85.

Donald K. Swearer

Principles and Poetry, Places and Stories: The Resources of Buddhist Ecology

THE WORLD'S RELIGIOUS AND SPIRITUAL traditions are a rich source of ethical values and principles for reflecting on environmental issues. Both religious adherents and scholars who are concerned about the environmental crisis are mining religious traditions in search of new ethical resources. Religious scriptures, doctrines, and practices have been invoked to promote a holistic, nonanthropocentric, egalitarian, eco-friendly worldview respectful of nature and compassionate to all forms of life. While these kinds of resources are crucial, I propose to include in my discussion of Buddhist ecology not only particular texts, philosophical ideas, and practices that Buddhists marshal in defense of an environmental ethic, but also hermeneutical and tactical strategies that Buddhists employ as well. In adopting this approach my concern is practical: I want to ensure that the religious dimensions of global environmental issues really do have an impact on decision-making, and that these essays have real implications for public policy.[1]

The contextuality of religious traditions must be kept in mind. Since there is no such thing as religion in general, the resources religionists bring to an environmental ethic may speak most powerfully to adherents of a given religious tradition or those inhabiting a specific social and cultural context. But those of us engaged in the religion and ecology movement also believe that particular traditions may embody principles and practices of more general applicability.

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PRINCIPLES: A HOLISTIC WORLDVIEW

Despite significant variations among the different traditions of Buddhism that have evolved over its 2,500-year journey throughout Asia and now to the West, Buddhists generally see the world as conjoined on four levels: existentially, morally, cosmologically, and ontologically. Existentially, Buddhists affirm that all sentient beings share the fundamental conditions of birth, suffering, old age, and death. The existential realization of the universality of suffering lies at the core of the Buddha's teaching. Insight into the nature of suffering, its cause and cessation, and the path to the cessation of suffering constitutes the essence of the Buddha's enlightenment experience (*Mahasacakka Sutta, Majjihma Nikaya*). This quadratic teaching forms the basis of the Four Noble Truths, the Buddha's first public teaching. The tradition conveys this universal truth via the story of the founder's path to Nirvana and the logic of the Four Noble Truths, but also by other narrative strategies. In one story, the Buddha is approached by a young mother after the death of her infant child. She pleads with the Blessed One to restore the life of her child. The Buddha responds by directing the grieving mother to bring a mustard seed from a house in the village where death had never been experienced; if she finds such a seed, he will restore her child's life. The mother returns to the Buddha, not with the mustard seed, but having realized the universality of the suffering caused by death. The poignant story of a mother's grief over the death of her child speaks to the heart; the syllogistic logic of the Four Noble Truths speaks to the mind.

Buddhism links the existential condition of the universality of suffering with the moral virtue of compassion. That the Buddha after his enlightenment decides to share his existential insight into the cause of suffering and the path to its cessation, rather than selfishly keeping this insight to himself, is regarded by the tradition as an act of universal compassion. Buddhist environmentalists assert that the mindful awareness of the universality of suffering produces compassionate empathy for all forms of life, particularly for all sentient species. They interpret the *Dhammapada*'s ethical injunction not to do evil but to do good as a moral principle advocating the nonviolent alleviation of

suffering, an ideal embodied in the prayer of universal loving-kindness that concludes many Buddhist rituals: "May all beings be free from enmity; may all beings be free from injury; may all beings be free from suffering; may all beings be happy." Out of a concern for the whole of creation, Buddhist environmentalists extend loving-kindness, compassion, and respect beyond people and animals to include plants and the earth itself: "We humans think we are smart, but an orchid . . . knows how to produce noble, symmetrical flowers, and a snail knows how to make a beautiful, well-proportioned shell. We should bow deeply before the orchid and the snail and join our palms reverently before the monarch butterfly and the magnolia tree."[2]

The concepts of *karma* and rebirth (*samsara*) integrate the existential sense of a shared common condition of all sentient life forms with the moral nature of the Buddhist cosmology. Not unlike the biological sciences, rebirth links human and animal species. Evolution maps commonalties and differences between species on the basis of physical and genetic traits; rebirth maps them on moral grounds. Every form of sentient life participates in a karmic continuum traditionally divided into three world-levels and a hierarchical taxonomy of five or six life forms. Although this continuum constitutes a moral hierarchy, differences between life forms and individuals are relative, not absolute. Traditional Buddhism may rank humans over animals, animals over hungry ghosts, men over women, monks over the laity, but all forms of karmically conditioned life—human, animal, divine, demonic—are interrelated within contingent, samsaric time: "In the long course of rebirth there is not one among living beings with form who has not been mother, father, brother, sister, son, or daughter, or some other relative. Being connected with the process of taking birth, one is kin to all wild and domestic animals, birds, and beings born from the womb" (*Lankavatara Sutra*). Nirvana, the Buddhist *summum bonum*, offers the promise of transforming karmic conditionedness into an unconditioned state of spiritual liberation, an emancipation potentially available to all forms of sentient life on the karmic continuum. That plants and trees or the land itself have a similar potential for spiritual liberation became an explicit doctrine in Chinese and Japanese Buddhism, but may even have

been part of popular Buddhist belief from earliest times. In sum, Buddhists believe that all life forms share both a problem and a promise: "*bodhisattvas* each of these, I call the large trees" (*Lotus Sutra)*.

Although the Buddhist doctrines of *karma* and rebirth link together all forms of sentient existence in a moral continuum, Buddhist ethics focus on human agency and its consequences. The inclusion of plants and animals in Buddhist schemes of salvation is important philosophically because it attributes inherent value to nonhuman forms of life. But humans have been the primary agents in creating the present ecological crisis and will bear the major responsibility for its solution.

The myth of origins in the canon of Theravada Buddhism describes the deleterious impact of human activity on the primordial natural landscape (*Agganna Sutta*). Unlike the Garden of Eden story in the Hebrew Bible, where human agency centers on the God-human relationship, the Buddhist story of origin describes the negative impact of humans on the earth as a result of their selfishness and greed. In the Buddhist mythological Eden, the earth flourishes naturally. But human greed and desire lead to division and ownership of the land, and this in turn promotes violent conflict, destruction, and chaos. It is human agency in the Buddhist myth of origin that destroys the natural order of things. Although change is inherent in nature, Buddhists believe that natural processes are directly affected by human morality. From the Buddhist perspective, our relationship to the natural environment is intrinsically moral: hence, an environmental policy based primarily on a utilitarian cost-benefit analysis cannot possibly be sufficient. Moral issues like greed and violence must be at the heart of the matter.

The Buddha's enlightenment vision incorporates the major elements of the Buddhist worldview. Tradition records that during the night of this defining experience the Blessed One first recalled his previous lives within the karmic continuum; then he perceived the fate of all sentient beings within the cosmic hierarchy; finally he fathomed the nature of suffering and formulated the path to its cessation, articulating the Four Noble Truths and the law of interdependent co-arising. The Buddha's

awakening evolved in a specific sequence: from an understanding of the *particular* (his personal karmic history), to the *general* (the karmic history of humankind), and finally to the *principle* underlying the cause and cessation of suffering. Subsequently, this principle was further generalized as a *universal law of causality*: "on the arising of this, that arises; on the cessation of this, that ceases." Buddhist environmentalists find in the principle of causal interdependence a vision that integrates all aspects of the ecosphere—particular individuals and general species—in terms of the principle of mutual codependence. The three stages of the Buddha's enlightenment suggest a model for moral reasoning applicable to environmental ethics that integrates general principles, collective action guides, and particular contexts. Effective schemes of distributive justice require that general principles, such as those embodied in the proposed international Earth Charter, be realized in enforceable programs, properly tailored for particular regions and nation-states.

In the Buddhist cosmological model, individual entities are by their very nature relational. There is no autonomous self that is set against the "other," be that other human, animal, or plant. Buddhist environmentalists reject the domination of one human over another and the human domination of nature, promoting instead an ethic of compassion that respects biodiversity. In the view of the Thai monk Buddhadasa Bhikkhu, "The entire cosmos is a cooperative. The sun, the moon, and the stars live together as a cooperative. The same is true for humans and animals, trees, and the earth. When we realize that the world is a mutual, interdependent, cooperative enterprise . . . then we can build a noble environment. If our lives are not based on this truth, then we shall perish."[3] Global warming presents a case in point. The scientific community has reached a consensus that human activity has been a major cause of the dramatic increase in the production of greenhouse gases. The long-term consequences of the resultant global warming are ominous. Yet short-term economic gain, from the production of fuel inefficient SUVs to the U.S. refusal to join with 178 other nations in support of the Kyoto Protocol, threaten the long-term future of

the planet. Buddhadasa sees the root of the problem in human greed but holds the optimistic view that it is not too late to build a noble world based on mutual respect and cooperation.

In later schools of Buddhist thought the cosmological vision of interdependent causality evolved into a more substantive sense of ontological unity. Metaphorically, the image of Indra's net found in the Hua-yen (Japanese, Kegon) tradition's *Avatamsaka Sutra* has been especially important in Buddhist ecological discussions: "Just as the nature of earth is one while beings each live separately, and the earth has no thought of oneness or difference, so is the truth of all the Buddhas." For Gary Snyder, the Hua-yen image of the universe—as a vast web of many-sided jewels, each constituted by the reflections of all the other jewels in the web, and each jewel being the image of the entire universe—evokes a world of interlinked ecological communities.[4] Buddhist environmentalists argue, furthermore, that ontological notions such as Buddha-nature or *Dharma*-nature provide a basis for unifying all existent entities in a common sacred universe even though the tradition privileges human life vis-à-vis spiritual realization. For T'ien-t'ai monks in eighth-century China, the belief in a universal Buddha-nature blurred the distinction between sentient and nonsentient life forms, and logically led to the view that plants, trees, and the earth itself could achieve enlightenment. Kukai (774–835), the founder of the Japanese Shingon school, and Dogen (1200–1253), the founder of the Soto Zen sect, described universal Buddha-nature in naturalistic terms: "If plants and trees were devoid of Buddhahood, waves would then be without humidity" (Kukai); "The sutras [i.e., the *dharma*] are the entire universe, mountains and rivers and the great wide earth, plants and trees" (Dogen). Buddhist environmentalists cite Dogen's view as support for the preservation of species biodiversity—a view that ascribes intrinsic value to all species while at the same time affirming their shared *dharmic* nature.

For Buddhists the principle of interdependence authenticated by the Buddha is a universal, natural law expressed through the narrative of the Buddha's own Nirvana and his teaching. As we have seen, Buddhist scriptures and other texts include the hermeneutical strategies of metaphor, story, and discursive logic to

promote and provoke an understanding of this truth. Throughout Buddhist history poetry has also been an important literary tool for conveying the truth of the interdependence of humans and nature. The *Therigatha*, an early Pali Sutta, extols nature's beauty:

> Those rocky heights with hue of dark blue clouds
> Where lies embossed many a shining lake
> Of crystal-clear, cool waters, and whose slopes
> The herds of Indra cover and bedeck
> Those are the hills wherein my soul delights.

East Asian traditions under the influence of Daoism best represent this tradition, however, as in the poetry of the early-ninth-century Chinese Buddhist poet and layman, Han-shan:

> As for me, I delight in the everyday Way
> Among mist-wrapped vines and rocky caves
> Here in the wilderness I am completely free
> With my friends, the white clouds, idling forever
> There are roads, but they do not reach the world
> Since I am mindless, who can rouse my thoughts?
> On a bed of stone I sit, alone in the night
> While the round moon climbs up Cold Mountain.

These poems see nature as a source of inspiration for the human spirit to reach beyond an instrumental attitude toward the environment.

AN ECOLOGY OF HUMAN FLOURISHING

Buddhism arose in north India in the fifth century B.C.E. at a time when the region was undergoing a process of urbanization and political centralization accompanied by commercial development and the formation of artisan and merchant classes. The creation of towns and the expansion of an agrarian economy led to the clearing of forests and other tracts of uninhabited land. These changes influenced early Buddhism in several ways. Indic Buddhism was certainly not biocentric, and the strong naturalistic sentiments that infused Buddhism in China, Korea, and Japan appear to have been absent from early monastic Buddhism, although naturalism played a role in popular piety.

Nonetheless, the natural world was central to the Indic Buddhist conception of human flourishing—perhaps, in part, because of the urbanizing environment in which it was born. While nature as a value in and of itself may not have played a major role in the development of early Buddhist thought and practice, it was always one key component of the tradition's account of the preconditions for human flourishing.

Even though the picture of the Buddha seated under the tree of enlightenment traditionally has not been interpreted as a paradigm for ecological thinking, today's Buddhist environmental activists point out that the decisive events in the Buddha's life occurred in natural settings: the Buddha Gotama was born, attained enlightenment, and died under trees. The textual record, furthermore, testifies to the importance of forests, not only as an environment preferred for spiritual practices such as meditation, but also as a place where the laity sought instruction.

Historically in Asia and today in the West, Buddhists have situated centers of practice and teaching in forests and among mountains at some remove from the hustle and bustle of urban life. The Buddha's own example provides the original impetus for such locations: "Seeking the supreme state of sublime peace, I wandered . . . until . . . I saw a delightful stretch of land and a lovely woodland grove, and a clear flowing river with a delightful forest so I sat down thinking, 'Indeed, this is an appropriate place to strive for the ultimate realization of . . . Nirvana'" (*Ariyapariyesana Sutta, Majjhima Nikaya*).

Lavish patronage and the traffic of pilgrims often complicated and compromised the solitude and simple life of forest monasteries. But forests, rivers, and mountains remain an important factor in Buddhist accounts of human flourishing. Recall, for example, the Zen description of enlightenment wherein natural phenomena such as rivers and mountains are perceived as loci of the sacred, as in Zen Master Dogen's *Mountains and Water Sutra*. Although religious practitioners often tested their spiritual mettle in wild nature, most preferred an artfully organized representation of nature, such as that found in the gardens of many Japanese Zen monasteries. Buddhadasa Bhikkhu called his forest monastery in south Thailand the Garden of Empowering Liberation: "The deep sense of calm that nature

provides through separation from the stress that plagues us in the day-to-day world protects our heart and mind. The lessons nature teaches us lead to a new birth beyond suffering caused by our acquisitive self-preoccupation."[5]

For Buddhist environmentalists, centers like Buddhadasa's Garden of Empowering Liberation exemplify a sustainable lifestyle grounded in the values of moderation, simplicity, and nonacquisitiveness. Technology alone cannot solve the eco-crisis; it requires a transformation of values and of lifestyle. The Summer 1996 issue of *Dædalus* takes its title from Jesse H. Ausubel's lead essay, "The Liberation of the Environment." Ausubel concludes his analysis of trajectories, strategies, and technologies that lessen pollution and conserve landscape with the ringing affirmation, "We have liberated ourselves from the environment. Now it is time to liberate the environment itself." Buddhadasa's model of the Garden of Empowering Liberation brings an ethico-spiritual critique to the confident vision that at long last science and technology will be able to reconcile our economy and the natural environment. There are more profoundly moral and spiritual issues at stake; without this realization debates about environmental protection will be fraught with a limited, instrumentalist myopia.

Buddhadasa intended the Garden of Empowering Liberation not as a retreat from the world, but as a place where all forms of life—humans, animals, and plants—live as a cooperative microcosm of a larger ecosystem. The ecological ethic exemplified by the Garden of Empowering Liberation highlights the virtues of restraint, simplicity, loving-kindness, compassion, equanimity, patience, wisdom, nonviolence, and generosity. These virtues represent moral ideals for all members of the Buddhist community—monk, layperson, political leader, ordinary citizen, male, female. Political leaders committed to defending the security of the nation are admonished to adhere to the ideal of nonviolence. King Asoka, the model Buddhist ruler, is eulogized for his rejection of animal sacrifice and his protection of animals, as well as for building hospices and other public works. The Buddhist ethic of distributive justice extols the merchant who generously provides for the needy. Even ordinary Thai rice farmers traditionally left a portion of rice unhar-

vested in their fields for the benefit of the poor and for hungry herbivores.

For contemporary engaged Buddhists—most notably the Dalai Lama—a sense of responsibility rooted in compassion lies at the heart of an ecological ethic: "The world grows smaller and smaller more and more interdependent . . . today more than ever before life must be characterized by a sense of universal responsibility, not only . . . human to human but also human to other forms of life."[6] The Dalai Lama's ecological ethic gives contemporary expression to a classical Buddhist moral sentiment phrased most eloquently by the eighth-century Indian poet-monk, Santideva:

> May I be the doctor and the medicine
> And may I be the nurse
> For all sick beings in the world
> Until everyone is healed
> May I become an inexhaustible treasure
> For those who are poor and destitute
> May I turn into all things they could need.

For many Buddhist environmentalists, compassion necessarily results from an understanding of all life forms as mutually interdependent. Others argue that a mere cognitive recognition of interdependence is a necessary but not a sufficient condition for an ecological ethic. These critics emphasize the centrality of practice in Buddhism and uphold the tradition's insistence on training in virtue and the threefold path to moral and spiritual excellence—morality, mindful awareness, wisdom. Among contemporary engaged Buddhists, the Vietnamese monk Thich Nhat Hanh is the most insistent on the practice of mindful awareness in the development of a peaceful and sustainable world where one perceives the fundamental interconnectedness of life and a feeling of identification with all life forms:

> *Look deeply*: I arrive in every second
> to be a bud on a spring branch
> to be a tiny bird, with wings still fragile
> learning to sing in my new nest
> to be a caterpillar in the heart of a flower
> to be a jewel hiding itself in a stone

I am the mayfly metamorphosing on the surface of the river
and I am the bird which, when spring comes
arrives in time to eat the mayfly
I am the child in Uganda, all skin and bones
my legs as thin as bamboo sticks
and I am the arms merchant
selling deadly weapons to Uganda
I am the twelve-year-old girl, refugee on a small boat
who throws herself into the ocean after being raped by a sea pirate
and I am the pirate, my heart not yet capable of seeing and loving
Please call me by my true names
so I can wake up
and so the door of my heart can be left open, the door of compassion.[7]

Critics of the ethical saliency of the traditional Buddhist vision of human flourishing argue that such central philosophical concepts as not-self (*anatman*) and emptiness (*shunyata*) undermine the distinction between self and other, a distinction essential to an other-regarding ethic. What reason is there to pass laws that protect the civil rights of minorities or animal species threatened with extinction if Buddhism rejects the independent reality of individuals as an epistemological fiction? Furthermore, critics point out that the most basic concepts of Buddhism—Nirvana, suffering, rebirth, not-self, and even causality—were intended to further the goal of the individual's spiritual quest rather than engagement with the world. They conclude, therefore, that Buddhism serves primarily a salvific or soteriological purpose, and that contemporary efforts to use the tradition for ecological aims distorts the historical and philosophical record.

A related but more sympathetic criticism from within the Buddhist environmental movement suggests that for Buddhism to be an effective force for systemic institutional change, the traditional Buddhist emphasis on individual moral and spiritual transformation must be adjusted to address forcefully the structures of oppression, exploitation, and environmental degrada-

tion. While preserving the unique Buddhist emphasis on the practice of mindful awareness and a personal lifestyle of simplicity, today's engaged Buddhist activists are also confronting head-on a host of international issues, ranging from the disposal of nuclear waste to a just and peaceful resolution of the Chinese occupation of Tibet. The most internationally visible leaders of this movement are the Dalai Lama and Thich Nhat Hanh, but they are joined by many others from around the globe, including Sulak Sivaraksa, A. T. Ariyaratna, Joanna Macy, and Kenneth Kraft.

Buddhist environmentalists believe that their tradition brings to the debates about the global environment an ethic of social and environmental responsibility more compatible with the language of compassion than the rhetoric of rights. Furthermore, they argue, the attempt to apply Buddhist insights to a broad ecology of human flourishing represents the tradition at its best, by elaborating a creative, dynamic response to a contemporary problem.

STORIES AND PLACES: DOI SUTHEP IN NORTHERN THAILAND[8]

I began this essay by referring to the contextual nature of religion and the distinctive hermeneutical and tactical strategies religions can bring to the development of an environmental ethic. The texts, doctrines, and practices that inform a holistic ecological worldview and vision of human flourishing are necessarily part of this discussion; however, since religious traditions are culturally and historically situated, their relevance to specific environmental challenges demands that particular cases also be brought into the discussion. In daily life religions combine with other cultural variables to form a unified story that integrates the work of culture with nature. Environmental writers from Aldo Leopold (*Sand County Almanac*) to Barry Lopez (*Arctic Dreams),* Terry Tempest Williams (*Refuge*), and John Elder (*Reading the Mountains of Home*) tell their experiences of particular places to make a general point regarding the intrinsic value of the natural environment, a land ethic, and the interrelationship between the human story and nature. In concluding this essay, I have chosen to relate my experience of a particular

place—Doi Suthep, a sacred mountain in the Chiang Mai valley of northern Thailand—to show that the work of culture and nature are interdependent; that this interdependence is important to the integrity of both; and that it has helped to preserve the natural environment against the pressures of tourism and economic exploitation.

From January through September of 1994, I lived at the foot of Doi Suthep, a mountain that overlooks Chiang Mai, Thailand's second largest city, a modern, bustling, increasingly crowded metropolis. Every day I saw the mountain from my study window, observed it on the way to my office at Chiang Mai University, and frequently visited the Buddhist temple at its summit. The face of the mountain constantly changed. In the hot months of March and April, the parched hillsides were often veiled in a brown haze consisting of dust and smoke from seasonal burning. After the monsoon rains, the mountain appeared with sharp, verdant clarity. At night, the temple lights twinkled brightly, while during the day wispy white clouds often encircled the peak. Doi Suthep proved to be a virtual kaleidoscope of shapes and colors, sights and sounds. The many faces the mountain displayed during the months I was her neighbor became a metaphor for Doi Suthep as a document into which human meanings and ideologies are read.

Rising 1,050 meters above sea level, the environs of Doi Suthep were first inhabited by the Lawa, a Mon-Khmer group that lived in the area prior to the major Tai migrations into northern Thailand in the twelfth and thirteenth centuries. From the time King Mengrai established Chiang Mai as his capital in 1292, the city has dominated northern Thailand. Physically, the mountain has served as an orientation point for the valley's inhabitants; ecologically, its watershed sustains an ever-growing population and its forest cover houses an impressive diversity of flora and fauna that includes over 253 species of orchids, 320 species of birds, 50 species of mammals, and more than 500 species of butterflies. New species of plants and animals are regularly discovered on Doi Suthep. Near its summit stands Wat Phrathat Doi Suthep, one of the most revered Buddhist sanctuaries in mainland Southeast Asia. A summer palace was built for the country's reigning monarch on Doi Pui, a neighbor-

ing peak, and both the temple-monastery and the royal palace now lie within the Doi Suthep-Pui National Park, which comprises 162 square kilometers.

Mountains in the Doi Suthep range loom large in the legends and myths of the area. The valley's inhabitants are protected by the guardian spirits of the Lawa, Phu Sae and Ya Sae, who reside on the mountains and who are placated and honored by an annual buffalo sacrifice. An ancient burial mound on Doi Pui's summit is reputed to contain the remains of the Lawa chieftain, Vilangkha. According to legend, he was an unsuccessful suitor of Queen Cama, who ruled the Mon city of Haripuñjaya in the ninth century, four hundred years prior to the Tai subjugation of the area by Mengrai. The mountain takes its name from the legendary hermit sage Vasudeva, the son of Phu Sae and Ya Sae, a major figure in northern legends who is linked to the founding of Haripuñjaya. It was Vasudeva who arranged for Queen Cama to come to northern Thailand from Lavapura, modern Lopburi. Devotees continue to make offerings to Vasudeva's spirit at a cave on the mountain's western slope where the ascetic is thought to have lived.

Of surpassing historical and cultural significance, however, is Wat Phrathat, the Buddhist temple-monastery near Doi Suthep's summit. Here myth and legend become history. Tradition has it that the sanctuary was established in the fourteenth century to house a Buddha relic brought by the monk Sumana Thera from the Thai kingdom of Sukhothai to Chiang Mai at the request of its ruler, Ku'ena (1355–1385). According to legend, upon its arrival the relic miraculously divided itself. King Ku'ena enshrined half of the relic at the royal Flower Garden Monastery (Wat Suan Dok) located in Chiang Mai city. The other half was placed on the back of an elephant to be enshrined wherever the animal was led by the gods, suggesting that supernatural forces determined its location on the mountain. These stories illustrate the rich Lawa, Mon, and Tai cultural map that overlays Doi Suthep's imposing physical topography.

The contemporary social and cultural significance of Doi Suthep as a sacred mountain became clear in 1986 during a controversy over the proposed construction of an electric cable car from the base of the mountain to the temple-monastery at

the summit. The cable car, endorsed by the Tourist Organization of Thailand, would accommodate the ever-increasing number of tourists who flock to Thailand's northern mountains. Long gone are the days when pilgrimage to the summit was on foot. But the two-lane road to the sanctuary constructed under the inspired leadership of the charismatic monk Khruba Siwijai had itself become part of the mountain's legendary history. It is one thing for a narrow road to meander up the mountain; for a commercial company to build a cable car is another matter. Environmentalists, university professors, students, and ordinary citizens united in protest. A key element of the protest to block the cable car was the role played by Buddhist monks, especially Bodhiramsi, the assistant ecclesiastical governor of the province of Chiang Mai and one of the most highly respected abbots in the city. Niranam Khorabhatham's letter in the *Bangkok Post* of April 30, 1986, illustrates not only the tenor of the protestors' rhetoric but also their reverence for the mountain:

> SIR: The manager of the proposed cable car project on Doi Suthep, Chiang Mai, stated that he was "not overlooking the sanctity of Wat Phrathat" (*Postbag,* March 14). He underestimates the northern people: The Soul of Lanna [northern Thailand] is still alive. Northerners perceive, at least in their subconscious, that Mount Suthep is like a symbolic stupa. Doi Suthep's dome-like shape is like an immense replica of the ancient Sanchi style stupa, a gift to Lanna by the Powers of Creation. Stupas are reliquaries of saints. More than that, they are a structural representation of the very essence of Buddhism. Plant and animal life are like Nature's frescoes, both beautifying and exemplifying the Law [*dharma*] not less than paintings in any man-made shrine. Although sometimes not being able to explain why rationally, the northern people want to preserve the Stupa Doi Suthep as it was given to them by Creation, as untouched as possible, as sacred.[9]

PLACE, STORY, AND PRINCIPLE

The pressures to develop Doi Suthep for its commercial value to the tourism industry threaten the mountain's natural environment and its spiritual integrity. The fact that the mountain

is perceived by northern Thais as a sacred landscape was a major factor in challenging both private and government intentions to build a cable car to its summit. While the place that Doi Suthep holds in the cultural imagination of northern Thais is unique to that particular place, the story of the mountain from its legendary origin to today suggests a more general truth, namely, that narratives of place can make a crucial contribution to environmental ethics. Indeed, when it comes to inspiring concrete action, such stories may be decisive, for they have the power to touch the deepest sensibilities of our personal and social identity. Ongoing narratives that connect myth and history, past and present, humans and nature give an environmental ethic a multivalent inclusiveness it otherwise lacks. The Doi Suthep episode, furthermore, can also be read from the perspective of the Buddhist principle of interdependence, the truth at the very core of the Buddhist worldview. It is this reading with which I bring this discussion of Buddhist ecological strategies to a close.

The stories of the Lawa chieftain Vilangkha, the ascetic Vasudeva, and the miraculous Buddha relic that was enshrined in two places tell of a symbiotic relationship between the mountain and the city. Whether one draws a relationship of dynamic tension between the two, as symbolized by Vilankha, who was rejected by Queen Cama; a collaborative one, as illustrated by Vasudeva, the mountain ascetic who founded the first city in northern Thailand; or a relationship of substantive interconnection, as suggested by the Buddha relic enshrined in the city and on the mountain—the kingdoms of Haripuñjaya and Chiang Mai derive their meaning not in isolation, but in relationship to the mountain. Mountain and *muang*, the Thai term for city, are inextricably bound together. Their fates are mutually interdependent. Those who fought the cable car project perceive the natural environment of the mountain as a unique locus of the sacred, essential to the identity of the *muang*.

In 1986, northern Thai Buddhists saw a threat to Doi Suthep as a threat to their own well-being. Donald Brown, in this issue of *Dædalus*, correctly suggests that ascribing an intrinsic rather than an instrumental value to nature is the cornerstone of an environmental ethic. But it is also true that an environmental

ethic depends on understanding that we as human beings are inextricably linked to nature, and that human flourishing depends on whether, as Buddhadasa has said, "we can listen to the voice of trees, grass, sand, and dirt and hear the sound of the *dharma*." If, as Lee Schipper suggests in the Summer 1996 issue of *Dædalus,* the achievement of ten thousand years of human history is that we have again become cave dwellers but with electronic gadgets, then we will have sacrificed more than nature; we will have sacrificed our humanity.

ENDNOTES

[1]This essay is adapted and enlarged from Donald K. Swearer, "Buddhism and Ecology: Challenge and Promise," *Earth Ethics* 10 (1) (Fall 1998): 19–22. © 1998 by the Center for Respect of Life and Environment.

[2]Thich Nhat Hanh, "The Sun My Heart," in *Dharma Rain: Sources of Buddhist Environmentalism*, ed. Stephanie Kaza and Kenneth Kraft (Boston: Shambala Publications, 2000), 85.

[3]Buddhadasa Bhikkhu, *Phutasasanik Kap Kan Anurak Thamachat* (Buddhists and the Care for Nature) (Bangkok: Komol Thimthong Foundation, 1990), 35; translation by the author.

[4]David Landis Barnhill, "Great Earth *Sangha:* Gary Snyder's View of Nature as Community," in *Buddhism and Ecology: The Interconnection of Dharma and Deeds,* ed. Mary Evelyn Tucker and Duncan Ryuken Williams (Cambridge, Mass.: Center for the Study of World Religions, Harvard Divinity School, 1997), 187–218.

[5]Buddhadasa Bhikkhu, *Siang Takon Jak Thamachat* (Shouts from Nature) (Bangkok: Sublime Life Mission, 1971), 6; translation by the author.

[6]Nancy Nash, "The Buddhist Perception of Nature Project," in *Buddhist Perspectives on the Ecocrisis*, ed. Klas Sandell, in *The Wheel,* vol. 18 (Kandy, Sri Lanka: Buddhist Publication Society, 1987), 73.

[7]Thich Nhat Hanh, "Please Call Me By My True Names," in Hanh, *Being Peace* (Berkeley: Parallax Press, 1984), 63–64.

[8]The author wishes to thank Swarthmore College, the John Simon Guggenheim Foundation, and the National Endowment for the Humanities for support of his research on sacred mountain traditions in Southeast Asia.

[9]*Bangkok Post,* 30 April 1986, 5.

Delusion is seeing all things from the perspective of the self. Enlightenment is seeing the self from the perspective of the myriad things of the universe.

—Dogen, Genjo koan, in *Shobogenzo,* 77

If trees and plants are to attain enlightenment, Why not those who are endowed with feelings? . . . If plants and trees were devoid of Buddhahood, Waves would then be without humidity.

—Kukai, "On the Meanings of the Word Hum" (*Unji gi*)

Tu Weiming

The Ecological Turn in New Confucian Humanism: Implications for China and the World

TODAY VIRTUALLY ALL AXIAL-AGE CIVILIZATIONS are going through their own distinctive forms of transformation in response to the multiple challenges of modernity.[1] One of the most crucial questions they face is what wisdom they can offer to reorient the human developmental trajectory of the modern world in light of the growing environmental crisis.

China and the Confucian tradition face an especially significant challenge given the size of China's population and the scale of her current efforts at modernization. A radical rethinking of Confucian humanism began in the late nineteenth and early twentieth centuries, when China was engulfed in an unprecedented radical social disintegration as the result of foreign invasion and domestic dissension. In the late twentieth century, this reformulation continued in the "New Confucian movement" led by concerned intellectuals, some of whom left mainland China for Taiwan and Hong Kong when communism was established as the ruling ideology in the People's Republic in 1949.

In the last twenty-five years, three leading New Confucian thinkers in Taiwan, mainland China, and Hong Kong independently concluded that the most significant contribution the Confucian tradition can offer the global community is the idea of the "unity of Heaven and Humanity" (*tianrenheyi*), a unity that Confucians believe also embraces Earth. I have described

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this vision as an anthropocosmic worldview, in which the human is embedded in the cosmic order, rather than an anthropocentric worldview, in which the human is alienated, either by choice or by default, from the natural world.[2] By identifying the comprehensive unity of Heaven, Earth, and Humanity as a critical contribution to the modern world, these three key figures in New Confucian thought signaled the movement toward both retrieval and reappropriation of Confucian ideas. Speaking as public intellectuals concerned about the direction of the modern world, each of the three key thinkers articulated this idea of unity in a distinctive way.

Qian Mu (1895–1990) of Taiwan characterized the unity as a mutuality between the human heart-mind and the Way of Heaven.[3] Tang Junyi (1909–1978) of Hong Kong emphasized "immanent transcendence": we can apprehend the Mandate of Heaven by understanding our heart-and-mind; thus, the transcendence of Heaven is immanent in the communal and critical self-consciousness of human beings as a whole.[4] Similarly, Feng Youlan (1895–1990) of Beijing rejected his previous commitment to the Marxist notion of struggle and stressed the value of harmony not only in the human world, but also in the relationship between humans and nature.[5] Since all three thinkers articulated their final positions toward the end of their lives, the unity of Heaven, Earth, and Humanity sums up the wisdom of these elders in the Sinic world. I would like to suggest that this New Confucian idea of cosmic unity marks an ecological turn of profound importance for China and the world.

AN ECOLOGICAL TURN

Qian Mu called this new realization a major breakthrough in his thinking. When his wife and students raised doubts about the novelty of his insight—the idea of unity between Heaven and Humanity is centuries old—Qian, already in his nineties, emphatically responded that his understanding was not a reiteration of conventional wisdom, but a personal enlightenment, thoroughly original and totally novel.[6] His fascination with the idea of mutuality between the human heart-and-mind and the Way of Heaven, and his assertion that this idea is a unique

Chinese contribution to the world, attracted the attention of several leading intellectuals in cultural China.[7]

Tang Junyi, on the other hand, presented his view from a comparative civilizational perspective. He contrasted Confucian self-cultivation with Greek, Christian, and Buddhist spiritual exercises, and concluded that Confucianism's commitment to the world combined with its profound reverence for Heaven offered a unique contribution to human flourishing in the modern world. The Confucian worldview, rooted in earth, body, family, and community, is not "adjustment to the world,"[8] submission to the status quo, or passive acceptance of the physical, biological, social, and political constraints of the human condition. Rather, it is dictated by an ethic of responsibility informed by a transcendent vision. We do not become "spiritual" by departing from or transcending above our earth, body, family, and community, but by working through them. Indeed, our daily life is not merely secular but a response to a cosmological decree. Since the Mandate of Heaven that enjoins us to take part in the great enterprise of cosmic transformation is implicit in our nature, we are Heaven's partners. In Tang's graphic description, the ultimate goal of being human is to enable the "Heavenly virtue" (*tiande*) to flow through us. His project of reconstructing the secular humanist spirit is, therefore, predicated on an anthropocosmic vision.[9]

Feng Youlan's radical reversal of his earlier position is an implicit critique of Mao Zedong's thoughts on struggle and the human capacity to conquer nature. His return to the philosophy of harmony of Zhang Zai (1020–1077) signaled a departure from his Marxist phase and a re-presentation of Confucian ideas he had first developed in the 1940s, prior to the founding of the People's Republic of China. The opening lines in Zhang Zai's "Western Inscription" state:

> Heaven is my father and Earth is my mother, and even such a small creature as I finds an intimate place in their midst.
>
> Therefore that which fills the universe I regard as my body and that which directs the universe I consider as my nature.
>
> All people are my brothers and sisters, and all things are my companions.[10]

The "Western Inscription" can be regarded as a core Neo-Confucian text in articulating the anthropocosmic vision of the unity of Heaven, Earth, and Humanity. Accordingly, Feng characterizes the highest stage of human self-realization as the embodiment of the "spirit of Heaven and Earth."[11]

A significant aspect of Qian, Tang, and Feng's ecological turn was their effort to retrieve the spiritual resources of the classical and Neo-Confucian heritages. In the sixteenth century, for example, Wang Yangming (1472–1529) offered in his "Inquiry on the Great Learning" an elegant interpretation of Confucian thought, one with rich implications for modern ecological thinking:

> The great man regards Heaven and Earth and the myriad things as one body. He regards the world as one family and the country as one person. As to those who make a cleavage between objects and distinguish between self and others, they are small men. That the great man can regard Heaven, Earth, and the myriad things as one body is not because he deliberately wants to do so, but because it is natural to the humane nature of his mind that he do so.[12]

By emphasizing the "humane nature of the mind" as the reason that the great person can embody the universe in his sensitivity, Wang made the ontological assertion that the ability to strike a sympathetic resonance with Heaven, Earth, and the myriad things is a defining characteristic of being human.

To demonstrate that this is indeed the case, he offered a series of concrete examples:

> When we see a child about to fall into the well, we cannot help a feeling of alarm and commiseration. This shows that our humanity (*ren*) forms one body with the child. It may be objected that the child belongs to the same species. Again, when we observe the pitiful cries and frightened appearances of birds and animals about to be slaughtered, we cannot help feeling an "inability to bear" their suffering. This shows that our humanity forms one body with birds and animals. It may be objected that birds and animals are sentient beings as we are. But when we see plants broken and destroyed, we cannot help a feeling of pity. This shows that our humanity forms one body with plants. It may be said that plants are living things as we are. Yet even when we see tiles and stones

> shattered and crushed, we cannot help a feeling of regret. This shows that our humanity forms one body with tiles and stones.[13]

These examples clearly indicate that "forming one body" entails not the romantic ideal of unity, but rather a highly differentiated understanding of interconnectedness.

Neo-Confucian thinkers like Wang deeply influenced Qian, Tang, and Feng. The efforts of the latter group to employ Confucian ideas to enunciate their final positions may seem to be a matter of personal style. Yet all three were obviously convinced that their cherished tradition had a message for the emerging global village; they delivered it in the most appropriate way they knew. Their use of a prophetic voice suggests that their Confucian message was addressed not only to a Chinese audience but also to the human community as a whole. They did not wish merely to honor their ancestors but also to show that they cared for the well-being of future generations.

Were they even conscious of the ecological implications of their final positions? In the last decades of the twentieth century, Taiwan, Hong Kong, and even mainland China were all marching toward Western-style forms of social organization. Modernization was the most powerful ideology in China. By challenging China's traditional agriculture-based economy, family-centered social structure, and paternalist government, industrialization seemed to seal the fate of Confucianism as no longer relevant to the vital concerns of the contemporary world.[14] Perhaps Qian, Tang, and Feng were nostalgic for the kind of "universal brotherhood" or "unity of all things" that Max Weber and others have supposed must disappear in a disenchanted modern world. However, while traces of romantic longing can be seen in their writings, all three discovered a new vitality in the Confucian tradition. In order to appreciate properly what these men accomplished, it will be useful to recall the broad historical context in which they worked.

HOLISTIC CONFUCIAN HUMANISM

Prior to the impact of the modern West, Confucian humanism largely defined political ideology, social ethics, and family val-

ues in East Asia. Since the East Asian educated elite were all well versed in the Confucian classics, what the three contemporary thinkers advocated as a unique Confucian contribution to the human community was, in fact, a spiritual orientation once widely shared in China, Vietnam, Korea, and Japan. The famous "eight steps" in the first chapter of the *Great Learning* provide a glimpse of what Confucian humanism purported to be:

> The ancients who wished to illuminate their "illuminating virtue" to all under Heaven first governed their states. Wishing to govern their states, they first regulated their families. Wishing to regulate their families, they first cultivated their personal lives. Wishing to cultivate their personal lives, they first rectified their hearts and minds. Wishing to rectify their hearts and minds, they first authenticated their intentions. Wishing to authenticate their intentions, they first refined their knowledge. The refinement of knowledge lay in the study of things. For only when things are studied is knowledge refined; only when knowledge is refined are intentions authentic; only when intentions are authentic are hearts and minds rectified; only when hearts and minds are rectified are personal lives cultivated; only when personal lives are cultivated are families regulated; only when families are regulated are states governed; only when states are governed is there peace all under Heaven. Therefore, from the Son of Heaven to the common people, all, without exception, must take self-cultivation as the root.[15]

This holistic vision of a peaceful world rests on a carefully integrated program of personal self-cultivation, harmonized family life, and well-ordered states. At the heart of this vision is a sense that "home" implies not only the human community, but also the natural world and the larger cosmos. Speaking directly to the above passage, Wm. Theodore de Bary has observed, "Chinese and Confucian culture, traditionally, was about settled communities living on the land, nourishing themselves and the land. It is this natural, organic process that Confucian self-cultivation draws upon for all its analogies and metaphors."[16] He noted that the farmer poet Wendell Berry made the Confucian point: "[H]ome and family are central, and we cannot hope to do anything about the environment that does not first establish the home—not just the self and family—as the home base for our efforts." De Bary concluded that:

> If we have to live in a much larger world, because ecological problems can only be managed on a global scale, the infrastructure between home locality and state (national or international) is also vital. But without home, we have nothing for the infrastructure, much less the superstructure, to rest on. This is the message of Wendell Berry; and also the lesson of Confucian and Chinese history.[17]

The human in this worldview is an active participant in the cosmic process with the responsibility of care for the environment. Thus in the classical period of Confucianism we see a holistic humanism expressed in the *Great Learning*. Furthermore, environmental concerns implicit in the *Great Learning* are explicitly articulated in other core Confucian texts. A statement in the *Doctrine of the Mean* succinctly captures the essence of this cosmological thinking:

> Only those who are the most sincere [authentic, true, and real] can fully realize their own nature. If they can fully realize their own nature, they can fully realize human nature. If they can fully realize human nature, they can fully realize the nature of things. If they can fully realize the nature of things, they can take part in the transforming and nourishing process of Heaven and Earth. If they can take part in the transforming and nourishing process of Heaven and Earth, they can form a trinity with Heaven and Earth.[18]

Obviously, this idea of the interrelation of Heaven, Earth, and humans was precisely what the three thinkers had in mind in stressing the centrality of the precept of "the unity of Heaven and Humanity," although for more than a century this idea had been regarded as an archaic irrelevance in cultural China. The excitement of rediscovering this central Confucian precept was a poignant reminder of how much had been lost and how difficult it was to retrieve the elements of the tradition that remained significant.

CRITICAL VOICES FOR AN ECOLOGICAL TURN: NEW CONFUCIANS AND THE EARTH CHARTER

Both from within the Confucian tradition and from without, critical voices have emerged to criticize the Enlightenment

vision of secularization, rationalization, and development at any cost. Even at the height of the May Fourth Movement's obsession with Westernization as modernization, some of the most original New Confucians had begun to question the individualistic worldview and utilitarian ethics implicit in the Enlightenment project. Two key examples are Xiong Shili (1883–1968), who elaborated a naturalistic philosophy of vitalism, and Liang Shuming (1893–1988), who called for restraint and moderation in using natural resources.

Xiong Shili reconfigured Confucian metaphysics through a critical analysis of the basic motifs of the Consciousness-Only school of Buddhism. He insisted that the Confucian idea of the "great transformation" (*dahua*) is predicated on the participation of the human in cosmic processes, rather than the imposition of human will on nature. He further observed that as a continuously evolving species, human beings are not created apart from nature, but emerge as an integral part of the primordial forces of production and reproduction. The vitality that engenders human creativity is the same energy that gives rise to mountains, rivers, and the whole of the planet. There is consanguinity between humans, Heaven, Earth, and the myriad things of nature. Since his naturalistic vitalism is based on the *Book of Change* and some Neo-Confucian writings, the ethic of forming one body with nature looms large in his moral idealism.[19]

Liang Shuming characterized the Confucian ethos as a balance between detachment from and aggression toward nature. Although he conceded that China had to learn from the West to enhance her competitive fitness for the sake of national survival, he prophesized that in the long run the Indian spirit of renunciation would prevail.[20] While Liang merely hinted at the possibility of alternative visions of human development, his inquiry generated a strong current in reevaluating and revitalizing Confucianism at a time when Westernization dominated the Chinese intellectual scene.

The distinctive contributions of these two thinkers are critical to the ecological turn of later Confucianism. Xiong highlights the naturalistic vitalism of the tradition from its classical expression in the *Book of Change* to its Neo-Confucian articula-

tion in the notion of the fecundity of life (*sheng-sheng)*. Liang maintains that long-term human survival depends on the practice of moderation, a hallmark of Confucian cultivation in attaining balance, harmony, and equilibrium. Thus Xiong and Liang observe that the vitality of natural processes must be respected and preserved through restraint.

However, neither Xiong nor Liang was able to sustain an argument in favor of a nonanthropocentric, not to mention eco-friendly, ethic. The modernist trajectory was so powerful that Confucian humanism was profoundly reconfigured toward a secular humanism. The rules of the game determining the relevance of Confucianism to China's modern transformation were changed so remarkably that most attempts to present a Confucian idea for its own sake were ignored outside a small coterie of ivory-tower academicians. Thus the goals of modernization and economic development overrode broader humanistic and communitarian concerns.

As Amartya Sen and others have argued, however, it is now clear that the modernization process, used simply for utilitarian ends of development, is insufficient for the full range of human flourishing.[21] Instead, there is a broader understanding emerging that development must include not only economic indicators but consider human well-being, environmental protection, and spiritual growth as well. To this end, there is a growing awareness in the world community of the need to develop a more comprehensive global ethic for sustainable development.[22] This coalesced in the "Earth Charter" that was developed over the last decade since the United Nations Earth Summit was held in Rio in 1992.[23] An international committee spent three years drafting the charter before its formal release by the Earth Charter Commission at a meeting in Paris in 2000. Hundreds of consultations were held with organizations and individuals throughout the world to ensure that it would be an inclusive people's charter. The charter sets forth principles of ecological integrity, social justice, democracy, nonviolence, and peace.

The Earth Charter enjoins us to "respect Earth and life in all its diversity," "care for the community of life with understanding, compassion, and love," and "secure Earth's bounty and beauty for present and future generations."[24] As the charter

puts it, "humanity is part of a vast evolving universe. Earth, our home, is alive with a unique community of life." For Confucians, the "community of life" is expressed as consanguinity between the earth and ourselves, because we have evolved from the same vital energy that makes stones, plants, and animals integral parts of the cosmos. We live with reverence and a sense of awe for the fecundity and creativity of nature as we open our eyes to what is near at hand.

When measured against these principles of a global ethic for sustainability, a narrowly conceived modernization process such as China's is inadequate. This critique is an important external counterpoint to modernization within an Enlightenment framework.

If China's modernist project had followed the democratic ideal of building a society that is "just, participatory, sustainable, and peaceful,"[25] as formulated in the Earth Charter, it could have had a salutary effect on China's overall conception of development. A counterfactual exercise is in order. Surely the global issues mentioned in the Earth Charter are far from being resolved in the modern West, but had they been put on the national agenda for discussion in China, the Chinese intellectual ethos could have been much more congenial to the culture of peace and environmental ethics. After all, "eradicating poverty as an ethical, social, and environmental imperative"[26] and promoting human flourishing as well as material progress are both socialist and Confucian ideals. Although "upholding the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being"[27] may appear to be a lofty goal, it is compatible with the Chinese notion of realizing the whole person. Furthermore, "affirming gender equality and equity as prerequisites to sustainable development" and "ensuring universal access to education, health care, and economic opportunity"[28] are clearly recognized modern Chinese aspirations. The traditional Confucian sense of economic equality, social conscience, and political responsibility could have been relevant to and significant for debate and conversation on these vitally important matters. The cost of the secularization of Confucian

humanism was high. The single-minded commitment to progress defined in materialist terms has substantially confined the scope of the national agenda to wealth and power. As China completely turned her back on her indigenous resources for self-realization, she embarked on a course of action detrimental to her soul and her long-term self-interest.

CONFUCIAN HUMANISM AS AN ANTHROPOCOSMIC VISION

Qian, Tang, and Feng saw the potential for Confucian humanism to occupy a new niche in comparative civilizational studies. As a partner in the dialogue among civilizations, what message can Confucians deliver to other religious communities and to the global village as a whole? To put it simply, can Confucian humanism informed by the anthropocosmic vision deepen the conversation on religion and ecology? Specifically, can the Confucian self-cultivation philosophy inspire a new constellation of family values, social ethics, political principles, and ecological consciousness that will help cultural China develop a sense of responsibility for the global community, both for its own benefit and for the improvement of the state of the world? Can Confucian thinkers enrich the spiritual resources and broaden the Enlightenment project's scope to embrace religion and ecology?

The idea of the unity of Heaven and humanity implies four inseparable dimensions of the human condition: self, community, nature, and Heaven. The full distinctiveness of each enhances, rather than impedes, a harmonious integration of the others. Self as a center of relationships establishes its identity by interacting with community variously understood, from the family to the global village and beyond. A sustainable harmonious relationship between the human species and nature is not merely an abstract ideal, but a concrete guide for practical living. Mutual responsiveness between the human heart-and-mind and the Way of Heaven is the ultimate path for human flourishing. The following four salient features constitute the substance of the New Confucian ecological vision.

Fruitful Interaction between Self and Community

Since the community as home must extend to the "global village" and beyond, the self in fruitful interaction with community must transcend not only egoism and parochialism, but also nationalism and anthropocentrism. In practical ethical terms, self-cultivation is crucial to the viability of this holistic humanist vision. Specifically, it involves a process of continuous self-transcendence, always keeping sight of one's solid ground in earth, body, family, and community. Through self-cultivation, the human heart-and-mind "expands in concentric circles that begin with oneself and spread from there to include successively one's family, one's face-to-face community, one's nation, and finally all humanity."[29]

In shifting the center of one's empathic concern from oneself to one's family, one rises above selfishness. The move from family to community prevents nepotism. The move from community to nation overcomes parochialism, and the move to all humanity counters chauvinistic nationalism.[30] While "[t]he project of becoming fully human involves transcending, sequentially, egoism, nepotism, parochialism, ethnocentrism, and chauvinist nationalism," it cannot stop at "isolating, self-sufficient humanism."[31] If we stop at secular humanism, our arrogant self-sufficiency will undermine our cosmic connectivity and constrain us in an anthropocentric predicament.

A Sustainable Harmonious Relationship between the Human Species and Nature

The problem with secular humanism is its self-imposed limitation. Under its influence, our obsession with power and mastery over the environment—to the exclusion of the spiritual and the natural realms—has made us blind to ecological concerns.[32]

An ecological focus is a necessary corrective to the modernist discourse that has reduced the Confucian worldview to a limited and limiting secular humanism. Confucianism, appropriated by the modernist mindset, has been misused as a justification for authoritarian polity. Only by fully incorporating the religious and naturalist dimensions into New Confucianism can the Confucian worldview avoid the danger of legitimating so-

cial engineering, instrumental rationality, linear progression, economic development, and technocratic management at the expense of a holistic, anthropocosmic vision. Indeed, the best way for the Confucians to attain the new is to reanimate the old, so that the digression to secular humanism, under the influence of the modern West, is not a permanent diversion.

Mutual Responsiveness between the Human Heart-and-Mind and the Way of Heaven

In the appeal of scientists at the Global Forum Conference in Moscow in 1990, religious and spiritual leaders were challenged to envision the human-Earth relationship in a new light:

> As scientists, many of us have had profound experiences of awe and reverence before the universe. We understand that what is regarded as sacred is more likely to be treated with care and respect. Our planetary home should be so regarded. Efforts to safeguard and cherish the environment need to be infused with a vision of the sacred.[33]

Obviously, the ecological question compels all religious traditions to reexamine their presuppositions in regard to the earth. It is not enough that one's spiritual tradition makes limited adjustments to accommodate the ecological dimension. The need is for none other than the sacralization of nature. This may require a fundamental restructuring of basic theology by requiring the sanctity of the earth as a given. Implicit in the scientists' appeal is the necessity of a new theology, adding nature as a factor that must enter into, and transform, the traditional understandings of the relationship between God and human beings.

For the New Confucians, the critical issue is to underscore the spiritual dimension of the harmony with nature. As Wing-tsit Chan notes in his celebrated *Source Book in Chinese Philosophy*, "If one word could characterize the entire history of Chinese philosophy, that word would be humanism—not the humanism that denies or slights a Supreme Power, but one that professes the unity of man and Heaven. In this sense, humanism has dominated Chinese thought from the dawn of its history."[34]

The "humanism that professes the unity of man and Heaven" is neither secular nor anthropocentric. While it fully acknowledges that we are embedded in earth, body, family, and community, it never denies that we are in tune with the cosmic order. To infuse our earthly, bodily, familial, and communal existence with a transcendent significance is not only a lofty Confucian ideal but also a basic Confucian practice. In traditional China, under the influence of Confucian thought, Daosist ritual, and folk belief, the imperial court, the capital city, literary temples, ancestral halls, official residences, schools, and private houses were designed according to the "wind and water" (*fengshui*) principles. While these principles, based on geomancy, can supposedly be manipulated to enhance one's fortune, they align human designs with the environment by enhancing intimacy with nature. Similarly, Chinese medicine as healing rather than curing and the mental and physical exercises such as the ritual dance of the great ultimate (*taijinqun)* and various forms of breathing disciplines (*qigong)* are also based on the mutual responsiveness between nature and humanity.

Self-Knowledge and Cultivation to Complete the Triad

Confucians believe that Heaven confers our human nature and that the Way of Heaven is accessible through self-knowledge. They also believe that to understand the Mandate of Heaven we must continuously cultivate ourselves. This is completing the triad of Heaven, Earth, and humans. Nature, as an unending process of transformation rather than a static presence, is a source of inspiration for us to understand Heaven's dynamism. As the first hexagram in the *Book of Change* symbolizes, Heaven's vitality and creativity is incessant: Heaven always proceeds vigorously. The lesson for humans is obvious: we emulate the constancy and sustainability of Heaven's vitality and creativity by participating in human flourishing through "ceaseless effort of self-strengthening."[35] The sense of "awe and reverence before the universe" is prompted by our aspiration to respond to the ultimate reality that makes our lives purposeful and meaningful. From either a creationist or an evolutionist perspective, we are indebted to "Heaven, Earth, and the myriad things" for our existence. To repay this debt we

cultivate ourselves so as to attain our full humaneness amidst the wonder of existence.

Mencius succinctly articulated this human attitude toward Heaven as self-knowledge, service, and steadfastness of purpose:

> When a man has given full realization to his heart, he will understand his own nature. A man who knows his own nature will know Heaven. By retaining his heart and nurturing his nature he is serving Heaven. Whether he is going to die young or to live to a ripe old age makes no difference to his steadfastness of purpose. It is through awaiting whatever is to befall him with a perfected character that he stands firm on his proper destiny.[36]

Self-realization, in an ultimate sense, depends on knowing and serving Heaven. The mutuality of the human heart-and-mind and the Way of Heaven is mediated by cultivating a harmonious relationship with nature. Through such cultivation, humans form a triad with Heaven and Earth and thus fully realize their potential as cosmological as well as anthropological beings. This sense of mutuality, achieved through completion of the triad, precludes the imposition of the human will on Heaven and transforms the human desire to conquer nature.

SUSTAINING THE ECOLOGICAL TURN: THE ROLE OF THE PUBLIC INTELLECTUAL

The Copenhagen Social Summit in 1995 identified poverty, unemployment, and social disintegration as three serious threats to the solidarity of the human community. Globalization intensifies and enhances the felt need for rootedness in primordial ties. Our community, compressed into a "village," far from being integrated, blatantly exhibits differentiation and outright discrimination.[37] For developing societies such as China to appreciate the environmental movements of the developed world, the contradiction between ecological and developmental imperatives will have to be resolved. The ecological advocacy of elegant simplicity is not persuasive if one considers development, in the basic material sense, a necessary condition for survival. Only if China comes to feel a responsibility not just for

nation-building but for nature itself can China become a constructive partner on global environmental issues. She could be encouraged to do so if the developed world, especially the United States, demonstrates moral leadership. Without encouragement and reciprocal respect from developed countries, it is unlikely that she will independently embark on such a path. Fortunately, mutually beneficial dialogues on religion and ecology between China and the United States have already begun.

The ecological turn, as an alternative vision, is particularly significant in this regard. To make it sustainable and, eventually, consequential in formulating policies, the need for public-spiritedness among intellectuals is urgent. The emergence of a public space in cultural China provides a glimmer of hope. Although full-fledged civil societies in the Chinese cultural universe are found only in Taiwan and Hong Kong, the horizontal communication among public intellectuals in several sectors of society in the People's Republic has generated a new dynamism unprecedented in modern Chinese history. If we define public intellectuals as those who are politically concerned, socially engaged, culturally sensitive, religiously sensitive, and ecologically conscientious, they are readily visible and audible on the political scene.[38] Indeed, public intellectuals in academia, government, mass media, business, and society are articulating a variety of ecological and spiritual messages relevant to China's quest to join the modern world. The New Confucians may never "find the unifying thread, the balancing mean, the underlying value, or the all-embracing conception"[39] that can serve as a standard of inspiration for all concerned citizens of the nation. However, they are strategically positioned to generate new discussions on the ecological way "as macrocosm, overarching unity, and ultimate process"; indeed, as a necessary reference for "the human enterprise in its fullest dimensions, deepest reflections, and most dynamic activity."[40]

Given the current political climate in China, religion is a particularly delicate matter. Whether religion will play an active role in shaping China's development strategy is not yet clear. The possibility of a sound environmental ethic depends heavily on the ability of Chinese intellectuals to transcend a narrow nationalism informed by secular humanism and their

willingness to take religion seriously in considering human integrity and self-fulfillment. The government's appeal to science and national security as a way of outlawing superstition, as in the case of the Falungong, has not been effective in dealing with the outpouring of religious sentiments throughout the country. Its technocratic approach to religious issues merely reflects an increasingly unworkable instrumental rationality. Religion as a vibrant social force is widely recognized by public intellectuals in government, academia, business, and the mass media. Although it is difficult to predict precisely how religious and ecological discourses will converge in China, tolerance of religion often entails sensitivity to ecology. When public intellectuals in China begin to appreciate the profound religious implications of the ecological turn and the importance of retrieving and reappropriating indigenous spiritual resources to develop an environmental ethic, they will be ready to take part in a dialogue among civilizations concerning religion and ecology.

In a broader context, for religious and spiritual leaders to play a significant global role in articulating a shared approach to environmental degradation, they must assume the responsibility of public intellectuals themselves. As the Millennium Conference at the United Nations in September of 2000 clearly showed, unless religious and spiritual leaders can rise above their communities of faith to address global issues as public intellectuals, their messages will be misread, distorted, or ignored. China is particularly suspicious of the intentions of religious and spiritual leaders if they are exclusively concerned about the well-being of their own communities. Yet the time is ripe for spiritual and religious leaders outside China to engage Chinese public intellectuals in mutually informative and inspirational conversations on religion and ecology.

The New Confucian ecological turn clearly shows that a sustainable human-Earth relationship will depend on the creation of harmonious societies and benevolent governments through the self-cultivation of all members of the human community. At the same time, Confucians insist that being attuned to the changing patterns in nature is essential for harmonizing human relationships, formulating family ethics, and establishing a re-

sponsive and responsible government. As Mary Evelyn Tucker notes: "The whole Confucian triad of heaven, earth, and humans rests on a seamless yet dynamic intersection between each of these realms. Without harmony with nature and its myriad changes, human society and government is threatened."[41] Since each person's self-cultivation is essential for social and political order, the public intellectual is not an elitist, but an active participant in the daily affairs of his or her society. The Confucian idea of the concerned scholar may benefit from the wisdom of a philosopher, the insight of a prophet, the faith of a priest, the compassion of a monk, or the understanding of a guru, but it is the responsibility of the public intellectual that is the most appropriate to the embodiment of this idea. The Confucians remind us that, in order to foster a wholesome worldview and a healthy ecological ethic, we need to combine our aspiration for a harmonious relationship with nature with our concerted effort to build a just society.

Public intellectuals in China should impress upon the political leadership that it is in an advantageous position to "promote a culture of tolerance, nonviolence, and peace,"[42] as recommended by the Earth Charter. They should recognize that since the Chinese people are well disposed to Mahayana Buddhism and religious Daoism as well as inclusive Confucian humanism, they can appreciate the value of the coexistence of Heaven, Earth, and the myriad things and can "treat all living beings with respect and consideration"[43] as an expression of their humanity. Furthermore, as an increasing number of public intellectuals in the academic community have already forcefully articulated their ecological concerns, they should be encouraged to "integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life."[44] Many liberal-minded public intellectuals have openly suggested that the major challenge in Chinese political culture is democratization at all levels, which must begin with greater transparency and accountability in governance at the top. As the rule of law, rather than the rule by law, is widely accepted as the legitimate way to provide access to justice for all, the ideal of "inclusive participation in decision making"[45] is no longer unimaginable.

New Confucians fully acknowledge that in their march toward modernization in the cause of nation-building, their primary language has been so fundamentally reconstructed that it is no longer a language of faith, but a language of instrumental rationality, economic efficiency, political expediency, and social engineering. They are now recovering from that mistake. Their reanimated anthropocosmic vision may inspire a new worldview and a new ethic. This ecological turn has great significance for China's spiritual self-definition, for it urges the nation to rediscover its soul. It also has profound implications for the sustainable future of the global community.

ACKNOWLEDGMENTS

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ENDNOTES

[1]For a contemporary discussion on the axial-age civilizations, see Shmuel N. Eisenstadt, ed., *The Origins and Diversity of Axial Age Civilizations* (Albany, N.Y.: State University of New York Press, 1986).

[2]See Tu Wei-ming, "Embodying the Universe: A Note on Confucian Self-realization," *World & I* (August 1989): 475–485.

[3]Qian Mu's last essay, "Zhongguo wenhua dui rennei weilai keyou di kongxian" (The Possible Contribution of Chinese Culture to the Future of Humankind), first appeared as a newspaper article in *United News* in Taiwan (26 September 1990). It was reprinted, with a lengthy commentary by his widow, Hu Meiqi, in *Zhongguo Wenhua* (Chinese Culture) 4 (August 1991): 93–96.

[4]For an elaborate discussion on this, see Tang Junyi, *Shengming cunzai yu xinling jingjie* (Life Existence and the Spiritual Realms) (Taipei: Xuesheng Book Co., 1977), 872–888.

[5]Feng Youlan, *Zhongguo xiandai zhexueshi* (History of Modern Chinese Philosophy) (Guangzhou: Guangdong People's Publishers, 1999), 251–254.

[6]See Hu Meiqi's commentary in *Zhongguo Wenhua.*

[7]For example, Ji Xianlin of Peking University, Li Shengzi of the Chinese Academy of Social Sciences, Cai Shangsi of Fudan University, and a number of other senior scholars all enthusiastically responded to Qian's article. My short re-

flection appeared in *Zhonghua Wenhua* (Chinese Culture) 10 (August 1994): 218–219.

[8]Max Weber, *The Religion of China: Confucianism and Taoism*, trans. Hans H. Gerth (Glencoe, Ill.: Free Press, 1951), 235.

[9]Tang Junyi, *Shengming cuizai yu xinling jingjie,* 833–930.

[10]Chang Tsai (Zhang Zai), "The Western Inscription," in Wing-tsit Chan, trans., *A Source Book in Chinese Philosophy* (Princeton, N.J.: Princeton University Press, 1963), 497.

[11]Feng Youlan, "Xin yuanren" (New Origins of Humanity) in *Zhenyuan liushu* (Six Books of Feng Youlan in the 1930s and 1940s) (Shanghai: Eastern Chinese Normal University Press, 1996), vol. II, 626–649.

[12]Wang Yangming (Wang Yang-ming), "Inquiry on the Great Learning," in Wing-tsit Chan, trans., *A Source Book in Chinese Philosophy,* 659.

[13]Ibid., 659–660. Since Wang Yangming wished to demonstrate that the mind of the small man can form one body with all things as well, he used "he" rather than "we" in the text.

[14]Joseph Levenson, *Confucian China and its Modern Fate: A Trilogy* (Berkeley: University of California Press, 1968).

[15]The "Text" of *The Great Learning*. Although I have made a few changes in my translation, it basically follows Wing-tsit Chan's version. See Wing-tsit Chan, trans., *A Source Book in Chinese Philosophy,* 86.

[16]Wm. Theodore de Bary, "'Think Globally, Act Locally,' and the Contested Ground Between," in *Confucianism and Ecology: The Interrelation of Heaven, Earth, and Humans*, ed. Mary Evelyn Tucker and John Berthrong (Cambridge, Mass.: Center for the Study of World Religions, Harvard Divinity School, 1998), 32.

[17]Ibid., 32–33.

[18]*Zhongyong* (Doctrine of the Mean), XXII. See Tu Wei-ming, *Centrality and Commonality: An Essay on Confucian Religiousness* (Albany, N.Y.: State University of New York Press, 1989), 77. This translation is slightly different from Wing-tsit Chan's version, cited in the book.

[19]Xiong Shili, *Xin Weishilun* (New Theory on Consciousness-Only) (reprint, Taipei: Guangwen Publishers, 1962), vol. I, chap. 4, 49–92.

[20]Liang Shuming, *Dongxi wenhua jiqi zhexue* (Eastern and Western Cultures and their Philosophies) (reprint, Taipei: Wenxue Publishers, 1979), 200–201.

[21]Amartya Sen, *Development as Freedom* (New York: Knopf, 1999).

[22]See Hans Küng and Karl-Josef Kuschel, eds., *A Global Ethic: The Declaration of the Parliament of the World's Religions* (New York: Continuum, 1993).

[23]The Earth Charter, <http://www.earthcharter.org>.

[24]Ibid.

[25]Ibid.

[26]Ibid.

[27]Ibid.

[28]Ibid.

[29]Huston Smith, *The World's Religions* (San Francisco: HarperSan Francisco, 1991), 182.

[30]Ibid.

[31]Ibid., 186–187.

[32]See Thomas Berry, *The Dream of the Earth* (San Francisco: Sierra Club Books, 1990) and Brian Swimme, *The Universe Story: From the Primordial Flaring Forth to the Ecozoic Era—A Celebration of the Unfolding of the Cosmos* (San Francisco: Harper San Francisco, 1994).

[33]Quoted in Mary Evelyn Tucker, "The Emerging Alliance of Religion and Ecology," in Steven L. Chase, ed., *Doors of Understanding: Conversations on Global Spirituality in Honor of Ewert Cousins* (Quincy, Ill.: Franciscan Press, 1997), 111.

[34]Wing-tsit Chan, trans., *A Source Book in Chinese Philosophy,* 3.

[35]*The Book of Change*, "image" of the first hexagram, *qian* (heaven).

[36]*Mencius*, VIIA:1. See D. C. Lau, trans., *Mencius* (Harmondsworth, U.K.: Penguin, 1970), 182. My translation of the first line is different.

[37]Tu Weiming, "Global Community as Lived Reality: Exploring Social Resources for Development," in *Social Policy & Social Progress*, Special Issue on the Social Summit, Copenhagen, 6–12 March 1995 (New York: United Nations, 1996), 47–48.

[38]The case of Qu Geping merits special attention. Since the Stockholm Conference on the Environment in 1972, he has been instrumental in developing an infrastructure within the governmental system for dealing with environmental protection in China. As chairman of the Environmental Protection and Resource Conservation Committee of the National People's Congress, he plays a pivotal role in formulating national policies and encourages nongovernmental agencies in raising environmental concerns. For a retrospective look at his own career, see Qu Geping, *mengxian yu qidai: Zhongguo huanjing baofu di guoqu yu weilai* (Dreams and Anticipations: The Past and Future of China's Environmental Protection) (Beijing: Zhongguo huanbao kexue chubanshe, 2000).

[39]Wm. Theodore de Bary, *Neo-Confucian Orthodoxy and the Learning of the Mind-and-Heart* (New York: Columbia University Press, 1981), 216.

[40]Ibid. It should be noted that although de Bary's main concern here is the Way in the "learning of the mind-and-heart," the ecological implications are self-evident.

[41]Mary Evelyn Tucker, "The Emerging Alliance of Religion and Ecology," in Chase, ed., *Doors of Understanding,* 120.

[42]The Earth Charter.

[43]Ibid.

[44]Ibid. Currently more than a hundred programs (including departments and research centers) focusing on the environment have been developed in China's institutes of higher learning. While the majority of these programs are primarily concerned with technical engineering issues, quite a few of them have integrated subjects in the social sciences and the humanities in their multidisciplinary approaches to environmental protection.

[45]Ibid.

James Miller

Envisioning the Daoist Body in the Economy of Cosmic Power

INTRODUCTION

As MARY EVELYN TUCKER AND JOHN GRIM have shown in their pioneering work on religions and ecology, the crux of the debate lies in the question of worldviews. From a sociological perspective, religious traditions represent and construct the collective values and systems of meaning of human societies. As such, religious traditions influence the way their adherents interpret their experience of the world and, consequently, influence their actions upon it. Religious ideologies, however, are themselves always *in medias res*. Even though their adherents may uphold an eternal vision of archaic principles handed down from the gods, in actuality this vision is continuously renegotiated and reconstructed in conversation with the changing demands of historical and cultural context.

Today we are faced with an extraordinary, and potentially far-reaching, transformation in our natural environment as a result of global climate change. The task facing all the religious traditions of the world is how to make sense of this change in a religiously meaningful way, a change that is unprecedented in the history of the world's religions. For Daoism, however, this is not just a question of worldview, in terms of human experience and human consciousness. Daoism takes to its heart the notion that we human beings are inextricably woven into the fabric of our natural environment or, as I have termed it elsewhere, an economy of cosmic power.[1] When our climate changes it is inevitable that so must we. Although Daoists have never

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experienced anything on the scale of present-day global warming, it is clear that Daoist traditions have always paid particular attention to the circumstances of their physical environment. A recent declaration of the Chinese Daoist Association on Global Ecology states:

> Daoists in China have diligently worked toward disseminating Daoist teachings and in maintaining the famous Daoist mountains and hermitages, planting trees and cultivating forests, and protecting the natural environment. We believe that as the Chinese state and society today are paying greater attention to ecological problems, educational programs concerning public health issues will be further fostered and developed. We pray that tomorrow's world will be better than today's, and that, by following the principle of mutuality among all things in nature, a new harmonious world will emerge.[2]

Now, as Daoism spreads across the world it is increasingly incumbent upon Daoists to pay attention to their environment in a global sense. There is an intellectual danger, however, when we move from considering things in the particular to the universal, from the small-scale to the global. Scholars of religions have rightly been wary of the problems of reification or essentialism, in which a living complex of historical phenomena is abstracted into a doctrinaire set of principles that may conveniently be applied to a set of facts or an ethical problem. Of course, some religious bureaucracies, such as the Vatican, purport to speak for the diversity of religious cultures of which they are the institutional representation, but this can only take place through the widespread acceptance among Catholics of the doctrine of papal infallibility.

Moreover, the trenchant orientalist critique of the Western study of "Eastern religions" has demonstrated the ways in which the religious studies academy, being genealogically rooted in Western colonial and missionary interests, has been complicit in imposing a central ideology and even an institutional apparatus upon Eastern religious cultures. As Richard King has demonstrated, the modern construction of "Hinduism" has been profoundly influenced by Western attempts to locate its essential doctrines in a narrow body of Sanskrit texts.[3]

In China, the bureaucratic interests of the Chinese Communist Party have also served to authorize, and thereby control, Daoism as a social, doctrinal, and institutional entity. Two branches of Daoism are recognized—Quanzhen (Complete Perfection) and Zhengyi (Orthodox Unity)—and both fall under the auspices of the Chinese Daoist Association, a unit of the government's Religious Affairs Bureau. Daoist temples are recognized as valuable tourist attractions, and thus the functioning of Daoism is now authorized so long as it falls within the bounds of the economic goals of the state authorities.[4]

The problem of relating "Daoism" with a global phenomenon such as climate change is that it runs the risk of falling into this same paradigm of appropriation and control. The historic affinity of environmentalists for Daoist "mystical philosophy" has all too frequently been predicated upon a version of Daoist philosophy that construes the existence of a benign natural force, "the Dao," that serves to harmonize and regulate the ecological order of things. The environmentalist Edward Goldsmith has attempted to discover this "Way" throughout pre-Enlightenment "vernacular" societies, seeing it in the Chinese concept of *Dao*, the Egyptian *Maat*, the Indian *R'ta*, and the Greek *Nomos* or *Dike*.[5] This ancient "Way" is presented as a holistic alternative to the reductionistic scientism of the Enlightenment mentality. In this surprisingly brutal act of cultural strip-mining, Goldsmith commits the same sort of reductionism that he condemns in scientism. The problem is that either our worldview is local, and therefore parochial, narrow-minded, and divisive, or it is global, and therefore imperial and totalitarian. For this reason, countries that have experienced Western colonialism are rightly suspicious of being subjected to a new form of Western hegemony in the form of global environmentalism. The great danger for global problems such as climate change is that the desire for the harmonious reintegration of human beings into the fabric of nature will lead to a reductive, even destructive, cultural colonialism. An example of this has been documented in Liu Xiaogan's analysis of the unintended, but no less real, cultural consequences of the European Union's decision to ban baby seal pelts:

> In 1983, following seven years of pressure from Greenpeace, the new European Parliament outlawed baby seal pelts in Europe. This miserably affected the life of the 100,000 Inuit living in the Canadian Arctic. The seal furnished most of the Inuit diet and nearly all essentials of life, like the buffalo of North American Plains Indians. In the years following the seal-pelt ban, an economic winter swept across the Canadian Arctic and welfare soared. In Canada's tiny Clyde River, nearly half of the population was soon collecting unemployment checks. As their lives soured, their social problems escalated. Many Inuit turned to alcohol and drugs. Crime and family violence doubled. The despair led to an epidemic of suicides, mostly that of young men. There were 47 suicides among Canadian Inuit in the eleven years before the ban but 152 in the same period after it.[6]

Liu goes on to note that this problem was brought about chiefly by the media-savvy politics of confrontation employed by Greenpeace:

> Simplified and intensified movements may create a furor and cause a sensation, but they often mislead people, even bring disasters as the Inuit have suffered. Environmental preservation involves serious and complicated issues affecting various groups of people, different nations and regions; thus it demands a patient, gradual and enduring working attitude that is in line with the Daoist wisdom of *wuwei* [nonassertive action].[7]

The historic Daoist emphasis on the local and the particular suggests that it may make a valuable contribution to global questions by always insisting on focusing on the small-scale effects of global activity. This cautionary tale suggests to me that the chief question at stake is whether or not it is possible to have an environmental ethic on global climate change that respects the diversity of human cultures as well as it respects the unity of the earth that sustains them. In this essay I would like to make two Daoist-inspired arguments that address this unity-in-diversity question. The first is that there can be no single principle or value that will lead to a correct solution to such a culturally complex problem. The second is that the best way of optimizing the situation in order to maximize the positive outcomes for all concerned is to adopt the metaphor of the

human body as the preeminent hermeneutical tool or *theoria* for considering such problems and as the preeminent value to be adopted in environmental practice.

A VISION OF ORGANIC UNITY

One of Confucius's chief concerns, as recorded in the *Analects* (*Lunyu*), is how to retrieve and reauthenticate the ancient ritual codes (*li*) as a practical means of restoring the unity of the fractured Chinese empire. Conversation, or shared discourse, was the primary means to achieve this. Confucius said of his student Zi Gong that they could discuss the Odes because Confucius only needed to begin a phrase and Zi Gong would know its proper sequence.[8] Familiarity with the classics, therefore, was the prerequisite for any meaningful conversation, just as familiarity with cultural codes (*li*) was the prerequisite for successful social interaction and the rectification of names (*zheng ming*) was the prerequisite for good government. From the Confucian perspective, the unity of humankind within the cosmos may only be envisioned and authentically lived out from within some established social, semiotic, and political system: it may not be imposed from without, which was the position of the Legalist school (*fajia*). In fact, from the Confucian perspective, the particularity of language and culture, far from constituting a sort of permanent hermeneutical alienation from what is real, genuine, and authentic, is to be celebrated as our only means of intercourse with it. Human beings are always and irrevocably instituted. Being true, correct, appropriate, or optimal is likewise an institutional process. This Confucian model of discourse is the one, broadly speaking, that is adopted by international congresses such as Kyoto and Rio that seek to institute a shared discourse (*lunyu*) as the path (*dao*) toward developing optimal codes of behavior (*li*).

The Daoist philosopher Zhuangzi argued on the other hand that optimal patterns of behavior are developed through skillful practice and cannot be communicated adequately by verbal teaching or erudite discourse. He illustrates this with the story of the wheelwright Bian.

> Duke Huan was reading a book at the top of the hall, wheelwright [Bian] was chipping a wheel at the bottom of the hall. He put aside his mallet and chisel and went up to ask Duke Huan
>
> "May I ask what words my lord is reading?"
>
> "The words of a sage."
>
> "Is the sage alive?"
>
> "He is dead."
>
> "In that case what my lord is reading is the dregs of the men of old, isn't it?"
>
> "What business is it of a wheelwright to criticize what I read? If you can explain yourself, well and good; if not, you die."
>
> "Speaking for myself, I see it in terms of my own work. If I chip at a wheel too slowly, the chisel slides and does not grip; if too fast, it jams and catches in the wood. Not too slow, not too fast; I feel it in the hand and respond from the heart, the mouth cannot put it into words, there is a knack in it somewhere which I cannot convey to my son and which my son cannot learn from me. This is how through my seventy years I have grown old chipping at wheels. The men of old and their untransmittable message are dead. Then what my lord is reading is the dregs of men of old, isn't it?"[9]

Zhuangzi's mystical philosophy puts the highest value on an intuitive, holistic grasp of the unity of subject and object, wheelwright and wheel. The nature of this intuition is such that it cannot be translated into cultural codes and transmitted through the ages in a body of cultural discourse. The experience of the supremely skilled person suggests the possibility of a noncategorizable field of experience that is somehow logically prior to the culturally mediated or culturally constructed experience. Zhuangzi offers this suggestion in order to counter those who offer principles or "formulae" as fragmented solutions to organic problems. Formulae are fractured, elemental structures that cannot hope to correspond to the organic unity-in-diversity of the spontaneous transformation of things in the natural environment:[10]

> Down below in the empire, there are many who cultivate the tradition of some formula, and all of them suppose that there is nothing to add to what they have. In which of them is it finally to be found, that which of old was called the tradition of the Way? I say it is to be found in them all. I say:

> From where does the daemonic [*shen*] descend?
> From where does illumination [*ming*] come forth?
> Sagehood is born from something,
> Kingship forms out of something;
> All have their source in the One. . . .
> There is an analogy in the ears, eyes, nose and mouth; all have something they illuminate but they cannot exchange their functions, just as the various specialties of the Hundred Schools all have their strong points and at times turn out useful. However, they are not inclusive, not comprehensive; these are men each of whom has his own little corner. They split the glory of heaven and earth down the middle, chop up the patterns of the myriad things, and scrutinize some point in what for the ancients was a whole. There are few who are able to have the whole glory of heaven and earth at their disposal, and speak of the full scope of the daemonic-and-illumined [*shenming*].[11]

In one sense, therefore, the mystical aspect of the Daoist religion may be considered as comprising ways to realize "the whole glory" of the unity of humans, heaven, and earth. The organic metaphors employed in Daoist writing suggest that this unity is to be conceived as an ontogenetic unity, that is, a root from which the diversity of things flowers. The genetic metaphor of root and branch (*ben-mo*) is a powerful way of conceiving our relation to the primordial source (*yuandao*) from which all life flows. Human beings experience a unity with this transformative, multifarious vitality within their bodies. For the Daoist, then, it is the body, not just the heart-mind (*xin*), that must be cultivated and imaged in order to realize the unity of humans and the cosmos. It is this point that most clearly distinguishes Daoist cultivation practices from Confucian intellectual discourse. This does not mean that Daoism and Confucianism are in any sense opposed to each other intellectually or practically. Rather, they operate on different terrains. Confucians seek primarily the transformation of the self through the cultivation of the heart-mind by means of devoted attention to the classics. Daoists seek primarily to realize a sort of transparency or porosity between their bodily identity and the economy of cosmic power in which it is embedded. For this reason, Daoism has the potential to be an important conversation part-

ner in the question of religion and global climate change because of its natural concern for the impact of global climate change on the health of individual bodies.

In the practice of Daoist cultivation, then, the human body forms the preeminent landscape or terrain for the Daoist imagination. To use an analogy from the Chinese, the character *xing* means "form" primarily in the concrete sense of the bodily form and secondarily in the abstract sense of the form of things. The body, in Daoist thought, informs—is the preeminent form of—human understanding and may serve as a vital metaphor for understanding our relationship with the world and for managing the practical complexities of social organization.

The Daoist religious system known as Highest Clarity (*Shangqing*) employed this theory of microcosm/macrocosm correspondence in its practice of invoking the presence of celestial divinities in the energy systems of the body, naming them, and describing how they configure the energy in each physiological system of the body.[12] To get at the contribution of Daoism to understanding the human problem of global climate change it is necessary to understand in more detail how the correspondence between the body and its environment functions.

THE DEVELOPMENT OF CORRELATIVE THINKING ABOUT THE BODY POLITIC[13]

A theory of "the body politic" had been developed as early as the third century B.C.E. in the *Springs and Autumns of Mr. Lü* (*Lüshi Chunqiu*):

> Human beings have 360 joints, nine bodily openings, and five yin and six yang systems of function. In the flesh tightness is desirable; in the blood vessels free flow is desirable; in the sinews and bones solidity is desirable; in the operations of the heart and mind harmony is desirable; in the essential *Qi* regular motion is desirable. When [these desiderata] are realized, illness has nowhere to abide, and there is nothing from which pathology can develop. When illness lasts and pathology develops, it is because the essential *Qi* has become static. . . .

> States too have their stases. When the ruler's virtue does not flow freely [i.e., if he does not appoint good officials to keep him and his subjects in touch], and the wishes of his people do not reach him, a hundred pathologies arise in concert, and a myriad catastrophes swarm in. The cruelty of those above and those below toward each other arises from this. The reason that the sage kings valued heroic retainers and faithful ministers is that they dared to speak directly, breaking through such stases.[14]

In the above text, the free flow of virtue (*de*) is not to be understood in terms of moral philosophy but by analogy with what is necessary to keep the body alive. Just as the circulation of bodily fluids is necessary for human survival, so also the free flow of "virtue" is necessary in the state. The concept of good that is the basis for making the connection between the natural world and the political world is basically medical rather than moral. Virtue seems to be understood here as a sort of moral energy that must flow freely like blood. This points toward an intriguing contribution that Daoism can make to the question of religion and global climate change: neither religion nor the problems of the environment are best understood in terms of morality. The problem of the human condition is what we do with our bodies and about how they are best harmonized with their environment. This is a psycho-physio-energetic problem, not a problem of ethics (affect) or doctrine (intellect). Our emotions, wills, and intellects are important, but they are systems of energy in the body and in the body-politic, and as such are no more or no less important than our gall bladders and our spleens.

In the foundational medical text *Huangdi neijing suwen* (Simple Questions on the Yellow Emperor's Internal Classic), however, we see the above analogy reversed. In this text the relative functions of the physiological systems are understood by analogy to the political hierarchy of the state:

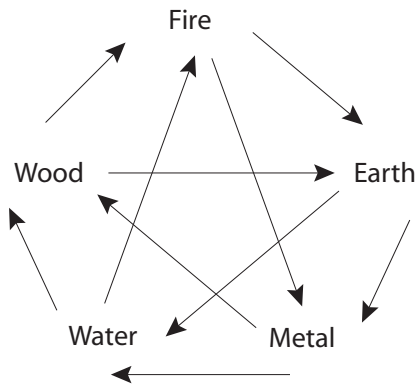
> The cardiac system is the office of the monarch: consciousness issues from it. The pulmonary system is the office of the minister-mentors: oversight and supervision issue from it. The hepatic system is the office of the General: planning issues from it. The gall bladder system is the office of the rectifiers: decisions issue from

> it . . . [and so on for the twelve systems of body functions associated with internal organs]. It will not do for these twelve offices to lose their co-ordination.[15]

Here we see how the physiology of the body was correlated with the hierarchical configuration of the state, in which the emperor, like the heart, remains supreme, but cannot function without proper communication with the other administrative departments. Traditional Chinese thought thus displays an organic, mutually reciprocal system of "correlative thinking" in which various dimensions of existence are understood by means of reciprocal correlation with other dimensions of existence.

This way of thinking was systematized in the well-known sequence of the five phases: earth, wood, fire, metal, and water. These phases represent moments in two cycles of transformation: a cycle of generation in which one phase leads into the subsequent phase; and a cycle of control in which one phase blocks or controls the preceding phase. Figure 1 shows the sequences of generation (*sheng*) and control (*zhu*): wood generates fire, which generates earth, which generates metal, which generates water, which generates wood; water controls fire, which controls metal, which controls wood, which controls earth, which controls water.

Figure 1. Cycles of Generation and Control



Notes: The sequence of generation is represented by the outer arrows and the sequence of control by the inner arrows.[16]

Within each sequence, the order is invariable, but any number of categories of things can be sequenced in this way. The addition of a new category of sequence is known as extension (*tui*) (see table 1). When an extension is made, and two different lists of items are brought into correlation, then it is possible to make an analysis or a diagnosis by following through the sequences of the two things that are now correlated. But it is important to remember that we are not comparing "things" or "items" in this way; rather, we are making comparisons between the dynamics within the phases of two different categories of transformation.

Table 1. Table of Correlations in Traditional Chinese Thought

Agent	Direction	Color	Season	Orb	Emotion	Sense	Flavors
Wood	East	Green	Spring	Liver	Anger	Eyes	Sour
Fire	South	Red	Summer	Heart	Joy	Tongue	Bitter
Earth	Center	Yellow	Late summer	Spleen	Worry	Lips	Sweet
Metal	West	White	Fall	Lungs	Sadness	Nose	Pungent
Water	North	Black	Winter	Kidneys	Fear	Ears	Salty

Correlation was chiefly employed as a heuristic tool, often for the diagnosis of diseases. The system of causative generation and control combined with synchronic correspondence makes it possible to understand events as particular configurations within the multiple life processes of an organism. If some excess has occurred, it is either because the preceding item in the generative sequence has proved too strong, or the preceding item in the destructive or controlling sequence has proved too weak. In either case the remedy to the situation is to be sought in treating not the symptoms but the deficient or excessive cause, thus restoring the system to its natural balance. Internally the system is one of cause and effect, but when one system is correlated to another system, the relationship between the two is that of mutual implication or synchronous resonance.

Thus a transformation in the seasons implies a corresponding transformation in the relative strengths of the various bodily functions, which requires a corresponding transformation in diet in order to maintain a homeostatic equilibrium. Or, as the

Most Elementary Aspects of the Yellow Emperor's Internal Classic (*Huangdi neijing taisu*) puts it:

> The Yellow Emperor: I should now like to hear why it is that in certain years everyone is struck by a similar illness.
>
> Shao Shi: This is the result of a manifestation [of the winds] of the eight seasonal turning points.[17]

Thus, according to the traditional Chinese worldview, the universe is not comprised of a number of discrete elements, but, in broad terms, of configurations (*xing*) of power or force that transform or "phase" (*xing*, lit. "walk") (1) according to the diachronic sequence of the five phases within one category and (2) according to the synchronic correspondence between the same phase in different categories. The influence or inspiration that is the mechanism for these synchronic transformations is known as *Qi*, conventionally translated as vital energy.[18]

THE DYNAMIC OF *QI* IN THE ECONOMY OF COSMIC POWER

In traditional Chinese medicine, the human body is viewed first and foremost as a network of systems of energetic transpiration or *Qi*. Each system of transpiration is an "organ" of which there are two kinds: yin systems (*zang*) and yang systems (*fu*). According to the *Simple Questions*, the function of the *zang* systems is to store or collect (*zang*) the "essential energy" (*jingqi*). This is defined by Manfred Porkert as "structive [structuring] potential."[19] It is the function of the complementary *fu* systems to "transmit or transform things."[20] Thus the body contains two basic physiological dynamics. The yin systems (*zang*) store the potential energy to maintain the dynamic homeostasis of the body, and the yang systems (*fu*) transmit this energy.

In the system of traditional Chinese medicine, therefore, the basic physiological principle is the continuous exchange of vital energy according to the pattern of yin and yang. Since the time of the Book of Changes (*Yijing*), this pattern of yin and yang has been regarded as the basic pattern of the cosmos. The treatise on yin and yang in the *Suwen* stresses the cosmic significance of these categories:

> The Yellow Emperor spoke: [The two categories] yin and yang are the underlying principle of heaven and earth; they are the web that holds all ten thousand things secure; they are father and mother to all transformations and alterations; they are the source and beginning of all creating and killing; they are the palace of spirit brilliance.
>
> In order to treat illnesses one must penetrate to their source.
>
> Heaven arose out of the accumulation of yang [influences]; the earth arose out of the accumulation of yin [influences]. Yin is tranquility, yang is agitation; yang creates, yin stimulates development; yang kills, yin stores. Yang transforms influences, yin completes form.[21]

It is important to remember that yin and yang are not forces or substances but modes or aspects of the transpiration of vital energy. This energy is the stuff of the universe as well as the vitality of our bodies. The last sentence of the quotation is particularly instructive. The nature of yang-*Qi* (expiration) is to transform, whereas the nature of yin-*Qi* (inspiration) is to receive and store form. The transformation of things, that is, the process of life itself, takes place by means of the continuous dynamic of the projection (yang) and reception (yin) of energy. Moreover, this dynamic, at its root, informs the cosmic diversity of the "ten thousand things." The binary dynamic that models the energetic transpiration of human physiological systems is the same dynamic that models the phases of the moon and the orbits of the stars. The basic binary character of the universe is a function of the dynamic nature of energy: *Qi* is never static; it is either expanding or contracting, activating or storing. There is no such thing as a steady state.

Within the bodily "ecosystem," each physiological subsystem, then, is constructed for the purpose of the free circulation of vital energy and fluids throughout the body. In traditional Chinese medicine, the diagnosis of pathologies consists of analyzing the network of relations between energy systems in order to detect disturbances to the homeostasis. This means taking into account the causal relationships within the systems, and also the synchronic correlation between the bodily systems and the macrocosmic environment. It is this latter, synchronic correspondence that provides the means for understanding the

microcosm/macrocosm relationship between human bodies and global climate change.

All physiological systems are rooted in the cosmic dynamic of yin-yang transpiration. Moreover, the medical definition of good is the harmonious integration and optimization of all energy systems. This means that the well-being of the physiological systems can only be achieved by harmonizing with the broader macrocosmic dynamics in which they are located. In traditional Chinese medicine, the most important macrocosmic dynamics are the positions of the sun and moon, the planets, and the seasons. To the Daoist mind—and body—this synchronic, correlative thinking is just as necessary as diachronic cause and effect to understand the whole range of relationships that obtains within nature, understood as an evolving organic system of diverse processes. When a change takes place in the global environment, therefore, it is inevitable that this will produce a synchronous reaction on other processes. For this reason different forms of ritual "astro-geomantic" practice are prescribed by Daoist priests, in accordance with the rotations of the stars and the contours of the earth.

The Daoist tradition, then, points the way toward understanding how it is possible in the religious imagination to conceive of the relationship between the physiological systems of the body and more large-scale systems such as social structures and astronomic patterns. It is a simple matter to see how this process of analogy and resonance can be extended (*tui*) to include transformations within the global climate system. Until now, however, Daoists have not had to take account of the transformation of their environment in this global way, but the Daoist tradition does allow us to understand the implication of human bodies in global climate systems, and it does offer a theory of organic optimization as being the ideal toward which we should aspire. Organic optimization means that systems must be considered as dynamic and constantly interacting with each other. The optimal state of the organism is reached when all the energy systems permit the free flow of energy. In this way Daoism does not therefore propose a moral vision for environmental protection or action to prevent global climate

change, but a physiological model of the interrelationship between many different complex systems.

IMPLICATION

So far I have attempted to resist describing what the usefulness of "Daoism" might be for environmental protection. Instead, I have aimed to highlight Daoism as a way of thinking about and acting upon the mutual implication of human beings, their social systems, and their natural environment. This way of thinking is clearly anthropocentric, for it takes the human body as its starting point, but it is a vision of the body that is rooted in what I have termed an "economy of cosmic power." This fully anthropocosmic vision has the practical—bodily—consequence of requiring us to take absolutely seriously the concept of our personal implication in the single fabric of the environment. The problem of global climate change is thus a problem for our bodies. It is not something that takes place in the abstract or on the horizons of our consciousness, but is a change that is occurring deep within us. As Kristofer Schipper explains:

> The emphasis on the self, on the personal relationship to the Dao, implies, also with respect to the preservation of the natural environment, that each person is responsible for the Dao, each person embodies the Dao. The preservation of the natural order therefore depends absolutely on the preservation of this natural order and harmony within ourselves and not on some outside authority. The environment is within us.[22]

The second practical ramification is the emphasis on gradual change and the refusal to employ persuasive power or violent rhetoric. Commenting upon the environmental precepts that governed one of the earlier Daoist communities, Schipper writes:

> The *One Hundred and Eighty Precepts* never speak of protests to the higher authorities, of political actions, revindications, demands for justice and peace, but only of respiration exercises, of inner harmony and individual peace. This is the only way to save the environment. True perfect nature can only be found within oneself.

> To regulate the world, we have to cultivate ourselves, to tend our inner landscape. Beyond, beneath, behind and inside the Precepts of the Daoist Libationer, we find a whole new world of spiritual ecology.[23]

This slow and gradual approach coheres well with Liu Xiaogan's analysis of the nonassertive action advocated in the *Daode jing*.

Such disappointingly personal and physiological self-cultivation may well not be what environmentalists have had in mind when they have championed the usefulness of Daoism as a cultural resource in the battle against environmental degradation. But as Lisa Raphals notes, that "would be to ignore the porosity of notions of selfhood in a wide range of Chinese thought: the inseparability of 'inner' and 'outer,' the high cultural value of 'selflessness,' macrocosm-microcosm identifications, and constructions of individuality that differ from Western norms."[24]

If, on the other hand, the purpose of investigating the cultural resources of the world's religious traditions is to locate alternative ways of envisioning ourselves in our environment, then the Daoist tradition of mapping the world in the body and the body in the world stands as a rich and enduring hermeneutical figure. It is the task of Daoists now to extend this hermeneutical figure to take into account the global changes in the economy of cosmic power that enfolds and nourishes us, just as in the past they have paid meticulous attention to the contours of the earth and the orbits of the stars.

ENDNOTES

[1]James Miller, "The Economy of Cosmic Power: A Theory of Religious Transaction and a Comparative Study of the Shangqing Daoism and the Christian Religion of Augustine of Hippo," Ph.D. diss., Boston University, 2000.

[2]Zhang Jiyu, "A Declaration of the Chinese Daoist Association on Global Ecology" in *Daoism and Ecology*, ed. N. J. Girardot, James Miller, and Liu Xiaogan (Cambridge, Mass.: Harvard University Press, Center for the Study of World Religions, Harvard Divinity School, 2001).

[3]Richard King, *Orientalism and Religion: Postcolonial Theory, India and "The Mystic East"* (London and New York: Routledge, 1999). See also Rosalind O'Hanlon, "Cultures of Rule, Communities of Resistance: Gender, Discourse

and Tradition in Recent South Asian Historiographies," *Social Analysis* 25 (1989): 94–114.

[4]Brock Silvers, "The Current State of Taoism in the People's Republic of China," a paper delivered at the conference on *Asian Human Rights: Critical Issues*, Center for Asian Studies, University of Colorado, Boulder, 7–8 April 2000.

[5]Edward Goldsmith, *The Way: An Ecological World-View*, rev. and enl. ed. (Totnes, England: Themis Books, 1996), 402–406.

[6]Liu Xiaogan, "Non-action (*Wuwei*) and the Environment Today: A Conceptual and Applied Study of Laozi's Philosophy," in Girardot, Miller, and Liu, eds., *Daoism and Ecology*.

[7]Ibid.

[8]A*nalects* 1:15.

[9]Zhuangzi 13, trans. Angus C. Graham, *Chuang-tzu* (London: George Allen and Unwin, 1981), 139–140; see also Lee Yearley, "Zhuangzi's Understanding of Skillfulness, and the Ultimate Spiritual State," in Paul Kjellberg and Philip J. Ivanhoe, eds., *Essays on Skepticism, Relativism and Ethics in the Zhuangzi* (Albany: SUNY Press, 1996).

[10]It is fairly certain that the following chapter of the Zhuangzi was not written by Zhuangzi himself. Graham refers to this as one of the later "syncretist writings." Graham, *Chuang-tzu*, 256.

[11]Zhuangzi 33, trans. Graham, *Chuang-tzu*, 275–276.

[12]See James Miller, "Respecting the Environment: Visualizing Highest Clarity," in Girardot, Miller, and Liu, eds., *Daoism and Ecology*.

[13]Much of what follows is based on chap. 2 of my dissertation, "The Economy of Cosmic Power: A Theory of Religious Transaction and a Comparative Study of Shangqing Daoism and the Christian Religion of Augustine of Hippo."

[14]*Lüshi chunqiu* 20, trans. Nathan Sivin, *Medicine, Philosophy and Religion in Ancient China* (Aldershot, England: Variorum, 1995), 6.

[15]*Huangdi neijing suwen* 8.1, trans. Sivin, *Medicine, Philosophy and Religion in Ancient China*, 7.

[16]This way of representing the five phases is taken from Shen Ziyin and Chen Zelin, *The Basis of Traditional Chinese Medicine* (Boston: Shambhala Publications, Inc., 1996), 17.

[17]*Huangdi neijing taisu* 1.1, trans. Paul U. Unschuld, *Medicine in China: A History of Ideas* (Berkeley: University of California Press, 1985), 243.

[18]The interpretation argued here is based on Unschuld's discussion of translating *Qi* as "influence" (Unschuld, *Medicine in China*, 67–73). From the perspective of the thing influencing, it is yang-*Qi* (expiration); from the perspective of the thing influenced, it is yin-*Qi* (inspiration); and from the perspective of the whole transaction, it is simply *Qi* (transpiration).

[19]Manfred Porkert, *The Theoretical Foundations of Chinese Medicine* (Cambridge, Mass.: MIT Press, 1974), 179–180.

[20]*Suwen* 2.4, trans. Unschuld, *Medicine in China,* 286.

[21]Ibid., 283.

[22]Kristofer Schipper, "Daoist Ecology: The Inner Transformation: A Study of the Precepts of the Early Daoist Ecclesia," in Girardot, Miller, and Liu, eds., *Daoism and Ecology.*

[23]Ibid.

[24]Lisa Raphals, "Metic Intelligence or Responsible Non-Action? Further Reflections on the *Zhuangzi*, *Daode jing* and *Nei ye*," in ibid.

Jack D. Forbes

Indigenous Americans: Spirituality and Ecos

THE COSMIC VISIONS OF INDIGENOUS PEOPLES are significantly diverse. Each nation and community has its own unique traditions. Still, several characteristics stand out. First, it is common to envision the creative process of the universe as a form of thought or mental process. Second, it is common to have a source of creation that is plural, either because several entities participate in creation or because the process as it unfolds includes many sacred actors stemming from a First Principle (Father/Mother or Grandfather/Grandmother). Third, the agents of creation are seldom pictured as human, but are depicted instead as "wakan" (holy), or animal-like (coyote, raven, great white hare, etc.), or as forces of nature (such as wind/breath). The Lakota medicine man Lame Deer says that the Great Spirit "is not like a human being. . . . He is a power. That power could be in a cup of coffee. The Great Spirit is no old man with a beard."[1] The concept perhaps resembles the *elohim* of the Jewish Genesis, the plural form of *eloi,* usually mistranslated as "God," as though it were singular.

Perhaps the most important aspect of indigenous cosmic visions is the conception of creation as a living process, resulting in a living universe in which a kinship exists between all things. Thus the Creators are our family, our Grandparents or Parents, and all of their creations are children who, of necessity, are also our relations.

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An ancient Ashiwi (Zuñi) prayer-song states:

> That our earth mother may wrap herself
> In a four-fold robe of white meal [snow]; . . . .
> When our earth mother is replete with living waters,
> When spring comes,
> The source of our flesh,
> All the different kinds of corn
> We shall lay to rest in the ground with the earth mother's living waters,
> They will be made into new beings,
> Coming out standing into the daylight of their Sun father, to all sides
> They will stretch out their hands. . . .[2]

Thus the Mother Earth is a living being, as are the waters and the Sun.

Juan Matus told Carlos Castaneda that Genaro, a Mazateco, "was just now embracing this enormous earth . . . but the earth knows that Genaro loves it and it bestows on him its care. . . . This earth, this world. For a warrior there can be no greater love. . . . This lovely being, which is alive to its last recesses and understands every feeling. . . ."[3]

Or, as Lame Deer puts it:

> We must try to use the pipe for mankind, which is on the road to self-destruction. . . . This can be done only if all of us, Indians and non-Indians alike, can again see ourselves *as part of the earth,* not as an enemy from the outside who tries to impose its will on it. *Because we . . . also know that, being a living part of the earth, we cannot harm any part of her without hurting ourselves.*[4]

European writers long ago referred to indigenous Americans' ways as "animism," a term that means "life-ism." And it is true that most or perhaps all Native Americans see the entire universe as being alive—that is, as having movement and an ability to act. But more than that, indigenous Americans tend to see this living world as a fantastic and beautiful creation engendering extremely powerful feelings of gratitude and indebtedness, obliging us to behave as if we are related to one another. An overriding characteristic of Native North American religion

is that of gratitude, a feeling of overwhelming love and thankfulness for the gifts of the Creator and the earth/universe. As a Cahuilla elder, Ruby Modesto, has stated: "Thank you mother earth, for holding me on your breast. You always love me no matter how old I get."[5] Or as Joshua Wetsit, an Assiniboine elder born in 1886, put it: "But our Indian religion is all one religion, the Great Spirit. We're thankful that we're on this Mother Earth. That's the first thing when we wake up in the morning, is to be thankful to the Great Sprit for the Mother Earth: how we live, what it produces, what keeps everything alive."[6]

Many years ago, the Great Spirit gave the Shawnee, Sauk, Fox, and other peoples maize or corn. This gift arrived when a beautiful woman appeared from the sky. She was fed by two hunters, and in return she gave them, after one year, maize, beans, and tobacco. "We thank the Great Spirit for all the benefits he has conferred upon us. For myself, I never take a drink of water from a spring, without being mindful of his goodness."[7]

Although it is certainly true that Native Americans ask for help from spiritual beings, it is my personal observation that giving thanks, or, in some cases, giving payment for gifts received, is a salient characteristic of most public ceremonies. Perhaps this is related to the overwhelmingly positive attitude Native Americans have had toward the Creator and the world of "nature," or what I call the "Wemi Tali," the "All Where" in the Delaware-Lenápe language. Slow Buffalo, a teacher, is remembered to have said about a thousand years ago:

> Remember . . . the ones you are going to depend upon. Up in the heavens, the Mysterious One, that is your grandfather. In between the earth and the heavens, that is your father. This earth is your grandmother. The dirt is your grandmother. Whatever grows in the earth is your mother. It is just like a sucking baby on a mother. . . .
>
> Always remember, your grandmother is underneath your feet always. You are always on her, and your father is above.[8]

Winona LaDuke, a contemporary leader from White Earth Anishinabe land, tells us that:

> Native American teachings describe the relations all around—animals, fish, trees, and rocks—as our brothers, sisters, uncles, and grandpas. . . .
>
> These relations are honored in ceremony, song, story, and life that keep relations close—to buffalo, sturgeon, salmon, turtles, bears, wolves, and panthers. These are our older relatives—the ones who came before and taught us how to live.[9]

In 1931 Standing Bear, a Lakota, said when reciting an ancient prayer:

> To mother earth, it is said . . . you are the only mother that has shown mercy to your children. . . . Behold me, the four quarters of the earth, relative I am. . . . All over the earth faces of all living things are alike. Mother earth has turned these faces out of the earth with tenderness. Oh Great Spirit behold them, all these faces with children in their hands.[10]

Again in 1931, Black Elk, the well-known Lakota medicine man, told us that "The four-leggeds and the wings of the air and the mother earth were supposed to be relative-like. . . . The first thing an Indian learns is to love each other and that they should be relative-like to the four-leggeds."[11] And thus we see this very strong kinship relation to the Wemi Tali, the "All Where": "The Great Spirit made the flowers, the streams, the pines, the cedars—takes care of them. . . . He takes care of me, waters me, feeds me, makes me live with plants and animals as one of them. . . . All of nature is in us, all of us is in nature."[12]

At the center of all of the creation is the Great Mystery. As Black Elk said:

> When we use the water in the sweat lodge we should think of Wakan-Tanka, who is always flowing, giving His power and life to everything. . . . The round fire place at the center of the sweat lodge is the center of the universe, in which dwells Wakan-Tanka, with His power which is the fire. All these things are Wakan [holy and mystery] and must be understood deeply if we really wish to purify ourselves, for the power of a thing or an act is in the meaning and the understanding.[13]

Luther Standing Bear, writing in the 1930s, noted:

> The old people came literally to love the soil and they sat or reclined on the ground with a feeling of being close to a mothering

> power. It was good for the skin to touch the earth and the old people liked to remove their moccasins and walk with bare feet on the sacred earth. . . . The soil was soothing, strengthening, cleansing, and healing. . . . Wherever the Lakota went, he was with Mother Earth. No matter where he roamed by day or slept by night he was safe with her.[14]

Native people, according to Standing Bear, were often baffled by the European tendency to refer to nature as crude, primitive, wild, rude, untamed, and savage. "For the Lakota, mountains, lakes, rivers, springs, valleys, and woods were all finished beauty. . . ."[15]

Of course, the indigenous tendency to view the earth and other nonorganic entities as being part of *bios* (life, living) is seen by many post-1500 Europeans as simply romantic or nonsensical. When Native students enroll in many biology or chemistry classes today they are often confronted by professors who are absolutely certain that rocks are not alive. But in reality these professors are themselves products of an idea system of materialism and mechanism that is both relatively modern and indefensible. I have challenged this materialist perspective in a poem, "Kinship is the Basic Principle of Philosophy," which I will partially reproduce here as indicative of some common indigenous perspectives:

> . . .For hundreds of years
> certainly for thousands
> Our Native elders
> have taught us
> "All My Relations"
> means all living things
> and the entire Universe
> "All Our Relations"
> they have said
> time and time again. . . .
>
> Do you doubt still?
> a rock alive? You say
> it is hard!
> it doesn't move of its own accord!
> it has no eyes!
> it doesn't think!

but rocks *do* move
put one in a fire
it will get hot won't it?
That means
won't you agree?
that its insides are moving
ever more rapidly?. . .

So don't kid me my friend,
rocks change
rocks move
rocks flow
rocks combine
rocks are powerful friends
I have many
big and small
their processes, at our temperatures,
are very slow
but very deep!

I understand because, you see,
I am part rock!
I eat rocks
rocks are part of me
I couldn't exist without
the rock in me
We are all related!

No, it's alive I tell you,
just like the old ones say
they've been there
you know
they've crossed the boundaries
not with computers
but with their
very own beings![16]

About a thousand years ago, White Buffalo Calf Woman came to the ancestors of the Lakota, giving them a sacred pipe and a round rock. The rock, Black Elk said,

> . . . is the Earth, your Grandmother and Mother, and it is where you will live and increase. . . . All of this is sacred and so do not forget! Every dawn as it comes is a holy event, and every day is

> holy, for the light comes from your father Wakan-Tanka; and also you must always remember that the two-leggeds and all the other peoples who stand upon this earth are sacred and should be treated as such.[17]

Here we see not only the expression of relatedness on a living earth, but also the sacredness or holiness of events that some persons take for granted: the dawn, the day, and, in effect, time and the flow of life in its totality. In relation to all of these gifts, human beings are expected to be humble, not arrogant, and to respect other creatures. An ancient Nahua (Mexican) poem tells us that

> Those of the white head of hair, those of the wrinkled face,
> our ancestors. . .
> They did not come to be arrogant,
> They did not come to go about looking greedily,
> They did not come to be voracious.
> They were such that they were esteemed on the earth:
> They reached the stature of eagles and jaguars.[18]

Lame Deer says: "You can tell a good medicine man by his actions and his way of life. Is he lean? Does he live in a poor cabin? Does money leave him cold?"[19] Thus, humility and a lack of arrogance are accompanied by a tendency toward simple living, which reinforces the ideal of nonexploitation of other living creatures. A consciousness of death also adds to the awareness of the importance of concentrating on the ethical quality of one's life as opposed to considerations of quantity of possessions or size of religious edifices. "A man's life is short. Make yours a worthy one," says Lame Deer.

Juan Matus, in Carlos Castaneda's *Journey to Ixtlan,* captures very well the attitude of many Native people: ". . .You don't eat five quail; you eat one. You don't damage the plants just to make a barbecue. . . . You don't use and squeeze people until they have shriveled to nothing, especially the people you love. . . ."[20] This kind of attitude is found over and over again in the traditions of Native people, from the basketry and food-gathering techniques of Native Californians to the characters in the stories of Anna Lee Walters (as in her novel *Ghostsinger,* the stories in *The Sun is Not Merciful,* or in *Talking Indian*).

Respect and humility are the building blocks of indigenous life-ways, since they not only lead to minimal exploitation of other living creatures but also preclude the arrogance of aggressive missionary activity and secular imperialism, as well as the arrogance of patriarchy.

But Anglo-American "ecologists" often have a very narrow conception of what constitutes "ecology" and the "environment." Does this contrast with the Native American attitude? Let us examine some definitions first. The root of the concept of environment has to do with "rounding" or "that which arounds [surrounds] us." It is similar to Latin *vicinitat* (Spanish *vecinidad* or English *vicinity*), referring to that which neighbors something, and also to Greek *oikos* (ecos), a house and, by extension, a habitation (Latin dwelling) or area of inhabiting (as in *oikoumene*, the inhabited or dwelled-in world). Ecology is the *logie* or study of ecos, the study of inhabiting/dwelling, or, as defined in one dictionary, the study of "organisms and their environment."

Ecos (*oikos*) is "the house we live in, our place of habitation." But where do we live and who are we? Certainly we can define ecos in a narrow sense, as our immediate vicinity, or we can broaden it to include the Sun (which is, of course, the driving power or energy source in everything that we do), the Moon, and the entire known universe (including the Great Creative Power, or *Ketanitowit* in Lenápe). Our ecos, from the indigenous point of view, extends out to the very boundaries of the great totality of existence, the Wemi Tali.

Similarly, our environment must include the sacred source of creation as well as such things as the light of the Sun, on which all life processes depend. Thus our surroundings include the space of the universe and the solar/stellar bodies that have inspired so much of our human yearnings and dreams.

Ecology, then, in my interpretation, must be the holistic (and interdisciplinary) study of the entire universe, the dynamic relationship of its various parts. And since, from the indigenous perspective, the universe is alive, it follows that we could speak of geo-ecology as well as human ecology, the ecology of oxygen as well as the ecology of water.

Many indigenous thinkers have considered humans part of the Wemi Tali, not separate from it. As I have written:

> For us, truly, there are no "surroundings."
>
> I can lose my hands and still live. I can lose my legs and still live. I can lose my eyes and still live. . . . But if I lose the air I die. If I lose the sun I die. If I lose the earth I die. If I lose the water I die. If I lose the plants and animals I die. All of these things are more a part of me, more essential to my every breath, than is my so-called body. *What is my real body?*
>
> We are not autonomous, self-sufficient beings as European mythology teaches. . . . We are rooted just like the trees. But our roots come out of our nose and mouth, like an umbilical cord, forever connected with the rest of the world. . . .
>
> Nothing that we do, do we do by ourselves. We do not see by ourselves. We do not hear by ourselves. . . . We do not think, dream, invent, or procreate by ourselves. We do not die by ourselves. . . .
>
> I am a point of awareness, a circle of consciousness, in the midst of a series of circles. One circle is that which we call "the body." It is a universe itself, full of millions of little living creatures living their own "separate" but dependent lives. . . . But all of these "circles" are not really separate—they are all mutually dependent upon each other. . . .[21]

We, in fact, have no single edge or boundary, but are rather part of a continuum that extends outward from our center of consciousness, both in a perceptual (epistemological-existential) and in a biophysical sense—our brain centers must have oxygen, water, blood with all of its elements, minerals, etc., in order to exist, but also, of course, must connect to the cosmos as a whole. Thus our own personal bodies form part of the universe *directly,* while these same bodies are miniature universes in which, as noted, millions of living creatures subsist, operate, fight, reproduce, and die.

Anna Lee Walters, the Otoe-Pawnee teacher and writer, in speaking of prayers, notes:

> "Waconda," it says in the Otoe language, Great Mystery, meaning that vital thing or phenomenon in life that cannot ever be entirely comprehensible to us. What is understood though, through the

> spoken word, is that silence is also Waconda, as is the universe and *everything* that exists, tangible and intangible, because none of these things are separate from that life force. It is all Waconda. . . .[22]

Thus ecos for us must include that which our consciousness inhabits, the house of our soul, our *ntchítchank* or *lenapeyókan,* and must not be limited to a dualistic or mechanistic-materialistic view of bios. Ecology must be shorn of its Eurocentric (or, better, reductionist and materialist) perspective and broadened to include the *realistic* study of how living centers of awareness interact with all of their surroundings.

At a practical level this is very important, because one cannot bring about significant changes in the way in which the Wemi Tali is being abused without considering the values, economic systems, ethics, aspirations, and spiritual beliefs of human groups. For example, the *sense of entitlement* felt by certain social groups or classes, the idea of being *entitled* to exploit resources found in the lands of other groups or *entitled* to exploit "space" without any process of review or permission or approval from all concerned—this sense of superiority and restless acquisitiveness must be confronted by ecology.

The beauty of our night sky, for example, now threatened by hundreds or thousands of potential future satellites and space platforms, by proposed nuclear-powered expeditions to Mars and space-based nuclear weapons, cannot be protected merely by studying the physical relations of organisms with the sky. The cultures of all concerned have to be part of the equation, and within these cultures questions of beauty, ethics, and sacredness must play a role. Sadly, the U.S. government is the greatest offender in the threat to space.

When a mountain is to be pulled down to produce cement, or coal, or cinderstone, or to provide housing for expanding suburbanites, the questions that must be asked are not only those relating to stream-flow, future mudslides, fire danger, loss of animal habitat, air pollution, or damage to stream water quality. Of paramount importance are also questions of beauty, ownership, and the unequal allocation of wealth and power that allows rich investors to make decisions affecting large numbers of creatures based only upon narrow self-interest. Still

more difficult are questions relating to the sacredness of Mother Earth and of the rights of mountains to exist without being mutilated. When do humans have the right to mutilate a mountain? Are there procedures that might mitigate such an aggression? Are there processes that might require that the mountain's right to exist in beauty be weighed against the money-making desires of a human or human group?

We hear a great deal about "impacts" and how "impacts" must be weighed and/or mitigated. But all too often, these considerations do not include aesthetics (unless the destruction is proposed for an area where rich and powerful people live), and very seldom do we hear about *sacredness* or the rights of the earth. Indeed, we have made progress in the United States with the concept of protecting endangered species, but it is interesting that, for many people, the point of such protection is essentially pragmatic: we are willing to preserve genetic diversity (especially as regards plant life) in order to meet potential human needs. The intrinsic right of different forms of life each to have space and freedom is seldom evoked. (Even homeless humans have no recognized right to "space" in the United States).[23]

All over the Americas, from Chile to the arctic, Native Americans are engaged in battles with aggressive corporations and governments that claim the right to set aside small areas (reserves) for Native people and then to seize the rest of the Native territory and throw it open to Occidental Petroleum, Texaco, or other profit-seeking organizations. Often, as in the case of the U'wa people, the concept of the sacredness of the living earth directly conflicts with the interests of big corporations and the revenue-hungry neocolonial governments that support them.

It has to be said that some indigenous governments and groups have also allowed devastating projects to be developed on their territories. Sometimes there has been grassroots resistance to the extraction of coal, uranium, and other minerals, but very often the non-Native government has encouraged (or strong-armed) the indigenous peoples into agreeing to a contract providing for little or no protection to the environment.

In her recent book, *All Our Relations,* Winona LaDuke focuses on a number of specific struggles involving Native people

in the United States and Canada. She points out that "Grassroots and land-based struggles characterize most of Native environmentalism. We are nations of people with distinct land areas, and our leadership and direction emerge from the land up."[24] LaDuke shows in each of her chapters how different groups of First Nations people are facing up to serious problems and are seeking to address them at the local, community level. They are also forming national and international organizations that seek to help individual nations, in great part through the sharing of information and technical assistance. In the final analysis, however, each nation, reserve, or community has to confront its own issues and develop its own responsible leadership. This must be stressed again and again: each sovereign Native nation will deal with its own environmental issues in its own way. There is no single Native American government that can develop a common indigenous response to the crisis we all face.

Mention should be made here of the work of Debra Harry, a Northern Paiute activist from the Pyramid Lake Reservation who is spearheading an information campaign relative to biopiracy and the dangers of the Human Genome Diversity Project. The collection of Native American tissue samples and DNA/mtDNA information represents a very serious environmental threat, since the discovery of unique genetic material could be used not only for patenting and sale but also for future campaigns of germ or biological warfare. The latter may seem extreme, but Native peoples have reason to be cautious about sharing potentially dangerous information with agencies, governments, and organizations not under their own control. The entire field of biopiracy, the theft of indigenous knowledge about plants and drugs, represents another area of great concern, since Native peoples could find themselves having to pay for the use of their own cultural heritage or for treatment using genetic material of indigenous origin.[25]

Many activists are concerned primarily with the environmental responses of Native Americans belonging to specific land-based communities recognized as sovereign by the U.S. or Canadian governments. But in addition, there are millions of Native people who do not have "tribal" governments that are recognized as legitimate by a state. In California and Mexico,

numerous Mixtec communities must deal with the hazards of agricultural pesticide, crop-dusting on top of workers, poor housing, inadequate sanitation, poor or polluted water sources, and a host of other issues. The Mixtec have responded by organizing around farm-labor issues, as well as developing their own ways of coping. For example, in Baja California they are often forced to build their own houses on steep hillsides where they must use old cast-off truck and auto tires as retaining walls to provide a level area for living.

Many Native groups, including Kickapoos, Navajos, Papagos, Zapotecs, and Chinantecs, produce a number of migrant agricultural laborers. These workers often remain rooted in home villages to which they may return seasonally. Such persons have a primary responsibility to their families; they cannot be expected to devote much energy to environmentalism, apart from attempting to obtain clean water, healthy food, and sanitary living conditions.

On a positive note, the environmental awareness of many indigenous American groups translates into a high respect for women in their communities. It would be hypocritical to seek to control women or restrict their opportunities for full self-realization while pretending to respect living creatures. This is a significant issue, because a great deal of evidence has shown that when women have high status, education, and choices, they tend to enrich a community greatly and to stabilize population growth. Many traditional American societies have been able to remain in balance with their environments because of the high status of women, a long nursing period for children, and/or the control of reproductive decisions by women.[26] Many of the leaders in the Native struggle today are women.

Many Native homelands are much reduced in size from former years and are often located on land of poor quality. These conditions can create overuse of resources. Human population growth is, of course, one of the fundamental issues of environmental science. Along with the unequal distribution of resources and the taking away of resources (such as the removal of oil from indigenous lands, leaving polluted streams and poisoned soil) from militarily weaker peoples, human population growth is one of the major causes of species loss and damage to ecos.

These are major issues in ecology but also must be overriding concerns for economists, political scientists, and political economists. In fact, the tendency in North America to ignore the impact of money-seeking activities upon nonmarket relations is a major source of environmental degradation. The recent effort to "charge" the industrial nations for the damage they have caused to world environments (as a new form of "debt" from the capitalist world to the rest of the world) is an example of how we must proceed.[27]

To many of the more materialistic peoples of the world, indigenous people have often seemed "backward" or "simple." They have seemed ripe for conquest or conversion, or both. The fact is, however, that the kind of ethical living characteristic of so many indigenous groups, with its respect for other life forms and its desire for wholeness of intellect, may be the best answer to the problems faced by all peoples today.

Yet there are some who challenge the environmental record of Native Americans, seeking to prove that in spite of the ideals expressed in indigenous spirituality, Native peoples were actually large-scale predators responsible some ten thousand years ago for widespread slaughter and even species annihilation. This viewpoint, shared primarily by a few anthropologists, overlooks the fact that during the Pleistocene era and later extinctions occurred in Eurasia and elsewhere, and that Native Americans cannot be blamed for a global phenomenon. In any case, indigenous Americans have always belonged to numerous independent political and familial units, each with its own set of values and behavioral strategies. One can hardly assign blame to modern Native people as a whole group when the "culprits" (if there were any) cannot even be identified.

In dealing with the sacred traditions of original Americans and their relationship to the environment, we must keep in mind a common-sense fact: not only do different Native groups have different traditions, stories, ceremonies, living conditions, challenges, and values, but each family or group has its own unique approach to "together-living" or "culture." We must also factor in time, since different days, years, and epochs have presented different circumstances. In short, humans do not live by

abstract rule alone. They live as well through a unique set of decisions informed by inspiration, personality, situation, and opportunity.

Native Americans, like any other group, are capable of acts that might well conflict with the major thrust of their sacred traditions. We must, therefore, differentiate between the concrete behavior of a people and their ideals. But in the case of indigenous Americans, such a distinction is perhaps less important than in other traditions. Why? Because Native Americans often lack a single, authoritative book or set of dogmas that tells them what their "ideals" should be. On the contrary, Native American sacred traditions are more the result of choices made over and over again within the parameters of a basic philosophy of life. Thus, we must look at the ideals expressed in sacred texts (including those conveyed orally), but also at the choices that people actually make.

Nonetheless, I believe that we can make the kinds of generalizations that I have, at least as regards those Native North Americans still following traditional values.

> . . .The Old Ones say
> outward is inward to the heart
> and inward is outward to the center
> because
> for us
> there are no absolute boundaries
> no borders
> no environments
> no outside
> no inside
> no dualisms
> no single body
> no non-body
>
> We don't stop at our eyes
> We don't begin at our skin
> We don't end at our smell
> We don't start at our sounds. . . .
>
> Some scientists think
> they can study a world of

matter separate from themselves
but there is no
Universe Un-observed
(knowable to us at least)
nothing can be known
without being channeled
through some creature's senses,
the unobserved Universe
cannot be discussed
for we, the observers,
being its very description
are its eyes and ears
its very making
is our seeing of it
    our sensing of it. . . .

    Perhaps we are Ideas in the mind
of our Grandfather-Grandmother
    for, as many nations declare,
    the Universe
    by mental action
    was created
    by thought
    was moved
    So be it well proclaimed!
our boundary is the edge of the Universe
    and beyond,
    to wherever the Creator's thoughts
    go surging. . . .[28]

Native people are not only trying to clean up uranium tailings, purify polluted water, and mount opposition to genetically engineered organisms; they are also continuing their spiritual ways of seeking to purify and support all life by means of ceremonies and prayers. As LaDuke tells us: "In our communities, Native environmentalists sing centuries-old songs to renew life, to give thanks for the strawberries, to call home fish, and to thank Mother Earth for her blessings."[29]

ENDNOTES

[1]John Fire, Lame Deer, and Richard Erdoes, *Lame Deer, Seeker of Visions* (New York: Simon and Schuster, 1972), 39–40.

[2]Ruth Bunzel, "Introduction to Zuni Ceremonialism," *Forty-Seventh Annual Report,* Bureau of American Ethnology (Washington: Government Printing Office, 1932), 483–486.

[3]Some writers have attacked Carlos Castaneda; however, I find that many of the insights in his first four books are quite valuable. Since he was most assuredly a man of Indigenous American ancestry, I am willing to quote him without arguing over whether his works are fiction or nonfiction. Carlos Castaneda, *Tales of Power* (New York: Simon and Schuster, 1974), 284–285.

[4]Fire, Lame Deer, and Erdoes, *Lame Deer, Seeker of Visions,* 265–266; emphasis added.

[5]Ruby Modesto and Guy Mount, *Not For Innocent Ears: Spiritual Traditions of a Desert Cahuilla Medicine Woman* (Angelus Oaks, Calif.: Sweetlight Books, 1980), 72.

[6]Sylvester M. Morey, ed., *Can The Red Man Help The White Man?* (New York: G. Church, 1970), 47.

[7]Black Hawk, *Black Hawk; An Autobiography* (Urbana, Ill.: University of Illinois Press, 1955), 106.

[8]John Gneisenau Neihardt, *The Sixth Grandfather: Black Elk's Teachings Given to John G. Neihardt,* ed. Raymond J. DeMallie (Lincoln, Nebr.: University of Nebraska Press, 1984), 312.

[9]Winona LaDuke, *All Our Relations: Native Struggles for Land and Life* (Cambridge, Mass.: South End Press, 1999), 2.

[10]Neihardt, *The Sixth Grandfather,* 288.

[11]Ibid., 288–289.

[12]Pete Catches, Lakota elder, quoted in Fire, Lame Deer, and Erdoes, *Lame Deer, Seeker of Visions,* 137–139.

[13]Black Elk, *The Sacred Pipe: Black Elk's Account of the Seven Rites of the Oglala Sioux,* rec. and ed. Joseph Epes Brown (Baltimore: Penguin Books, 1971), 31–32.

[14]Luther Standing Bear, *Land of the Spotted Eagle* (Lincoln, Nebr.: University of Nebraska Press, 1978), 192–193.

[15]Ibid., 196.

[16]Jack D. Forbes, "Kinship is the Basic Principle of Philosophy," *Gatherings: The En'owkin Journal of First North American Peoples* VI (Penticton, B.C.: Theytus Books, 1995), 144–150.

[17]Black Elk, *The Sacred Pipe*, 7.

[18]Miguel Leon-Portilla, *La Filosofia Nahuatl: Estudiada en sus Fuentes* (Mexico: Universidad Nacional Autonoma de Mexico, Instituto de Investigaciones Historicas, 1966), 237–238. My translation.

[19]Fire, Lame Deer, and Erdoes, *Lame Deer*, 155–158.

[20]Carlos Castaneda, *Journey to Ixtlan: The Lessons of Don Juan* (New York: Simon and Schuster, 1972), 69–70; Fire, Lame Deer, and Erdoes, *Lame Deer*, 16.

[21]Jack D. Forbes, *A World Ruled by Cannibals: The Wetiko Disease of Aggression, Violence, and Imperialism* (Davis, Calif.: D-Q University Press, 1979), 85–86. See also Jack D. Forbes, *Columbus and Other Cannibals* (Brooklyn: Autonomedia, 1992), 145–147.

[22]Anna Lee Walters, *Talking Indian: Reflections on Survival and Writing* (Ithaca, N.Y.: Firebrand Books, 1992), 19–20.

[23]See Jack D. Forbes, "A Right to Life and Shelter," *San Francisco Chronicle*, 28 May 2000, zone 7, 9.

[24]LaDuke, *All Our Relations*, 4.

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[26]Forbes, *Columbus and Other Cannibals*, 109–110.

[27]This is a proposal made by Third World nation that seeks to "capitalize" the costs of environmental damage.

[28]Jack D. Forbes, "The Universe Is Our Holy Book," unpublished poem, 1992.

[29]LaDuke, *All Our Relations*, 3.

Bill McKibben

Where Do We Go from Here?

HAVA TIROSH-SAMUELSON speaks for nearly all religious traditions when she writes that for Jewish thinkers, until very recently, "environmentalism has remained a marginal concern." It's not that religions ignored the natural world—indeed, if you edited out every hymn in the Christian hymnal that testifies to God's presence through the thunder, the dew, or the cycle of the seasons, you would be left with a thin book indeed. But for several millennia some of these ancient religions took the natural world for granted, assumed it as a given, the backdrop against which humans and deities worked out their various relationships.

Now, responding to the urgent alarms of scientists, historians of religion and theologians have pored over old texts and traditions, seeking to find in them sources for a new environmental ethics—a repair guide for what suddenly seems our most broken relationship of all, namely, our human relationship to the natural habitat. The splendid work of these historians, presented in a series of Harvard conferences and books on world religions and ecology and exemplified by the essays in this issue of *Dædalus*, has yielded much that is useful. It turns out that buried in plain sight throughout our various traditions are myriad clues and suggestions about how we might live more lightly on the planet. In addition, the conferences and the books are documenting examples of religiously inspired environmental projects in various parts of the world.

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While scholars and environmental activists have joined forces in these conferences, religious leaders and laypersons still need to become more involved. So far, with notable outstanding exceptions—like the Greek Orthodox Patriarch Bartholomew, the Tibetan Buddhist Dalai Lama, and the Chancellor of the Jewish Theological Seminary, Ismar Schorsch—few religious leaders have stepped forward to make these new understandings central parts of their work. Denominations that addressed questions of social justice and civil rights have adopted a lower profile on equally central questions of environmental ethics. They have faithfully adopted, and then faithfully filed away, any number of right-thinking position papers on toxic waste or global warming (which they deplore) and God's creation (which they cherish). But all in all, it's been a pretty damp squib. So perhaps a useful task, in these closing pages, would be to suggest some of the ways these emerging insights from our texts and traditions might be translated into action, soon enough to meet the urgent timetable laid out by Michael McElroy in his introductory essay. We need to build on the work begun by this project to bring together ideas and action.

My general point is simple: the deepest religious insights on the relation between God, nature, and humans may not emerge until religious people, acting on the terms indicated by their traditions, join these movements. The act of engagement will itself spur new thinking, new understanding.

Another way of saying it is this: for many Christians, a profound understanding of the Jewish story of Exodus as an allegory of liberation followed, not preceded, Rosa Parks's decision to stay in the front seat of a Montgomery bus. She sat there out of some intuitive sense of right and wrong, of frustration and hope. But as the churches took up her cause, they searched more deeply through their traditions, and certain verses came to new and real life; certain themes emerged. Notably, many of the insights formulated by the liberation theologies of Latin America, Asia, and Africa could bring important perspectives to the question of religious understanding of the human-Earth relationship—significantly, in regions of the globe where that question is gaining urgency at the fastest rate.

It is undeniable, as Sallie McFague points out in her powerful essay, that our religions help us determine "who we are in the scheme of things and how we should act." But of course, as her piece makes clear, that emerges not only through proof-texting or sermonizing. It is true, to use the words of Christopher Key Chapple in his essay on the Jain tradition, that in order to be effective, environmental work "must proceed from a story." But that story, that new understanding of who we are, will in turn emerge through action.

For instance, within fifteen miles of the *Dædalus* offices, several old coal-fired power plants continue to supply Massachusetts with a portion of its electricity. Local environmentalists have worked for years to force the plants to convert to natural gas, citing a series of studies showing the human health effects of coal soot on New Englanders. But if a hundred priests and ministers and imams and rabbis, joined by several hundred laypeople, descended on those plants in protest, what would be the result? It might or might not change the political dynamic (I think it would), but the act itself would certainly force those participating to think more seriously about what their traditions demand. They would have no choice but to begin viewing the facts about global warming, laid out with understated power by Michael McElroy, as the story of human beings grown too large in relation to their planet, a position that almost requires reference to the Book of Job or Psalm 148.

Or say that the campaign against genetic modifications in food, so far ably led by secular environmentalists, suddenly began to draw significant religious participation. Soon these people of faith would begin to discover what parts of our traditions are actually resonant across secular lines (the tree of knowledge? the stewardship of God?), and from those begin to knit together a new story of who we are and how we should act.

The importance of religious participation in these movements cannot be underestimated. For instance, McFague offers a powerful indictment of neoclassical economics as being unable to apprehend the things that make us fully human. That indictment is common enough in environmental circles, but the search

for some alternative has so far faltered. The political Left has not been much help, offering mainly a critique about distribution, but still tied to the idea of "more." Only our religious institutions, among the mainstream organizations of Western, Asian, and indigenous societies, can say with real conviction, and with any chance of an audience, that there is some point to life beyond accumulation. In the past, that vision was expressed purely in spiritual and aesthetic terms; now it has also acquired a deeply practical urgency. Those in monks' habits are joined by scientists in white coats, and they're saying the same few things: Simplicity. Community. Restraint. That confluence carries enormous potential energy.

This is not to say that there's a great chance this new wave of religious involvement will carry the day. At least in the West, many religious *diktats* are ignored, even among the theoretically faithful. (Consider, for instance, the powerful indictments of neoclassical economics, on justice grounds, by the Catholic bishops of North America.) Still, there's a real opportunity here, one not yet fully tried, and one that can't be ignored, given the severity of the crisis. There are few enough leavening agents left in our society, few enough potential goads to the conscience of the wealthy majority. Potential activists within the churches, synagogues, mosques, and temples doubtless fear marginalization if they get too far outside the mainstream, but in fact they are marginalized now, invisible within the smothering consensus of our society. It is only by getting far enough out to risk seeming extreme that they have any real chance of challenging our consumerist complacency.

This radical discontinuity between religions and the secular mainstream—a mainstream that threatens, remember, to raise the temperature of the planet five or ten degrees before the century is out—might prove more important than the divisions between different religious traditions. Reduced to cases, some of the theoretical conflicts disappear: if you have to decide about drilling for six months' worth of oil in the Arctic National Wildlife Refuge, a stewardship view of the world might well yield the same conclusion as a more radically biocentric vision. At any rate, the gulfs between traditions are probably a second-

order problem, one to be worked out as the various religions get down to actual work in the territories where they prevail.

And as they do so, I have no doubt they will discover new and powerful visions emerging, stronger than even the foundational work done by theologians so far suggests. Donald Swearer's chronicle of the controversy in northern Thailand over plans to build a cable car up Doi Suthep, one of Buddhism's sacred mountains, is heartening in this regard. He quotes from local newspaper accounts of the massive opposition to the project: The authorities had "underestimated the northern people: the soul of northern Thailand is still alive. Although sometimes not being able to explain why rationally, the northern people want to preserve Doi Suthep as it was given them by Creation, as untouched as possible, as sacred." These same religious-environmental impulses are ingrained in billions of human beings, and one role of religious communities is surely to give them permission to come to the surface.

Ecology may rescue religion at least as much as the other way around. By offering a persuasive practical reason to resist the endless obliterating spread of consumerism, it makes of Creation a flag round which to rally. And it is a flag planted not in the past, but in the present and the future. It is the keystone issue for our moment, the one that makes eco-theology urgent.

And it is to this word "urgent" that I want to return. The poor you may always have with you, but the atmosphere you don't—as McElroy makes abundantly clear in his essay. Climate change is a timed test, and so are most of the other environmental crises we face. So we need more conferences and conclaves of religious leaders, scholars, and activists, but we need them to be different from the meetings we've held in the past. We must gather to discuss not only ideas from the past but how those ideas can be put into action. We need to identify, as the essays in this issue of *Dædalus* have done, the remarkable religiously inspired environmental initiatives already happening in many parts of the world. But we need much more as well.

Imagine gatherings where theologians and scholars and activists came together—and did not leave until they had worked out plans for closing down a polluting power plant, opening up

new funding for alternative energy, or any of a hundred other tasks: specific actions, which they would help to carry out in the days and weeks ahead. Dozens of strategies will emerge from such discussions: mindfulness and protest, witness and lament, nonviolence and celebration—new initiatives like Episcopal Power and Light, the church-based nonprofit that markets green energy; new efforts like the Boston-based Coalition for Environmentally Responsible Economics (CERES) to speak truth to the powerful in the corporate and political worlds; new declarations from bolder leaders: that sport utility vehicles are morally problematic, that the Kyoto treaty needs moral support. Most of all, new actions. A thousand things, all done in the name of the sacredness of Creation, all designed to make a real, visible, luminous difference.

Hey! Lean to hear my feeble voice
At the center of the sacred hoop
You have said that I should make the tree to bloom
With tears running, O Great Spirit, my Grandfather,
With running eyes I must say
The tree has never bloomed
Here I stand, and the tree is withered.
Again, I recall the great vision you gave me.

It may be that some little root of the sacred tree still lives.

Nourish it then
That it may leaf
And bloom
And fill with singing birds!

Hear me, that the people may once again
Find the good road
And the shielding tree.

—Black Elk

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