CONFERENCE REPORT

© DAVID KELLY/SHUTTERSTOCK

Toward a New Consciousness: Values to Sustain Human and Natural Communities

Yale School of Forestry & Environmental Studies Conference, Aspen, CO, 11–14 October 2007

Anthony A. Leiserowitz and Lisa O. Fernandez

Our world, our only habitat, is a biotic system under such stress it threatens to fail in fundamental and irreversible ways. Major change is required to stabilize and restore its functional integrity. Examine any of the great environmental challenges confronting us—climate change, biodiversity loss, pollution, resource depletion—and a similar pattern emerges. A modest number of people know a great deal about these afflictions and unfolding tragedies, but their messages have difficulty overcoming public apathy, political denial, or entrenched opposition. Most of all, these messages rarely spur responsive public action, basic shifts in values and attitudes, or the behavioral change needed at the scale or within the time frame required. The result is what is commonly referred to as a failure of political will, but this phrase fails to capture the depth of the cultural void or social malfunction involved.

At its deepest level, if we are to address the linked environmental, social, and even spiritual crises, we must address the wellsprings of human caring, motivation, and social identity. Many have concluded that what we need is a major shift in our core values and dominant culture—in effect, the evolution of a new consciousness. Aldo Leopold wrote to a friend in 1944 that little could be done in conservation "without creating a new kind of people."[1] Peter Senge and his colleagues have similarly argued, "When it is all said and done, the only change that will make a difference is the transformation of the human heart."[2]

To explore these themes, the Yale School of Forestry & Environmental Studies convened an esteemed group of leaders representing diverse disciplines, including the natural sciences, social sciences, philosophy, communications, education, religion, ethics, public policy, business, philanthropy, history, the creative arts, and the humanities.[3] The conference focused on the role of cultural values and worldviews in environmentally destructive behavior within affluent societies—patterns that are being adopted throughout the world, including the rising centers of Western-style affluence in the developing world. The conference was intented to help catalyze further investigation of the critical role of cultural values and worldviews in the global environmental crisis and the implementation of concrete initiatives to accelerate a paradigm shift in human values, attitudes, and behaviors toward the natural world.

Diagnoses

The failure of the developed world to fully comprehend or confront the size, severity, and urgency of the global environmental crisis requires a deep examination of the prevailing worldviews, structures and institutions, and norms and beliefs within modern society that maintain and reinforce a self-destructive relationship with the natural world.

Worldviews

Anthropocentrism, materialism, and alienation from nature. The anthropocentric notion that humans stand "above" and independent of nature, rather than "within" and interdependent with it, has deep cultural and historical roots, some argue, dating back at least to the biblical cosmology of Genesis. Further, since the Enlightenment, the reigning scientific worldview has held that matter is dead and inert, encouraging human beings to believe that they can manipulate and rearrange the material world any way they like, with few moral or ethical constraints, duties, or obligations. One result is that members of modern societies are increasingly physically, psychologically, and culturally separated from the natural world. We live in a system that has severed or rendered invisible many of our connections

to nature. The packaged chicken in the grocery store has been cleaned, sanitized, and presented in a way that disguises that it was once a living, breathing animal, that inhabited a particular place (a factory farm), was bred, fattened, pumped with growth hormones and antibiotics, and slaughtered by migrant workers. The cell phone is an assemblage of literally hundreds of material elements, mined, milled, and gathered from around the world, manufactured, assembled, distributed, and disposed of by faceless people in unknown places, with unknown environmental consequences. The entire edifice of the global economic system is constructed upon this underlying worldview and accompanying detachment of products from their natural origins.

As a result, there are few daily reminders of the natural world as the foundation on which civilization stands. People, especially children, are spending less and less time outside in natural settings, which some have called the "extinction of nature experience."[4] Human contact with other species and wild nature is increasingly mediated through the television, constrained within the safe confines of the rectangular screen. There seems to be a growing societal blindness to the beauty, succor, and necessity of the more-than-human world.

Surveys do find that people around the world strongly profess environmental values,[5] yet these values are increasingly less rooted in actual experience and interaction with nature and thus begin to float free, untethered, unintegrated into everyday behavior. The well-documented gap between our professed environmental values and actual behavior stems in part from this increasing detachment from the natural world.

Reductionism. The prevailing scientific worldview seeks understanding by breaking complex objects of study into smaller and smaller parts, with the assumption that complex behavior is the simple result of the interaction of these parts. Thus, if we can just understand and model the behavior of each piece, we will understand the behavior of the whole.[6] Over the centuries, this approach has generated tremendous advances in scientific knowledge, leading to the establishment of disciplinary fields of expertise. At the same time, however, this approach has led to hyperspecialization within science, where entire subdisciplines and entire careers are spent investigating smaller and smaller twigs on the "tree of knowledge." As a result, many researchers can no longer understand the breadth of their own discipline, much less how their discipline might intersect with others.

This approach, however, has been recently challenged by the findings of systems and complexity theory, which demonstrate the existence of emergent properties unpredictable from the interaction of their constituent parts in systems ranging in size from microscopic to cosmological, in disciplines as diverse as chemistry, ecology, and astronomy. Likewise, interdisciplinary research has received increasing attention and funding, as scientists and funders have recognized the importance of holistic and systems perspectives at play in natural and social phenomena and the environmental crisis.

Binary and dichotomous thinking. Good versus evil, humans versus nature, economy versus environment: binary or dichotomous thinking is often problematic, as it separates the world into simplistic, separate, and opposing categories, while privileging one of the two. Lost is the potential for gray areas of difference, "win-win" solutions, or the possibility of an interdependent relationship between the two. For example, there are tremendous opportunities to protect the environment while growing the economy—for instance, through green jobs and renewable energy technologies. On a deeper level, the dualistic separation of humans and nature reinforces the false notion that humans are outside and above nature and natural processes, instead of emergent from and inextricably interconnected to them.

Radical individualism. American society often privileges competition over collaboration and individualism over community, equity, or social justice. Meanwhile, studies have demonstrated that radical individualists are less likely to believe environmental problems exist and more likely to oppose environmental policies and programs.[7] Taken to an extreme, individualism privileges personal autonomy at the expense of what is best for communities or society as a whole. While individualism remains a core value, it also needs to be balanced with other core values, such as equality, fairness, and justice.

Economism. Just as all cultures have a complex of myths about nature and the proper human relation to nature, so do we have a complex of myths about the economy, which can collectively be referred to as economism. Given the privileged place economic analysis holds in policymaking and the acquiescence of other disciplines to the rules of economic discourse, many individual decisions, some with deep moral implications, are now determined primarily by income and prices. We increasingly perceive and understand "reality" from our particular position in the economic system and perceive the value of others and nature through an economic lens. Our dreams for the future are often dominated by portrayals of economic and material progress. The field of economics makes a number of often unquestioned, flawed assumptions, such as the belief in a direct and consistent relationship between income and human well-being, an autonomous, rational-actor model of human decisionmaking and behavior, that the economy is independent of ecology, and that perpetual economic growth is possible on a planet of finite resources. Meanwhile, the implementation of these ideas in the real world is a major driver of the environmental crisis.

Cornucopianism and technological optimism. For centuries, the bounty of nature seemed unlimited. In the twentieth century, however, the world witnessed an explosion in scientific

knowledge and technology and an accompanying exponential increase in human beings' power to exploit nature. While science and technology have unquestionably improved human health and well-being, technologies invented to solve one problem have often had unanticipated and negative human or ecological consequences—for example, the pesticide DDT. Further, science and technology do not operate in a vacuum—scientific and technological advances are mediated and inflected through existing social structures, norms, and values. In turn, outside forces like venture capital drive much scientific research and lead to the development of certain technologies and not others, based on market values. Finally, science and technology have vastly increased the human impact on the natural world, ranging from individual environmental disasters, like Chernobyl and the *Exxon Valdez* oil spill, to large-scale problems like climate change and the ozone hole. We have now entered the Anthropocene era, in which human beings are one of the dominant forces of change on the planet. This rate and scale of the human impact is radically new and is due in large part to the exponential increase in the human ability to manipulate the world. Finally, while environmental science and green technologies will certainly be important contributors to the effort to find solutions to global environmental problems, such as climate change, overfishing, biodiversity extinctions, and ocean acidification, they alone are insufficient to solve these problems, which are also rooted in politics, economics, social relations, and culture.

Structures and Institutions

Media: Balance and compartmentalization. "Balanced" and "objective" reporting are core values of the news media. Perversely, however, the implementation of these values has led to misleading news coverage of critical environmental issues. "Balance" has often been interpreted as meaning that each side of a debate merits equal mention. Thus many news stories have, in the interest of "balance," placed the views of the overwhelming majority of scientists on a level playing field with a small minority of dissenters, leading to the false impression that there is more scientific controversy about an issue than actually exists.

Likewise, too many environmental news stories frame environmental issues only in terms of natural science or politics. For example, many environmental stories describe human impacts on the natural world, without necessarily connecting these impacts back to human beings. Meanwhile, stories about environmental justice—the disproportionate environmental harms imposed on the poor, people of color, and the disempowered—often fail to get adequate attention. Even climate change has often been described in terms of its impacts on nonhuman nature, such as glaciers or polar bears, with inadequate attention to the potential impacts on human beings or the implications for global environmental justice.

Academia: Disciplinary silos. Disciplines within academia (natural and social sciences and the humanities) are often isolated from one another. More broadly, too many academics talk only to each other, using language and jargon incomprehensible to even the educated layperson. The traditional disciplinary structure, along with the reward system of academia (status, tenure, and promotion) all constrain the holistic, integrated, and interdisciplinary research and teaching required to address environmental problems.

Humanities: An anthropocentric focus. The humanities, as evidenced by their very name, continue to retain an almost exclusive focus on human beings and their affairs, often treating the natural world as a mere backdrop to human history and culture. There is a burgeoning genre of nonfiction nature writing; however, it remains marginalized within the study of literature. Meanwhile, this genre itself has historically been dominated by "cabin" and "wilderness" narratives of lone individuals confronting and reflecting upon the natural world.[8] Many culturally, racially, and ethnically diverse voices are now emerging, often challenging deeply held conceptions of the human-nature relationship.[9]

Environmentalism: An inadequate reach. Some argue that environmentalism largely remains a reform movement committed to the assumption that the environmental crisis can be solved within the current political and economic system, without challenging underlying values or questioning contemporary lifestyles.[10] For 40 years, the environmental movement has worked to develop new policies, regulations, and legislation to protect the environment and relied on large expert bureaucracies and the judicial system to enforce these rules and regulations. Likewise, many environmentalists today are working to promote green thinking and practice within corporations and consumer markets. Working within the system, environmentalists have tended to be pragmatic and incrementalist, often focused on solving individual problems rather than addressing deeper underlying causes. Environmentalism needs to sharpen its critique of contemporary culture, economics, and politics; reach out and form alliances with other social movements; invest in the intellectual development of core concepts, ideals, and values; and wage effective campaigns to win hearts and minds.

Policy: Dysfunctional political systems. Many political systems are crippled by cronyism, revolving doors, corporate influence, lobbyists, special interests, gerrymandering, scandal, and a lack of inspired leadership. The local level, however, is proving to be fertile ground for transformative action. Cities, counties, states, and other local groups have taken bold action to address both local and global issues, such as climate change. While serving as the inspiration and testing ground for new

ideas and approaches, however, these local solutions ultimately have to be scaled up to the national and international levels if we are to successfully deal with our global environmental challenges.

Philanthropy: A lack of holistic, strategic, and systems thinking. The philanthropic sector often invests in projects to fix pressing environmental and social problems. Philanthropic organizations have become very good at describing what they are against, but rarely do they invest in projects that help articulate what they are for—detailed, concrete, and positive visions of a better world and roadmaps to help get us there. Thus, much of philanthropic giving has been relatively tactical and piecemeal, not strategic. This tendency is reinforced by the corporatization of foundations, with increasing emphasis placed on quantifiable, short-term results.

Norms and Beliefs

Environmental issues lack urgency. Many political leaders and members of the public in the United States have not yet comprehended the urgency of the environmental crisis. While the sense of urgency about climate change has grown recently, it still is underappreciated, and we are running out of time to avoid the worst consequences. Meanwhile, climate change is just one of many global environmental stressors that have potentially disastrous consequences, yet barely register on the radar screens of leaders (including ocean acidification, nitrogen pollution, overfishing, patterns of consumption, and population growth). Although the broad public professes positive environmental attitudes and expresses concern about the state of the world's environment,[11] a very large gap between individual and societal attitudes and behaviors clearly remains.

Scientists should not advocate. Many scientific disciplines are currently struggling with the proper role of science and the scientist in society. Some argue that scientists should focus only on the production of scientific facts and leave value judgments to policymakers and the public. They further argue that when scientists speak out as advocates for action, they diminish the public perception that scientists provide objective truth, debase scientific credibility, and reduce scientists to just another special interest group prone to making up, selecting, or distorting facts to fit a preestablished subjective agenda.

In response, other scientists argue that science—through the scientific method and rigorous empiricism—has identified and described a wide array of human factors currently tearing ecosystems apart, degrading human health and well-being, and destroying the life-support systems of the planet, in rapid and irreversible succession. Given these pervasive and dangerous impacts, these scientists argue that to stand by and say nothing, especially given scientists' unique understanding of what is happening, is problematic at best and immoral at worst.

Environmental behavior is an individual responsibility. The prototypical environmental act today is recycling—primarily an individual behavior. Likewise, individuals are told they should buy green products, turn down the thermostat, buy compact fluorescent light bulbs, drive less, buy more fuel efficient cars, eat organic, and eat local. Meanwhile, relatively little attention is focused on the vital need for systemic changes in collective behavior. Political action, carbon pricing, government incentives and subsidies for clean energy development, and increased regulation of polluters are all examples of social policies and behaviors that are required to deal with the environmental crisis. Individual consumption and conservation, while important on many levels, are simply inadequate to address the scale and scope of our current challenges.

Environmentalism needs to sharpen its critique of contemporary culture, economics, and politics; reach out and form alliances with other social movements; and invest in the intellectual development of core concepts, ideals, and values.

Consumerism as the basis of self-identity. The desire for and expression of individual identity has become a major force in modern culture and societies. These desires have been amplified and exploited by marketers to sell products. Individuals now adopt distinct "lifestyles" or particular ensembles of material products, homes, color schemes, and hobbies that become both sources of individual identity and the means by which these identities are signified to others. This process helps to fuel consumerism, which is the primary engine of many developed economies. These economies in turn drive much of the increasing exploitation and degradation of the global environment. As personal identity becomes further entangled with consumer behavior, it becomes harder and harder to challenge existing patterns of consumption.

Prescriptions

After diagnosis comes the difficult but critical challenge of searching for cures. We must ask ourselves what kind of a world

we want to live in, what kind of world we want our descendents to live in, and how we can get there. Given the enormity of the task, the following proposals certainly do not exhaust the realm of possibilities. Effecting a mass change in public environmental values, priorities, and behavior will require the concerted efforts of millions of committed individuals and organizations seeking a better and more sustainable world—a movement already well under way. These proposals are intended to spark a broader conversation about ways to catalyze deep change and inspire others to search for, create, and implement their own answers to these fundamental questions.

New Narratives

New narratives are needed to help guide and inspire social transformation and changes in the practice of science and education, religion and ethics, and policy and economics. Narratives ranging from sacred texts to national myths to individual life stories give meaning, order, and direction to the lives of individuals and entire societies. It is vital that we create new narratives that:

• Vividly depict the kind of world we are for, not just the problems we are against.

• Raise fundamental questions: How should individuals and societies measure success: ever higher incomes, growing GNP, greater material consumption? What truly makes individuals happy?

• Re-envision "the good life" and alter the trajectory of ever-greater material consumption: "Rich lives instead of lives of riches."

• Articulate ecocentric and biophilic ways of thinking. In this view, humanity is understood as coexisting within nature—a community that includes land, water, air, and biota. The central challenge is for humans to conceptualize ourselves as existing as part of and because of the biosphere. Our ecological niche is now the entire planet, but cultural evolution has not yet caught up to this new fact. We must now adapt to this global scale by reconceptualizing our relationship to nature.

• Emphasize themes of health and wellness. The global environmental crisis is part of a broader set of enormous challenges to human physical and mental health, the health and viability of other species, and planetary health.

• Reclaim the word "sacrifice." Human beings have long been willing to sacrifice their comfort, possessions, and even their lives for freedom, for equality, for God, for country. How can we reinvigorate and harness this force for the common good?

• Invoke the language of faith and spirituality. The discourses of science and policy, while necessary, are not sufficient to motivate mass changes in values and behavior. The work in world religions and ecology has important contributions to make in this regard. Many people will be more motivated to save the planet if the sacredness of creation is included in the conservation message. The sense of an enchanted, awe-inspiring universe and creation can reawaken a commitment to the Earth.

• Embed the human story in the story of the universe. A deep understanding of modern cosmology places human beings within the grand narrative of the universe—from the Big Bang, to the formation of galaxies, the coalescing of Earth and the solar system, and the origins and evolution of life. This narrative reminds us that human beings are not separate from nature and its processes—we emerged from it, we are the descendents of a vast, complex, ancient, and beautiful universe, inhabitants of an incredibly precious planetary home, and kin, genetically, to all other life on Earth. These ideas and this story fundamentally challenge our traditional understandings of what it means to be human in relation to the natural world.

Conference participants suggested several ways to promote and disseminate these new narratives, including the development of films and television programs and organizing a national conversation on "the good life" and the new American dream.

For example, serial melodramas have been used to promote mass changes in social values and behavior in the developing world regarding issues such as HIV/AIDs, infant mortality, and women's rights. These projects start with in-depth social science research to identify key target audiences in a society and the barriers preventing them from adopting the new behavior. Screenwriters then create stories with characters that represent the target audience, confronting the same barriers they confront, but finding ways to overcome them. Research has found that viewers and listeners strongly identify with these characters and their struggles and are inspired to change their own lives through the example of these role models.[12]

Likewise, it is vital that we track, catalogue, and broadcast real-world examples of the changes in behavior and ethical lifestyle we are trying to promote. What does a two-tons-carbon-per-year lifestyle actually look like, and what would it take to get there? Can we demonstrate that this way of living can be fun, meaningful, and more fulfilling than current lifestyles?

Finally, a series of structured dialogues in cities across the United States could be organized to help local communities and the country at large confront the global ecological crisis and provide a forum to deliberate the meaning of the American Dream in the twenty-first century. Such a forum should provide the opportunity to reflect on the meaning of "the good life" and our deepest values, goals, and aspirations as individuals, families, and communities, as well as to question the current trajectories of material consumption, environmental and social degradation, and the current meaning of the "pursuit of human happiness."[13]

Science and Education

Support and promote sustainability science. Sustainability science (also known as "boundary science") occurs in the "ecotones"[14] between basic and applied research. Sustainability science focuses on theoretically important questions that also have real-world applications. It seeks to understand the drivers of sustainability—economic growth, wealth and distribution, environmental protection, and human development and security—and often partners with real-world decisionmakers to answer their pressing questions and needs.[15] This often interdisciplinary research requires significantly more long-term support from funders, including the National Science Foundation, philanthropies, and scientific organizations. Further, the traditional structures of academia, funding, and reward systems remain major obstacles. Interdisciplinary research inherently takes longer to conduct as scientists must integrate different fields, methodologies, and theories in the effort to understand the complex, interconnected reality of major environmental and social problems, which cannot be understood solely from the standpoint of any one discipline.

Produce an Intergovernmental Panel on Climate Change (IPCC)–like assessment of global sustainability values, attitudes, and behavior. Our empirical understanding of the current state, trajectories, and drivers of sustainability values, attitudes, and behaviors around the world is very limited. Collaborative research to identify, measure, and explain the trends in sustainability values, attitudes, and behaviors over time is critically needed. This research should integrate survey, ethnographic, historical, and experimental methods leading to both global-scale surveys repeated at regular time intervals, and local-scale, intensive studies to identify and overcome critical barriers to sustainable behavior. As a first step, an international workshop could be convened to gather the lessons learned from past studies of global values, attitudes, and sustainability behaviors and develop a collaborative research program.[16]

Construct and convey a range of possible futures. Scientists can help support change by constructing empirically based scenarios, illustrating a range of potential futures for policymakers and the public to consider, evaluate, and choose among. These scenarios should describe both the potential futures that we desire and those we do not, extrapolating from current trends and trajectories and the key decisions that individuals, governments, companies, and civil society will be making over the next several decades.[17]

Encourage greater engagement of scientists in societal decisionmaking. Scientists need to be encouraged and supported to participate in education, outreach, and policymaking. The engagement of science and scientists will be absolutely necessary (although insufficient) to achieve a global transition toward a sustainable world. Courses to teach scientists how to speak publicly about their research and about the policy implications should be integrated into graduate school science programs.[18] Reward systems within science and academia should be developed to encourage scientists to engage in (two-way) discussions with different audiences outside the lab and the ivory tower.

Create a national center for environmental education. This organization would develop environmental science and studies curricula, materials, and teaching plans; train teachers; and integrate environmental science and studies into state standards, advanced placement courses, and local curricula for grades K–12, based on several curriculum principles. These include:

- Promoting environmental education as part of the core curriculum, not just the occasional event or field trip.
- Developing interdisciplinary, integrative, and theme-based approaches to environmental education.
- Teaching about both local and global environmental change and the connections between these scales.
- Developing courses, readers, and curricula on worldviews and nature.[19]
- Providing place-based experiential learning and exploration of local ecological processes and problems.

How should individuals and societies measure success: ever higher incomes, growing GNP, greater material consumption? What truly makes individuals happy?

Religion and Ethics

Revitalize reverence for the Earth. Spirituality, ritual, and scripture are all vital resources to help accelerate this moment of transition. Religions are among the oldest of human wisdom traditions and have shaped the human-nature relationship in cultures around the world. Though embedded in worldviews, religions can also form and transform those views, as the Quaker rejection of slavery in the nineteenth century and the role of religion in the U.S. civil rights movement make clear. Indeed, reverence for nature can be found in most of the world's religions; this moral force is beginning to awaken to the environmental crisis.

Revitalize the sense of the sacred Earth. The Western humanities and culture often have dismissed or marginalized the sacred by placing it in the realm of the transcendent instead of the "here and now." For many, the sacred is limited to notions of the afterlife, or specific locations and buildings like churches, mosques, and synagogues. The sense of the sacred, however, can also enhance the human experience of connection and inextricable embeddedness in nature. The humanities and the world's religions can provide powerful symbols and language to reinvigorate a sense of sacred interconnection and interdependence with the natural world.

Convene a dialogue on cosmology. Each religious tradition has emerged from a different set of cosmological frameworks, scriptures, and practices. At the same time, science now offers its own large-scale cosmological story. While there are certainly fundamental differences in these cosmological worldviews and epistemologies, there is also tremendous opportunity for a dialogue between science and religion to discuss the deeper significance of these scientific findings and how science and religion can work together to address the interlinked global environmental and human crises of sustainability.

Revitalize the Golden Rule. "Treat others as you would have them treat you" is a fundamental principle of human ethics that can be found in many of the world's greatest religions. How do we reinvigorate this precept in our relations with each other, especially with regard to the great questions of environmental justice between the haves and have-nots both within and between countries? How might it be expanded to include ethical consideration of the natural world within the human community and vice versa?

Promote ecological ethics as integral to social ethics and vice-versa. Environmental ethics has for too long been focused solely on the ethics of human behavior toward the nonhuman world. Likewise, social ethics have rarely incorporated a consideration of human moral duties and responsibilities toward the natural world. These two domains need to be interconnected, as it has become increasingly evident that the health and functioning of the environment affect the health and functioning of society, and vice versa. Environmental quality should be a human right.

Endorsement and adoption of the Earth Charter. The Earth Charter, the result of a global, six-year participatory consultation process, presents four general-level values (community of life; ecological integrity; social and economic justice; and democracy, nonviolence, and peace).[20] These are elaborated with 16 intermediate-level principles and an additional 61 specific-level values. Since its release in 2000, the charter has been endorsed by more than 13,000 individuals and organizations. This soft-law document for a global ethics remains open for endorsement by other organizations and communities.

Policy and Economics

Policy analysts cannot create a movement by themselves. But they can help prepare the ground so that when a movement coalesces, policy tools and leaders are ready with a clear sense of which goals to pursue and paths to take. Likewise, it is imperative that environmentalism become more than another special interest. What is required is a systems shift, a new holistic view of the world we live in. A powerful, inspiring vision of a better world, not just a critique of the status quo is needed. If widely accepted, the policy changes will follow. Policymakers and analysts can help to develop the social and political capital and policy tools for the movement that is emerging in response to the ecological, social, and economic challenges of the present and future.

Use policy to encourage behavior change along with a change in values. The late Senator Daniel Patrick Moynihan (D-NY) argued that, "The central conservative truth is that culture, not politics, determines the success of a society. The central liberal truth is that politics can change a culture and save it from itself." Sociologists have found that the engrained routinization of behavior, over time, can lead to sea changes in values. Focusing solely on changing values first may miss the opportunity to engrain new behaviors, which may themselves lead to new values. Part of the importance of policy is that laws and regulations can require changes in behavior, whether or not citizens and companies currently hold the values that would lead to those behaviors without regulation.

Democratic governments, however, cannot govern without the consent of the governed and often cannot adequately enforce changes in individual behavior. Thus, policy instruments and value changes need to support each other, creating synergies and positive feedbacks that lead to large-scale changes in human behavior. Changes in smoking, seat-belt use, and drunk driving are all recent examples of the mutually reinforcing impacts of shifts in public values and attitudes on the one hand and changes in government policies on the other.

Prepare for the opportunities inherent in future crises. There is often opportunity in crisis, and the policy domain needs to be prepared to act when it occurs. Crises like Pearl Harbor, Three Mile Island, and 9/11 resulted in rapid and fundamental shifts in public priorities and institutions. As global environmental conditions continue to deteriorate, there will be inevitable surprises, shocks, and disasters. How can leaders be prepared not only to better respond to the damage and destruction of these events, but also to take advantage of these "teachable moments"? We need to prepare for future ecological crises by creating institutions, systems, and roadmaps for change so that negative responses, such as authoritarianism, do not seize the day.

Reconnect people with nature. A movement to bring the land back to the city is already quietly building in the form of Com-

munity-Supported Agriculture programs, farmers markets, efforts to source school lunches locally, and conversion of abandoned properties and brownfields into community gardens. A concerted effort is needed to amplify these innovations and explore other ways—such as parks and greenways—to reconnect people to nature within urban settings, while at the same time revitalizing communities and building social resilience.

Establish a U.S. Federal "Land Service" or "Green Corps" modeled on the Peace Corps. Volunteers could work within the United States or internationally to help conserve, preserve, or restore natural environments and processes, or address global environmental challenges, such as climate change, loss of biodiversity, and water scarcity.

Develop better measures of societal progress and well-being than Gross Domestic Product. Many economists have argued that GDP does not adequately measure the current state of either the economy or social progress and well-being. For example, many social and ecological "bads" are mischaracterized as positive economic benefits. An oil spill may generate millions of dollars in cleanup costs, which count as an increase in GDP. Meanwhile, the environmental and social costs, such as killed birds, fish, and animals, lost livelihoods, and lost communities are often not accounted for—they become "externalities." Attempts are under way to design measures of economic progress that internalize these environmental and social "externalities."[21] Meanwhile, others are calling for new measures of human well-being, as better indicators of changes in social welfare than simplistic and misleading measures like GDP.

Coming at a critical moment in human and natural history, the conference participants' collective efforts on behalf of environmental protection and social justice are important and inspiring. Many ideas described in this report represent themes that have been the subject of enormous scholarship and debate, and we encourage the interested reader to further investigate these rich research traditions. One place to begin is at the conference Web site, which includes links to related resources, organizations' and efforts: http://www.environment.yale.edu/newconsciousness.

Anthony A. Leiserowitz is director of Strategic Initiatives and the Yale Project on Climate Change, and a research scientist at the School of Forestry & Environmental Studies at Yale University. He is also a principal investigator at the Center for Research on Environmental Decisions at Columbia University. Lisa O. Fernandez is the program coordinator for Strategic Initiatives and the Yale Project on Climate Change. The authors welcome readers' thoughts and ideas by e-mail at newconsciousness@yale.edu.
This article is excerpted from *Toward a New Consciousness: Values to Sustain Human and Natural Communities: A Synthesis of Insights and Recommendations* from the 2007 Yale School of Forestry & Environmental Science Conference (New Haven, CT: Yale School of Forestry & Environmental Studies, 2008).

NOTES

1. A. Leopold, letter to Douglas Wade, 23 October 1944, Leopold Papers 10-8, 1, University of Wisconsin–Madison.

2. P. M. Senge, C. O. Scharmer, J. Jaworski, and B. S. Flowers, *Presence: An Exploration of Profound Change in People, Organizations, and Society* (New York: Currency Doubleday, 2005), 26.

3. A list of conference participants can be found at http://www.environment.yale.edu/newconsciousness.

4. R. M. Pyle, "The Extinction of Experience," *Horticulture* 56 (1978): 64–67.

5. A. Leiserowitz, R. Kates, and T. Parris, "Do Global Attitudes and Behaviors Support Sustainable Development?" *Environment* 47, no. 9 (2005): 22–38.

6. While the origins of this worldview have deep cultural roots, it was greatly crystallized in the thought of Descartes, who described the universe as a giant "clockwork" with individual mechanical parts, and Newtonian physics, which described the universe as the interaction of billiard ball–like objects.

7. A. Leiserowitz, "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values," *Climatic Change* 77 (2006): 45–72.

8. See H. D. Thoreau, *Walden, Or, Life in the Woods* (Boston, MA: Ticknor and Fields, 1854); H. Beston, *Outermost House: A Year of Life on the Great Beach of Cape Cod* (New York: Doubleday, Doran & Co., 1928); A. Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1949); and A. Dillard, *Pilgrim at Tinker Creek* (New York: Bantam, 1975).

9. The following describe both alternative cultural approaches to understanding the natural world and wrenching experiences of environmental and social change: N. S. Momaday, *House Made of Dawn* (New York: Harper & Row, 1968); S. Ortiz, *Woven Stone* (Tucson, AZ: University of Arizona Press, 1992); and K. D. Moore, K. Peters, T. Jojola, and A. Lacy, eds., *How It Is: The Native American Philosophy of V. F. Cordova* (Tucson, AZ: University of Arizona Press, 2008).

10. G. Speth, *The Bridge at the End of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability* (New Haven, CT: Yale University Press, 2008); and M. Dowie, *Losing Ground: American Environmentalism at the Close of the Twentieth Century* (Cambridge, MA: MIT Press, 1996).

11. A. Leiserowitz, R. Kates, and T. Parris, "Sustainability Values, Attitudes and Behaviors: A Review of Multi-national and Global Trends," *Annual Review of Environment and Resources* 31 (2006): 413–44.

12. A. Singhal, M. J. Cody, E. Rogers, and M. Sabido, eds., *Entertainment-Education and Social Change: History, Research, and Practice* (London: Lawrence Erlbaum, 2004).

13. One potential example is the National Conversation on Climate Action, a partnership between the Yale School of Forestry and Environmental Studies, ICLEI—Local Governments for Sustainability, and the Association of Science and Technology Centers. See http://www.climateconversation.org (accessed 10 July 2008).

14. An ecotone is a transition zone between two adjacent ecological communities, such as forest and grassland. It has some of the characteristics of each bordering community and often contains species not found in the overlapping communities. An ecotone may exist along a broad belt or in a small pocket, such as a forest clearing, where two local communities blend together. The influence of the two bordering communities on each other is known as the edge effect. An ecotonal area often has a higher density of organisms and a greater number of species than are found in either flanking community. "Ecotone," *Encyclopedia Britannica Online*, http://search.eb.can/eb/article_903194 (accessed 29 July 2008).

15. W. C. Clark, "Sustainability Science: A Room of One's Own," *Proceedings of the National Academy of Sciences* 104, no. 6 (6 February 2007): 1737–38.

16. Key questions include: What are the key factors that drive cultural evolution and social change? What can we learn from the analysis of past societal paradigm shifts? What universal and particular factors underlie each? What explains the differences in sustainability values, attitudes, and behaviors across different nations, regions, or levels of economic development? What value and lifestyle changes will be required to achieve a sustainable world? What can we learn from past successful and unsuccessful efforts to change public attitudes and behaviors (for instance, smoking and drunk driving)? What are the primary value, attitudinal, and structural barriers that constrain sustainable behavior in particular social, economic, political, cultural, and geographic contexts? Leiserowitz, Kates, and Parris, note 11; and P. R. Erlich and D. Kennedy, "Sustainability: Millennium Assessment of Human Behavior," *Science* 309, no. 5734 (22 July 2005): 562–63.

17. For example, see the work of the Great Transition Initiative, http://www.gtinitiative.org/.

18. The Aldo Leopold Leadership Program at Stanford University is one example of a successful effort to help scientists better communicate with journalists. See http://www.leopoldleadership.org (accessed 10 July 2008).

19. The Forum on Religion and Ecology, through its conferences, publications, and Web site, provides a rich set of resources. See http://www.yale.edu/religionandecology (accessed 10 July 2008).

20. The Earth Charter is available at http://earthcharterinaction.org/ec_splash/ (accessed 10 July 2008).

21. Redefining Progress and the International Forum on Globalization are two such organizations.