

State of the World 2013

IS
SUSTAINABILITY
Still Possible?



THE WORLDWATCH INSTITUTE

Teaching for Turbulence

Michael Maniates

In late 2010, a respected research team led by Yale University professor Susan Clark released a two-part assessment of college and university programs in environmental studies and science (ESS). The team's conclusions were hard-hitting and pointed. Too many ESS programs, they wrote, do too much too quickly with insufficient clarity of purpose and method. They "suffer from muddled goals, disciplinary hodge-podge, and an educational smorgasbord of course offerings." At a time when the need for dynamic college and university programs in environmental science and studies has never been greater, those who plan and deliver these programs appear to be selling their students and the planet short.¹

Clark's assessment is the latest in a series of warnings about the incoherence of environment and sustainability programs in higher education. In a seminal 1998 essay, for example, University of California at Santa Cruz professor of environmental studies Michael Soulé and his colleague Daniel Press lamented a persistent and structural "multidisciplinary illiteracy" among ESS undergraduates. Even critics of their argument had to admit that at least 30 percent of ESS programs were fragmented and poorly conceived.²

As the planet's health declines and undergraduate interest in environmental issues soars, concern about the effectiveness of ESS programs will surely intensify. At first glance, this is welcome. Who, after all, could be in favor of diffuse goals and multidisciplinary illiteracy around educational programs so critical to the transition to sustainability? Architects of ESS programs and professors who work within these programs must redouble their efforts to clarify the field's core competencies while implementing curricular mechanisms that enforce focus and integration. And students should ask tougher questions about curricular form and focus. Flashy websites, green buildings, and environmentally responsible campus practices do not necessarily translate into strong ESS programs, regardless of first impressions.

But aspiring students and program architects must also remember that

Michael Maniates is a professor of environmental science and political science at Allegheny College and a visiting professor of environmental studies at Oberlin College.

www.sustainabilitypossible.org

the college student of today will graduate into a world that will be singularly defined by turbulence—a white-water turbulence of climate instability, ecological decline, and attendant economic and political dislocation, with winners, losers, and persistent inequality. Merely sharpening the focus of programs built for placid waters will not be enough. Now is the time to explore how current ESS programs undermine student capacity to navigate a turbulent world—and to entertain new curricular features that foster nimbleness and wisdom in times of crisis.

Patterns of Teaching and Learning

Not long ago, the notion that ESS programs could play a pivotal role in the transition to sustainability was a distant thought. They were often viewed on campus as marginal programs, a place where students who could not succeed in traditional natural-science fields (biology, chemistry, or geology, for instance) could complete their studies and graduate. On more than a few campuses, “ES” came to stand for “easy science.”

For a time it looked as if a multidisciplinary assessment of environmental problems that integrated the social and policy sciences could only occur outside of ESS. North Carolina State professor Marvin Soroos, a prominent scholar of environmental politics, spoke for many when he argued, in 1991, that professors of political science and international relations had best begin teaching about sustainability if academia harbored any hope of “preparing students for the historically unprecedented challenges that their generation will face.” Soroos had no quarrel with the investigatory power of the natural sciences but, like others, saw a natural-science focus as insufficient to the demands of sustainability. If ESS would not change, then it would be marginalized, in part by political science and international relations programs with their own programs in environmental studies.³

Those days of doubt about ESS programs are long gone, at least in the United States, which boasts the greatest concentration of such programs. According to Shirley Vincent, perhaps the nation’s premier authority on the focus and trajectory of ESS programs, there were some 500 such programs in the United States in 1990. By 2010, there were 1,200, with 90 percent of them at the undergraduate level. By 2015 that number could easily expand to 1,400 or more, making ESS one of the fastest-growing fields of undergraduate study in the country. This explosion in programs has been matched by an expansion in disciplinary diversity and intellectual focus. Some ESS programs, notes Vincent, prepare natural scientists capable of analyzing environmental science problems, while others strive to foster a deeper understanding of the policy process and environmental citizenship. Still others focus on training managers in collaborative processes of environmental problem solving. Almost all programs strive to imbue their stu-

dents with critical thinking and problem-solving skills appropriate to the challenges ahead.⁴

Three patterns of teaching and learning emerge from today's *mélange* of programs. The first is a general trend toward urgency and alarm, coupled with a focus on the inability of prevailing systems of economic accounting and political decisionmaking to address looming environmental ills. ESS courses, and especially introductory courses that summarize the extent of the human assault on nature, can be jarring. Students quickly learn that the planet's health is declining more rapidly and systematically than they might have imagined. They discover that the damage often flows from the very institutions—the market, pluralist democracy, education—that we often look to for solutions. Left unchallenged, this “urgency + inability” equation can overwhelm students with a sense of hopelessness and despair and can foster the expectation that system-jarring crises are just around the corner.⁵

To battle this despair and to create opportunities for interdisciplinary integration of course material, ESS programs turn to applied research and hands-on problem solving. This second pattern of teaching and learning is perhaps the most essential feature of ESS. It

is not enough in most programs to simply understand the major environmental problems. Students must critically assess them and carefully evaluate competing solutions. To this end, program websites and brochures emphasize the acquisition of problem-solving approaches and research skills.

Required courses focus on environmental problems on campus or in the community and engage students in community projects and applied research. Campus administrators, sympathetic community groups, and local political actors are frequently part of the mix so that students can practice communicating environmental information to disparate groups. Sustainability coordinators responsible for college- or university-wide environmental initiatives chip in by coordinating campus-wide recycling and energy conservation challenges. The problem-solving focus is typically local, with the hope that these small-scale interventions will scale up to match regional, national, and even international challenges.



NOAA Photo Library

North Carolina State University students are involved in a joint EPA/NOAA Air Resources Laboratory project to measure and model ammonia fluxes in forest and agricultural landscapes.

Indeed, perhaps more than any other higher-education field of study, ESS understands and justifies itself as a problem-solving discipline. Writing in 2005 to the Andrew W. Mellon Foundation, for example, professors Sharon Hall, Tom Tietenberg, and Stephanie Pfirman, representing Colorado College, Colby College, and Barnard College, observed that “service learning and community-based learning (CBL) courses or experiences are among the most successful and empowering experiences for ES students during their time in college.” They noted that these experiences, together with courses that focus on the local environment, provide “a productive source of inspiration for ‘hands on’ student research” while fostering engagement with interdisciplinary approaches to real-world problem solving. In 2005, this assessment illuminated the best practices of the top ESS programs. Today it describes the curricular norm in the field.⁶

It comes as no surprise that ESS students and their mentors are unusually active—in the lab, the classroom, the library, on campus, and in the community. Their work is both positive and normative: they seek to understand the causes of environmental ills, and they strive to implement solutions. By and large, though, this work occurs without any systematic assessment of how it fits into a larger mosaic of political power, cultural transformation, and social change. As Shirley Vincent notes, few programs ask their students to study competing theories of social change or to critically assess how their research or work on local projects fit into larger models or ideas about cultural transformation. This is an odd oversight, since ESS students are almost always asked to think critically about how change happens in natural systems. But such “systems analysis” rarely spills over into the social sciences, at least not in any concerted or focused way.⁷

Why the omission? For Richard Wallace, an environmental studies professor at Ursinus College who studies the dynamics of interdisciplinary education, the “big tent” approach in ESS is largely at fault. As a field of study and a guide to problem solving, ESS invites and includes a diversity of disciplinary approaches to environmental problem solving. Under this sprawling canopy, no single notion about how or why social change occurs is privileged. Students are to glean theories of social change from their courses outside of ESS and then integrate them during their research and project work. It is decidedly a do-it-yourself affair. Wallace’s diagnosis enjoys support from other scholars, including Indiana University professor Matt Auer, whose analysis of graduate-level ESS programs paints a similar “big tent” picture of teaching and learning.⁸

Another explanation, according to analysts like journalist Mark Dowie and scholars like Wallace, is the strong influence of the natural sciences on the evolution of ESS. This influence privileges the notion that societies change naturally and rationally in response to new scientific information.

Social change becomes an exercise in finding the facts and electing policymakers who will act on the data. It is a straightforward process in need of no serious interrogation other than reflecting on how natural scientists can more effectively communicate their findings to policymakers.⁹

Finally, faculty in ESS programs may shy away from developing courses that focus on social activism and political change for fear of looking as if they are training environmental activists rather than environmental scientists and analysts. U.S. environmentalism, notes Dowie, has historically been a “polite movement,” where offering additional research and compelling facts has been a more comfortable way of promoting change than noisy activism or social protest. Vermont Law School professor and author Gus Speth, a pivotal figure in the U.S. environmental movement, makes the same point in his clarion call to the environmental community to abandon its safe but largely ineffective reliance on facts, studies, and data to drive political change and social transformation.¹⁰

Disabling Assumptions

Too often, students are left to cobble together their own theories of social and cultural change amid a backdrop of troubling urgency, looming crisis, and a focus on research and project-implementation skills. What do they conclude? This question weighed heavily on Sam Rigotti, an environmental studies student and researcher at Allegheny College until his graduation in 2010. In a path-breaking study, Rigotti began by observing how “10 Easy Ways to Save the Planet” lists and similar publications have inundated his generation. He hypothesized that the lack of sustained analysis of processes of social change within ESS programs creates a vacuum that the “easy ways to save the planet” narrative quickly fills: buy green, initiate a few lifestyle changes, spread the word to others, and wait for the totality of these small changes to sum into fundamental social change. Rigotti feared that students who assimilated this “small and easy” view would later come to grips with its limitations and in frustration fall back on notions from their introductory classes about the inevitability of crisis.¹¹

Working with faculty and other students at Allegheny, Rigotti conducted the first national survey that explores these issues. His results, from 437 randomly selected ESS students at 15 colleges and universities, are provocative. Some three quarters of students surveyed, for example, identified green consumption and “voting with your dollar” as among the very best strategies for promoting environmentally conscious social change. By contrast, students thought that supporting or joining environmental interest groups, pressuring legislators, engaging in electoral politics, and other forms of civic engagement were too diffuse or decidedly utopian. For these students, the small and easy theory of social change seemed natural and obvious—and

empowering too. Being a meaningful part of social change is as straightforward and accessible as driving less, recycling more, eating less meat, buying vegetables at a farmers market, or making a point of purchasing environmentally oriented products.¹²

The most startling insight from Rigotti's analysis, however, may be around the notion of crisis. Seventy percent of students surveyed blamed "poor environmental values" for our current predicament and pointed to the need for more education and a compelling crisis to drive a meaningful transition to sustainability. According to these students, the average American does not know about environmental problems or knows but does not deeply care. For more than half the students in the sample, a crisis that will make Americans care—that will compel them to heed well-trained experts in environmental problem solving—is something to anticipate and welcome.¹³

This naive faith in crisis and the dim view of human nature upon which it rests reflects the literatures to which ESS students are commonly exposed. Mainstay introductory textbooks, like *Environmental Science* by G. Tyler Miller and Scott Spoolman, as well as Daniel Chiras's text of the same name, underscore the power of crisis in driving needed change. When explaining policy change, for instance, Chiras shares former secretary of state Henry Kissinger's observation that "in government, the urgent often displaces the important" to make the case that change occurs only in the face of compelling crisis. Miller and Spoolman are more direct; they simply state that "U.S. political and cultural systems are slow moving" and that "change happens slowly" in the absence of crisis.¹⁴

In the same vein, the core environmental policy texts in the field, including those by Walter Rosenbaum and by Norman Vig and Michael Kraft, attribute the spate of environmental regulation in the 1970s to crisis events like air pollution alerts in Los Angeles and burning rivers in Ohio. Key intellectual frameworks, finally, underscore the shortsightedness of human behavior and the inevitability of crisis. ESS students need not go much further in their early studies than Garrett Hardin's famous "The Tragedy of the Commons" essay to learn that an environmental crisis, driven by human failing, is both necessary and inevitable.¹⁵

The small and easy theory of social change, which promises big change when large masses of people commit themselves to small acts of personal sustainability, only amplifies this kind of crisis thinking. This is because social change does not happen through mass, uncoordinated shifts in lifestyles or consumption choices: small and easy is attractive, plausible, and dead wrong. It is the rare social movement that crystalizes and advances because of the initial mobilization of large majorities of the population, and the environmental movement is no exception. After all, some people will always refuse to adopt any lifestyle or consumption change.

And in the realm of environmental action, the proportion of the reluctant remains consistently large, despite decades of aggressive environmental education and untold millions spent by marketers of green products. More than 80 percent of Americans fail to consistently practice a small suite of environmentally sound behaviors, like reducing their energy use, driving smaller cars, and buying green products. Almost 25 percent of Americans do not recycle, often because they cannot be bothered or believe that doing so makes little difference. More generally, consumer commitment to environmental practices appears to be waning. Harris Interactive, which regularly polls Americans on their environmental behaviors and attitudes, reports a decline in overall “green” activities and concerns in 2012.¹⁶

These data and the behaviors they document generate a predictable set of responses among adherents to small and easy. Confronted by low rates of green consumerism in the general population, well-meaning environmentalists rabidly promote green lifestyles with a heavy dose of guilt and almost missionary zeal. They offer pronouncements meant to underscore the importance of unified commitment to environmental aims, like

“If everyone in America used energy-efficient lighting, we could retire 90 average-sized power plants, reducing CO₂ emissions, sulfur oxide, and high-level nuclear waste.” They offer more and more information on the virtues of environmental living. And they often heap disdain on those who do not, for instance, recycle or drive small cars or otherwise live sustainability. When all this fails, what remains is a natural, logical, altogether understandable tendency to conclude that people themselves are at fault—they are too selfish, too ignorant, too irresponsible—and that, ultimately, only a crisis will move them.¹⁷

Of course, all this is both unproductive and misdirected. A politics of guilt can never mobilize and inspire. And even if most Americans did suddenly “green” their lifestyles, underlying processes of production and disposal that are largely insulated from personal consumption decisions would still drive the planetary ecosystem toward collapse, albeit just a bit more slowly. This point is vividly illustrated by the “personal footprint calculator” offered by



Allegheny College students and faculty work with a local farmer on an aquaponics project that raises tilapia and grows lettuce in the same facility.

the highly respected Global Footprint Network. (See Chapter 4.) As the calculator consistently demonstrates, large changes in lifestyle translate into disappointingly small effects on anyone's environmental footprint.¹⁸

Sam Rigotti's study was the first of its kind and thus awaits further verification and refinement. On its face, though, it is both plausible and compelling. It resonates deeply with the experience of many ESS educators who find their students to be overly enamored with the power of crisis and too often dismissive of the capacity of Americans to sacrifice for the common good. The risk here is not that students see crisis on the horizon, for crisis is surely coming. The danger instead is that ESS graduates increasingly view crisis as a benevolent force that will rally the public and enhance the power of environmental problem solvers like themselves. This idea of crisis as a welcome lubricant in the transition to a sustainable world is a lovely, if unpromising, notion. Preparing students for turbulence involves making them aware of less-benign species of crisis and enabling them to react in kind.

The Real Face of Crisis

Early in President Obama's first term, in the midst of a financial meltdown in the United States, chief of staff Rahm Emanuel was quoted as saying, "Emanuel's Rule One: Never allow a crisis to go to waste. They are opportunities to do big things." Emanuel's theory of crisis reaches back to the sixteenth century, when Niccolo Machiavelli wrote, in *Il Principe*, "Never waste the opportunities offered by a good crisis."¹⁹

Students of environmental issues would undoubtedly agree with Emanuel, but in doing so they may have in mind a kind of crisis that author Rebecca Solnit writes about so eloquently in *A Paradise Built in Hell*. Disasters, Solnit says, demonstrate "the resilience and generosity of those around us and their ability to improvise another kind of society. . . . They demonstrate how deeply most of us desire connection, participation, altruism, and purposefulness."²⁰

In ways both compelling and persuasive, Solnit profiles five disasters, ranging from the San Francisco earthquake in 1906 to Hurricane Katrina's assault on New Orleans in late summer 2005. She documents striking heroism, ingenuity, and compassion among ordinary people, and she shows how communities traumatized by crisis self-organize in effective and humane ways. For Solnit, sudden disaster reveals a generosity, resourcefulness, and bravery latent within us, ready to be called forth in service of a "new paradise." Look closely at disaster-driven crises, she says, and you can see how a new world might be possible, with all that is necessary already within each of us.²¹

A Paradise Built in Hell should be required reading for ESS students, regardless of their disciplinary orientation. Solnit complicates the dim

view of human nature to which many ESS students subscribe and offers hope of a better world rooted in existing abilities and widely felt yearnings. Read closely, her work suggests that ESS students might best think of themselves as midwives working to deliver something already present within society rather than as experts trained to educate the uninformed and motivate the uninspired.

The difficulty with Solnit's work, and its notion of "crisis as deliverance," lies with the type of crises she documents and that ESS students so commonly imagine. They are sudden, cataclysmic events with jarring psychological and political impact. They bring to the forefront underappreciated or nascent networks of human connection while, for a time, throwing existing power structures back on their heels. These sudden disasters, moreover, expose stark divisions in wealth and power that, so brightly illuminated, are questioned or rejected, at least for a time.

By contrast, the disasters that ESS graduates will confront are likely to be slow-motion affairs: gradual and persistent, with moments of upheaval punctuating slow decline. Water will grow scarcer, food prices will rise, coastal cities will periodically flood as increasingly intense storms lash their shores, droughts will become more commonplace, livelihoods will be disrupted, economies may falter, and inequality will deepen. The threat of these crises is not so much that they generate catastrophes of unthinkable proportion but rather that they will become the norm, freighted with a deepening sense of inevitability.

These slow-motion crises risk evoking three dynamics that ESS graduates are poorly prepared for. One is what environmental analysts Michael Shellenberger and Ted Nordhaus call "insecure affluence": the growing sense among a large slice of Americans that their economic position in life is unstable at best and more likely at imminent risk. As insecure affluence deepens, Americans may be especially reluctant to accept even the smallest of material sacrifices, especially if these sacrifices are imposed on them by elites, a point emphasized by political theorist John Meyer, who observes that "an environmentalist call to sacrifice" will be resisted "not just for its paternalistic attitude, but also for its blindness to the lived experience of sacrifice central to the lives of many." Alas, too many ESS students are trained to play the very role of elites who, in one way or another, will make arguments supporting present sacrifice for future gain. Crisis will be no friend to these graduates.²²

Nor will a politics of anger, which is another likely result of economic and ecologic upheaval. As former U.S. secretary of labor Robert Reich notes, prolonged periods of stress and insecurity lead to "an increasing bitterness and virulence of the nation's politics" and can quickly morph into "an underlying readiness among average voters to see conspiracies among power-

ful elites supposedly plotting against them.” If it is true, as Shellenberger and Nordhaus assert, that environmentalists naively “hoped that the environmental crisis would bring us together and make us happier,” then Reich and scholars like historian Richard Hofstadter, who studied paranoia in politics, or Thomas Edsall, who reflects on American politics under conditions of scarcity, offer a rude awakening. It is more likely that crisis will generate widespread anger, fear, conflict, and a deepening paranoia than a spiritual awakening and ecological reckoning. ESS graduates expecting the latter and ill-prepared for the former may wonder why their false expectations were not more thoroughly challenged by their professors.²³

Finally, while crisis may provoke suspicion and fear of elites among some citizens, it is likely to fuel a desire among others for greater government power and control. In this way, as observed by economic philosopher Robert Heilbroner in the late 1960s, ecological crisis can bring about a slow slide to authoritarianism, as people become more willing to trade their freedom away for the promises of strong leaders who will fix pressing problems. The danger that Heilbroner highlighted is familiar to Americans worried about the erosion of civil liberties after 9/11. And Heilbroner’s warnings are not without empirical support. In her classic study of crisis and dictatorship, which spurred an entire line of scholarship, sociologist J. O. Hertzler showed how crisis—often but not always economic—erodes democratic impulses and structures and produces a consolidation of power friendly to dictatorial regimes. Studies like these suggest that crisis is inimical to progressive social causes, environmentalism included.²⁴

Despite these tendencies and dangers, it may yet be possible to follow Rahm Emanuel’s Rule One. But using the crises to do big things means seeing them for what they are and training a new generation of college students to think strategically, rather than wishfully, about the possibilities that crises present.

A Curriculum for Turbulence

White-water rafting is a growing tourist activity, and young people willing to serve as raft guides are in high demand. New employees who would steer rafts down turbulent rivers are educated in the art of “reading” rivers, navigating boats, and coaxing effective and timely paddling from their guests, who help propel and steer their craft through bumpy waters. White-water guides-to-be are also trained to anticipate worst-case scenarios: an overturned raft, a guest dumped into the water, broken bones, or equipment failure. It is impossible, of course, to prepare raft guides to handle unanticipated risks and problems—but they can be and are primed to expect the unknown and to approach it with humility and equanimity.

What might a course of instruction look like for students in ESS pro-

grams who will be asked to negotiate a similar kind of turbulence? Five characteristics loom large, especially in light of patterns of existing curricular deficiencies. (See Box 24–1.)²⁵

First, ESS programs must stay true to their founding passions and intent, even as they seek to address curricular aimlessness and incoherence. Not every student must become an expert in processes of social change or prove capable of thinking creatively about political behavior during prolonged crisis. Nor must every program undergo radical change to effectively teach for turbulence. The best curricular reforms will be those that achieve the greatest effect with the least intrusion and that anticipate and prevent student misperceptions about social change and crisis before they take deep root.

Box 24–1. Gaps and Opportunities in Environmental Studies

Internationally known climatologist Richard Alley, a professor at Penn State, writes and performs rock songs on climate change and does a spirited dance illustrating how Earth’s orbital variations influence climate. Humboldt State University in Arcata, California, recently launched an environmental studies program that aspires to train students to think creatively about power, privilege, and social change. And faculty at Wheaton College in Norton, Massachusetts, pioneered, for a time, an undergraduate course on the theory and practice of environmental conflict resolution that used case studies, community engagement, and scenario building to prepare students for an increasingly contentious world.

These examples of innovative ESS pedagogy and curriculum stand out because they remain the exception rather than the rule. A review of the most prominent ESS programs in the United States reveals that few programs expose their students in systematic ways to a range of ideas about how change occurs in political and cultural systems. Even fewer still put students in the way of experiences that will help them rigorously analyze and initiate social change and reflect on how locally successful initiatives might “scale up” or “network out.” That is why new programs like that at Humboldt State University are so exciting.

Likewise, although many ESS programs ask their students to engage in community projects, almost all such work occurs in no- or low-conflict situations. These courses emphasize research skills, data collection, and

communication across disciplinary boundaries—important goals, to be sure, but insufficient in the face of growing social turbulence. Wheaton College’s openness to courses that bring political conflict and cultural discord into the mix is laudable and worthy of emulation.

Finally, despite the centrality of the natural sciences to most environmental programs, there are surprisingly few places in the ESS curriculum where students explore the changing role of science and scientists in the struggle for sustainability. Such exploration might begin with how scientists better communicate their ideas in politically charged environments and then extend to deeper questions about the politics of expertise around contentious environmental issues. During turbulent times, natural scientists and the insight they generate will be greeted with increasing skepticism and hostility. The best-trained ESS students, and especially those with strong natural-science interests, will be those who have given careful thought to these dynamics, beginning but certainly not ending with Richard Alley’s playful approach to scientific communication.

Most ESS programs fail to acclimate students to contentious environments, neglect to analyze the changing nature of natural-science expertise, and gloss over processes of social and cultural change. But this is changing, slowly. ESS programs that consciously train students for turbulence by filling these gaps are the promise of the future.

Source: See endnote 25.

Second, early courses in ESS programs might ask students to think critically and imaginatively about human nature and the nature of crisis, separately and together. Instructors could take a page from Rebecca Solnit's work and push students to explore the often latent capacity of humans to connect with and care for one another, to take the long view, and to work in common for the common good. Even as these introductory courses document growing environmental threats to human well-being, they might also explore the conditions under which humans regularly sacrifice for their family, faith, and community. Ideally, students would leave this course work preoccupied with how sustainability initiatives could more consistently bring these latent and noble human capacities to the surface rather than reflecting on how looming crises will nicely teach selfish and narrow-minded people an important lesson or two.

An important curricular pivot, of course, is a rigorous course or courses that interrogate overlapping and competing theories of political and cultural change. The successful integration of this third curricular element will produce students whose thinking about social change will transcend the "small and easy" frame that is so unproductive to enlightened and empowering action. ESS programs that focus on feedback, thresholds, and dynamics of change in their natural-science courses must now bring the same level of rigorous analysis to their discussion of social and cultural change. To continue hoping that other departments or students' own initiative will fill the "theory of social change" hole in the ESS curriculum is at best wishful thinking. Some of the most exciting work in ESS over the next few years will revolve around the design and delivery of such courses.

In their applied and experiential courses, most ESS students engage with campus and community partners who are broadly sympathetic to their work. During times of crisis, however, such natural sympathy will be the exception rather than the norm. To teach for turbulence, ESS programs could expose students to more-contentious environments and create classroom moments that foster strategic thinking about managing—and even taking advantage of—a politics of anger or the anxiety that comes with insecure affluence. In advancing this fourth curricular element for turbulence, ESS programs might also consider how to draw on campus resources around conflict management and resolution.

Finally, teaching for turbulence means providing students with the theoretical background and classroom practice to explore how they can best pursue their passions in rough water. Natural scientists might focus on the increased politicization of science in a turbulent world and what that may imply for their own work. Students with a talent for project-based community work might be engaged in thinking critically about how local-level initiatives can scale up in ways that address or capitalize on insecure af-

fluence or a politics of anger. And ESS majors who see themselves working as managers or practitioners in organizations of environmental governance or stewardship could be similarly challenged to analyze the shifting role and power of organizations during times of political paranoia and a tilt toward authoritarianism. After all, these three groups of students imagine themselves as “boundary spanners” who will work at the intersection of the multiple disciplines and disparate concerns. Their training will be complete when they can anticipate greater discord at these intersections and react with strategic balance.

A New Coherence

Ocean Conservation Society executive director Charles Saylan and professor Daniel Blumstein of the University of California at Los Angeles paint a dim picture of environmental education in the United States in their recent book, *The Failure of Environmental Education*. Despite decades of environmental education, they say, significant change in human behaviors that matter most are scarce. Indeed, based on behavior, it is difficult to distinguish students who have participated in environmental education from those who have not. It is time for a better curriculum, one that moves students to new ways of thinking and acting. That curriculum, they say, would focus on consumption and overconsumption, underscore the necessity of sacrifice, and tease apart the dynamics of policy change.²⁶

While their work has generated controversy, in the end Saylan and Blumstein probably do not go far enough. The real danger, at least when it comes to ESS education within colleges and universities, is not the puny effect of environmental education on behavior. The danger is the impact of this education on students’ sense of the possible and of their own role and power in transforming the world around them. Educational programs that leave students with an emaciated theory of social change and that fuel a politics of guilt and crisis do little to foster the creativity and compassion that sustains personal and collective transformation.

It is time for a new coherence in undergraduate ESS programs—not just among the hodgepodge of courses that produce multidisciplinary illiteracy but also within the story that students hear as they move through the curriculum. These students come to understand, with great clarity, that industrial civilization as we know it stands at a precipice of change, where existing political, economic, cultural, and technological patterns must quickly be supplanted by new arrangements and habits. But they are rarely presented with a coherent picture of how to bring about these arrangements or of how exploring competing processes of social, scientific, and technological change can illuminate pressure points for change. Instead they are offered, in sometimes intricate detail, the blueprints of a sustainable future—renewable

energy, sustainable agriculture, reconfigured cities, and a plentitude economy—but with little integrated, systematic sense of how to get from here to there.

In defense of those who teach in and design ESS programs, the path from here to there is profoundly unclear. But this uncomfortable fact only underscores the importance of preparing students for times of turbulence in the hope that when white water hits, they have both the tools and the vision to see the route down the river and coax effective and timely paddling from their fellow rafters. The future, as most people who work or study within ESS programs know, will not be like the present. Now is the time to carefully consider how students are best prepared to be thoughtful and anticipatory agents of change in the tumult to come.

Chapter 24. Teaching for Turbulence

1. Susan Clark et al., “College and University Environmental Programs as a Policy Problem (Part 1): Integrating Knowledge, Education, and Action,” and “(Part 2): Strategies for Improvement,” *Environmental Management*, both online 26 February 2011.
2. Michael Soulé and Daniel Press, “What Is Environmental Studies?” *BioScience*, May 1998, pp. 397–405; Michael Maniates and John Whissel, “Environmental Studies: The Sky is Not Falling,” *BioScience*, June 2000, pp. 509–17.
3. Marvin Soroos, “Adding Green to the International Studies Curriculum,” *International Studies Notes*, winter 1991, pp. 37–42.
4. Shirley Vincent, *Interdisciplinary Environmental Education on the Nation’s Campuses: Elements of Field Identity and Curriculum Design* (Washington, DC: National Council of Science and Environment, 2010).
5. These patterns are drawn from analysis of 41 prominent U.S. undergraduate ESS programs conducted for this chapter; these programs typically serve as models for other programs in the United States.
6. Sharon Hall, Tom Tietenberg, and Stephanie Pfirman, *Environmental Programs at Liberal Arts Colleges: Findings and Recommendations for the Andrew W. Mellon Foundation* (Washington, DC: Project Kaleidoscope, 2005).
7. Shirley Vincent, email to author, 19 October 2012.
8. Clark et al., op. cit., note 1; Richard Wallace, discussion with author, 19 October 2012; Matthew Auer, “Communication and Competition in Environmental Studies,” *Policy Science*, December 2010, pp. 365–90.
9. Mark Dowie, *Losing Ground: American Environmentalism at the End of the 20th Century* (Cambridge, MA: The MIT Press, 1996).
10. Ibid.; James Gustave Speth, *The Bridge at the End of the World* (New Haven, CT: Yale University Press, 2008).
11. Samuel Rigotti, *Environmental Problem Solving: How Do We Make Change?* (Meadville, PA: Department of Environmental Science, Allegheny College, 2010).
12. Ibid.
13. Ibid.
14. G. Tyler Miller and Scott Spoolman, *Environmental Science* (Belmont, CA: Brooks Cole, 2012); Daniel Chiras, *Environmental Science* (Burlington, MA: Jones and Bartlett, 2012); Walter Rosenbaum, *Environmental Politics and Policy* (Washington, DC: CQ Press, 2010).
15. Norman Vig and Michael Kraft, *Environmental Policy: New Directions for the Twenty-First Century* (Washington, DC: CQ Press, 2012); Garrett Hardin, “The Tragedy of the Commons,” *Science*, 13 December 1968, pp. 1,243–48.
16. Harris Interactive, Inc., “How Green Are We? Putting Our Money (And Our Behavior) Where Our Mouth Is,” press release (New York: 13 October 2009); Harris Interactive, Inc., “One-Quarter of Americans Do Not Recycle in Their Own Homes,” press release (Rochester, NY: 11 July 2007); Harris Interactive, Inc., “Fewer Americans ‘Thinking Green,’” press release (New York: 18 April 2012).
17. Flexi Display Marketing, Inc., “Benefits of Using CFL Lightbulbs,” *AwarenessIDEAS.com*, 8 June 2008.
18. Global Footprint Network, “Footprint Calculator,” at www.footprintnetwork.org/en/index.php/GFN/page/calculators.
19. Emanuel quoted in Jeff Zelany, “Obama Weighs Quick Undoing of Bush Policy,” *New York Times*, 10 November 2008; Niccolo Machiavelli, *II Principe* (1513).
20. Rebecca Solnit, *A Paradise Built in Hell: The Extraordinary Communities that Arise in Disaster* (New York: Viking Press, 2008), pp. 305–06.
21. Ibid.
22. Michael Shellenberger and Ted Nordhaus, *Break Through: From the Death of Environmentalism to the Politics*

of Possibility (New York: Houghton Mifflin, 2009), John M. Meyer, “A Democratic Politics of Sacrifice,” in Michael Maniates and John M. Meyer, *The Environmental Politics of Sacrifice* (Cambridge, MA: The MIT Press, 2010), pp. 26–27.

23. Robert Reich, *Aftershock: The Next Economy and America’s Future* (New York: Vintage, 2011); Ted Nordhaus and Michael Shellenberger, “The Green Bubble: Why Environmentalism Keeps Imploding,” *New Republic*, 20 May 2009; Richard Hofstadter, “The Paranoid Style in American Politics,” *Harper’s Magazine*, November 1964; Thomas Edsall, *The Age of Austerity: How Scarcity Will Remake American Politics* (New York: Anchor Books, 2012).

24. Robert Heilbroner, *An Inquiry into the Human Prospect* (New York: W. W. Norton & Company, 1980); J. O. Hertzler, “Crises and Dictatorships,” *American Sociological Review*, April 1940.

25. Box 24–1 from the following: Andrew Revkin, “The Changing (Communication) Climate” (Dot Earth blog), *New York Times*, 31 March 2011; John Meyer, Humboldt State University, email to author; Stephen Cunha, Humboldt State University, email to author; Wheaton College, “Political Science 361: Environmental Conflict Resolution,” at wheatoncollege.edu/catalog/pols_361.

26. Charles Sayan and Daniel Blumstein, *The Failure of Environmental Education (And How We Can Fix It)* (Berkeley: University of California Press, 2011).

Chapter 25. Effective Crisis Governance

1. I thank Lyn Carson, Mark Diesendorf, and Steve Wright for valuable comments on earlier drafts of this chapter.

2. Michael Renner and Zoé Chafe, “Turning Disasters into Peacemaking Opportunities,” in Worldwatch Institute, *State of the World 2006* (New York: W. W. Norton & Company, 2006), pp. 123–27; Eric Stover and Patrick Vinck, “Cyclone Nargis and the Politics of Relief and Reconstruction Aid in Burma (Myanmar),” *Journal of the American Medical Association*, 13 August 2008, pp. 729–31.

3. Stockholm International Peace Research Institute, *Warfare in a Fragile World: Military Impact on the Human Environment* (London: Taylor & Francis, 1980).

4. Janet Abbate, *Inventing the Internet* (Cambridge, MA: The MIT Press, 1999).

5. Jasper Becker, *Hungry Ghosts: Mao’s Secret Famine* (New York: Free Press, 1996); Frank Dikötter, *Mao’s Great Famine: The History of China’s Most Devastating Catastrophe, 1958–62* (London: Bloomsbury, 2011); Article 19, *Starving in Silence: A Report on Famine and Censorship* (London: 1990).

6. Kenneth Bain, *Treason at Ten: Fiji at the Crossroads* (London: Hodder and Stoughton, 1989); Robert T. Robertson and Akosita Tamanisau, *Fiji—Shattered Coups* (Sydney: Pluto Press, 1988).

7. Peter Ackerman and Jack DuVall, *A Force More Powerful: A Century of Nonviolent Conflict* (New York: St. Martin’s Press, 2000); Michael Randle, *People Power: The Building of a New European Home* (Stroud: Hawthorn, 1991); Kurt Schock, *Unarmed Insurrections: People Power Movements in Nondemocracies* (Minneapolis, MN: University of Minnesota Press, 2005); Stephen Zunes, “Arab Revolutions and the Power of Nonviolent Action,” *National Catholic Reporter*, 25 November 2011, p. 26.

8. Erica Chenoweth and Maria J. Stephan, *Why Civil Resistance Works: The Strategic Logic of Nonviolent Conflict* (New York: Columbia University Press, 2011); Table 25–1 from *ibid.*, p. 73.

9. Adam Roberts, “Civil Resistance to Military Coups,” *Journal of Peace Research*, March 1975, pp. 19–36; D. J. Goodspeed, *The Conspirators: A Case Study in the Coup d’État* (London: Macmillan, 1962); Victoria E. Bonnell, Ann Cooper, and Gregory Freidin, eds., *Russia at the Barricades: Eyewitness Accounts of the August 1991 Coup* (Armonk, NY: M. E. Sharpe, 1994).

10. Michael Flood and Robin Grove-White, *Nuclear Prospects: A Comment on the Individual, the State and Nuclear Power* (London: Friends of the Earth, 1976); Robert Jungk, *The New Tyranny: How Nuclear Power Enslaves Us* (New York: Grosset and Dunlap, 1979).

11. David Collingridge, *The Social Control of Technology* (London: Frances Pinter, 1980).

12. C. George Benello and Dimitrios Roussopoulos, eds., *The Case for Participatory Democracy: Some Prospects for a Radical Society* (New York: Grossman, 1971); Gerry Hunnius, G. David Garson, and John Case, eds., *Workers’*

Advance Praise for

State of the World 2013: Is Sustainability Still Possible?

“State of the World 2013 cuts through the rhetoric surrounding sustainability, providing a broad and realistic look at how close we are to achieving it and outlining practices and policies that can steer us in the right direction. . . . A must-read for those seeking authentic sustainability.”

—Hunter Lovins, President, Natural Capital Solutions
and Author of *Climate Capitalism*

“This is a book of hope for a world in profound crisis. It gives honest assessments of the enormous challenges we face and points us toward institutional and cultural changes that are proportional to our dire situation. *State of the World 2013* reaffirms that we are not helpless but that we have real choices—and that transformation is both possible and desirable.”

—Reverend Peter S. Sawtell, Executive Director,
Eco-Justice Ministries

“State of the World 2013 cuts through ‘sustainababble’ with crisp coverage that puts the news of the year in context and provides an expert survey of today’s and tomorrow’s big issues. It’s a perennial resource for everyone concerned about our common future.”

—Karen Christensen, publisher of the 10-volume *Berkshire Encyclopedia of Sustainability*

“Every elected official in the world needs to read this book. Mass denial is no longer an option. An ‘all hands on deck’ approach to transforming our culture and economy is the only path to a safe, resilient future. This book is the blueprint for that safe path forward.”

—Betsy Taylor, President, Breakthrough Strategies & Solutions
and Founder, Center for a New American Dream

2013

STATE OF THE WORLD

Is Sustainability Still Possible?

“*State of the World 2013* assembles the wisdom and clarity of some of the earth’s finest thinkers, visionaries, and activists into a dazzling array of topics that merge to offer a compellingly lucid and accessible vision of where we are—and what is the wisest and healthiest course for the future.”

—**NINA SIMONS**, Cofounder, Bioneers

“This edition forges a new path for the *State of the World* series, and for environmental thinking in general. . . . A pivotal book that marks a defining moment for our species.”

—**RICHARD HEINBERG**, Senior Fellow, Post Carbon Institute, and author of *The End of Growth*

“*State of the World 2013* is a powerful collection of articles, and the vision behind it is impressive. Here is a book that gets beyond ‘sustainababble’ and asks the tough, essential questions. It should make readers more determined than ever to do their part in avoiding planet-wide disaster—and better informed about how to do that.”

—**PETER SINGER**, Professor of Bioethics, Princeton University, and author of *Animal Liberation*, *One World*, and *The Life You Can Save*

Sustainability gets plenty of lip service, but the relentless worsening of key environmental trends reveals much of that attention to be “sustainababble.” From climate instability and species extinctions to approaching scarcities of freshwater, minerals, and energy, worrisome limits to human economic activity look more pressing each year—all while our political institutions seem impotent to address the challenge.

THE WORLDWATCH INSTITUTE, in this edition of the celebrated *State of the World* series, takes an unflinching look at what the data say about the prospects for achieving true sustainability, what we should be doing now to make progress toward it, and how we might cope if we fail to do so.



Washington | Covelo | London
www.islandpress.org

All Island Press books are printed on recycled, acid-free paper.
Cover photos: *Binoculars Reflecting the Sky* ©iStockphoto.com/Jill Fromer
Rain clouds, vertical ©iStockphoto.com/Adrian Assalve

ISBN 13: 978-1-61091-449-9

ISBN 10: 1-61091-449-X



9 781610 914499

