



JONATHAN Z.
CANNON

FINDING A WAY FORWARD ON THE ENVIRONMENT

U.S. ENVIRONMENTAL LAWS enacted in the late 1960s and 1970s were successful in addressing a number of the pressing issues that gave rise to the modern environmental movement. But daunting issues remain, such as climate change, species loss, and watershed degradation, while the public debate about environmental law and policy is more polarized than ever. Jonathan Cannon's perspectives on these issues grow from a career in environmental law that encompasses, in roughly equal portions, private practice, government service, and teaching and scholarship. This combination is unusual among environmental law scholars and helps give Cannon's insights a distinctive balance and persuasiveness.

Cannon's interest in the environment began with a youthful delight in the outdoors, which continues unabated into his seventy-first year. It grew with his attraction as an undergraduate English major to the English romantic poets Wordsworth and Keats and to American writers such as Thoreau and Whitman. Cannon's undergraduate training as a critical reader of literary texts would later become instrumental in his distinctive interpretation of environmental texts, most notably the Supreme Court's opinions in major environmental cases. In this aspect of his work, Cannon explores the significance of these opinions as cultural as well as legal texts. Equally important to Cannon's scholarship was his decades-long apprenticeship as a lawyer in the private practice of environmental law and as a senior official in the U.S. Environmental Protection Agency, charged with shaping and implementing national environmental policy. Stemming from this experience, a second strain of Cannon's scholarly work is a pragmatic account of how environmental policies and institutions work and how they can be made to work better. Each of these two streams of his work is explored below.

HOW DOES IT WORK AND HOW COULD IT WORK BETTER?

Federal environmental law consists of thousands of pages of dense statutory material and tens of thousands of pages (and growing) of regulations interpreting and applying those statutes. This body of law governs a dozen or more separate regulatory programs. It is often likened to federal income tax law in its arcane complexity. Equally complex are the institutional mechanisms by which that law is carried out; these include not only the decision processes of the Environmental Protection Agency and other regulatory agencies but also the interventions of Congress and the White House, and intricate relationships with states and Indian tribes, which function as primary implementers of many of these laws. “To students who come to law school with a passion for the environment, this complexity can make the field of environmental law seem brittle and opaque, tempting them to abandon their passion for more intuitively accessible areas of the law,” Cannon said. Cannon has used his deep knowledge and experience in the field to unpack this complexity, diagramming how the laws and institutional actors work together, and offering suggestions for making environmental programs more efficient and effective.

Two early articles in this vein are largely descriptive, detailing the political economy of the EPA’s relationships with regulated entities, Congress, and the White House. These pieces focused on the ability of the EPA—an executive branch agency lacking a congressional charter—to control the nation’s environmental agenda. In one, Cannon analyzes the EPA’s bargaining with regulated entities to satisfy its major constituent groups and protect against overruling actions by Congress and the White House (“Bargaining, Politics and Law in Environmental Regulation,” in *Environmental Contracts: Comparative Approaches to Regulatory Innovation in the United States and Europe* (Kluwer Law International, 2001)). He revealed the EPA’s use of its interpretive discretion as a bargaining chip in negotiations with industry that produced net environmental benefits (thus pleasing environmentalists) while reducing compliance costs (thus pleasing industry) and challenging stereotypes of bureaucratic overreaching (thus blunting congressional reform efforts and minimizing the risks of White House oversight). In this, the EPA undertook a “complex dance with its two political overseers” that served to protect its separate interests as “policy-maximizer.”

A second piece documented the EPA’s success as a political actor in fending off congressional amendments that would, in its view, have weakened its regulatory authority. In the process, Cannon argues, the agency also made the political system more responsive to the public’s views (“EPA and Congress (1994-2000): Who’s Been Yanking Whose Chain?,” 31 *Envtl. L. Rep.* 10942 (2001)). As the new Republican majority advanced its “Contract with America” in the 104th Congress, the EPA mobilized public opinion against the deregulatory legislation and successfully pressured the White House to take a more forceful posture against it. Administrative agencies like the EPA are conventionally understood as agents of the political branches, subject to their direction and control. In this case, however, the EPA used information, expertise, and reputational resources that were uniquely within its possession to shape the political landscape, ultimately moving the White House and Congress in its direction. This behavior might be cause for concern—a rogue agency getting its own way at the public’s expense. But opinion polls of the period showed that the EPA’s position was in accord with the views of a broad majority of Americans. “Rather than frustrating the people’s preferences, the EPA’s political maneuverings arguably helped to bring those preferences to bear on the actions of elected officials,” Cannon said.

Cannon’s assessments of major environmental programs have produced influential recommendations for reform. In “Adaptive Management in Superfund: Thinking Like a Contaminated Site,” 13 *N.Y.U. Env’tl. L.J.* 561 (2005), he captured the awkward predicament of the gargantuan Superfund, a federal liability and funding program to cleanup the nation’s most severely contaminated sites. When Superfund was enacted by Congress in 1980 and substantially amended in 1986, the expectation was that sites would be cleaned up quickly and completely, leaving no residual contamination to complicate their future use. In fact, as it turned out, Superfund sites took much longer (and cost much more) to cleanup than initially anticipated, and most sites had contaminants remaining even after cleanup measures were taken, which resulted in a need for long-term monitoring and review. Cannon used concepts of adaptive management, developed as a tool in restoring damaged ecosystems, to shape recommendations to the EPA for making Superfund more responsive to the realities on site. These recommendations included promoting collaborative stakeholder processes to guide long-term management of sites, improving

monitoring and feedback mechanisms focused on crucial unknowns, and employing systematic policy-learning for the entire portfolio of sites. The agency has adopted this innovative application of adaptive management principles in its own program reviews (EPA, Superfund Remedial Program Review Action Plan (FY 2014)).

Cannon also undertook a rigorous analysis of federal water quality programs in “A Bargain for Clean Water,” 17 *N.Y.U. Env’tl L. J.* 608 (2008). Finding that almost forty years after the adoption of the Clean Water Act, between 40 and 50% of the nation’s waters still had water quality problems, he searched the statute and its implementation to understand why. The explanations he found included the lack of regulatory authority over polluted runoff from agriculture and other non-point sources, which caused or contributed to more than half of the nation’s water quality problems. This regulatory void contributed to the weakness of water quality trading schemes that could promote fair and efficient allocation of pollution abatement responsibilities. Also, farm bill subsidies that could work to alleviate the non-point source problem in the absence of regulation were not well-targeted.

Cannon combined his policy analysis with an assessment of the political viability of possible reforms. The result was a set of incremental steps that might be taken to address each of the shortcomings, among them establishing enforceable expectations for non-point pollution sources and shifting to a more performance-based, cost-effective allocation of subsidies for non-point source controls. Cannon qualified his recommendations with an assessment of the political barriers to adopting them and the inherent limitations on market-based approaches in the local and regional settings in which many water-quality problems occur. His prescriptions were incorporated in a comprehensive proposal for reform of environmental laws (David Schoenbrod, Richard B. Stewart, and Katrina Wyman, *Breaking the Logjam: Environmental Protection That Will Work* (Yale University Press, 2010)).

Cannon’s work on institutional design goes beyond federal regulatory programs to multi-tiered watershed programs. Watersheds are the aquatic and associated terrestrial ecosystems encompassed within drainage basins or sub-basins—for example, the 64,000-square-mile basin of the Chesapeake Bay. “Because they address an assortment of land and water resources subject to both public and private control, watershed management efforts typically depend on collaboration

among government agencies, nongovernmental organizations, and the private sector,” Cannon said. Although they may incorporate federal programs, such as the Clean Water Act, these programs emphasize the federal government’s role as facilitator or enabler, rather than top-down decisionmaker. In several articles, Cannon mined the experience of watershed programs, with a specific attention to the Chesapeake Bay Program, in the search for keys to effective design of these complex institutions (“Choices and Institutions in Watershed Management,” 25 *Wm. & Mary Env’tl L. & Policy Rev.* 369 (2000); “Checking in on the Chesapeake: Some Questions of Design,” 40 *U. Richmond L. Rev.* 1131 (2006); “Sustainable Watersheds,” 107 *Mich. L. Rev. First Impressions* 74 (2008)). A major challenge, he concluded, was navigating between the Scylla of undue centralization and the Charybdis of parochial interests that threaten overuse of the ecological commons. Cannon identified a potential role for the federal EPA—providing accountability for individual actors within a cooperative framework of agreed-upon goals. That approach has since been implemented in the Chesapeake Bay, through adoption of bay-wide water quality standards and implementation plans. Moreover, the Third Circuit Court of Appeals recently upheld this framework in the face of legal challenge.

LAW AND MEANING—THE CULTURAL SIGNIFICANCE OF ENVIRONMENTAL DECISIONS

The second dimension of Cannon’s work addresses the interplay of culture and environmental law and policy. Cannon sees competing paradigms of nature and people’s relation to it as deeply woven into our political and legal discourse. Federal environmental statutes give concrete form to these paradigms; political debates and conflicting judicial interpretations rehearse the continuing tension between them.

In an early work, Cannon and a co-author traced the shape and influence of environmental worldviews in the speeches of U.S. presidents on the environment. They discovered recurring rhetorical patterns—themes, images, and stories—that were remarkably consistent among presidents of different ideologies and political agendas (“Presidential Greenspeak: How Presidents Talk About the

Environment and What It Means” (with Jonathan Riehl), 23 *Stan. Envtl. L.J.* 195 (2004)). (The study extended through the first term of President George W. Bush.) The presidents used this common symbolic stock in their efforts to reconcile apparently conflicting values, claiming that environmental protection was consistent with continued technological progress and economic growth. This insight led the authors to ask whether there indeed might be a consensus environmentalism in the U.S. that crossed political lines, although they also detected within the presidential discourse competing cultural values that could send environmental policy in very different directions.

Cannon’s subsequent work on the cultural dimensions of the Supreme Court’s environmental decisions continued this line of inquiry, although rather than the consensus suggested by the study of presidential speech, it pointed less optimistically to a growing dissensus on environmental values. In several law review articles and his new book, *Environment in the Balance: The Green Movement and the Supreme Court* (Harvard University Press, 2015), Cannon used beliefs and values associated with the environmental movement as an interpretive lens to assess the cultural significance of the Court’s major environmental cases. For Cannon, the cultural meanings of the cases were not separate from the law, but grew from the interplay of legal doctrine and reasoning with the values and beliefs of the justices drawn from society. “The interpretive challenge was that the justices typically do not acknowledge the background beliefs and values that shape their approach to legal questions, representing themselves instead as ‘finding’ the law through neutral principles and logic,” Cannon said. To meet this challenge, Cannon combined conventional legal analysis, focused on the structure and content of legal argument, with attention to the imagery, tone, and narrative elements of the opinions.

Cannon drew on the work of social scientists and the literature of the environmental movement to identify the beliefs and values associated with environmentalism and its cultural antithesis. “The new ecological paradigm espoused by most environmentalists emphasizes the interconnectedness and fragility of natural systems, the need for collective restraint in protecting those systems, and the desirability of maintaining harmonious relations with non-human nature. This paradigm often expresses itself as resistance to industrial-scale technology and economic markets,” Cannon explained. (Pope Francis’s

Laudato Si embodies it, he added.) “The competing dominant social paradigm emphasizes individualism, entrepreneurial effort, technological mastery, and economic growth. In contrast to the interdependence and fragility of the environmentalist worldview, the dominant paradigm projects an atomistic model—a world of discrete features and events of largely individual or local significance, a world that is resilient rather than fragile.”

In a focused analysis of thirty of the Court’s most important environmental cases since 1970, Cannon found that a majority of the Court sometimes gravitated toward the ecological paradigm and sometimes toward the dominant paradigm. Decisions from the early 1970s shared the urgency of environmentalist concerns: for example, *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 (1971) (reversing the Secretary of Transportation’s decision to allow an interstate highway to bisect an urban park) and *United States v. Students Challenging Regulatory Agency Procedures (SCRAP)*, 412 U.S. 669 (1973) (extending standing based on attenuated causal linkages between local streams and forests and national freight rates for recyclables). The Court’s early embrace, however, soon gave way to a more neutral stance and, in some cases, to skepticism and even animosity toward the environmentalist worldview, as in the castigation of ecologically based theories of standing in *Lujan v. Defenders of Wildlife (Lujan II)*, 504 U.S. 555 (1992).

Cannon’s thirty cases included major victories for environmentalists, such as *Massachusetts v. EPA*, 549 U.S. 497 (2007), in which the Court not only vindicated environmentalists’ legal claim that the EPA had authority to regulate greenhouse gas emissions under its existing Clean Air Act but also conveyed an underlying sense of the urgency of combatting climate change. On balance, however, Cannon concluded that the resistance to environmentalist beliefs and values in these cases overshadowed the gains for environmentalists. As he put it in his book, “Much in these cases presents as a cultural rear-guard action—the importation of pre-ecological values and practices into judicial doctrine and the statutes of a new ecological era.” Even more importantly for his analysis, beneath the surface of the diverse outcomes of these cases, persistent divisions among the justices were apparent along the fault line of competing cultural paradigms. Among sitting justices, conservatives such as Chief Justice Roberts and Justices Scalia, Thomas and Alito have tended to align in environ-

mental cases with the dominant paradigm; liberals such as Justices Ginsburg, Kagan and Sotomayor with the ecological. In the middle are Justice Kennedy, a conservative who has nevertheless been responsive to the ecological model in important cases, and Justice Breyer, a liberal who has expressed concern about extending environmental protections regardless of costs, as evidenced by his separate opinions in *Whitman v. American Trucking Associations, Inc.*, 531 U.S. 457 (2001) and *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208 (2009).

In Cannon's analysis, this division among the justices replicates the progress of environmentalism in society and supports the theory that in becoming widely institutionalized, environmentalism galvanized its cultural opposition. Passed by large majorities from both parties, the demanding federal environmental laws of the 1960s, 1970s and 1980s suggested a basic reordering of societal values and priorities. By the 1990s, however, it was increasingly clear that if there had ever been a consensus environmentalism, it was not a complete or enduring one. Cultural resistance to environmentalist gains organized itself around themes of economic freedom, property rights, and resource use, and found voice in the wise-use and property movements. "The rise of these movements was associated with a broader cultural sorting," Cannon said, "as environmentalism became more closely identified with the Democratic Party, and the Republican Party became more consistently and assertively the defender of the dominant paradigm." Although the environmental movement's early surge, which included the passage of the major federal environmental laws, had strong public support, the Court and other institutions worked over time to find expression for competing values that were subordinated at the surge but remained deeply engrained in the culture.

Finding that the resurgence of the dominant paradigm has stymied the environmental movement, sapping its ability to force progress on pressing issues that remain, Cannon spends the last portion of his book investigating possible futures for the movement that might overcome the stalemate. Options put forward by other commentators range from radically reframing the movement, with the goal of wresting it from the clutches of liberals, to radically transforming society, in the form of a liberal revolution covering every aspect of public life—from the electoral process, to wealth distribution, consumption, and corporate governance. Cannon argues for more provisional and plural

responses that test new practices for their ability to create alliances across existing cultural divides or perhaps to create new paradigms entirely.

The pervasiveness and irreversibility of human impacts—a condition that some argue warrants placing us in a new geologic era, the Anthropocene—is causing environmentalists to question their received concepts of nature and the proper role of humans within it. This new awareness suggests changes in our understanding of what relationships are possible and of the role that technology and markets should play securing those relationships. Cannon agrees that the movement needs to come to terms with the Anthropocene (and is in the process of doing that), but he also concludes that it would be a mistake to abandon the traditional wellsprings of the movement—its deep sense of connection "to the natural processes central to all life." As he puts it in his book's concluding chapter, "The continued tenacity and power of the movement may depend on keeping its roots deep in the cultural soil from which it grew, even as its expressions take on new adaptive forms."

EXCERPTS

ENVIRONMENT IN THE BALANCE: THE GREEN MOVEMENT AND THE SUPREME COURT

(Harvard University Press, 2015)

INTRODUCTION

This is the story of the modern environmental movement's encounters with the United States Supreme Court. It is a story of the movement's efforts to transform the culture of the country and, particularly, the law culture embodied by the Court. The results of these efforts are recorded in hundreds of the Court's decisions in environmental cases over the last four decades but are most vividly revealed in a smaller set of decisions that have special cultural resonance as well as legal significance. These cases show how environmentalism has in important ways affected the Court's deliberations and been affected by them.

Although diverse, the modern environmental movement has cohered around a discrete set of beliefs about the way the world is and how we should value it. Environmentalists embrace an ecological model of the world—one in which human and natural systems are closely interconnected and human actions affecting one part of a system are likely to have harmful effects that may be widespread in place and time. Environmentalists typically assign special value to the environment, view the threats to it as grave, and argue that efforts to protect it are entitled to high priority among competing concerns. They often express a sense of crisis and urgent need for action. Substantial protective measures must be taken, and quickly, often in the form of regulations that limit individual choice, use of technology, and economic growth. At their most ambitious, environmentalists seek not only protective policies but also a transformation of societal institutions and practices to reflect their beliefs and val-

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ues. Values dominant in the national culture, such as individualism, technological mastery, and commitment to economic growth, resist that ambition.

What follows is a perspective on the success of this transformational enterprise through the lens of the Supreme Court, using its environmental decisions to probe the cultural sources of our resistance as well as our receptivity to environmentalism. In diverse cases over the last four decades, advocates have pressed the Court to shape the law to accommodate environmentalist tenets. Their arguments and the Court's response to them are framed in the specialized language of legal discourse. But a careful reading of these cases shows that the justices' deliberations reflect deep-seated, extralegal beliefs and values, both for and against environmentalist claims.

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Opinions in these cases reveal sharply divergent views among the justices at the level of cultural as well as purely legal debate. For example, differences among the justices on legal issues such as standing, federalism, land-owners' rights, and the scope of regulatory authority in environmental cases often reflect different levels of acceptance of the environmentalists' ecological model and the values associated with it. Similarly, varying degrees of sympathy with claims for the special importance of environmental concerns color the justices' interpretations of institutional orderings and legislative priorities. These persistent divisions among the justices are consistent with other evidence that the environmental movement has yet to achieve its transformative aspirations. Opposing cultural elements have endured and remain deeply embedded in our institutions and practices. This unresolved cultural conflict has produced a stalemate in which the movement has been largely successful in maintaining its historic gains but has struggled to make progress on the issues that remain.

What might this stalemate mean for the future of environmentalism, at a time when the movement is undergoing critical self-analysis and facing environmental challenges, such as climate change, of breathtaking scope and complexity? One choice for environmentalists is to double down on the cultural commitments that have brought them this far. The movement has already succeeded in changing political institutions, including monumental legislative enactments in the 1960s, 1970s, and 1980s, and might make further

inroads as circumstances change: for example, improved scientific understanding and public acceptance of the causes and risks of global climate change. But the abiding resistance to environmentalist claims among a number of the justices illustrates the difficulty of simply overwhelming the cultural divisions that limit the movement's success. A second choice is to neutralize the cultural divide by broadening the movement's cultural appeal, through such means as increased reliance on markets and emphasis on economic growth, transformative technologies, and active management of natural systems. These and other innovations offer the movement risks as well as rewards—indeed, they may sever the movement from the very connectedness to nature that has powered it in the past. The book encourages a cultural pragmatism that can engage a range of perspectives in the search for beneficial outcomes while staying connected to ideas about the place of humans in nature that have been crucial to the movement's energy and purpose.

MASTERY, TECHNOLOGY, AND NATURE

Environmentalists have resisted mastery values expressed through technological manipulation of the environment and economic growth. In his dissent in *Sierra Club v. Morton*, Justice Douglas represented these values as the “bulldozers of ‘progress,’” poised to “plow under all the aesthetic wonders of this beautiful land” and reduce “priceless bits of Americana ... to the eventual rubble of our urban environment.” Virtually all of the contested actions and policies in this book's selected cases were variants of the “bulldozers of ‘progress’”—from dams, highways, and nuclear plants to land development, mining, and industrial emissions. In opposing them, environmentalists sought more harmonious relations with nature, reducing the human footprint and limiting technological intrusions. Mastery for environmentalists, however, is less straightforward than this account suggests.

Reconsidering the Antimastery Narrative

The founding text of the movement, Rachel Carson's *Silent Spring*, begins with her “A Fable for Tomorrow,” depicting a rich and harmo-

nious world threatened by death-dealing synthetic chemicals. Critics have attacked this narrative as a harmful romanticization. Nordhaus and Shellenberger, for example, argue that it falsely depicts nature as Edenic and the natural impulse of humans to control it as sinful, aping the myth of the fall in the book of Genesis. “It is this reality—human agency—that most bothers environmentalists like Carson,” they write. “For her, human attempts to control nature inevitably end in tragedy.” But Carson's actual response to the crisis she depicted was more complex—and much less antimastery—than this criticism presumes. She did not urge retreat to a prechemical past but instead encouraged the development of a “science of biotic controls” that could offer comparable protections for agriculture with fewer ecological risks than chemical poisons: for example, chemical sterilization to wipe out the screwworm fly in the southeastern United States. This was hardly a return to Eden.

The valence of mastery has only become more complex with increasing awareness of the pervasiveness of human impacts on the environment and the recognition that technological and economic development will be essential to manage at least some of those impacts, most notably climate change. In *The End of Nature*, environmental activist Bill McKibben ruefully argued that anthropogenic climate change pervaded nature in a way that made human dominance complete. Although we had intruded on nature before, “we never thought we had wrecked [it] ... we never really thought we could.” Climate change, however, changed the meaning of nature from something reassuring and secure to something contingent, subdued. On the basis of a comprehensive tracing of the human imprint across ecosystems and landscapes, the Nature Conservancy's (TNC) chief scientist, Peter Kareiva, and his colleagues confirm that “virtually all of nature is now domesticated.” By “domesticated,” they mean nature “exploited and controlled.”

If nature is thoroughly domesticated, the question for environmentalists may shift from how we put it back or set it free to how we manage it to best effect. This shift in perspective revealed itself dramatically in the split among environmentalists over the Cape Wind project off Nantucket. Environmentalist Robert F. Kennedy Jr. proclaimed his support for wind power but drew the line at a project that would compromise the beauty of his beloved Cape Cod. He framed the case against Cape Wind as an antimastery narrative,

emphasizing the industrial scale of the project and its violation of the Massachusetts coastal environment. “130 giant turbines whose windmill arms will reach 417 feet above the water [will] be visible for up to 26 miles,” “hundreds of flashing lights ... will steal the stars and nighttime views,” and “a transformer station rising 100 feet above the sound would house giant helicopter pads and 40,000 gallons of potentially hazardous oil.” Kennedy compared siting the project on Nantucket Sound to building a wind farm in Yosemite Park. The Massachusetts coast, while “far from pristine,” was itself a kind of wilderness, necessary for the “spiritual renewal” of people in nearby cities, like Boston, and vulnerable to the wind farm’s disruptions.

Nordhaus and Shellenberger criticized mainline environmental groups, such as NRDC, for not taking Kennedy, one of their own, to task; Kennedy’s opposition, they argued, was selfish NIMBYism. But a number of environmentalists did object to Kennedy’s stance, including Bill McKibben, probably the nation’s most prominent environmentalist and climate change advocate. In an open letter to Kennedy, McKibben and others wrote that the adverse impacts of Cape Wind were trivial when measured against the need to address the climate change crisis, which “will require the dramatic transformation of America’s energy economy.” They offered a future not of technological and economic restraint but of “cutting-edge technologies, and rewarding high-paying jobs.” In his 2010 approval of Cape Wind, Secretary of the Interior Ken Salazar celebrated its grand scale, job creation, and carbon-reducing benefits while taking steps to reduce local disruptions, including “visual impacts from the Kennedy Compound National Historic Landmark.”

“OLD GREENS VERSUS NEW”

Reconsideration of the antimastery narrative extends beyond climate change and embraces a collection of revisionist views on technology, nature, and the goals of environmental stewardship. Mark Lynas, a self-described environmentalist and former advisor to the president of the Maldives on climate change, argues in his book *The God Species* that Earth is stressed across a number of its major system processes, and humans have transgressed the boundaries of three of them: biodiversity loss and excessive nitrogen (eutrophication) in

addition to climate change. To reestablish sustainable practices in these areas and avoid exceeding other planetary boundaries, Lynas writes, we must reject “the standard Green creed ... that playing God is dangerous. Hence the reflexive opposition to new technologies.... My thesis is the reverse: playing God (in the sense of being intelligent designers) at a planetary level is essential if creation is not to be irreparably damaged or even destroyed by humans unwittingly deploying our newfound powers in disastrous ways.”

Lynas seems intentionally to challenge Leopold’s foundational trope: god-like Ulysses is called not to humble himself as a “mere citizen” of the biotic community but to assert his prowess, albeit with a knowledge of the natural limits of the systems within which he must live. This recast stewardship urges the development and use of technologies and economic strategies across a range of planetary problems. These tools are to be used wisely within the real constraints that nature imposes, but their purpose is not to establish a prelapsarian state. It is to secure the conditions for sustained human flourishing in a nature unalterably different from that which would have been if the “god species” had never appeared.

Like Lynas, new environmentalist Peter Kareiva challenges the antimastery narrative by undercutting the movement’s received wisdom. In a 2011 lecture, he provocatively marked the cultural break with traditional environmentalists by disparaging the views of prophets of the movement such as Thoreau and Abbey. Thoreau and Abbey were hypocrites in their sanctification of pristine nature: Thoreau’s mother did his laundry while he lived at Walden Pond; Abbey privately expressed his loneliness while publicly celebrating the “loveliness” of his wilderness experience. Although he has been kinder to Rachel Carson, lauding her role in bringing about needed environmental protections, Kareiva dismisses her “fragility trope” (with its corollary of apocalypse) as inconsistent with data showing nature’s resilience.

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The promise of these change initiatives is not only a more pragmatic approach to looming environmental challenges but also a cultural inclusivity that could lead to broader acceptance of the scientific basis for urgent action as well as agreement on forms that action should take. The risk is that they will dissolve the environmentalist perspective into an undifferentiated sea of competing interests and

value preferences. In a world of trade-offs, one may question what remains of environmentalism's transformative aspirations. It is unclear, in the end, what Shellenberger, Nordhaus, and their followers offer other than the cultural status quo and the indifferent environmental outcomes that we might expect from it.

My own view is that although the movement needs to come to terms with the Anthropocene (and is already doing that), it would be a mistake to abandon its traditional wellsprings, as Kareiva and others have urged. There is power in the idea of nature, although we understand that nature is, and perhaps has been since humans appeared in numbers on the planet, beyond recall in a "pristine" state. "People feel that nature matters and act on that conviction." That primary connection to nature has set environmentalism apart from the other great social movements of our time. It has rallied the movement's adherents. To give up that idea entirely is to abandon the allegiances that have powered the movement—to show the white flag, as Wilson quipped—and abdicate its enterprise of deep change.

A cultural synthesis is plausible. Seminal figures such as Aldo Leopold and Rachel Carson offer bridges between the old and the new. Leopold was an advocate of wilderness protection, but he also valued working landscapes, including the Wisconsin farm that he brought back into productive use from past abuse and neglect. His land ethic is the fount of ecocentric theories that would limit human intervention. But it also lends itself to anthropocentric interpretations. Carson defended an idyllic harmony from the harms of pesticides but envisioned a chemically managed future for modern high-yield agriculture. Contemporary environmentalist writer and activist Bill McKibben wrote *The End of Nature* but remains an advocate for wildness in multiple forms. "For me," he writes, "the idea that there's no such thing as pure wilderness has made the relative wild all the more precious."

The synthesis may take the form of benign mastery: the world is what we make it, but we make it out of concern not only for ourselves. Benign mastery need not imply allegiance to intrinsic value theories, but it does imply an attitude of respect for nature in all its forms—our own bodies included. Justice Douglas's *Sierra Club* dissent imagined an assemblage of species of the Mineral King Valley "standing before the Court" in their own right. But because we cannot speak with the environmental other, there may be little practical

difference between this view of an egalitarian council of life and the more anthropocentric but empathetic views of Justice Blackmun's dissent or even the Court's opinion. These views all support a more generous consideration than a narrow utilitarian or instrumentalist perspective would grant. The challenge going forward would be to deepen and broaden that consideration to encompass diverse environments, technologies, knowledge systems, and cultural idioms. In this version of the movement's future, as Jedediah Purdy wrote, the triad of Leopold's land ethic—"integrity, stability, and beauty"—stand not as "qualities of unchanged 'wild' nature, but goals for active management, both of wilderness and of densely inhabited places."

One might argue that continuing the emphasis on our connectedness to nature is not based on reason, but flatters instead the movement's mystical or quasi-religious side, risking romantic excess or policy irrelevance. Even reason has its limits, however. It cannot by itself force change beyond prevailing conventions of reasonableness. Movements may appeal to reason; they may use the implements of reason, such as CBA, to advance their aims. But they are not powered by reason, and reason may arbitrarily limit their horizons. This was the point of David Brower, who knew something about what made a movement, when he claimed provocatively that "objectivity is the greatest threat ... today." The continued tenacity and power of the movement may depend on keeping its roots deep in the cultural soil from which it grew, even as its expressions take on new, adaptive forms.

A BARGAIN FOR CLEAN WATER

17 *N.Y.U. Envtl. L.J.* 608 (2008)

This paper reviews the effectiveness, efficiency, and political viability of federal water quality programs and possible reforms of those programs. The paper's primary focus is the conundrum of what to do about pollution from non-urban stormwater runoff—an issue that has long been identified as crucial to achieving the nation's avowed water quality goal but that remains fundamentally unresolved.

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To further cost-effective implementation of national water quality goals, the CWA should be applied or, if necessary, amended to: require states and localities in problem watersheds to develop water quality implementation plans applicable to non-point source as well as point source dischargers and facilitate cost-effective implementation on a watershed basis by increasing the flexibility and scope of trading where possible.

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Unregulated nonpoint source pollution is solely responsible for failure of 30 to 50 percent of U.S. waterbodies to meet water quality standards and is a contributing factor in an even larger percentage. The waterbodies seriously and adversely affected by non-point source pollution include major interstate watersheds, such as the Mississippi River Basin/Gulf Coast complex, which drains two-thirds of the lower forty-eight states, the Chesapeake Bay, center of a five-state watershed, and the Great Lakes, fed by portions of eight states and Canada. For waters such as these, some federal involvement is appropriate and likely necessary for effective control of non-point as well as point source pollution to achieve desired water quality.

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Proponents argue the advantages of market-based approaches over competing instruments in cost-effective attainment of environmental goals, transparency, stimulating technology innovation, and reducing administrative costs. The classic market-based instrument is the cap-and-trade program, in which government determines a “cap”—a maximum desired amount of discharge of a pollutant in a geographic area—and creates allowances in the amount of the cap. The allowances are auctioned or otherwise distributed to the pollution sources in the area, each of which is prohibited from discharging in excess of the allowances it holds. Sources may freely trade allowances among themselves. Sources with relatively high pollution reduction costs would be expected to purchase additional allowances from sources with relatively low reduction costs, with the result that the area reductions represented by the cap would be achieved in the most cost-effective manner. Although cost-effective allocation of pollution reduction among sources could be attempted administratively, cap and trade relegates the allocation to the decisions of source managers in a market setting. Proponents argue that this mode of allocation is superior because the source managers have better information

about their costs and sharper incentives to reduce their costs through reallocations and because the costs of administering the program are less.

EPA seeks to approach this model in its Water Quality Trading Policy. [But] the current trading policy ... does not require that discharges from non-point sources be capped or otherwise limited. The system is only partially capped, as only point sources must hold allowances (permits) in order to discharge. The ability of uncontrolled non-point sources to generate credits risks the problem we identified with subsidies—encouraging activities that the policy seeks to discourage. Also, the failure to limit non-point source discharges means that one of the major advantages of a cap-and-trade system—assurance that a desired environmental endpoint will be met using limited allowances—is not realized. Under the current trading policy, non-point sources may generate and sell pollution reduction credits, after voluntarily meeting “baseline” expectations, but those reductions may be offset by increased discharges by other non-point sources not subject to controls.

Failure to cap or otherwise restrict non-point sources may also discourage trading by raising the threshold for trading by non-point sources: in order to begin to generate pollution reduction credits for sale, a non-point source must first undertake to meet baseline expectations, which are otherwise voluntary and, to the extent not underwritten by subsidies, may be costly to the source. Moreover, in the absence of a TMDL implementation plan specifying what measures are needed to meet the non-point source allocation, baseline expectations may be quite unclear.

...

At least for large watersheds with systemic water quality problems, where market-based approaches offer the greatest promise, the ultimate objective would be a cap-and-trade system fully integrating point and non-point sources. But the feasibility of that objective remains subject to a number of questions. These questions include: limitations on the scope of watershed trading due to the characteristics of aquatic systems and the effects of pollutants within those systems; uncertainties in measuring or estimating the actual amounts of pollution flowing from individual non-point sources over time; and the transaction costs associated with trading, which have the potential to swallow the savings achieved. These concerns may prevent the

broad scale success of water-quality based trading and force consideration of alternatives, such as mandating management practices for non-point sources in watersheds not meeting water quality standards or, if that proves still to be politically infeasible, abandoning current national water quality goals as not reasonably attainable.

CONCLUSION

The CWA is stuck. There is substantial public support for further progress toward the goals of the nation's water quality program and evidence that further progress could be made for lower marginal costs than much of the progress to date. And yet there is a lack of systematic progress and even, in some of the country's premier watersheds, evidence of slipping backward as the effects of urbanization and more intensive agricultural uses swallow the gains of advanced point source controls. The sole regulatory focus on point sources becomes increasingly inefficient with continued efforts to achieve water quality goals, and to the extent that it foists disproportionate burdens on the point source sector is also unfair.... Trading programs struggle under restrictions placed on the scope of trading by point sources and failure to establish requirements for the non-point sector.

...

The analysis has focused on the federal role, but the great majority of the policy making and implementation must be done by state and local stakeholders. The goal, ultimately, is a watershed-based system in which non-point sources would bear obligations (and opportunities) comparable to their point source counterparts and in which, to the extent feasible, allowances would be traded freely among point and non-point sources.

ADAPTIVE MANAGEMENT IN SUPERFUND: THINKING LIKE A CONTAMINATED SITE

13 *N.Y.U. Envtl. L.J.* 561 (2005)

INTRODUCTION

Over the last three decades adaptive management has emerged as one of the most promising innovations in natural resource management and environmental regulation. Yet the possible benefits of this approach for Superfund, which is among the Nation's most expensive and controversial environmental programs, have not been comprehensively explored....

The Article concludes that, in the complex and uncertain world within which it must operate, Superfund does have something to learn from adaptive management. Superfund would work better, adaptive management principles suggest, with five changes in the framing and management emphasis of the Superfund program:

1. EPA should adopt a broad and flexible view of the public interest affected by Superfund sites. This expanded notion of the public good would encompass not only the values made explicit in the Superfund statute, such as environmental protectiveness, but also other values that emerge from consultation with those most affected by a site's disposition. It would give future use of sites a central importance in the Agency's decisions.
2. EPA should promote and monitor institutional innovations, including collaborative stakeholder processes, to clarify and order values in deliberations on alternate futures for the site.
3. In the lengthy process of site study, remediation and post-remedial review, EPA should improve monitoring and feedback mechanisms focused on crucial unknowns or uncertainties at the site and revisit and adjust prior decisions as warranted in light of new information. In particular, the Agency should improve its information gathering and review of anticipated future uses of the site in tandem with its planning, implementation, and review of cleanup actions.
4. Acknowledging the ability of players in both the public and private sectors and at multiple levels of government to affect out-

comes at the site, EPA should foster the integration of decisions across sectors and jurisdictional scales.

5. EPA should employ conscious policy learning in its management of the entire portfolio of sites. It should consider framing program policies on controversial issues or questions involving scientific or technical uncertainty as experiments and commit to systematic recording and analysis of program experience as a basis for review and change.

More generally, the Article recommends that the Agency embrace adaptive management principles in administering Superfund. Superfund as currently implemented, including recent agency initiatives in several of the areas mentioned above, provides some support for an adaptive approach. But “adaptive management has not yet been incorporated into the [cleanup] process as a whole,” nor has Superfund adopted it as a management guide. Systematic application of adaptive management principles will be necessary to realize the full potential of this approach.

...

IV. HIERARCHICAL LINKAGES: INTEGRATING ACROSS SCALES

Adaptive management attends to hierarchical linkages, in both natural and human systems. It calls on EPA and others who make decisions affecting Superfund sites to locate their understanding of the site’s physical and biological resources in the larger physical and biological systems to which they belong. It also calls on decision makers to understand their place within the institutional hierarchy that affects the site. Because Superfund sites—as distinct from other categories of land generally managed by private markets and local regulation—experience a substantial federal presence, the hierarchical considerations affecting these sites are both unusual and complex.

...

The federal presence at nationally listed sites and other contaminated sites warranting emergency response serves important functions, but the possible theoretical justifications for that presence do not provide overwhelming support for federal hegemony. The interests and capabilities of states, localities, and private parties in the management of Superfund sites justify a substantial and ongoing

role for them in site-related decision making. Typically the benefits of cleaning up and redeveloping a Superfund site are realized predominantly within the state and indeed within the local jurisdiction in which the site is located. A significant portion of the costs of cleanup and reuse are also likely to be felt within the state and the locality. Even if federal funds are used for cleanup, spreading most of the remedial costs nationally, the state remains obligated for a share of those costs and for long-term operation and maintenance costs as well. Moreover, the land use aspects of Superfund sites fall within the traditional purview of state and local regulation. Accordingly, adaptive management in Superfund site management suggests that EPA invest heavily in processes to elicit the preferences of state and local stakeholders throughout its involvement at the site—with particular emphasis on the community where the impacts of site activities will be concentrated—and to facilitate integration of the results into federal, state, and local decisions affecting the site.

V. ADAPTIVE MANAGEMENT OF THE SUPERFUND SITE INVENTORY

Adaptive management principles are also applicable to EPA’s management of the Superfund site portfolio as a whole. Program level issues that might benefit from continuous learning include what remedies work best in particular types of sites or with particular types of contaminants; what remedies work best with specific types of land use; what community involvement techniques are most effective in eliciting useful and reliable information about community preferences; how best to integrate decisions across private and public sectors and across federal, state, and local jurisdictions; and what the relevant contingencies are and how best to address them.

Institutional learning has been going on since the program began, but much of it has been episodic and reactive.... EPA could improve Superfund policy learning program-wide by acknowledging and addressing complexity and uncertainty in program implementation; framing policies to test hypotheses about how the program might work better and carefully monitoring their implementation; and, even more fundamentally, systematically monitoring and recording experience at sites as a basis for ongoing review

and adjustment of national policies. The last of these—generating and recording site information—is crucial for continuous learning, and it is an area of particular difficulty for Superfund. Despite the existence of various Superfund databases, Katherine Probst and Diane Sherman found that “it is difficult to obtain reliable information on key attributes for [NPL] sites” without talking to regional staff directly involved with the site. Well-developed case studies of Superfund site decision making are scarce. ... There are also few well-developed accounts of the post-ROD process, including remedy review and reuse decisions. The absence of such accounts makes it very difficult to determine, among other things, frequently occurring contingencies and the most effective responses or moderating measures for those contingencies for the Superfund universe as a whole.

Probst and Sherman recommend that the Agency develop a core set of data for each site that includes “important measures of progress as well as key site attributes” and “that meets the needs of the full panoply of stakeholders.” They see a consistent, well-maintained site monitoring and reporting system not only as a means of improving management of particular sites but also as a source of aggregated data for improving overall program efficiency and effectiveness. Similarly, the recent report of the Superfund Subcommittee of EPA’s National Advisory Council for Environmental Policy and Technology (NACEPT) recommended that EPA “develop and implement a system to ensure clear, transparent dissemination of a core set of data for all NPL sites and Superfund program activities.” Properly detailed, this data could provide the basis for more effective integration of diverse stakeholder perspectives within Superfund’s complex hierarchical setting.

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