

## ARTICLES

# Reimagining Environmental Law for the 21st Century

by Sanford E. Gaines

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### Summary

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Aldo Leopold's 1947 observation still rings true today: we are "slipping two steps backward for each forward stride." Environmental law, which once expressed a social movement, has failed to keep pace with comprehensive ecological degradation. How can we reimagine it? Agreeing with Leopold that we need to change our "wants and tolerances" in order to change the "economic factors bearing on the land," we can draw from European sociology of law scholarship and two recent books invoking Plato as a philosopher-guide to a new set of social norms to argue that environmental lawyers should be leaders of a broad social movement to change norms. This means a fresh outlook on the role of law in society and the training of lawyers as social and business leaders cognizant of the natural world who are oriented to restructuring social norms and economic behaviors in order to alleviate today's extreme pressures on ecosystems and preserve social and ecological resilience for future generations.

In 1947, American naturalist and essayist Aldo Leopold commented, "Everyone ought to be dissatisfied with the slow spread of conservation to the land. . . . The only progress that counts is that on the actual landscape . . . and here we are still slipping two steps backward for each forward stride."<sup>1</sup> Beginning in the 1960s, modern environmental law emerged as a key expression of a new social awareness of the deteriorating environmental conditions that keen observers like Leopold had earlier described. Most in the first generation of environmental lawyers, including the present author, were optimistic that the sense of urgency in those years about controlling pollution and preventing despoliation of natural ecosystems would lead to paradigm shifts in attitudes and behavior, to a brave new world in which environmental protection would be embedded in government and society as a constant and paramount consideration.

In the decades between then and now, human population growth, economic and technological development, and a broader and deeper scientific understanding of our environmental circumstances rapidly expanded the list of environmental issues to be addressed, including contamination from disposal of hazardous waste, loss of biodiversity, and changes to the earth's climate from human emissions of greenhouse gases, to mention only a few prominent examples. As each new issue rose on the political agenda, governments were motivated to respond with new environmental legislation and new international environmental agreements. Environmental law had come of age. Law schools around the world developed environmental law courses, and the ranks of environmental lawyers working for governments, businesses, and nongovernmental groups rapidly expanded to meet the growing need for their expertise. In June 1992, the greatest single assemblage of heads of state convened in Rio de Janeiro for the U.N. Conference on Environment and Development (UNCED),<sup>2</sup> where they blessed the Rio Declaration of sustainable development principles,<sup>3</sup> approved the encyclopedic Agenda 21 program for action on myriad environmental problems of global significance,<sup>4</sup> signed an international agreement for action

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1. Aldo Leopold, *The Ecological Conscience*, speech given on June 27, 1947, reprinted in *THE RIVER OF THE MOTHER OF GOD AND OTHER ESSAYS BY ALDO LEOPOLD* 338 (Susan L. Flader & J. Baird Callicott eds., 1991) [hereinafter Flader & Callicott, *Leopold Essays*].
2. See Report of the United Nations (U.N.) Conference on Environment and Development, U.N. Doc. A/CONF.151.26 (Vol. I), Aug. 12, 1992.
3. *Id.* Annex I.
4. *Id.* Annex II.

on climate change,<sup>5</sup> and concluded an agreement on the conservation of biodiversity.<sup>6</sup>

The 1992 Rio conference was a high watermark for environmental law. Despite all the many accomplishments since then, we must now acknowledge that Rio has not fulfilled the promises with which the world invested it. The Rio+20 conference in 2012 evoked pessimistic assessments of current environmental conditions from prominent participants in the original Rio conference. Gro Harlem Brundtland, the godmother of “sustainable development,”<sup>7</sup> noted that “[t]he pressures of ecosystem decline, pollution and resource depletion have become immense,” leading her to lament: “Twenty years after the Earth Summit it is clear that humanity has been a poor steward for the Earth.”<sup>8</sup> William Reilly, the Administrator of the U.S. Environmental Protection Agency (EPA) in 1992, used language that echoes Aldo Leopold: “We have not slowed, let alone reversed, the increasing pace of ecological destruction.”<sup>9</sup> Delegates to a 2012 international environmental science and policy conference declared: “Significant changes have occurred since the 1950s, and the rate of change is accelerating. Researchers observe unsafe levels of pollution, ecological change and resource demand, with potentially catastrophic consequences for our global civilisation.”<sup>10</sup> Even the usually circumspect Organisation for Economic Cooperation and Development (OECD) expressed alarm: “[C]ontinued degradation and erosion of natural environmental capital are expected to 2050 and beyond, with the risk of irreversible changes that could endanger two centuries of rising living standards.”<sup>11</sup>

After 50 years of diligent and sophisticated work by environmental lawyers on legislation, regulation, prin-

ciples, treaties, and judicial decisions, how is it that the “actual landscape” of the world’s resources is still “slipping two steps backward for each forward stride”? Part of the explanation for that disappointing result can be found in the statements issued by a distinguished international collection of prosecutors, judges, and legal scholars at the Rio+20-related World Congress on Justice, Governance, and Law for Environmental Sustainability.<sup>12</sup> They focused almost exclusively on matters of substantive doctrine and legal procedure. Recommitment to enhancing “law” in this narrow sense—a body of formal rules and principles and the judicial and prosecutorial mechanisms for their application and enforcement—certainly has great value, and that work should go forward vigorously. But the ongoing ecological deterioration is traceable in large part to pervasive social and political attitudes favoring a growth-based model of economic “development” that steadily intensifies human appropriation of planetary resources. To address the root of the problem, it will be argued here, environmental law needs a more expansive society-based conception of “law,” one that activates law as a social institution engaged broadly with the habits and customs, the expectations and aspirations, of people and organizations in their daily lives. Environmental lawyers, then, need a fresh and bold reimagination of their mission, to hone and use their persuasive and analytical skills in creative ways to alter the social dynamic underlying environmental change and to foment a deep commitment to effective stewardship of resources.<sup>13</sup>

Part I of the Article begins by recalling legal theories that offer an analytical perspective on legal evolution and the role of law in general. It then reviews the evolution of environmental law from its emergence as a distinct field of law in the 1960s, through its early successes in addressing the most urgent environmental problems of the day, to its reform and recalibration when it later encountered environmental issues less amenable to rules-based solutions and case-by-case adjudications. The analytical perspective and the history in Part I become reference points to help chart where environmental law should go from here.

Only by diagnosing the apparent ineffectiveness of environmental law in responding to the most salient challenges of the 21st century is it possible to imagine new pathways for the environmental law enterprise. Part II explains the shortcomings of environmental law through an analytical framework structured around selected

5. United Nations Framework Convention on Climate Change, *signed* June 3-14, 1992, *entered into force* Mar. 21, 1994, 1771 U.N.T.S. 107, 31 I.L.M. 849 (1992).

6. Convention on Biological Diversity, *concluded* June 5, 1992, *entered into force* Dec. 29, 1993, 1760 U.N.T.S. 79, 31 I.L.M. 818 (1992).

7. Brundtland chaired the U.N.-chartered World Commission on Environment and Development that provided the classic definition of sustainable development: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Report of the World Commission on Environment and Development, “Our Common Future,” U.N. Doc. A/42/427, Annex, ch. 2, ¶ 1, Aug. 4, 1987, published in book form by Oxford University Press (1987).

8. Gro Harlem Brundtland, *Earth Agonistes*, N.Y. TIMES, June 18, 2012, <http://www.nytimes.com/2012/06/19/opinion/earth-agonistes.html> (last visited Jan. 23, 2014).

9. William K. Reilly, *Rio Earth Summit—Then and Now*, THE HILL’S CONGRESS BLOG, June 19, 2012, <http://thehill.com/blogs/congress-blog/energy-a-environment/233511-rio-earth-summit-then-and-now> (last visited Jan. 23, 2014).

10. The State of the Planet Declaration, Mar. 29, 2012, ¶ 6, *available at* <http://www.planetunderpressure2012.net>.

11. Organisation for Economic Cooperation and Development, *Environmental Outlook to 2050, Executive Summary* (2012), at 20, [http://www.oecd-ilibrary.org/environment/oecd-environmental-outlook-to-2050/executive-summary\\_env\\_outlook-2012-3-en](http://www.oecd-ilibrary.org/environment/oecd-environmental-outlook-to-2050/executive-summary_env_outlook-2012-3-en) (last visited Jan. 23, 2014).

12. Rio+20 Declaration on Justice, Governance, and Law for Environmental Sustainability, June 20, 2012, *available at* <http://www.unep.org/delc/world-congress/Portals/24151/UNEPGC.27-13-English.pdf>.

13. Without embracing all the elements of Roberto Unger’s world view, the present author happily acknowledges the kinship of his appeal to imagination with Unger’s philosophy. *See, e.g.,* Roberto Unger, *What Should Legal Analysis Become?* (London: Verso 1996) (calling for “institutional imagination”).

social, ecological, and economic characteristics of today's environmental issues. It argues that these characteristics make it intrinsically difficult for traditional tools of environmental law to exert more than a limited effect on environmental conditions.

Part III of the Article opens with some of the oft-repeated prescriptions of the social and attitudinal transformations needed for an ecologically (and socially) sustainable society. It then refers back to the theoretical perspective in Part I and adds some newer analyses from outside the legal tradition to put forward a few useful frameworks for thinking about how environmental law could be reimagined to achieve the needed transformation. The gist of the argument is that environmental law should be pursued in an interdisciplinary fashion as a social instrument contributing self-consciously to changing values and practices, thus accentuating an imaginative and institutional, rather than a merely instrumental or doctrinal, conception of environmental law.

Part IV offers some ideas about fresh approaches to environmental law for the first half of the 21st century. It does not attempt a comprehensive or integrated model of a "new" environmental law. Its more modest ambition is to provoke further discussion and other imaginative ideas by highlighting the need for institution-building, interaction with other elements of public policy, and innovative approaches to value transformation. It concludes with some observations about the education and training of environmental lawyers for this reimagined future social role. A brief Part V summarizes and concludes.

## I. 50 Years of Environmental Law—Theoretical Perspectives and a Historical Survey

This part begins with theoretical perspectives on the modern evolution in the social role of law and the social, political, and institutional elements of that evolution. From that theoretical perspective, the part will trace the development of environmental law over the past 50 years, from the transformation of legal systems to address environmental problems between 1960 and 1980 to the more recent decades of consolidation and adaptation marked by a shift away from direct regulation toward strategies and systems for motivating, rather than compelling, the desired private behavior.

### A. Theoretical Perspectives on Environmental Law's Evolution

In broad outline, environmental law through the end of the 20th century has followed the evolutionary pattern described by Gunther Teubner for areas of law affected by the rise of modern industrial societies.<sup>14</sup> In Teubner's analy-

sis, societies shifted from classical notions of the law as a means to prescribe and adjudicate private responsibility to a public-law approach when they confronted the intensity and complexity of the externalities and social consequences of industrialization. That is, society enlisted the legislative power of the government to regulate private parties and modulate social conditions. Eventually, however, the inevitable rigidities and inefficiencies of the public-law-based social welfare state began to manifest themselves, giving rise to a third stage in law's evolution, which Teubner called reflexive law. Reflexive law restores important elements of responsibility to private persons, allowing flexibility in the means they use to pursue social goals, thereby reducing social cost as well as administrative overhead.

Teubner's analysis of law's evolution derives from scholarship on the sociology of law. The component that Teubner calls "formal law" is the system of rules and principles, designed by the law itself, that applies to formal relationships between private persons, as in contract law or tort law.<sup>15</sup> In the modern state, formal law has been substantially transformed by positive legislation (such as environmental legislation) that expressly modifies or supplants the formal rules of law, creating, in Teubner's own terminology, "substantive" rather than formal rationality.<sup>16</sup> That is, even the interpretation and enforcement of contracts is now shaped by nonformal, and thus possibly non-"legal," social and political considerations. The sociology-of-law question then becomes whether the social impingements are internal to the law itself or should be understood as an interaction between the law and society as two distinct social systems. As Teubner summarizes, Jürgen Habermas posited that the law in the late 20th century developed a "post-conventional" structure adapting to the changing dynamics of the society in which it functioned, with society viewed as external to the law itself. Habermas therefore stressed the need for discursive systems through which society and law should reach an understanding of the purposes and goals of the law; without those, he believed that the law had a crisis of legitimation.<sup>17</sup> Philippe Nonet and Philip Selznick, on the other hand, saw the patterns of the mid-20th century as a process through which law transforms itself into a socially responsive system, taking on participatory and purposive character. Teubner himself conceived "reflexive law" as a way of ameliorating Habermas' legitimation crisis by having social subsystems, such as businesses, use discursive structures to define their own social identity and responsibility. In his original formulation at least, he thus

14. Gunther Teubner, *Substantive and Reflexive Elements in Modern Law*, 17 LAW & SOC'Y REV. 239 (1983), available at <http://ssrn.com/abstract=896509>.

15. As Teubner explains, *id.*, other legal sociologists call this "formal rationality" (the terminology of Niklas Luhmann and Jürgen Habermas) or "autonomous law" (the terminology of Philippe Nonet and Philip Selznick).

16. Luhmann and Habermas term this "rematerialization of law"; Nonet and Selznick call it "responsive law" with both purposive and participatory elements. See Teubner, *supra* note 14.

17. *Id.* In later writings, Habermas elaborated a theory that the legitimation crisis is resolved by democratic law making. He saw a complex relationship between morality, individual liberty, and collective regulation, with law as a means of social integration. JÜRGEN HABERMAS, BETWEEN FACTS AND NORMS: CONTRIBUTIONS TO A DISCOURSE THEORY OF LAW AND DEMOCRACY (1986).

promoted a Habermasian notion that there needed to be a linkage between the internal (enterprise-based) and external (societal) mechanisms.<sup>18</sup>

While their theoretical frameworks have different foundational concepts, there is little practical difference in the end between Habermas' dualist law-and-society perspective and the Nonet/Selznick idea that the law itself should strive to be more functionally "responsive" to changing social conditions. From their different perspectives, all see the essential need for the engagement of nonlawyers in society to participate in making positive law in complex pluralistic societies and all believe that the law should be congruent with the values and goals of the society at large. Underscoring this fundamental agreement, Selznick himself blurred the scholarly distinctions, emphasizing the need for a focus on institutionalization of social morality within firms and other social subsystems as a means of legitimizing nonformal legal regulation of the social consequences of behavior.<sup>19</sup>

This Article's argument for a broad conception of law uses an analytical framework and argumentation in keeping with the original Nonet/Selznick theory, which embraces social responsiveness and purposive law within the definition of the "law" itself as a self-determined system of principles and rules.<sup>20</sup> The "law" in general, and environmental law in particular, will be construed here as an integrated social system with three interlinked components. Legal rules in the traditional or formal sense are one component, but formal rules are effective only when they are consistent with and operate in the context of social norms and social institutions. Norms and institutions are thus two other essential components of the law; lawyers need to pay attention to the interaction among all three components. The brief historical review of the evolution of modern environmental law in Part I.B. below shows that this three-part conception of the law has descriptive as well as theoretical strength.

Social scientists have applied an analytical formula very similar to the one proposed here. At the broadest level, if the challenge we confront is "to secure a sustainable world through effective responses to today's interacting processes of environmental and social change," social scientists see "the inseparability of social and environmental systems and conditions" as one of three "defining attributes of today's changing global realities."<sup>21</sup> Scholars of environmental governance apply this integrated approach. Karl-Werner Brand and Fritz Reusswig, for example, identify "at least three preconditions for a successful social 'anchoring' of

new institutional arrangements of global environmental governance." They label the first precondition "culture," by which they mean a normative acceptance or "legitimizing" narrative "which convincingly suggests that the new institutional arrangements are a reasonable, appropriate, and fair answer to the socially perceived problems." The second precondition, "interests," recognizes that governance institutions "must find a reasonable degree of resonance with the interests of the actors involved." The third precondition, "power," means that the governing entity must be invested with sufficient power to gain compliance and sanction noncompliance.<sup>22</sup>

Including social mores and institutions within the "law" is especially appropriate for environmental law. Most legally enforceable environmental rules can be characterized as a special application of certain general social norms to specific conduct. Indeed, one of the principal justifications for modern environmental law is precisely that the formal law of property, contracts, and torts (delicts) offers few enforceable rules of conduct with respect to environmental harms.<sup>23</sup> Environmental law lies outside the realm of formal rationality because it is intrinsically "responsive" or "materialistic." This is true whether the regulated actor is a private person or business, a public entity, or a government office, and whether the prescribed conduct is a matter of procedure or a standard for substantive conduct. In particular, a standard of conduct—that is, the boundary between acceptable and unacceptable conduct—is often defined by calculating for each class of entities a quantified maximum level of pollution to achieve a publicly determined "acceptable" level in the general environment. The very notion of "acceptable" pollution makes clear that environmental law prescribes rules that reflect norm-based aspirations of the society as a whole. As Håkan Hydén and Minna Gillberg remark, environmental law is about the exploitation of the environment consistent with norms about economic activity that tend to contradict the "norm" of protecting the environment as such.<sup>24</sup> The challenge for environmental law, then, is to find rules, incentives, and institutions that help to reconcile the norms of the different social subsystems in a way that respects the external requirements of nature.

Traditional legal analysis can lead to a similar social contextualization of environmental law. The late Swedish environmental law scholar Staffan Westerlund formulated a program for fundamental change from his observation that law applies only to humans; the environment therefore exists outside the law. But in environmental law, a desired

18. Teubner later favored the more self-referential idea of *autopoiesis*. For a brief discussion of *autopoiesis* in the environmental law context, see Sanford Gaines & Cliona Kimber, *Redirecting Self-Regulation*, 13 J. ENVTL. L. 157, 158-62 (2001).

19. Philip Selznick, *Self-Regulation and the Theory of Institutions*, in GUNTHER TEUBNER ET AL., ENVIRONMENTAL LAW AND ECOLOGICAL RESPONSIBILITY: THE CONCEPT AND PRACTICE OF ECOLOGICAL SELF-ORGANIZATION 395 (1994).

20. See also HABERMAS, *supra* note 17.

21. INTERNATIONAL SOCIAL SCIENCE COUNCIL/UNESCO, *World Social Science Report 2013: Changing Global Environments*, at 3-4.

22. Karl-Werner Brand & Fritz Reusswig, *The Social Embeddedness of Global Environmental Governance*, in GERD WINTER ED., MULTILEVEL GOVERNANCE OF GLOBAL ENVIRONMENTAL CHANGE: PERSPECTIVES FROM SCIENCE, SOCIOLOGY, AND THE LAW 79, 83 (2006).

23. Economists were the first to point this out, perceiving that environmental harms were *external* to the constraints of formal law. See ARTHUR PIGOU, *THE ECONOMICS OF WELFARE* (1920); Ronald A. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

24. Håkan Hydén & Minna Gillberg, *Legal and Governing Strategies—Towards a Law of Sustainable Development*, in INDIVIDUAL AND STRUCTURAL DETERMINANTS OF ENVIRONMENTAL PRACTICE 115 (Anders Biel et al. eds., 2003).



condition for the environment is the goal. As Westerlund saw the problem, environmental law is based on substantive standards, but “laws and legal principles [for humans] outside the environmental law field often counteract the environmental laws and thus the thrust may be weakened because of the legal system as a whole. A modern view on environment and law must therefore take the entire legal system into account.” He argued further that notions of the rule of law and principles of legality, which are intrinsic to the law, constrain the enforcement of binding restrictions on human actions that do not result in any foreseeable injury to the interests of other humans. This skews the legal system toward short-term considerations, whereas consideration of the environment for future generations is needed to put society, locally and globally, on the path to sustainable development.

Environmental issues, especially when they include future generations, call for legal thinking in general to be reconsidered. The aim, with a foundation in sustainable development, is of course to make law sustainable—to proceed towards a Sustainable Rule of Law and not only a Rule of Law for the present generation. Each and every legal principle has to be reassessed from this perspective in order to avoid “legality” to prove hazardous for Mankind.<sup>25</sup>

Yet another way to understand the law as a networking of legal, attitudinal, and institutional elements is to begin with the appreciation that “law,” in the narrow sense of rules or standards of conduct enforceable by state authority, serves to express and vindicate established or emerging social values. The values themselves are not self-determined by the law itself, however, but are socially constructed. The Scandinavian school of the sociology of law emphasizes the connections between law and social norms.<sup>26</sup> Norms not only provide the foundation for “law” as written and applied through state mechanisms, but also establish socially enforceable expectations about behavior that operate through complementary nonlegal processes, both formal and informal, which brings us back to “reflexive law.” Even law concepts such as “equity” are normatively malleable, and “justice” is perennially contested in social norm-based discourse.

In the Scandinavian tradition, this Article will use the term “norms” to denote the social values that undergird the legal system.<sup>27</sup> “Institutions” will refer to the social systems, especially formally organized entities, through which

both the law and less rigorous norms are articulated and applied.<sup>28</sup> The operation of the interaction between norms, institutions, and legal doctrine in its narrow sense is more complex than the preceding discussion suggests. Nevertheless, it provides a useful analytical framework for analyzing the relationship between social norms and “the law” for environmental protection and conservation of resources, and the institutional systems through which environmental norms and environmental “laws” are formulated, expressed, and applied.

A final thought about environmental law from the sociology-of-law perspective: Different social subsystems have different normative constructs. The “norms” of environmental law are strongly oriented to a scientific foundation, so that much of environmental law has become highly technical and very complex. In the process, argues Inger Johanne Sand (another Scandinavian scholar), environmental law has lost its connection with core legal norms of justice.<sup>29</sup> Taking “justice” to imply norms of social fairness, sustainability of society, and avoidance of exploitive behavior, this Article shares Sand’s view that the link between environmental protection and justice needs to be reestablished.

## B. A Retrospective Review of Late 20th Century Environmental Lawmaking

### I. From Private Law to Public Law: 1960-1980

In the 1960s, a revolution occurred in awareness and attitudes about nature and pollution that laid an essential social foundation for the environmental legislative revolution of the 1970s. Several factors came together to inspire this social transformation. I use the American experience as my primary example of this interplay among norms, institutions, and law, but refer as well to similar changes elsewhere in the world.

New scientific information and insights frequently drive environmental policy; this was true in the early 1960s. Many credit Rachel Carson’s 1962 book, *Silent Spring*,<sup>30</sup> with first drawing public attention to environmental contamination and stimulating people to think about the relationship between productive activity, technological innovation, and the natural environment. Carson documented damaging ecological and health effects from the widespread application of DDT, dichlorodiphenyltrichloroethane, as an agricultural pesticide after World War

25. Staffan Westerlund, Law and the Environment (unpublished paper, dated 2004), available from IMIR Institute for Environmental Law, <http://www.imir.com>.

26. E.g., Håkan Hydén, *The Dependency of Laws Upon Norms—The Hallandsås Debacle*, in LAND USE AND NATURE PROTECTION—EMERGING LEGAL ASPECTS (H.T. Anker & E.M. Basse eds., 2000); Hydén & Gillberg, *supra* note 24.

27. I use the term “norms” as defined in the text with the full understanding that it has various definitions and connotations for different scholars in the sociology of law. Other possible terms are equally indefinite, however. As discussed later in the Article, another analyst distinguishes between “norms” and “ethos,” and prefers ethos for what this Article calls norms. But ethos seems rather pretentious for this Article, so the author prefers the more colloquial “norms.”

28. Political scientists use the term “institutions” to encompass the systems of rules themselves and their associated processes. This Article follows the customary legal usage of “institutions” to refer to the public and private social structures responsible for these adoption, implementation, and enforcement of norms and rules, especially formally constituted public entities such as legislatures, courts, and administrative bodies.

29. Inger Johanne Sand, *Niklas Luhmann’s Theories of Law in the Twenty-First Century*, in UNDERSTANDING LAW IN SOCIETY: DEVELOPMENTS IN SOCIO-LEGAL STUDIES (Knut-Erich Papendorf et al. eds.) (SOCIETY AND LAW, Vol. 7) 109 (2011).

30. RACHEL CARSON, *SILENT SPRING* (1962).

II, especially DDT's effects on the reproduction of birds, including the iconic American bald eagle.

While Carson's book certainly catalyzed the modern environmental movement, it had that effect because society was already receptive to its message. During the 1950s, many middle-class people living in cities moved to the suburbs and used some of their newly acquired income and leisure time for outdoor recreation. Both trends gave growing numbers of people a new awareness of the landscapes around them. Meanwhile, skepticism about the triumphs of industrialization and suburbanization was beginning to appear. For example, concerns over "fallout" of radiation from atomic bomb testing sensitized people to the idea of invisible forms of contamination (and contributed to Carson's turn to chemical contamination).<sup>31</sup> The United States turned a page in its cultural history with the election of John F. Kennedy as president in 1960 and an embrace of his "new frontier." By this time, Carson was already a familiar figure to many, thanks to her popular books on life in the oceans. In this cultural setting, *Silent Spring* was an immediate bestseller. Moreover, the political effect of her book was enhanced by a television interview—a relatively new phenomenon in communication—that brought her message, her calm voice, and her scientific credibility to millions. A hearing in the U.S. Congress soon followed; Carson calmly repeated her main findings, prompting political calls for investigation and action to curtail use of DDT.<sup>32</sup>

A broader conservation movement for protection of wildlife and landscapes was emerging at the same time. Landowners and sportsmen in the United States, conservationists since the time of President Theodore Roosevelt in the early 20th century, were galvanized to political action in the 1960s by threats to natural areas from construction of highways and other large projects and by losses of birds and fish due to pollution of the rivers, lakes, and wetlands. Wealthy landowners north of New York City brought a lawsuit to block a planned power project in a scenic stretch of the Hudson River, leading to important declarations by the court that the government had a responsibility to account for scenic and environmental values in its decisions.<sup>33</sup> A proposal to build a hydroelectric dam on the Colorado River that would have affected part of the Grand Canyon aroused strong opposition and was defeated in Congress. Growing concern for the environment was reinforced by a 1968 picture of the earth taken from the moon that vividly revealed the earth as a small, vulnerable globe in the black vastness of space.

Such new ideas and images and social trends resonated in a society that was also undergoing internal political transformation on other issues, such as the civil rights

and anti-war movements. Young people fomented critical attitudes toward big businesses and government authority. The introduction of nightly television newscasts in these same years fostered an active national discourse on issues of the day and made visual images an important element of journalism. In the United States, visually compelling headline news stories brought national attention to environmental pollution. When an offshore oil well near Santa Barbara, California, suffered a blowout in early 1969, TV news coverage showing the polluted shoreline and thousands of oil-covered seabirds sparked a strong national reaction.

The emerging environmental awareness also inspired researchers in fields like economics<sup>34</sup> and philosophy<sup>35</sup> to explore new ways of understanding the environment and the consequences of pollution. Science writers published popular books on population,<sup>36</sup> technology,<sup>37</sup> and human relationship to the environment.<sup>38</sup> Skillful communicators and social activists brought environmental issues into the political arena, culminating in the first Earth Day in April 1970, which drew 20 million people to peaceful demonstrations in cities and towns across the United States.

The law did not inspire the social changes just described, but activist lawyers were quick to apply their own tools and available legal remedies to help translate this social transformation into practical results. Traditional law and legal institutions, however, lagged behind the social trends, and responded only slowly and in small increments to the new social outlook. Until this period of transformation, what we now identify as environmental law was applied mostly through private causes of action based on traditional formal doctrines such as nuisance, trespass, or liability for damages from dangerous activities. By the late 1960s, however, it became apparent in judicial decisions that application of formal law—for example, the doctrinal differences between private nuisance and public nuisance—inherently limited the ability of private litigation to exercise substantive restraint over polluting activities affecting the public at large, publicly owned resources, or pollution affecting the private interests of many individuals.<sup>39</sup> Indeed, those same difficulties with formal law persist to this day. The U.S. Supreme Court recently rejected an effort to use nuisance law against major emitters of greenhouse gases by states and cities affected by climate change even though the fed-

31. SPENCER R. WEART, *THE RISE OF NUCLEAR FEAR 193-94* (2012). Spencer Weart reports a similar early motivation for Barry Commoner. *Id.*  
32. Eliza Griswold, *The Wild Life of "Silent Spring,"* N.Y. TIMES, Sept. 23, 2012, MM36.  
33. See, e.g., *Scenic Hudson Preservation Conference v. Federal Power Commission*, 354 F.2d 358 (2d Cir. 1965). David Sive, the lawyer for the property owners, became an early leader of the environmental law movement.

34. For example, JOHN H. DALES, *POLLUTION, PROPERTY, AND PRICES* (1968); ALAN KNEESE ET AL., *ECONOMICS AND THE ENVIRONMENT* (1970).  
35. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243-48 (1968); Arne Naess, *The Shallow and the Deep, Long-Range Ecology Movement*, 16 INQUIRY 95-100 (1973); JOHN PASSMORE, *MAN'S RESPONSIBILITY FOR NATURE* (1974).  
36. PAUL EHRLICH, *THE POPULATION BOMB* (1970).  
37. BARRY COMMONER, *THE CLOSING CIRCLE: MAN, NATURE, AND TECHNOLOGY* (1971).  
38. E.g., LOREN EISELY, *THE FIRMAMENT OF TIME* (1969); RENÉ DUBOS, *SO HUMAN AN ANIMAL* (1968).  
39. For example, in *Boomer v. Atlantic Cement Co.*, 26 N.Y.2d 219, 309 N.Y.S.2d 312 (1970), the highest court in the state of New York found that the law did not allow an injunction against the pollution of a town by an industrial facility, but did require the facility to pay "permanent" damages to affected property owners.

eral statute that could control that pollution has not yet brought about significant reductions.<sup>40</sup>

Even advances in procedural law came slowly. Wealthy landowners of the Hudson Valley gained a major advance when the court held that scenic and environmental values should be considered by the federal power agency with jurisdiction over the project, but their effort to block the project was later turned aside by the same court after the power commission, having considered the scenic values, nevertheless approved the project.<sup>41</sup> When an environmental group sought to prevent federal permission for a ski resort on public land in a pristine area of the Sierra Nevada, it took a Supreme Court decision to establish that environmental concerns were within the purview of the law. In principle, the decision gave the Sierra Club legal standing to bring the lawsuit, but the Court insisted that the Sierra Club show that individual members used the particular mountain area in dispute. Justice William O. Douglas famously challenged this narrow reading of standing law in dissent, arguing that the trees themselves, or anyone who spoke for them, should have standing.<sup>42</sup>

The transformation of environmental values throughout society in the 1960s quickly became a political transformation. In 1969, Congress passed the National Environmental Policy Act (NEPA)<sup>43</sup> with this evocative statement of purpose:

To declare national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation. . . .

President Richard Nixon symbolically signed NEPA into law on New Year's Day 1970. A few weeks later, in his annual "State of the Union" address to Congress, he marked the arrival of environmental protection into the front rank of political concerns: "The great question of the seventies is, shall we surrender to our surroundings, or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, to our land, and to our water?"<sup>44</sup> As President Nixon foresaw, and

to some degree instigated, an avalanche of environmental legislation and court cases in the 1970s began to inscribe the new social and political consensus into law, and the field of environmental law emerged.

Similar social and political change appeared elsewhere in the developed countries. Social change appeared as leftist radicalism and student protest in Europe and strident local protests against pollution stemming from the national push for industrialization in Japan. During the 1960s and early 1970s, many countries enacted ambitious laws to control pollution of air and water and to establish environmental issues as a permanent concern of government. Germany adopted a federal environmental program and established an Advisory Council on the Environment.<sup>45</sup> The European Union (EU, then the European Community) adopted environmental initiatives in 1968 and its first Environmental Action Plan in 1973. Japan enacted or amended 14 separate environmental statutes.<sup>46</sup> The OECD adopted the polluter-pays principle in 1972.<sup>47</sup> In 1968, the United Nations (U.N.) General Assembly initiated planning for the U.N. Conference on the Human Environment, held in Stockholm in 1972, which produced an influential declaration of principles.<sup>48</sup> The parade of legislation continued through the 1970s. Internationally, so many different conventions and agreements were negotiated during the 1970s and early 1980s that one scholar warned of "treaty congestion."<sup>49</sup>

The successes of this first wave of environmental law were substantial. Gross pollution of the air by soot and sulfur was dramatically reduced. Waterways were cleansed of municipal sewage and major industrial discharges. Disposal of ordinary waste was upgraded, and disposal of waste in the ocean stopped in most locations. Management of chemicals production was tightened. Automobile engines and exhaust systems were reengineered to eliminate most pollution (although smog-generating volatile compounds in motor fuels have proved more difficult to control). The generation of hazardous waste by industry was sharply reduced through production engineering and materials changes, and the disposal of the remaining hazardous waste greatly improved. By all accounts, the resulting improvements in public health and environmental conditions have been substantial, and the benefits of the

40. American Electric Power Co., Inc. v. Connecticut, 131 S. Ct. 2527, 41 ELR 20210 (2011).

41. Scenic Hudson Preservation Conference v. Federal Power Commission, 354 F.2d 358 (2d Cir. 1965); Scenic Hudson Preservation Conference v. Federal Power Commission, 453 F.2d 475 (2d Cir. 1971). In the end, the project developer decided to abandon the project. Nevertheless, the prevailing legal view in the United States is still that government agencies are only obligated to give fair consideration to environmental values, but retain discretion to allow significant environmental harm unless otherwise constrained by their legislated authority.

42. Sierra Club v. Morton, 405 U.S. 727, 2 ELR 20912 (1972); dissenting opinion by Justice William O. Douglas, 405 U.S. 741, citing the article (which Justice Douglas himself instigated), Christopher Stone, *Should Trees Have Standing?—Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972).

43. 42 U.S.C. §§4321-4370h, ELR STAT. NEPA §§2-209.

44. Richard M. Nixon, Annual Message to Congress on the State of the Union, Jan. 22, 1970, available at <http://www.presidency.ucsb.edu/ws/index.php?pid=2921#axzz1h2FCn4yU>.

45. In German, the Sachverständigenrat für Umweltfragen, which still functions. See [http://www.umweltrat.de/EN/TheGermanAdvisoryCouncilOnTheEnvironment/thegermanadvisorycouncilontheenvironment\\_node.html](http://www.umweltrat.de/EN/TheGermanAdvisoryCouncilOnTheEnvironment/thegermanadvisorycouncilontheenvironment_node.html) (last visited Jan. 23, 2014).

46. Lara Fowler, *From Technical Fix to Regulatory Mix: Japan's New Environmental Law*, 12 PAC. RIM L. & POL'Y J. 441, 444-46 (2003).

47. OECD, Recommendation of the Council on Guiding Principles Concerning International Aspects of Environmental Policies, May 26, 1972, Doc. No. C(72)128, Annex.

48. Report of the Conference, U.N. Doc. A/CONF.48/14.

49. Edith Brown Weiss, *International Environmental Law: Contemporary Issues and the Emergence of a New World Order*, 81 GEORGETOWN L.J. 675, 699-700 (1993). See also Don Anton, "Treaty Congestion" in Contemporary International Environmental Law, ANU College of Law Research Paper 12-05 (2012), available at <http://ssrn.com/abstract=1988579>.



improvements far outweigh the cost to businesses for environmental control measures.<sup>50</sup>

Although these achievements did not come without significant political debate, they were largely accomplished through direct regulation requiring engineering controls of identifiable sources of pollution, either applying numerical standards limiting environmental releases or specifying particular control systems. In most cases, the number of sources to be controlled was sufficiently small that government agencies could keep track of all the sources and make periodic onsite inspections, with administrative penalties or prosecution in court if violations of requirements were documented. Pollution from the much larger universe of motor vehicles was mostly controlled through design and equipment requirements for automobile manufacturers, only later supplemented by inspection systems for each automobile enforced through standard inspection and licensing requirements for automobile owners.

A social change and a political movement like the eruption of environmental issues onto national agendas around the world cannot sustain itself without the third element of governance: institutional support. The institutional creativity of the early environmental movement is a substantial part of its legacy. It built institutional foundations from three overlapping legal traditions: litigation; use of government legal authority; and new legislation.

In the United States and Japan in particular, the courts played an influential role in promoting government attention to environmental protection and in expanding the access of nongovernmental groups to the courts and the administrative process. In the United States, carefully prepared litigation secured judicial decisions that strengthened the legal foundation for environmental protection by easing access to the courts and insisting on transparency and procedural regularity in administrative law. Legislation reinforced the judicial trend by explicitly authorizing nongovernmental parties to challenge agency action, to act as private prosecutors, and to be awarded attorneys fees if they prevailed, and by enacting the Freedom of Information Act. In Japan, the courts heard four major environmental cases in the late 1960s. Though the compensation to victims of pollution or other remedies awarded by the Japanese courts were modest, the litigation stirred social awareness and political response, leading to a wave of environmental legislation in the 1970s.<sup>51</sup>

Another institutional factor that gave environmental litigation extra energy and influence in the early decades was the formation of not-for-profit private organizations dedicated to the development and enforcement of environmental law. In 1968, with support from wealthy donors, scientists and lawyers organized the Environmental Defense Fund (EDF), an environmental advocacy and litigating group. In 1970, other scientists and lawyers

formed the Natural Resources Defense Council (NRDC). These two groups, both still active, have played a significant role in shaping environmental law, internationally as well as in the United States. They inspired the formation of similar environmental law organizations in countries around the world, often with the active advice, support, and cooperation of partners in the United States and Europe. The Centro Mexicano de Derecho Ambiental in Mexico and The Law of Nature Foundation in the Philippines are just two examples.

Three judicial developments in the United States, replicated in many other jurisdictions, magnified the effectiveness of these civic organizations. First, as noted above,<sup>52</sup> the courts determined that environmental concerns, even aesthetic concerns, were matters of legal significance that came within their jurisdictional purview. They also decided that private persons with some direct connection to the particular dispute being adjudicated had standing to bring such cases, including cases against government officials. Finally, they agreed that an organization could be the litigant in such cases so long as some of its members were among those with an individual standing to sue.

Environmental law and environmental law advocacy cannot be effective without good scientific information, so scientific institution-building, especially in the government, was another vital part of the environmental law movement. From a rudimentary scientific base, the U.S. government has steadily acquired an enormous capability for environmental scientific research and data analysis, including collecting observational data on earth systems by satellite. Visionary environmental leaders worked to make sure that scientific information and analysis gets to the most important decisionmakers. In NEPA, Congress created the President's Council on Environmental Quality (CEQ), which had a major role in setting the methodologies for environmental impact assessment and preparing forward-looking reports such as the 1980 *Global 2000 Report to the President*. President Nixon reorganized several government departments to put together EPA. Other countries also established scientific organizations and advisory bodies, such as the German Advisory Council mentioned earlier. The 1972 Stockholm Conference on the Human Environment called for an international organization for the collection and analysis of environmental data, which became the U.N. Environment Programme. Privately funded nonprofit research entities also make an important contribution, not only on science and technology, but also with independent economic and legal analysis. U.S. examples from the earliest years include the highly respected Resources for the Future, originally established in 1952, which has since the 1960s emphasized economic analysis of environmental policy, and the Environmental Law Institute, founded in 1969, which is still very active as an independent source of environmental law and policy research, analysis, publications, and educational outreach.

50. See, for example, U.S. EPA, First Retrospective Study 1970-1990, calculating, for the United States, costs to control air pollution of \$523 billion and benefits (mean estimate) of \$22 trillion. Available at <http://www.epa.gov/cleanairactbenefits/retrospective1.html>.

51. FRANK K. UPHAM, LAW AND SOCIAL CHANGE IN POSTWAR JAPAN (1987).

52. *Supra* notes 41-42 and accompanying text.



In sum, the first phase of the environmental law revolution in the 1960s and 1970s drew on a deep reservoir of social support inspiring political action, and a nonregulatory network of institutional support to offer independent data, evaluation, and advocacy. Today's political and diplomatic controversies over specific elements of environmental regulation should not obscure the fact that the environmental consciousness that emerged in the early decades has matured into an unshakable social commitment to the core objectives of reducing health-affecting pollution and conserving natural resources. The manifold challenges for environmental law in the 21st century do not reflect fundamental social resistance to environmental protection in principle; what is lacking is the deeper penetration of environmental learning and thinking into every realm of human enterprise and action so that nature is given full and proper consideration in economic and political affairs.

## 2. The Thermidorean Reaction, 1980-2000

As pollution control and chemicals management regulation steadily expanded in the 1970s, businesses began to voice resistance to increasingly intrusive, detailed, and administratively burdensome controls. Their arguments gained support from studies showing that the different ages, configurations, and locations of industrial sources meant very high pollution control costs at some facilities with only marginal environmental benefits. This fundamentally challenged the standard legislative approach of uniform control standards throughout the nation. In the same years, macroeconomic problems and a turn away from radical questioning of "the establishment" in many countries brought greater influence to political leaders advocating more individual autonomy from the dictates of state policy. In the context of these shifting social, political, and economic trends, environmental law became contested ground.

Meanwhile, economic theoreticians had honed complementary arguments that economic incentives and other market-based approaches could motivate businesses to meet environmental objectives at lower social cost than prescriptive regulatory systems. The guiding principle was to engage free market profit-loss motivation by shifting the economic incentives facing business in order to induce them to change behavior in environmentally desired directions. Policymakers and lawmakers became interested in these ideas as means to pursue environmental goals without centralized prescription and enforcement of universal environmental performance standards. Three basic strategies were applied.

The most common approach uses public law to create market-based incentives for firms to change environmental behavior. Perhaps the best-known example is emissions trading. Economists from the EDF worked with legislators and the administration of President George H.W. Bush in 1990 to enact an emissions trading scheme to reduce

sulfur dioxide emissions from coal-fired power plants in order to abate acid rain.<sup>53</sup> Within a decade, this strategy achieved a rapid decline in sulfur emissions at much lower cost than forecast. More recently, the EU has used this approach to reduce emissions of climate-changing carbon dioxide from industrial and electric power facilities through the Emissions Trading Scheme (ETS),<sup>54</sup> albeit with mixed results. In 2013, the state of California began to implement a carbon trading system even more comprehensive than the EU ETS.<sup>55</sup>

Informational schemes are a second nonprescriptive strategy. The signature effort for this approach in the United States is the Toxics Release Inventory (TRI).<sup>56</sup> There are nearly 200 regulated toxic chemicals released into the environment. The need to accumulate and evaluate data about each chemical before setting prescriptive standards made it administratively infeasible to set pollution limits substance-by-substance. The TRI finesses the data problem by simply requiring every facility to report every year the amount of each of the listed chemicals it released into the environment, whether into the air, the water, or by injection underground. The results of this simple law have been remarkable. Once businesses had to collect (or estimate) and publicly report the information, it showed releases of thousands of tons by many hundreds of facilities. Executives and boards of directors suddenly became keenly interested in reducing those releases; some companies found ways to stop using the listed substances altogether.<sup>57</sup> Reporting schemes for air and water pollution generally, known generically as pollutant release and transfer registries, are now applied in many countries.<sup>58</sup>

A third nonprescriptive approach is to create incentives or requirements for firms to evaluate their own environmental behavior. Environmental self-auditing, for example, is designed to lead firms to self-regulate their own pollution while easing the strain on government inspectors.<sup>59</sup> The concept of corporate social responsibility (CSR), coupled with requirements for firms to prepare and report on CSR programs, has gained a substantial following in Europe.<sup>60</sup> Yet another indirect approach is the adoption of environmental product standards and management stan-

53. Title IV of the Clean Air Act, added by the Clean Air Act Amendments of 1990.

54. EU, Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, as amended.

55. CAL. CODE REGS., tit. 17, subch. 10, art. 5, implementing parts of AB 32, the California Global Warming Solutions Act of 2006.

56. 40 C.F.R. Part 372, implementing §313 of the Emergency Planning and Community Right-to-Know Act of 1986.

57. Bradley C. Karkkainen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257 (2001).

58. E.g., The European Pollutant Release and Transfer Registry (E-PRTR), established under European Commission (EC) Regulation 166/2006.

59. For example, the European Eco-Management and Audit Scheme (EMAS), initiated in 1993, is now in its third iteration. European Commission (EC) Regulation No. 1221/2009 (EMAS III).

60. The European Union continues moving forward on legal implementation of CSR. See *A Renewed EU Strategy for 2011-2014 for Corporate Social Responsibility*, European Commission Communication COM(2011) 681 final, Oct. 2, 2011.

dards. The International Organization for Standardization (ISO) environmental management standards, for example, require companies to establish internal environmental management control systems with oversight by senior officers and boards of directors in order to gain ISO certification.<sup>61</sup> ISO certification, in turn, is applied down the procurement chain as a contractual requirement for suppliers to most major corporations. The privately established Forest Stewardship Council has had considerable influence through standard-setting and monitoring of forestry management practices by vendors to major paper companies and retail sellers of wood.<sup>62</sup>

### C. Conclusion

Considerable legal creativity as well as economic and business management imagination lie behind market-based, information-based, and self-regulation systems. Nevertheless, from the perspective of the second decade of the 21st century, it is fair to ask what substantive differences in environmental outcomes they have brought about. The benefit of controls on releases of chemicals and certain forms of air and water pollution have accrued primarily to residents of developed countries with robust private markets and environmentally conscious consumers. Worldwide, gross industrial pollution continues with little abatement. Moreover, for environmentally damaging activities like mining that grow with the intensification and globalization of economic activity, these alternative strategies have had little effect. Indeed, environmental regulation strategies of all kinds have failed to keep pace with the rapid evolution of technologies, products, and markets presenting a new generation of environmental challenges. The world's ever-rising emissions of greenhouse gases reveal the inadequacy of both traditional and market-based strategies in the face of relentless population growth, economic expansion, and rising energy consumption.

In the face of these pressures on the planet, a broader conception of environmental law is needed to maintain resilient ecosystems. The quantitative precision of pollution control law is rarely practicable, not least because human knowledge ecosystem functioning and adaptive capacity is still limited. In this arena, law in the narrow sense can only declare general principles and objectives and then strive to channel human behavior in desired directions. Leopold expressed this important insight about law's limitations in colloquial terms. Conceiving of conservation as "a system of acts, motivated by a desire, and executed with skill," Leopold argued that "[a]cts without desire or skill are likely to be futile." In his view, "because desires and skills are intangible, [they] cannot be defined in law, nor created by law." Leopold saw this limitation of law as "inherent and unavoidable. . . . It can be offset only by education, which is not precluded from dealing with desires and

skills."<sup>63</sup> Leopold is clearly using "law" in the narrow sense of binding prescriptions for behavior. To remain relevant, environmental law needs a more visionary conception of "law" that embraces means of inculcating conservation norms (Leopold's "desire") and creating institutions and other social mechanisms (Leopold's "skill") to bring those norms into practice.

## II. The Environmental Challenges of the Contemporary Situation

### A. Introduction

The environmental law transformation of the 1960s and 1970s addressed the most apparent problems of that time: the pollution of air and water; the buildup of solid waste; rapid increases in the development and use of synthetic chemicals; and obvious damage to land and natural resources. Even in developing countries, progress is being made on these problems, once again driven by changes in social attitudes reflected in civic activism and in the growing role of the judiciary in confronting the worst abuses.

The story on ecological conservation is less clear, but by 1992, it appeared the world was making progress on Leopold's agenda. International agreements had been negotiated on a variety of conservation issues, from curtailing trade in endangered species<sup>64</sup> to protection of the stratospheric ozone layer,<sup>65</sup> and environmental law was an established field of education and practice around the world. On the occasion of the U.N. Conference on Environment and Development in Rio de Janeiro that year, nations agreed on new international law regimes to conserve biodiversity<sup>66</sup> and to avoid "dangerous anthropogenic interference with the climate system."<sup>67</sup>

More significantly, the world community then seemed ready, at last, to deal directly with Leopold's "economic factors bearing on the land." Principle 4 of the Rio Declaration<sup>68</sup> directed that "environmental protection shall be an integral part of the development process," and Principle 7 announced the resolve of the governments "to co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem." Principle 8 spoke even more directly to "changing [society's] wants and tolerances" by committing governments "to reduce and eliminate unsustainable patterns of production and consumption." In the same spirit, the preamble of the Earth Charter of 2000 declares: "Funda-

61. International Organization for Standardization, ISO 14000:2004, especially ISO 14001:2004, Environmental management systems.

62. See the home page of the Forest Stewardship Council, <https://ic.fsc.org>.

63. Flader & Callicott, Leopold Essays, *supra* note 1, at 310, 317-18.

64. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087.

65. Montreal Protocol on Substances That Deplete the Ozone Layer, Sept. 16, 1987, 152 U.N.T.S. 257, 26 I.L.M. 1550 (1987).

66. Convention on Biological Diversity, *opened for signature* June 5, 1992, 1760 U.N.T.S. 79, 31 I.L.M. 818 (1992).

67. United Nations Framework Convention on Climate Change, art. 2, May 9, 1992, 1771 U.N.T.S. 107, 31 I.L.M. 849 (1992).

68. U.N. Doc. A/CONF.151/26 (Vol. 1), 31 I.L.M. 874 (1992).

mental changes are needed in our values, institutions, and ways of living.”<sup>69</sup>

Nonetheless, overall global patterns of production and consumption continue at unsustainable levels. One example among many: the United Kingdom (U.K.) National Ecosystem Assessment of 2011 concluded that about 30% of the ecosystem services provided by terrestrial and aquatic ecosystems in the U.K. are currently declining and “[m]any others are in a reduced or degraded state.”<sup>70</sup> This is true even though much of the U.K.’s “environmental footprint” falls on other countries through the U.K.’s high imports of food and other biomass.<sup>71</sup> Another notable example of stalled progress: notwithstanding the high ambitions of the climate change convention, emissions of carbon dioxide from fossil-fuel combustion reached an all-time high in 2013 of 36 billion metric tons,<sup>72</sup> yet governments of leading industrial countries such as Canada, Japan, and Russia have backed away from continuing or strengthening their earlier international commitments to reduce those emissions.<sup>73</sup>

We humans are victims of our own success. The technological revolution of the past 250 years has given us unprecedented capacity to transform the natural world. The scale and intensity of human-caused environmental changes means, for many scientists, that the world has entered the Anthropocene, a new geologic era in which human agency has displaced the physical dynamics of nature and geology as the dominant force shaping the physical world and all its forms of life.<sup>74</sup> Humans are reducing the earth’s incredible diversity of plants and animals, changing the chemistry of the oceans, and altering the composition of the atmosphere in ways that will inexorably and profoundly change the world’s natural systems for centuries to come. To be sure, some environmental policy analysts subscribe to optimistic scenarios in which the ingenuity of continuing technological and policy transformation overcomes or avoids the apparent limits of natural resources.<sup>75</sup> In the final analysis, however, there are immutable limits. If the famous *Limits to Growth*<sup>76</sup> was simplistic in approach and rudimentary in methodology, its essential message remains true. Even with the enormous daily flux of energy from sunlight and our steady innovations in ways to put that energy to use, humans are fundamentally constrained by the physical resources of the planet and the annual primary production

of plants. The majority of today’s scientists urgently warn that “human activities are moving several of the Earth’s subsystems outside the range of variability for the previous 500,000 years.”<sup>77</sup>

The accumulating scientific warnings are a sign that the development of individual and social norms with respect to the earth’s natural resources has not kept pace with our social capacity to overuse and abuse those resources. Quite the contrary, our societies exhibit what one commentator calls “pernicious habits of thought, including the enchantment of a limitless material expansion and . . . [quoting John K. Galbraith] ‘the highly contrived consumption of an infinite variety of goods and services.’”<sup>78</sup> The question for this part is why new norms for sustainability have not yet emerged to transform sustainable development rhetoric into behavioral reality. What are the impediments to socio-ecological normative change for sustainability that account for the failure of norm-building efforts thus far?

Fundamentally, the persistence of “unsustainable patterns of production and consumption” is a “wicked” problem. “Wicked” problems, by definition, are problems that are indeterminate in nature and do not have “right” (or “wrong”) solutions or any identifiable set of solutions, and perhaps no “solution” at all. Wicked problems are social problems, usually with multiple and diverse causes and consequences, so they can be defined in different ways or from different perspectives, meaning that even broad agreement on the nature of the problem may be elusive. This indeterminacy leaves enormous space for social and political contests over how society should respond to wicked problems, a political conundrum compounded by the likelihood that they will demand attention for the indefinite future.<sup>79</sup> [Un]sustainable development clearly meets these criteria. Indeed, one commentator argues that sustainable development is not even a substantive goal, but a never-ending process.<sup>80</sup> It is thus not surprising that the very definition of sustainable development is sharply contested, with governments and analysts variously prioritizing its ecological, economic, or social aspects.

As a matter of environmental law and policy, the “wickedness” of sustainable development presents a formidable challenge, because “in the absence of shared social recognition and collective deliberation to establish legitimate interpretation of a norm’s formal validity, individuals will resort to their respective culturally constituted ‘background knowledge’ or their ‘normative baggage.’”<sup>81</sup> Never-

69. The text of the Earth Charter is available at <http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html>.

70. The U.K. National Ecosystem Assessment: Synthesis of the Key Findings (2011), at 5, available at <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>.

71. *Id.* at 11.

72. *Global Carbon Emissions Rise to New Record in 2013 Report*, REUTERS, Nov. 18, 2013, available at <http://www.scientificamerican.com/article.cfm?id=global-carbon-emissions-rise-to-new> (last visited Jan. 23, 2014).

73. Decision 1/CMP.7, Annex 1, notes p, q, and r, respectively, U.N. Doc. FCCC/KP/CMP/2011/10/Add.1.

74. See <http://en.wikipedia.org/wiki/Anthropocene>.

75. In Europe, the best-known exponent is BJØRN LOMBORG, *THE SKEPTICAL ENVIRONMENTALIST* (2001); in the United States, see (among others) Ted Nordhaus and Michael Shellenberger, founders of The Breakthrough Institute, <http://www.thebreakthrough.org/>.

76. DONELLA H. MEADOWS ET AL., *THE LIMITS TO GROWTH* (1972).

77. Frank Biermann et al., *Navigating the Anthropocene: Improving Earth System Governance*, 335 SCIENCE 1306 (Mar. 16, 2012).

78. JAMES GUSTAVE SPETH, *RED SKY AT MORNING* 192 (2004).

79. The author was introduced to “wicked problems” by Richard Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153 (2009). The concept, which has a long history in the social sciences, was originally developed by Horst Rittel & Melvin M. Webber, *Dilemmas in a General Theory of Planning*, 4 POL’Y SCI. 155, 160-69 (1973).

80. Howard Mann, *Comment on the Paper by Philippe Sand*, in WINFRIED LANG ED., *SUSTAINABLE DEVELOPMENT AND INTERNATIONAL LAW* 67, 71 (1995).

81. Antje Wiener & Uwe Puetter, *The Quality of Norms Is What Actors Make of It: Critical Constructivist Research on Norms*, 5 J. INT’L L. & INT’L REL., No. 1, at 1 (2009).



theless, in principle, it is possible to imagine a set of norms for environmental conservation that would advance some of the generally accepted objectives of sustainable development and provide a normative framework for sustainable development law. In Part IV, we will return to development of norms or an ethos. The rest of this part explains how certain common characteristics of current environmental problems—complexity, scale, and comprehensiveness—impede the formulation of widely shared environmental law formulations or strategies for sustainable development.

## B. Complexity

In 1939, Leopold wrote: “Conservation . . . is keeping the resource in working order, as well as preventing over-use. Resources may get out of order before they are exhausted, sometimes while they are still abundant. Conservation, therefore, is a positive exercise of skill and insight, not merely a negative exercise of abstinence or caution.”<sup>82</sup> Since then, ecological sciences have made tremendous advances in deciphering the webs of life that compose ecosystems and understanding how ecosystems may get “out of order” in responding to stress and change. While ecosystem scientists continue their explorations, we at least now understand that the old notion of a static “balance of nature” must be replaced with the indeterminate “new ecology” model of dynamic ecosystems constantly adapting to changing conditions. Some theorists have therefore formulated a new conceptual framework for judging human actions on the environment: maintaining ecological resilience. Resilience means the capacity of an ecosystem as a whole, in terms of species diversity and ecological structure, to make successful adaptations to natural or human-caused changes without catastrophic losses.<sup>83</sup>

Ecological resilience theory is a powerful idea, but the human capacity to predict how an ecosystem will respond to changing circumstances is still rudimentary at best, and the chaos inherent in dynamic change (including, for example, the influence of changes of ocean currents on forest cover thousands of kilometers distant) make it difficult to set appropriate behavioral norms for human alterations to natural environments. One policy response to this indeterminacy is adaptive management: try certain approaches to protect or restore an ecosystem, constantly monitor the system, and then adapt the management strategy according to the observed patterns of change. Adaptive management is reminiscent of Teubner’s emphasis on autopoiesis (self-generation of norms) and the open-ended flexibility of reflexive law in that the ecosystem managers evaluate their own work and decide how to adapt. A deeper question is whether adaptive management comports with the rule of law. Traditionally, the law tries to assure stability

and predictability, whereas adaptive management deliberately promotes flexibility—which is to say, uncertainty—about future rules governing those who use the ecosystem or depend on its services.

The appropriate design of governance systems across a range of ecological scales and jurisdictional boundaries is another legal and social factor in adaptive management that eludes prescriptive solutions. Who are the appropriate people to review conditions and make changes to the management strategy? How are they selected? What are the rules for decisionmaking within that group? Do they have final authority, or must their recommendations be adopted by a public entity with rulemaking power? Who pays for and oversees the constant ecosystem monitoring? Management of small ecosystems or a single resource among local users has been successful in many parts of the world, as documented by the work of the late Elinor Ostrom. Her empirical research showed that the “tragedy of the commons” is not inevitable. Ostrom’s later research, however, showed that poor design or other weaknesses in social governance systems lead to flaws in ecological governance and thus poor ecological outcomes.<sup>84</sup> From that empirical foundation, she mapped out a complex array of social and political factors requiring careful consideration in devising an effective governance structure.

Ostrom’s work and the work of other social scientists inspired the formulators of resilience theory to incorporate an integrated science-and-society approach under an expanded concept: social-ecological resilience.<sup>85</sup> Social-ecological resilience theory is fully consistent with the social-economic-ecological triad of sustainable development. It also underscores the fundamental condition of the Anthropocene: managing the interaction of humans with the natural environment is the core challenge in maintaining ecological resilience. Social-ecological resilience and its close kinship with sustainable development reveal further complexity for governance and law in adaptive management systems. At least one promising adaptive management program for an ecosystem of high value, the Bay-Delta system of rivers and estuaries in northern California, is close to collapse after several years because of governance problems, including sharp contests among diverse user interests over the appropriate management objectives.<sup>86</sup>

Because many vital ecosystems function at large scales, social-ecological resilience theorists have also assessed the additional complexities of multilevel governance systems. Even a simple description of multilevel adaptive governance is daunting: “An adaptive governance framework relies critically on the collaboration of a diverse set of stakeholders operating at different social and ecological scales in

82. Flader & Callicott, Leopold Essays, *supra* note 1, at 255, 257.

83. Resilience theory has its roots in the work of American ecologist Crawford S. Holling, CRAWFORD S. HOLLING, RESILIENCE AND STABILITY OF ECOLOGICAL SYSTEMS (1973). It has been extended and refined by many others, e.g., Carl Folke et al., *Resilience Thinking: Integrating Resilience, Adaptability, and Transformability*, 15 ECOL. & SOC’Y, No. 4, art. 20 (2010).

84. Elinor Ostrom, *A General Framework for Analyzing Sustainability of Social-Ecological Systems*, 325 SCIENCE 419 (July 24, 2009).

85. Carl Folke, *Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses*, 16 GLOBAL ENV’T L CHANGE 253 (2006).

86. National Academy of Sciences, *A Review of the Use of Science and Adaptive Management in California’s Draft Bay Delta Conservation Plan* (2011), available at <http://dels.nas.edu/wstb>. This report is highly critical of the scientific analysis underlying the draft plan and the lack of coherence among the management group.

multilevel institutions and organizations.”<sup>87</sup> The California Bay-Delta example shows that adaptive governance is difficult enough within the multiple local jurisdictions and interest groups of a single state within a single nation. The governance challenge becomes even more complex when two or more nations are involved, bringing differences in legal tradition and political culture into play. For example, in the arid lands along the border between the United States and Mexico, management of transboundary groundwater resources and maintenance of biologically important riparian and wetland habitat are important concerns. Notwithstanding a durable and largely effective bilateral treaty and institutional framework for surface water supply management between the United States and Mexico, differences in cultural outlook, political systems, legal frameworks, and economic resources have contributed to a persistent deadlock and lack of mutually beneficial action on groundwater. In Mexico, groundwater is considered a national resource and is managed by a federal agency; in the United States, groundwater is not only managed under state law allowing private exploitation, but the four U.S. border states have distinctly different groundwater legal regimes. These legal inconsistencies have been a major impediment to binational agreement on groundwater protection and management, even though groundwater is an essential resource in this desert region.

### C. Scale

With seven billion people on the planet, rising to about nine billion by mid-century, the scale of human activity has become overwhelming. The environmental consequences of the last 60 years of population growth are now readily perceptible at planetary scale—in the oceans, at all levels of the atmosphere, and in the remotest deserts, forests, and mountains.

In principle, dealing with effects at planetary scale calls for international rules and transboundary agreements, but these aspects of the law still struggle for recognition and effect in legal communities and in governments. At best, the formulation of international environmental law through the work of jurists, academicians, and government negotiators is a resource-intensive and laborious process that often operates at glacial pace in spite of rapid environmental deterioration. In 2012, for example, governments of 90 nations agreed to establish the Intergovernmental Platform on Biodiversity and Ecosystem Services as “an interface between the scientific community and policymakers that aims to build capacity for and strengthen the use of science in policymaking.”<sup>88</sup> This seems a valuable exercise in cooperation, but even though the Platform has no regulatory power, it took seven years of international consultation and negotiation to bring it into being.

Frustration with international environmental law is especially keen with respect to climate change. Twenty

years after conclusion of the U.N. Framework Convention on Climate Change (UNFCCC) in 1992, emissions of greenhouse gases are higher than ever and steadily increasing. The legally binding emissions reduction obligations for developed countries in the Kyoto Protocol expired at the end of 2012; although it was agreed to extend the Protocol until 2020, only the EU and a few other nations accepted continuation and enhancement of legally binding obligations to reduce emissions. Meanwhile, negotiations among the governments over new legal mechanisms and binding obligations for all nations under the UNFCCC are not scheduled to conclude before 2015, with implementation to begin only in 2020. In the meantime, carbon dioxide continues to accumulate rapidly in the atmosphere, approaching 400 parts per million at the time of this writing. Because it is the cumulative amount that will drive climate change for decades to come, even dramatic reductions in emissions after 2020 may well be a matter of “too little, too late.” The EU presses ahead with its own program, but has so far failed to inspire others to follow its lead and thus faces resistance from some member states. The United States has no coherent national climate policy, but the state of California’s comprehensive emissions reduction program is being implemented. Among developing countries, too, there are some recent encouraging signs of a change in attitude,<sup>89</sup> but emissions continue to rise.

Though one can find some room for hope in the changing social and political milieu that is prompting such initiatives, the scale problem intrudes. Unless all of the nations that are major emitters take significant steps to reduce emissions in the immediate future, the efforts of Mexico or California or even the EU will have only the marginal effect of somewhat slowing the accumulation of greenhouse gases in the atmosphere. Even if all national emissions reduction commitments are fulfilled, the abatement in emissions in the coming 10-20 years will fall well short of the drastic reductions needed in order to alter the trajectory of climate change significantly.<sup>90</sup>

One could continue a long litany of scale-related impediments to effective environmental law and behavioral change; three more examples will suffice. First, notwithstanding the U.N. Convention on the Law of the Sea, effective global governance of the world’s ocean environments has been practically impossible due to the fragmentation of legal jurisdiction over ocean resources and over different marine activities such as fishing, shipping, and fixed installations. Second, the world’s forests lack even a U.N. convention; the effort to negotiate one before the 1992 Rio conference failed. No one denies that large forests have global ecological significance, but the diversity of

87. Folke, *supra* note 85, at 262.

88. See <http://www.ipbes.net/about-ipbes.html>.

89. Mexico recently enacted its own General Climate Change Law, codifying ambitious commitments to reduce greenhouse gas emissions and increase renewable electricity supply and reorganizing government agencies to implement these requirements. China has announced large-scale programs to improve energy efficiency and shift strongly toward renewable energy sources and is working on an emissions trading system with assistance from the EU.

90. See United Nations Environment Program, *Bridging the Emissions Gap: A UNEP Synthesis Report* (2011).

forest types and of patterns of forest resource use around the world have proved to be insuperable barriers to an overarching forests convention. Third, the oft-cited international environmental law success of the Montreal Protocol on Substances That Deplete the Ozone Layer seems to have reached its political limit. The rapid curtailment of production of chlorofluorocarbons (CFCs) was possible because the scale of that production—the number of facilities—was modest, and substitute materials were rapidly developed. But resistance to new international measures has arisen in various quarters—the United States with respect to methyl bromide<sup>91</sup> and Asian countries with respect to requests for regulation of the byproduct gas trifluoromethane (HFC-23), a potent greenhouse gas.<sup>92</sup> For all the success in zeroing out production of CFCs and HCFCs, the stratospheric ozone layer still shows depleted levels in both polar regions. Meanwhile, ozone-depleting substances are a significant contributor to climate change, suggesting that the scale of the problem with these substances may have been underestimated.

In short, scale effects not only mean that global conservation efforts to achieve something approximating ecological sustainable development will require drastic changes in current behaviors by most of the world's 7-9 billion people, but also mean that decisions about and coordination of those efforts will require international cooperation of a scope and intensity that has no precedent in human history. Such cooperation is conceivable, but the compromises in international environmental law in recent decades have resulted in much less robust action than the ecological situation demands.

#### D. Comprehensiveness

Even outside the climate change context, scientists are detecting, with increasing frequency, interactions and unexpected effects from activities once thought to be relatively harmless. Comprehensiveness will be used as the term for this pervasive condition of contemporary environmental problems. Here is one example of comprehensiveness: researchers have recently concluded that agriculture, cattle ranching, energy development, and other activities in the deserts of the American Southwest during the 20th century have irretrievably broken the natural crust or "pavement" that once coated desert soils. The breaking of the crust has led to more rapid loss of soil moisture; the dry, fractured soil in turn contributes to a significant increase in

dust storms; some of this airborne dust then settles on winter snowpack in the Rocky Mountains hundreds of kilometers away; the coating of red dust on the snow speeds up spring melting and sublimation of the snow, meaning less runoff to feed rivers and fill reservoirs in a region already short of fresh water.<sup>93</sup> Drier mountain soils also weaken or kill trees in mountain forests, which are now more susceptible to forest fires.

It seems that everything we do—as farmers, manufacturers, energy producers, and ordinary citizen consumers of houses, fish, air travel, and all the rest—is having expected and unexpected adverse effects on natural systems, often thousands of kilometers distant. Dioxin generated by industrial facilities in the United States ends up in the animal-based food supply of Arctic First Nations' peoples in northern Canada; gaseous and particulate emissions from Louisiana contribute to atmospheric haze in Big Bend National Park some 2,000 kilometers away; dark particles of industrial pollution settle on the Greenland icecap. To repeat, this is the Anthropocene, where humans are the dominant force shaping the earth's natural systems.

Formal private law that might impose liability for damage to property loses effectiveness in the face of the comprehensiveness of causes and effects. An Alaskan native village immediately threatened by climate change-related coastal storm flooding sought compensation from Exxon Mobil and other large oil companies as joint tortfeasors producing the carbon-based fuels the combustion of which is a major source of climate-changing carbon dioxide. The court dismissed the suit on a motion for summary judgment on two grounds: the issues raised were not justiciable because regulation of greenhouse gas emissions was a political question to be decided by legislators rather than through individual legal actions; and the village's damages were in any case not "traceable" to the actions of the oil companies.<sup>94</sup> A human rights petition by other Arctic natives argued that the failure of the United States to mitigate greenhouse gas emissions violated their human rights by altering the climate in ways that were threatening their communities, impeding travel between communities, impairing health, and disrupting important cultural practices such as traditional hunting and building of igloos. The Inter-American Commission for Human Rights summarily dismissed the petition on the carefully phrased legal ground that the petition, notwithstanding its detailed allegations, did not "enable us to determine whether the alleged facts would tend to characterize a violation of rights protected by the American Declaration."<sup>95</sup>

91. The United States gained Montreal Protocol acceptance of "critical use exemptions" that have allowed continuing, albeit steadily declining, use of methyl bromide for various agricultural uses. Compared with the Montreal Protocol phaseout deadline of 2005, complete phaseout in the United States will come only in 2015 or later. See generally the U.S. EPA webpage on methyl bromide, <http://www.epa.gov/ozone/mbbr/> (last visited Jan. 23, 2014).

92. For a straightforward account of the recent inaction under the Montreal Protocol, see the heading "Proposed Amendments to the Montreal Protocol" in the summary of the July 2012 meeting of the Open-Ended Working Group in the International Institute for Sustainable Development's Earth Negotiations Bulletin, <http://www.iisd.ca/vol19/enb1987e.html> (last visited Jan. 23, 2014).

93. Thomas H. Painter et al., *Response of Colorado River Runoff to Dust Radiative Forcing in Snow*, PROC. NAT'L ACAD. SCI. (2010), available at <http://www.pnas.org/content/early/2010/09/14/0913139107.full.pdf+html>.

94. *Native Village of Kivalina v. Exxon Mobil Corp.*, 663 F. Supp. 2d 863, 39 ELR 20236 (N.D. Cal., 2009).

95. Petition to the Inter-American Commission on Human Rights Seeking Relief From Violations Resulting From Global Warming Caused by Acts and Omissions of the United States (2005), Summary of the Petition, available at [http://earthjustice.org/sites/default/files/library/legal\\_docs/summary-of-inuit-petition-to-inter-american-council-on-human-rights.pdf](http://earthjustice.org/sites/default/files/library/legal_docs/summary-of-inuit-petition-to-inter-american-council-on-human-rights.pdf). The one-



These rulings follow traditional legal doctrines; the few examples that can be found in other jurisdictions where courts have awarded relief in similar circumstances are the exceptions. In Part I.B.1. above, we saw that modern environmental legislation arose in part because the comprehensive problems of multisource pollution were not amenable to piecemeal legal remedies, but could only be effectively addressed by public law or other social initiatives. Now, comprehensiveness connections cut across even more jurisdictional lines and arise from more widespread and socially accepted behaviors, calling into question the fundamental capacity of “the law” to address them—unless we reimagine environmental law itself.

Asymmetries within comprehensiveness compound the challenges of climate change for international law as much as for formal private law that is challenged. Four asymmetries are embedded in this comprehensive problem.

First, there is an empirical asymmetry of causes and effects. Just 10 or 12 nations (counting the EU as one) are responsible for the bulk of the world’s greenhouse gas emissions, but the resulting disruptions to the climate affect everyone, everywhere. To make matters worse, international climate law creates a formal legal asymmetry of responsibility between developed and developing countries, expressed in the phrase “common but differentiated responsibilities.” Grounded though it is in meritorious principles of equity, “common but differentiated responsibilities” has become a rhetorical refuge for nations such as China and India to excuse themselves from any legal commitment to curtail the steady growth in their own very substantial greenhouse gas emissions until developed countries have reduced theirs.

The second climate change asymmetry is the contingent asymmetry of location and economic status. The nations that contribute most to the climate problem have large economies and almost all are centered in temperate regions. Thus, the source nations are relatively less vulnerable to the effects of climate change, whereas those who are most vulnerable include people in least-developed countries, small island states, and isolated and relatively poor native Arctic communities. Ironically, the most vulnerable have done almost nothing to create the problem, nor do they benefit economically from the emitting activities. In the annual conferences of the parties to the UNFCCC, the urgent pleas for action from the low-lying island nations, whose very existence is threatened by rising sea levels, get a polite hearing, at best, from the major economic powers, who then perpetually defer any immediate, aggressive action to reduce emissions.

The third asymmetry is a structural asymmetry in international environmental law and international economic law that leaves gaps in constructing comprehensive solutions or exerting legal or economic pressure to mitigate their emissions. The difficulty of regulating releases of the byproduct gas HFC-23, a powerful greenhouse gas emit-

ted in large volumes, has been noted above. On the positive side of this same asymmetry, the sharp reduction in releases of other ozone-depleting substances, such as CFCs, under the Montreal Protocol has done more to slow the pace of climate change than all the efforts to reduce emissions of other greenhouse gases under the UNFCCC and the Kyoto Protocol. Another structural asymmetry arises with respect to black carbon. A scientific and, to some extent political, consensus has emerged that black carbon (soot) should be controlled to slow the pace of climate change. But black carbon is not even a gas, so it is outside the legal ambit of the UNFCCC. Coming from diverse small sources such as agricultural burning, wood-fueled cooking stoves, and diesel vehicle emissions, black carbon also falls between the cracks of international environmental law on air pollution or industrial chemicals. Several developed and developing countries, under the banner of the Climate and Clean Air Coalition to Reduce Short-Term Climate Pollutants, are now working together outside the formal international climate law framework to organize and underwrite initiatives to reduce black carbon emissions and also methane emissions contributing to ground-level ozone pollution.<sup>96</sup> Laudable collaborative efforts of this kind will need to be replicated many times over to address enough dimensions of the climate problem, such as electricity generation and deforestation, to make a significant contribution to climate mitigation at the global scale.

The fourth asymmetry climate change reveals is the temporal asymmetry of cause and effect. First, there is the long lag in the response of the world’s oceans and atmosphere to increasing concentrations of greenhouse gases. Whatever climate change effects we are experiencing today are the result of emissions of carbon dioxide and other greenhouse gases dating all the way back to the beginning in the 19th century. By the same token, the climate-altering effects of the very high emissions of recent years will not manifest themselves for decades to come. For example, although a dramatic rise of sea level due to accelerated melting of the Greenland and Antarctic ice caps is widely expected, most experts agree that it will not become a matter of great concern to coastal communities until late in this century at the very earliest, and then only gradually if inexorably. Our accepted norms or methodologies for evaluating trade offs between current actions and future consequences fail us when the consequences become temporally remote. The traditional rules and principles of the law itself often obstruct needed efforts to avert effects of indeterminate intensity that will not manifest themselves for several human generations. Anglo-American lawyers, at least, learn early in their training about the “rule against perpetuities,” by which the law tries to prevent those living today from controlling the actions of people in the future. How should law and society cope with the inverse problem—to give our descendants in the remote future a stake in how we act

page refusal to proceed, dated Nov. 16, 2006, is available at <http://graphics8.nytimes.com/packages/pdf/science/16commissionletter.pdf>.

96. For details, see the home page of the Climate and Clean Air Coalition at <http://www.unep.org/ccac/>.

today? Morally and politically, many accept the idea of intergenerational equity, but are the interests of future generations in any way legally cognizable?<sup>97</sup>

### E. One View of the Contemporary Challenges for Environmental Governance

In anticipation of the Rio+20 conference, an international group of 32 environmental policy experts, mostly political scientists, set forth a seven-point plan for “improving earth system governance.”<sup>98</sup> Their seven points offer a useful governance roadmap on which to situate the environmental law challenge of the 21st century.

The first two points focus on organizational reform and better integration of the social, economic, and environmental elements of sustainable development policy, particularly at the U.N. level. This is a perennial topic in international environmental law and governance. Institutional arrangements do matter, but the system so far adjusts by incremental steps rather than bold initiatives. Two of the tangible outcomes of Rio+20 were to replace the ineffective U.N. Commission on Sustainable Development with a new (but not yet defined) “high level political forum” on sustainable development, and to undertake to establish “sustainable development goals” as policy targets, akin to the existing Millennium Development Goals. The first steps in this project have been taken, and reaffirm that “the moment is right to merge the social, economic and environmental dimensions of sustainability guiding international development.”<sup>99</sup>

The third point in the seven-point program is to close “remaining regulatory gaps at the global level.” One example the experts offer is the management of emerging technologies such as nanotechnology and what they call “synthetic biology.” They envision multilateral environmental agreements as a likely mechanism for accomplishing this, though the discussion above raises some questions about that recommendation.<sup>100</sup>

The fourth point in the experts’ program is for “governments [to] place a stronger emphasis on planetary concerns in economic governance.” They specifically mention changes in world trade law as one example. Economic governance may well be the central issue for sustainable development and a reimagined environmental law. The challenge is how to bring about change. An environmental historian identi-

fies the primacy of economic growth as “easily the most important idea of the twentieth century.”<sup>101</sup> As many other analysts have remarked, the social and political trends of the current century are further accentuating the primacy of economic growth, running in the opposite direction from the prescribed need to give more emphasis to environmental concerns.<sup>102</sup> In 2013, economic development is still the focal issue for most national governments; environmental considerations, especially planetary ones such as global climate change or protection of the oceans, are relegated to the political periphery.<sup>103</sup> It was not encouraging that the Rio+20 final document redefined sustainable development in terms of two economic pillars—poverty alleviation and economic vitality—along with environmental protection, and that it prioritized poverty alleviation among those three, omitting the customary third pillar of “social” considerations. Poverty alleviation should of course be a prominent consideration in world policy; it was a key idea in the original view that economic development was a core element in “sustainable” development.<sup>104</sup> Identifying poverty alleviation as a separate and top priority goal, however, seems to mark a significant shift in the intergovernmental conception of sustainable development away from the recommended deemphasis of economic growth. Subsequently, the work of the U.N. Sustainable Development Solutions Network has rebalanced the rhetoric, making “eradication of poverty” a subset of “economic development” as one of four “interconnected objectives,” reestablishing “social inclusion” and “good governance” as separate objectives along with “environmental sustainability.”<sup>105</sup>

The experts’ fifth and sixth points are procedural: to make more use of qualified majority voting as the international norm in place of consensus decisionmaking; and to enhance transparency and public participation. Leaving aside problematic considerations with respect to each of these points, they are ancillary to the larger project. Process reform can contribute only marginally to transformational change with deeper social and political roots.

The seventh and final point in the experts’ program is another perennial issue in global environmental affairs. Asserting that “equity and fairness must be at the heart of

97. Douglas Kysar analyzes this problem in depth. DOUGLAS KYSAR, *REGULATING FROM NOWHERE* (2010).

98. Frank Biermann et al., *Navigating the Anthropocene: Improving Earth System Governance*, 335 *SCIENCE* 1306 (Mar. 16, 2012).

99. See High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, *A New Global Partnership: Eradicate Poverty and Transform Economies Through Sustainable Development*, Report to the U.N. Secretary General, May 30, 2013, at 5. For an effort by scientists toward the same objectives, see David Griggs et al., *Policy: Sustainable Development Goals for People and Planet*, 495 *NATURE* 305, Mar. 21, 2013. For further discussion, see Part V below.

100. I am skeptical about the effectiveness of this approach to governance of technologies. Even the EU and the United States have sharply different regulatory philosophies about nanotechnology, reflecting deep-rooted cultural differences in tolerance for risk from novel technologies.

101. John R. McNeil, as quoted in Speth, *supra* note 78, at 192.

102. E.g., Jay Lorsch, & Rakesh Khurana, *The Pay Problem: Time for a New Paradigm for Executive Compensation*, *HARV. MAG.*, May-June 2010, at 30, available at <http://harvardmagazine.com/2010/05/the-pay-problem> (observing at p. 35 that, “Today, corporations are typically described in terms of economic and financial considerations alone. . . . Without empirical justification, [this model] relieves the corporate institution of any meaningful responsibility to anyone but the transitory group of stockholders who buy and sell shares constantly.”).

103. For example, in April 2013, the European Parliament turned down a measure to reinvestigate Europe’s troubled ETS because of the current economic recession. Stanley Reed, *Europe Vote Sets Back Carbon Plan*, *N.Y. TIMES*, Apr. 17, 2013, B-1.

104. The report of the World Commission on Environment and Development, *Our Common Future* (1987), makes repeated reference to poverty as a cause of environmental degradation. Development must therefore address poverty to be sustainable for the world as a whole.

105. Sustainable Development Solutions Network, *A Framework for Sustainable Development*, Dec. 19, 2012 (draft), available at <http://unsdsn.org/files/2012/12/121220-Draft-Framework-of-Sustainable-Development.pdf>.

a durable international framework for sustainable development,” the experts argue for stronger financial support for poorer countries and put forward some ideas about how to raise the necessary financial resources, such as a levy on air transportation. Global disparities in wealth and associated economic, technical, and administrative capacity are certainly fundamental obstacles to robust environmental protection and resource conservation programs in many parts of the world. Too often, it seems, the best chance for the poorest countries to generate economic development in the current global economic system is through the exploitation of their own natural resources to feed the insatiable resource and consumption appetites of large economies. A development path focused on selling minerals, forest products, agricultural products, energy, or tourism for the wealthy can alleviate poverty in the short term, but experience teaches that it is often not compatible with sustainable development. To take this point to its logical conclusion, creating sustainable development opportunities for the poorest countries calls for some fundamental changes in the world economic and political order and the particular mechanisms of the capitalist incentive patterns for private gain through which they now operate.

In the final analysis, then, this catalogue of governance reform proposals by experts in environmental science and policy underscores how the activities of environmental law have been overwhelmed by the complexity, scale, and all-encompassing comprehensiveness of the current world situation. The question that naturally follows is this: How can environmental law be reimagined to make its own contribution to correcting the systemic distortions that are perpetuating ecological degradation?

### III. Pathways to Reimagining Environmental Law

The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our [world].<sup>106</sup>

#### A. Transforming Culture and Consciousness

One-half-century of environmental law has so far failed to disenthral the world's societies from “unsustainable patterns of production and consumption.”<sup>107</sup> To arrest the environmental deterioration of past decades and to maintain our planet in a truly sustainable manner will require pervasive and fundamental behavioral change.

In 1933, Leopold framed the behavioral challenge this way:

The ultimate issue, in conservation as in other social problems, is whether the mass-mind *wants to* extend its powers of comprehending the world in which it lives . . . I simply affirm that a sufficiently enlightened society, by changing its wants and tolerances, can change the economic factors bearing on the land.<sup>108</sup>

In this framing, the challenge is to extend the “mass-mind” to comprehend its precarious ecological situation and then to change “wants” and “tolerances” accordingly. Leopold understood that a change of social norms is a necessary first step to a change in behavior: “No important change in human conduct is ever accomplished without an internal change in our intellectual emphases, our loyalties, our affections, and our convictions.”<sup>109</sup> Many decades after Leopold, James Gustave Speth made much the same point: “The most fundamental transition is the transition in culture and consciousness.”<sup>110</sup>

The essential character of the desired transformation has been identified by many over the years. A 1980 report to President Jimmy Carter stated:

[O]ur duty to exercise a conserving and protecting restraint extends as well to the community of life—animal and plant—that evolved here with us. There are limits beyond which we should not go in disrupting or changing this community of life, which, after all, we did not create. Although our dominion over the earth may be nearly absolute, our right to exercise it is not.<sup>111</sup>

Ten years later, Pope John Paul II called for “[a]n education in ecological responsibility . . . [that] entails a genuine conversion in ways of thought and behaviour.”<sup>112</sup> At the turn of the millennium, the international team that drafted the 1980 Earth Charter reaffirmed: “Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more.”<sup>113</sup>

The law is an instrument of social governance well-suited to resolve some matters in human affairs and less appropriate for others. Analysts from various domains and perspectives agree that the law in its traditional mode of enforceable rules is often an awkward vehicle for mediating social values affecting the behavior of economic actors toward the environment—for changing the “economic factors that bear on the land.” All-embracing conceptions for the future like “sustainable development” encompass a complex and evolving interplay of social, economic, and environmental objectives and mechanisms to achieve them. To be fully effective, environmental law needs to embed

106. President Abraham Lincoln, second annual message to Congress, Dec. 1, 1862 [substituting “world” for the original “nation”].

107. Rio Declaration, princ. 8.

108. Flader & Callicott, Leopold Essays, *supra* note 1, at 192.

109. Flader & Callicott, Leopold Essays, *supra* note 1, at 338.

110. Speth, *supra* note 78, at 191.

111. U.S. Council on Environmental Quality (1981), *Global Energy Futures and the Carbon Dioxide Problem* (Washington, D.C.: Government Printing Office), at viii, quoted in Speth, *supra* note 78, at 5.

112. Pope John Paul II, Message for the Celebration of the World Day of Peace (Jan. 1, 1990), ¶ 13.

113. Earth Charter (2000), *supra* note 69, pmb1.



itself in that larger context. A first jurisprudential question must therefore be the following: Can environmental law be reimagined to contribute more effectively to meeting the environmental challenges of the 21st century?

This part will explore how environmental law might be reimagined to help bring about and shape the “internal change” in “culture and consciousness.” The argument builds on some recent writings on the challenge of changing patterns of thought and behavior to foster sustainability that harken back to Plato, which are presented in Part III.B. Part III.C. then offers some observations about the role of law and lawyers in this fundamental undertaking, drawing on the legal, social, and political theories presented in Part I above. Finally, Part III.D. will venture some ideas about how environmental law could be reimagined, including changes to legal training and practice to equip future lawyers for the practice of this reimagined law.

## B. Looking to Plato for Inspiration and Guidance

### I. Ecology and Politics

In *Plato's Revenge: Politics in the Age of Ecology*,<sup>114</sup> the American political scientist William Ophuls, a veteran commentator on environmental policy, offers a provocative critique of the current social response to environmental problems. With respect to environmental law, Ophuls bluntly asserts: “Legislation is no substitute for morality.”<sup>115</sup> On the other hand, Ophuls believes that natural law can be a moral guide.

Ophuls takes his definition of natural law from Cicero: “True law is right reason in agreement with Nature.”<sup>116</sup> For a long time, though, as Ophuls explains, this definition presented a moral vacuum for “natural law.” Enlightenment philosophers concluded that what is in “agreement with Nature” should be determined by science, not by abstract reasoning. Until recently, however, science’s view of nature has been instrumental and thus without moral significance. Ophuls argues that scientific understanding has now grown beyond a mechanical view of the world. Chaos theory, uncertainty principles, the ecologists’ reconception of the organic character of life, and new neurological understandings of perception and thought shape a post-modern scientific view that deeply appreciates nature as a system with its own intricate relationships and limits that must be respected. Man is not above or separate from nature; that, Ophuls asserts (quoting Albert Einstein), is “a kind of optical delusion of [man’s] consciousness.” So we must (quoting Einstein again) “widen[ ] our circle of compassion to embrace all living creatures and the whole of nature in its beauty.”<sup>117</sup>

His perspective on contemporary science leads Ophuls to an intermediate conclusion: “By discovering and appreci-

ating the moral order implicit within the natural world, we can derive ethical principles that will serve as a basis for polity and society in the twenty-first century and beyond.”<sup>118</sup> He builds his argument for this proposition around three Greek terms: *therapeia*, *paideia*, and *politeia*. For Ophuls, *therapeia* means an individual self-awareness that must underlie and motivate behavior. He appeals to Carl Jung and others to argue that there is a universal human psyche deeply imbued with kinship to our ancient biological roots in the natural world. The second element, *paideia*, “is about . . . what epistemology, what way of thinking, what worldview, what myth or metaphor will foster a sane, humane, and ecologically viable way of life over the centuries to come?”<sup>119</sup> Ophuls’ *paideia* is distilled in a straightforward but open-ended proposition: “Our thinking must become as complex as we now know nature to be.” He then quotes Donella Meadows: “The world is a complex, interconnected, finite, ecological-social-psychological-economic system. We treat it as if it were not, as if it were divisible, separable, simple, and infinite. Our persistent, intractable, global problems arise directly from this mismatch.”<sup>120</sup> From his *therapeia* and *paideia*, Ophuls derives a *politeia* that embraces Platonic idealism in its Athenian form as reflected in Jean Jacques Rousseau and Thomas Jefferson—a society of small-scale self-governing communities.

What lessons can environmental lawyers draw from Ophuls’ analysis? Ophuls marshals considerable evidence for the proposition that humans have an instinctive psychic orientation to the natural world, reflected in religions, arts, mythology, and literature everywhere. If he is also correct in suggesting that the anomie and anxiety pervasive in the modern world are rooted in our alienation from this psychic grounding in nature, then an important element of social and cultural transformation would be to reinductate into our urbanized, industrialized societies—that is, into people with little direct experience of nature—an attitude of deep respect for the natural order. For environmental law specifically, that task could, for example, begin with training lawyers in the natural and cognitive sciences in order to orient them to fundamental truths in the sciences that lie outside of, but must be accommodated by, the abstract logic of legal theory and analysis. Even better would be for legal training to include some personal experience living and working in a natural setting.

Ophuls’ political agenda of inculcating sustainability (which coincides with the argument of this Article) implies a reconfiguration of the social and political systems that drive today’s unsustainable patterns, to which the prevailing conception and practice of law is handmaiden. But on social sustainability grounds, I disavow Ophuls’ appeal to elitism, and I find his call for return to local governance by implicitly self-sustaining communities politically implausible in today’s highly urbanized world of more than seven

114. WILLIAM OPHULS, *PLATO'S REVENGE: POLITICS IN THE AGE OF ECOLOGY* (2011).

115. *Id.* at 13 (with support from Aristotle).

116. *Id.* at 20.

117. *Id.* at 68.

118. *Id.* at 22.

119. *Id.* at 97-98.

120. *Id.* at 113. Meadows was one of the co-authors of the 1972 Club of Rome report, *The Limits to Growth*.

billion people. Such a bucolic conception of the future is unlikely to engage society's best scientific and technological skills and innovative spirit to do the urgent work of ameliorating environmental damage and then sustaining, if not repairing, our damaged ecological systems.

Although the late-18th century political prescription Ophuls offers seems romantic and naïve, there is nevertheless substantial merit in his argument that the post-Rousseau, post-Jefferson neoliberal order dominating the world today is at the root of the ecological deterioration that environmental law aspires to arrest and reverse. His argument recalls the spaceman metaphor in the 1966 essay by the economist Kenneth Boulding:

[I]n the spaceman economy, throughput is by no means a desideratum, and is indeed to be regarded as something to be minimized rather than maximized. The essential measure of the success of the economy is not production and consumption at all, but the nature, extent, quality, and complexity of the total capital stock, including in this the state of the human bodies and minds included in the system. In the spaceman economy, what we are primarily concerned with is stock maintenance, and any technology change which results in the maintenance of a given total stock with less throughput (that is, less production and consumption) is clearly a gain. This idea that both production and consumption are bad things rather than good things is very strange to economists, who have been obsessed with the income-flow concepts to the exclusion, almost, of capital-stock concepts.<sup>121</sup>

Thus, Ophuls partakes of a long-standing and certainly forceful school of thought that the present course of the world economy is fundamentally incompatible with ecological sustainability, and perhaps social and psychological sustainability as well. Implicitly, if not explicitly, the highest aspirations of environmental law are grounded in something close to this worldview. Environmental lawyers should reimagine their calling to embrace the endeavor to bring about deep changes in attitudes and socioeconomic systems. Only through such transformational efforts can they help make environmental law more effective.

## 2. Platonic Ethics and Virtue

Melissa Lane, also a political scientist, is the other recent writer to invoke Plato as a guide to a revolution in society's relationship to the environment. Her book, *Eco-Republic: What the Ancients Can Teach Us about Ethics, Virtue, and Sustainable Living*,<sup>122</sup> constructs a philosophically meticulous argument grounded in close analysis of Plato's *Republic*.

At an early stage of her argument, she observes that the law-and-economics doctrine of "efficient breach" of contracts foresees and even countenances behavior that is con-

trary to formal law but is punished, if at all, only after the fact. In the environmental context, she argues, the fallacy of "efficient breach" is that it can result in uncompensable environmental harms:

Thus it is crucial to deter environmental harms from being committed, and not just to rest content with being able to sanction them after the fact. Laws and regulations certainly play a role in effecting such deterrence: many people and corporations choose to be law-abiding. But a fuller and wider compliance, complying with the spirit as well as the letter of the law, rests on adoption of an ethical outlook, embedded in an ethos of sustainability. In such an outlook, the free choice of options to follow is not constrained only by the threat of legal sanctions. It is informed from within by an orientation towards the value of sustainability in one's personal choices, even those which the law leaves open.<sup>123</sup>

In a footnote to this text, Lane explains the essence of her argument:

My primary claim is . . . that an ethos shaping individual choice according to the principles of sustainability is necessary in order for sustainability to be realized. However, I will also argue [in Part II of the book] that such an ethos, and the political imagination which nourishes it, is necessary for the psychosocial sustaining, as it were, of ecological sustainability. Combined, the claim is that the ethos as reshaped by the imagination is necessary both for achieving and for sustaining a more ecologically sustainable society.<sup>124</sup>

Lane uses a definition of "ethos" by Gerald Cohen, namely, "the 'structure of response lodged in the motivations that inform everyday life.'"<sup>125</sup> In this construct, norms are constituent elements that, taken together, make up an ethos. More is required than changes in norms to achieve the "systemic and integrated" social change that Lane is seeking. In particular, she invokes "imagination" to activate ethos. That is, the ethos guides behavior only by engaging "background beliefs, images, and narratives which are more or less explicit and more or less common. Such beliefs, images, and narratives are in part the product of imaginative modes of perception, and they in turn structure habitual acts and practices . . ."<sup>126</sup> For Lane, imaginative perceptions are not restricted to political institutions, "but range more widely to encompass the relationship between the individual and the political community and the units of value and meaning which are in play in that relationship."<sup>127</sup> This is where Lane's deep understanding of and appeal to Plato become clear. Plato, as she explains at length, was deeply concerned with the relation-

121. Kenneth E. Boulding, *The Economics of the Coming Spaceship Earth* (1966). A reliable version is available at [http://www.eoearth.org/article/The\\_Economics\\_of\\_the\\_Coming\\_Spaceship\\_Earth\\_%28historical%29](http://www.eoearth.org/article/The_Economics_of_the_Coming_Spaceship_Earth_%28historical%29).

122. MELISSA LANE, *ECO-REPUBLIC: WHAT THE ANCIENTS CAN TEACH US ABOUT ETHICS, VIRTUE, AND SUSTAINABLE LIVING* (2012).

123. *Id.* at 72.

124. *Id.* at 205, endnote 44.

125. *Id.* at 9 (quoting GERALD A. COHEN, *RESCUING JUSTICE AND EQUALITY* (2008)).

126. *Id.* at 10.

127. *Id.* at 10-11.

ships between the individual and the political community, between and “the soul” and “the city.”

In looking to Plato for guidance on social action prescriptions for pursuit of “sustainability” (her reference point), Lane begins with a diagnosis of certain problems in our current situation based on Greek philosophy. She applies the Greek term *pleonexia*, which she defines as “overreaching greed,” to the excesses of capitalist pursuit of wealth. She then calls on more modern philosophers to urge us to overcome the social and political inertia, which she finds pervasive in modern societies, stemming from the sense (profoundly mistaken, in her view) that individual action in response to complex and large-scale problems has only negligible effects.

As a general guide to how we might respond to the current situation individually and collectively, Lane then delves deeply into Plato’s conception of “the good” and its essence as an ideal and unvarying “Form of the Good” derived from knowledge and reason. While distancing herself from the Platonic idea that only the select few can fully understand the Form of the Good, she takes the core of Plato’s analysis to construct a more colloquial idea of “the good.” She emphasizes two dimensions: time and growth. About time, she concludes: “The question of legacy brings the Platonic concern for wholeness into the domain of time. It is a challenge to reimagine the temporal horizon of our action, from the short-term rewards and responsibilities to the pressing concern of what we will leave behind.”<sup>128</sup> As for growth, which she identifies as an intrinsic condition of life, she suggests that Plato understood that growth must be meaningful or intelligible, so “the Platonic message is that healthy growth is the only growth to which it is sane to aspire.”<sup>129</sup>

From these Platonic premises, Lane constructs a framework for action more modest but more persuasive than Ophuls. She poses the following rhetorical question: “[W]hat are the ethics of responsible initiative in a society as yet untransformed, still in the throes of contestation between norms and values old and new?” She then offers this overall answer to that question:

Platonic guidance would suggest that the responsibility is to reorient one’s understanding of existing social roles in light of one’s understanding of the whole, of what the overall good requires (and . . . specifically the element of the good which consists in sustainability). This in turn suggests two principal tasks in the domain in which one acts: to press towards an understanding of the whole, and to press towards action in relation to it.<sup>130</sup>

On understanding the whole, Lane prescribes that we reaffirm and institutionalize a broad and long-term perspective on the consequences of individual and organizational action. This may seem a familiar prescription; environmental impact assessment was launched more than

40 years ago on just such premises. But the advice is still very much needed. In November 2012, the U.S. National Research Council recommended that the intelligence agencies of the U.S. government incorporate the social effects of climate change into their assessments of national security, something they have not yet done.<sup>131</sup> Lane goes further, however. Striving for understanding the whole does not end with environmental assessment, but becomes a fundamental criterion for institutional design and systematic substantive goal-setting. For corporations at least, she proposes one means to “press towards action in relation to” those goals: public reporting by corporations and other organizations on the environmental consequences of their activities, specifically including reasoned explanations for the organization’s response. Such a recommendation dovetails with notions of reflexive environmental law described in Part II above, but Lane gives reflexivity added robustness by proposing that organizations explain their thinking publicly. She specifically urges reporting that goes beyond citing mere improvements over past practices and instead shows steps toward achieving substantive sustainability goals that would be determined through systemic analysis of the “total magnitude of the task that needs to be achieved.”<sup>132</sup> Environmental lawyers could be strong advocates for such a reform, which would give new vitality and importance to environmental assessment and environmental self-reporting mechanisms.

Lane concludes by identifying “three principal planks in the Platonic project”: political agitation for transformation; philosophy in its literal sense as loving wisdom; and rule by an enlightened elite. She embraces the first two as guidance for meeting the sustainability challenge through “political art and philosophical insight”<sup>133</sup> about the scientific dimensions of the sustainability challenge and the ethical demands it presents. But she rejects Plato’s elite leadership model in favor of a bottom-up project through which motivated individuals initiate the needed social and ethical revolution. Environmental lawyers should be the first to sign up for Lane’s project to initiate social and ethical change.

## IV. Elements of Reimagined Environmental Law

### A. Introduction

To paraphrase Lane, the premise of this Article is that environmental lawyers have a responsibility to reorient their understanding of their existing social role in light of their understanding of the whole of “the good” of sustaining ecosystems and societies. The traditional enterprise of environmental law has been to prescribe rights and responsibilities through formal legal processes of lawmak-

128. *Id.* at 153.

129. *Id.* at 154.

130. *Id.* at 170-71.

131. National Research Council, *Climate and Social Stress: Implications for Security Analysis* (J. Steinbruner et al. eds., 2012).

132. LANE, *supra* note 122, at 176-77.

133. *Id.* at 182-83.



ing and adjudication, combined with both prosecutorial and market means to enforce behavioral expectations and the redesign of social decisionmaking procedures to give more effective voice to environmental values. The preceding parts have argued that the environmental law should recognize the inadequacy of this formulation, which operates on implementation of or compliance with established law, when our desired and more complex goal is to achieve social-ecological resilience throughout human society and the ecosphere. As Ophuls, Lane, Speth, the Earth Charter and many others have argued, this goal can be achieved only if society profoundly reshapes ethics and ethos. Environmental law should not stand on the sidelines in this reshaping process. On the contrary, it should be at the forefront of reshaping attitudes and practices, because its own future depends on the new ethics and ethos. The question for this part is just how a reimagined environmental law for the 21st century might contribute to this process of transformation. What new elements and new approaches would deepen environmental law's social role?

The law as an active shaper of social values and social systems should not be thought of as a radical departure from law's traditional roles. On the contrary, the expansive reconception of the law proposed here springs from the law's deep historical roots as a field of learning and theory. Early Greek and Roman law had rich traditions of norm-creation and institution-building under an overarching concept of natural law, as Ophuls recognized in citing Cicero. In the Middle Ages, people trained in the law served the Church, secular sovereigns, commercial guilds and traders, and other key social organizations as counselors and as theoreticians, applying their particular analytical skills to framing the rights and responsibilities and the interactions of these different elements of society, often devising means to avoid or resolve conflicts outside the formal systems of law in the narrow sense. This long tradition of law has been remolded only in the last two centuries when modern mass society and depersonalized economic relationships impelled practitioners of law to become ever more specialized. It is time for the lawyers to reclaim their birthright as leading formulators and expositors of values and aspirations and architects of institutions securing the welfare of society.

## B. *Environmental Law and Social Valuation*

To begin with a law-oriented analysis of a reimagined environmental law, recall Teubner's idea of reflexive law, a mode self-regulation founded on Niklas Luhmann's notion of *autopoiesis*. The core idea behind reflexive law is that the larger society should define broad goals for those acting on the environment, but that the specific behavioral changes to meet those goals should be left to the individual or enterprise to work out through constant, iterative reflection. Reflexive law fundamentally *assumes* that an internal value structure for determining appropriate behavioral choices is already in place or is in the process of unfolding.

For economic producers, however, the modalities of modern financial markets and globalized production enforce a short-term profit-value system that often conflicts with the ecological demands of long-term sustainability and resilience. Against this social backdrop, reflexive law and self-regulation seem particularly ill-suited to post-modern challenges such as climate change mitigation, for which the decades between investment in reducing emissions and realizing the benefit of a more stable climate cannot be reconciled with the short-term profit-and-loss accounting and the time-value of money. The only way out of this dilemma is to restructure the underlying value system to engender universal commitment to long-term tasks, and make institutional changes in law and governance that give meaningful value today to benefits accruing to future generations.

Such value transformation, and law's role in bringing it about, is not inconceivable. When modern environmental law blossomed in the 1960s, it was nourished by a rapidly growing social awareness that pollution from industrial enterprises, reckless resource exploitation, unexamined environmental risks latent in manufactured chemicals, and ecologically thoughtless development projects were causing significant harm to human health and highly valued natural systems. Environmental law was seen as a key tool through which to bring the specific perpetrators of these harms under social control. But legislation also expressed high ambitions: to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters"<sup>134</sup>; to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population"<sup>135</sup>; or, at the international level, to "prevent dangerous anthropogenic interference with the climate system."<sup>136</sup> Lawmakers set these lofty goals because they were essential statements of social purpose to inspire popular support and to galvanize action. They rightly resisted arguments to compromise on the goals in the name of feasibility or some other idea of "reality." Law, in the form of legislation, was thus used deliberately not merely to define enforceable codes of conduct, but to stir public ambition and guide strategic choices even while the declared goals themselves lay beyond immediate reach.

In the Platonic terminology of Ophuls and Lane, we can say that such environmental law began by articulating views of "the good" embodied in instinctive and widely shared conceptions of man's proper relationship with the natural world. In the intervening decades, however, environmental law, in theory as well as in practice, became enmeshed in the intricate details of incremental and "efficient" steps toward those lofty goals. By the 1980s and 1990s, much environmental policy debate devolved into arcane, technocratic arguments over methodologies for assessing health risks and purporting to measure the costs and benefits of particular decisions. As risk assessment and cost-benefit

134. CWA §101(a), 33 U.S.C. §1251(a).

135. CAA §101(b)(1), 42 U.S.C. §7401(b)(1).

136. U.N. Framework Convention on Climate Change, art. 2.

analysis became legally determinative, “the good” was no longer defined by an ideal health or environmental condition, but by whether any specific decision would yield a monetized net social benefit. For better or worse, environmental law scholarship also began to focus on these details of regulatory design and implementation, with only a rear-guard of principled argument that the methodologies for these social benefit analyses were so seriously flawed that they should not be used to guide decisions. This instrumental mind-set has become so pervasive that environmental lawyers themselves have criticized more visionary overarching statements about the “the good,” such as “sustainable development,” for being too vague and too socially contested to serve as valid benchmarks for government or private decisions.<sup>137</sup>

Douglas Kysar has performed the valuable scholarly service of constructing a philosophically grounded critique of risk-benefit and cost-benefit decisionmaking, leading back to the larger questions of how societies should shape analysis of goals to bring social and ethical valuation back to the center of environmental law- and policymaking.<sup>138</sup> The title of his book, *Regulating From Nowhere*, encapsulates his core argument that the dominant environmental decisionmaking paradigms of recent years are morally vacuous, giving us “nowhere” to start and nowhere to go. From a philosophical and ethical perspective, Kysar particularly emphasizes the deep challenge of how to bring the responsibility that we have to future generations into full consideration. This is the very question at the heart of “sustainable development” or Lane’s “sustainability” and coincides with her argument that the time perspective of legacy is fundamental to a Platonic view of “the good” to which we should aspire. Their plea, and mine, is that environmental law needs to return to that idealistic mind-set, and to focus its effort on how to make long-term sustainability thinking the dominant normative framework for choices among possible courses of action.

The challenge, of course, is how to translate such idealism into action. To do this, it is essential, as Ophuls and Lane urge, for environmental lawyers to reach outside the institutional boundaries of modern legal systems to instigate and guide deep social transformation. Even the best of traditional legal scholarship struggles valiantly with the gap between idealized legal outcomes and the current weakness of the underpinnings of ecological consciousness, but seems uncertain about how to do more. For example, Mary Christina Wood recently offered an ambitious proposal to make a robust and modernized version of the public trust doctrine into a “transformative framework” for environmental governance.<sup>139</sup> The public trust doctrine, however, necessarily applies only in cases where governments are

trustees and depends on a judge’s appraisal of whether the challenged government behavior violates the public’s inchoate interest in publicly owned resources, which is clearly a contingent and value-laden question. Professor Wood frankly recognizes these limitations: “To be at all effective, any legal crusade must be part of an overall cultural and economic movement that spans many levels and human institutions. Legal principles that do not resonate with culturally and spiritually rooted human values will be short-lived and destructive.”<sup>140</sup>

The same can be said about other creative legal concepts such as a constitutional or human “right to [a safe or healthy] environment.” On the one hand, asserting such a right is a valuable starting point for social and political discussion about just what such a right entails or how it should influence the outcome of a legal dispute. On the other hand, without such a social and ethical context developed through Habermasian discursive processes in the whole society, the declaration of a right to the environment softens to rhetorical window-dressing that fails to pressure governments or private parties to change behavior. The casual dismissal of the Inuit human rights claim based on climate change by the Inter-American Commission on Human Rights<sup>141</sup> reveals the instinctive reluctance of legal decisionmakers to engage with environmental issues. An abstract “right” gives them no meaningful guidance about how to evaluate competing arguments in their legal decisions, and their traditional legal training and experience apparently leaves them unequipped to undertake the unavoidable scientific and technical evaluation on their own.<sup>142</sup>

On the societal level, the analyses by both Ophuls and Lane have application for a reimagination of *autopoiesis* and reflexive law. Reflexive law calls for systematic and iterative thinking about what one is doing and how to adjust one’s behavior in light of social values. For individuals as well as for enterprises, however, mere reflection is necessary, but not sufficient. Choosing environmentally preferred courses of action requires access to reliable information about cause and effect and a meaningful opportunity to implement the desired change in behavior, which may require financial investment or other adjustment to one’s circumstances. The law can make a real contribution here in at least two respects. First, it can help to create institutional mechanisms for accumulating high-quality information, validating it, and making it available and accessible to citizens.

140. *Id.* at 207-08.

141. See *supra* note 95 and accompanying text.

142. The same criticism applies to venturesome but still conventionally legal ideas offered in papers by Klaus Bosselmann, Nicholas Robinson, and others at the conference “Rule of Law for Nature” held in Oslo May 9-11, 2012, collected in HANS CHRISTIAN BUGGE & CHRISTINA VOIGT, *RULE OF LAW FOR NATURE: BASIC ISSUES AND NEW DEVELOPMENTS IN ENVIRONMENTAL LAW* (2013). I have great respect and admiration for these senior environmental law scholars and value their life-long contributions to the enhancement of environmental law. I am happy to count many of them as friends. I do not in any way discredit their ideas or their scholarly acumen. I am simply arguing that environmental law needs to reach deeper and farther into norm-creation and ethos-building outside the conventional boundaries of the law.

137. E.g., Daniel Esty, *A Term’s Limits*, FOREIGN POL’Y, Sept. 1, 2001, available at [http://www.foreignpolicy.com/articles/2001/09/01/a\\_terms\\_limits](http://www.foreignpolicy.com/articles/2001/09/01/a_terms_limits) (asserting that sustainable development has become a “buzzword largely devoid of content”).

138. KYSAR, *supra* note 97.

139. Mary Christina Wood, “You Can’t Negotiate With a Beetle”: *Environmental Law for a New Ecological Age*, 50 NAT. RESOURCES J. 167 (2010).

As noted earlier, information-based environmental law initiatives have already been deployed with considerable success. But they come with a caveat. As Peter Sand argued, they need to be protected and reinforced with strong legal constraints on private and public concealment of inconvenient information and rigorous transparency about the sources of the information provided.<sup>143</sup> Many existing information-based environmental strategies remain voluntary, whereas transformation of values can only be effective if all are required to report and self-evaluate. As noted in Part III.B.2. above, Lane offers a detailed justification for explicitly going beyond procedural and informational compliance to require public explanations for decisions about how the data will or will not affect substantive environmental behavior.<sup>144</sup>

A more often-used alternative to reflexive law has been market-based regulation systems to transform environmental performance into monetized economic value. But by definition, the market can only reflect, not shape, society's judgment about how much environmental protection it is willing to pay for. This leaves market-based regulation as an instrumental technique that elides unresolved social conflicts over environmental values. At their worst, market-based systems play directly into financial markets that operate either free of the constraints of environmental values or commodify and monetize social objective and moral values. When large sums of money are at stake, overwhelming incentives arise for private actors to strive to include or exclude themselves from the system or to manipulate the market for strictly financial, rather than environmental, gain. The tribulations of the EU's climate-motivated emissions trading scheme are testimony to the many ways in which the climate objectives of the scheme have been undermined, even while many market participants have enriched themselves.<sup>145</sup> The lesson is clear: Environmental law must grapple with more fundamental environmental-value change leading to more fundamental changes in the economic order, just as Leopold foresaw.

Another contribution from the law could be to help devise measures or systems to assure in practical affairs the availability of the means to change behavior in the desired ways. In easier cases, this may involve, for example, systematic and internationally coordinated financing mechanisms to facilitate investment in new technologies, as in programs assisting with the wider diffusion of renewable energy systems, specifically including communities still lacking any access to electricity. More challenging will be alterations to underlying social systems and physical infrastructure, as will be necessary, for example, to enable meaningful and convenient alternatives for personal

transportation (one current example is for wide availability of recharging stations for electric vehicles) or for integrated and intelligent grid systems that can manage 100% renewable electricity including distributed generation. Lawyers have important roles to play in redesigning business and government decisionmaking processes, financial mechanisms, and systems for administration and control of investments. In my reimagination, these tasks are an important component of environmental law because they help to restructure economic decision frameworks along sustainable development lines.

One clear recommendation that emerges from this discussion is for environmental lawyers to engage the society at large in the conversation. Can environmental law professors, for example, not break the mold of self-referential scholarly articles citing each other's work to publish instead more interdisciplinary scholarship that brings ideas and analysis to a wider readership?<sup>146</sup> It is the public that needs to be "educated" and invited to think about and debate these questions, to think long and hard about the environmental "good" for the whole society. One place to start would be to make public communication part of the specialized environmental law curriculum offered by many law schools. For law scholars, initiatives to address the public should be encouraged by reform of academic incentive systems to foster such public scholarship. If environmental lawyers feel personally reticent to engage actively in a broader discourse with society, perhaps they can enlist the assistance of others with the talent for publicity and political activism, or serve as advisers or informants to those already engaged in environmental social activism. Many environmental lawyers are already so engaged to a greater or lesser degree; the appeal here is for such engagement to become the norm for environmental lawyers in general.

Playing more to the usual strengths of people trained in the law, environmental lawyers could do more to reach out to those who work in other areas of the law, and search for ways to deploy or reshape their doctrines to shift the balance of legal power from short-term thinking to the long-term perspective, and to hold accountable those whose actions, even in small ways, contribute to more diffuse but very serious environmental problems such as climate change. This challenge is formidable. Most nations continue to believe in the magic of perpetual economic growth, and many highly talented lawyers are employed privately and publicly to pursue this goal. At the global level, the developing countries, exploited or marginalized for so many decades, are understandably reluctant to give up the hope that economic growth will come to lift their people out of poverty. At Rio+20, it was developing country governments who argued against a strong reaffirmation in the final conference document of Rio Principle 8, the principle seeking movement away from "unsustainable patterns of production and consumption." Lane's appeal for deep thinking

143. Peter Sand, *Information Disclosure as an Instrument of Environmental Governance*, 63 HEIDELBERG J. INT'L L. 487, at 499-502 (2003).

144. Corporate social responsibility reporting is moving in this direction, but still remains too open-ended to meet Lane's standards.

145. A U.K. environmental nongovernmental organization, Sandbag, has documented many of the financial manipulations that have undermined the emissions-reducing goals of the European EYS. See, e.g., Sandbag's fifth annual report, *Drifting Toward Disaster?: The EU ETS Adrift in Europe's Climate Efforts* (June, 2013), available at <http://www.sandbag.org.uk/reports/>.

146. To be self-critical, this Article itself is written mostly for academic or professional colleagues. Perhaps, I should also abbreviate it and recast it for the general reader.



about “the good” for the world as a whole and about our legacy seems, to the political leaders of the world’s poor, hopelessly elitist and abstract. The developed and rapidly industrializing nations must certainly acknowledge, as a first step toward restoring a sense of community among all nations, that it is their own modes of consumption and production that are especially unsustainable and in need of fundamental reform.

There are more than a few excellent centers of environmental law analysis and policy development around the world, and environmental law organizations dedicated to social and political change, but the numbers of lawyers so engaged remains, in the end, very small compared to lawyers in other lines of work. Even after 40 years, environmental law is, in practice as well as in the imagination of others, a specialty of interest to a few rather than a matter of central importance to the law and society in general. Environmental law professors rightly worry about the scant career opportunities for all but their most accomplished students.

So, we come back to the root, the social values or norms themselves. As described above, the broad agreement about the need for changes in values is absolutely clear, and the general objective of affirming care for the environment with a perspective to the future is also a common theme. But these and other statements become very general, indeed vague, about the specific content of the values that would advance sustainable development around the world. What is needed, but has not yet occurred for world society as a whole, is a robust debate about specific norms. As Antje Wiener and Uwe Puetter put it: “First, norms entail an inherently contested quality and therefore acquire meaning in relation to the specific contexts in which they are enacted. Second, norm contestation is a necessary component in raising the level of acceptance of norms.”<sup>147</sup>

Environmental lawyers have been in the forefront of drafting declarations of principles for international environmental law and sustainable development. Indeed, much of that earlier work on principles and theories for sustainable development has direct application in the norm-formation endeavor. The world does not need new ideas or new principles; the difficult work is to bring the existing ideas and principles down from the realms of rhetorical declarations adopted by international conferences to the level of ordinary citizens, to embed those norms into the choices people make every day in their work and their personal lives. As the Earth Charter puts it:

To realize these aspirations, we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities. We are at once citizens of different nations and of one world in which the local and global are linked. Everyone shares responsibility for the present and future well-being of the human family and the larger living world.”

How do we get people to embrace those thoughts and act accordingly? As noted repeatedly in this Article, one important realm of human affairs in which sustainability norms have yet to be internalized is in economic life—in every economic activity from farming to finance. This confronts us with a question posed by Erik Swyngedouw: if transformative change is needed to protect the environment, do law/politics need to address the fundamental socioeconomic structures that have led us to the current situation? It is not sufficiently transformative to try to change the practices of businesses and communities and individuals who are driven by “economic factors” that create incentives for environmentally unsustainable behavior. Some recent work on corporate social responsibility, or “irresponsibility,” further underscores the challenge.<sup>148</sup> Even Speth, who acknowledged that the transitions he proposed did not “fundamentally threaten the prevailing economic and international systems,” understood that “[d]eeper changes may be necessary.” That, he said, will come about only as “the result of a change in public values and aspirations.”<sup>149</sup>

It is often argued that environmental protection is bad for the economy. Now, it may be time to turn that argument on its head, to argue openly that economic growth is bad for the environment. If environmental lawyers are to be part of that argument, they will need the help of their lawyer colleagues with highly developed expertise in business matters of all kinds, from simple writing of contracts to the elaborate structuring of the instruments of high finance. If the transformation of economic systems is to happen, truly monumental changes will be needed around the world in business practices and their regulation, where the analytical skills and drafting expertise of lawyers will be essential. It could be left to others, such as political and social activists, writers, and other shapers of public opinion, to inspire the social drive for the necessary changes. Even there, lawyers can play an important supporting role in counseling activism and in designing and implementing appropriate institutional changes.

### C. Legal Education

The central question of this Article is how to inculcate deep respect for nature into the ways of thinking for the 21st century. Much of that project lies outside the ambit of law, even broadly conceived, but for lawyers as members of society, with a received status as opinion leaders, respect for nature should become part of their thinking and part of their work, too. To serve this social function, lawyers will need training that goes well beyond the traditional effort to teach law students doctrine and legal history and modes of legal analysis.

148. Beate Sjöfjell, *Why Law Matters: Corporate Social Irresponsibility and the Futility of Voluntary Climate Change Mitigation*, Nordic & European Company Law LSN Research Paper Series No. 10-26, available at <http://ssrn.com/abstract=1774759>.

149. Speth, *supra* note 98, at 201.

147. Wiener & Puetter, *supra* note 81, at 7.

With the challenge of sustainability at the top of the world agenda, one place to start is to make some training in the natural sciences and in the scientific method a required element of legal education. The need for scientifically literate lawyers with respect to environmental law is exemplified, negatively, by Supreme Court Justice Antonin Scalia. The case of *Massachusetts v. EPA*<sup>150</sup> presented the Court with the question whether EPA was required by the Clean Air Act<sup>151</sup> to determine officially whether carbon dioxide should be identified for regulation as a pollutant affecting health and welfare. During oral argument of the case, Justice Scalia had the following colloquy with James Milkey, the Assistant Attorney General for Massachusetts, who was arguing for EPA to assert its regulatory authority:

JUSTICE SCALIA: . . . To be sure, carbon dioxide is a pollutant, and it can be an air pollutant. . . . But I always thought that an air pollutant was something different from a stratospheric pollutant, and your claim here is not that the pollution of what we normally call “air” is endangering health. . . . [Y]our assertion is that after the pollutant leaves the air and goes up into the stratosphere it is contributing to global warming.

MR. MILKEY: Respectfully, Your Honor, it is not the stratosphere. It’s the troposphere.

JUSTICE SCALIA: Troposphere, whatever. I told you before I’m not a scientist. [Laughter] That’s why I don’t want to have to deal with global warming, to tell you the truth.<sup>152</sup>

Not only did Justice Scalia lightly dismiss his ignorance about the legally critical difference between the lower and upper levels of the atmosphere, he expressly declared his resentment at being obliged to consider the central scientific elements of the case he would be deciding. Justice Scalia’s lack of understanding about science, his inability to connect science with law, and his disdainful attitude about science were foretold years earlier in his majority opinion in *Lujan v. Defenders of Wildlife*, where he vividly demonstrated his complete ignorance of and disdain for ecosystem science, which has contributed to the Court’s continuing failure to appreciate the relevance of that science to issues coming before the Court. Justice Scalia wrote:

[Defenders of Wildlife] propose a series of novel standing theories. The first, inelegantly styled “ecosystem nexus,” proposes that any person who uses any part of a “contiguous ecosystem” adversely affected by a funded activity has standing even if the activity is located a great distance away. This approach, as the Court of Appeals correctly observed, is inconsistent with our opinion in *National Wildlife Federation*, which held that a plaintiff claiming injury from environmental damage must use the area

affected by the challenged activity and not an area roughly “in the vicinity” of it. It makes no difference that the general purpose section of the ESA [Endangered Species Act] states that the Act was intended in part “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved,” 16 U.S.C. §1531(b). To say that the Act protects ecosystems is not to say that the Act creates (if it were possible) rights of action in persons who have not been injured in fact, that is, persons who use portions of an ecosystem not perceptibly affected by the unlawful action in question.<sup>153</sup>

The grip of the tradition-bound legal thinking and scientific illiteracy that Justice Scalia’s analysis embodies will not relax easily. Therefore, it seems essential to the enterprise of a reimagined environmental law that all lawyers, many of whom will have influence over environmentally significant decisions in many different contexts, should have at least a rudimentary understanding of scientific basics and the scientific method. Of course, many environmental lawyers have some formal scientific training or have acquired through their professional work a deep appreciation for science and the scientific method. The proposal here is to ensure that all lawyers have at least a fundamental grounding in science before they are licensed to undertake professional work.

But knowing some basic science and the methodology of scientific inquiry is only a start. An important second step is that lawyers should be trained to appreciate how scientific understandings of the world should influence the choices that we make in individual, business, and government decisions. A world of lawyers with this second level of training would improve the chances that the law will evolve in the ways that Ophuls and Lane are suggesting. Some might object that training about the application of science to law would be too subjective; after all, scientists themselves often disagree about scientific questions at the boundaries of their learning, and even more so about the policy implications of their work. I offer two arguments in response. First, as to the role of law in society, legal training has for many years sought to develop in future lawyers not simply the technical capacity to analyze complex issues, but a core shared understanding of justice, equity, the impartiality of law (at least that it strives not to be influenced by the social status or selfish interests of persons or groups), and the elements of professional responsibility. Second, lawyers have for many centuries also played an important role in helping society shape its goals and preferences. This is true not only with respect to procedures for decisionmaking to assure fairness and the observance of democratic principles, but also with respect to the desired substantive outcome, whether that come through legislation or some other approach. In that spirit, a reimagined environmental law should seek, insofar as possible, to imbue all citizen-lawyers with

150. 549 U.S. 497, 37 ELR 20075 (2007).

151. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.

152. Official transcript of the oral argument in *Massachusetts v. Environmental Protection Agency*, Nov. 29, 2006, at 22-23, available at [http://www.supremecourt.gov/oral\\_arguments/argument\\_transcripts/05-1120.pdf](http://www.supremecourt.gov/oral_arguments/argument_transcripts/05-1120.pdf).

153. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 565-66, 22 ELR 20913 (1992).

a full appreciation that the sustainability of ecosystems of every scale and description should become one of the foundational principles of the law everywhere. The scientific training I am recommending would begin with the university training of lawyers, but it should be maintained through all stages of legal training and the certification or licensing of lawyers. For example, a licensing examination should include a question involving environmental issues so that lawyers would be tested on their understanding of how the sustainability-relevant sciences can or should be applied to guide legal decisions.

This line of thinking could usefully be applied more broadly to call for an interdisciplinary approach to legal education. For the United States, where legal education is customarily three years beyond the level of a bachelor's degree and where there is some discussion of reducing that to two years, introducing an interdisciplinary element would give third-year law students a requirement for at least one semester course in a field other than law. The discussion above, for example, referred to the importance of communications, but many other fields of study could beneficially broaden horizons about the connections between law and society at large.

## V. Conclusion

Social value transformations can happen quickly once ideas catch hold. Witness the political revolutions of the late 18th century or the movement to abolish slavery in the first half of the 19th century. The sense grows that the world may be on the cusp of the necessary economic as well as environmental transformation, even as our environmental crisis deepens. It is no longer just moral leaders or academic thinkers who are urgently calling for a new ethos. Political leaders from different countries have been equally if not more urgent and emphatic. In January 2012, the U.N. Secretary-General's High-Level Panel on Global Sustainability, an eminent group of former political and social leaders, declared: "We need to change dramatically, beginning with how we think about our relationship to each other, to future generations, and to the eco-systems that support us."<sup>154</sup>

This Article springs from the conviction that the traditional modes of advocacy, counseling, governmental service, and scholarly analysis by environmental lawyers, valuable as they continue to be, are no longer sufficient to the environmental challenges before us as a world society. The legislation and regulation of today, including international treaties and innovative market- and information-based approaches, have not fundamentally challenged the dominant neoliberal economic incentives for behavior that are now widely recognized to be imminently threatening key elements of the earth's ecosystems and, in turn,

human welfare. As one recent conference declaration states: "As consumption accelerates everywhere and world population rises, it is no longer sufficient to work towards a distant ideal of sustainable development. Global sustainability must become a foundation of society. It can and must be part of the bedrock of nation states and the fabric of societies."<sup>155</sup>

Calling on several different perspectives, including sociology of law and the quest for new philosophical groundings rooted in the Platonic tradition, this Article's argument has been twofold. First, the world needs to restructure its moral and social values to make environmental consequences, at long last, a central consideration for behavior. Second, environmental lawyers themselves should engage directly in helping to build the new normative foundations upon which a reimagined environmental law must stand if it is to contribute effectively in steering human behavior. Part IV offered some preliminary ideas about how this reimagined environmental law might function and how the education and training of lawyers could be reformed to equip the practitioners of reimagined environmental law to fulfill this broader social responsibility. I invite others to build on those preliminary ideas or to imagine other ways to reinvent environmental law for the 21st century.

Cold realists might counter that "sustainability" and "sustainable development" have been widely accepted in the vocabulary of governments, businesses, and academics for 25 years, and have yielded only slight changes in behavior that are manifestly insufficient to meet the challenges before us. Against such observations, I can only reply that "sustainable development" is a contested concept, which implies that it can evolve. A group of experts has proposed just such an evolution in its meaning. As one of them explained to the *New York Times*:

In the Anthropocene we must abandon old thinking.

We need to redefine the problem. By replacing the three pillars [that is, the social, economic, and environmental pillars of standard sustainable development theory] with a clear and simple idea: an economy, within society, within Earth's life support system. A healthy planet is a prerequisite for healthy, thriving, prosperous lives. From this we need a new definition for sustainable development: "development that meets the needs of the present while safeguarding Earth's life-support system, on which the welfare of current and future generations depends."<sup>156</sup>

The group has proposed "Sustainable Development Goals" (SDGs) similar in concept to the Millennium Development Goals.<sup>157</sup> Their six goals are:

155. Planet Under Pressure (2012), State of the Planet Declaration, ¶ 4, available at <http://www.planetunderpressure2012.net/>.

156. Owen Gaffney, *Scientists Propose a New Architecture for Sustainable Development*, N.Y. TIMES DOTEARTH BLOG, Mar. 21, 2013, <http://dotearth.blogs.nytimes.com/2013/03/21/scientists-propose-a-new-architecture-for-sustainable-development/> (last visited Jan. 23, 2014).

157. David Griggs et al., *Policy: Sustainable Development Goals for People and Planet*, 495 NATURE 305 (Mar. 21, 2013).

154. United Nations Secretary-General's High-Level Panel on Global Sustainability (2012), "Resilient People, Resilient Planet: A Future Worth Choosing," letter dated Jan. 30, 2012, from the Co-Chairs of the High-Level Panel on Global Sustainability addressed to the Secretary-General, unformatted final text, p. 3.



- Goal one: Thriving lives and livelihoods
- Goal two: Sustainable food security
- Goal three: Sustainable water security
- Goal four: Universal clean energy
- Goal five: Healthy and productive ecosystems
- Goal six: Governance for sustainable societies

The goals are not new. What is new is the way they are framed. As the group argues: “[T]he first step is for policymakers to embrace a unified environmental and social framework for the SDGs, so that today’s advances in development are not lost as our planet ceases to function for the benefit of a global population.” Just when the proposed SDGs appeared, the U.N. released its 2013 Human Development Report, highlighting the danger that within the next 35 years the planet would “cease to function” in a meaningful way for billions of people, aggravating rather than alleviating poverty. In a more formal document, the U.N. Sustainable Development Solutions Network has identified an agenda of 10 sustainable development goals that captures the spirit of the scientists’ formulation, but more elaborately includes such social goals as gender equality, education for all, and development that respects planetary boundaries.<sup>158</sup>

A more instinctive framing of the same issues, deeply rooted in cultural traditions, was recently articulated by a Canadian First Nations activist, Leanne Simpson. She recalled a conversation some years ago with a First Nations elder. When asked about “sustainable development,” after some thought, he replied that the concept is backwards. “You don’t develop as much as Mother Earth can handle. For us it’s the opposite. You think about how much you can give up to promote more life. Every decision that you make is based on: Do you really need to be doing that?” Simpson herself then adds, invoking an indigenous phrase: “The purpose of life is this continuous rebirth, it’s to promote more life. . . . [F]ood security and economic security [for Canadian indigenous communities 200 years ago] was based on how good and how resilient their relationships were—their relationships with clans that lived nearby, with communities that lived nearby . . . .”<sup>159</sup>

This Article has argued that the law should play an integral role in promoting life and resilient relationships by developing, expounding, disseminating, advocating, and implementing the six reframed sustainable development goals or goals of similar focus and intent. In a forward-looking literature review of the concept of global environmental governance, two political scientists set a similar challenge for law and society:

Earth system governance bridges levels from global to local as well as academic communities from natural science-oriented modeling and scenario building to political science and philosophy. Although the concept of Earth system governance is still fairly recent and requires more substantiation in research, it might well emerge into a powerful new paradigm that describes the core governance challenge that lies ahead: the long-term transformation of the entire Earth system driven by humankind.<sup>160</sup>

The governance task falls not only to environmental law; it must engage, and draw strength from, the work of many disciplines. Nevertheless, lawyers are often best-positioned to be the synthesizers of value-transformation goals, and are also essential members of the architectural teams that will build the social systems needed to bring new values into operation.

The intellectual endeavor of this Article only makes sense because the author believes, and hopes many of his readers also believe, that there is still time for changing norms to avoid or mitigate the worst consequences of humanity’s collective behavior. Straws of change in the wind sustain that fragile belief. The most upbeat assessments of Rio+20 came from environmental and business entrepreneurs, entrepreneurial environmental nongovernmental organizations, development banks, and governments who put together more than \$513 billion of new partnerships for environmental improvement and “green” economic development. Meanwhile, at one university, professors and students are working on the transformative social idea of “ecological citizenship”<sup>161</sup> At Harvard University, some undergraduates challenged the orthodox economics curriculum and organized an alternative educational forum.<sup>162</sup> The climate change activist group 350.org, with a very small budget, has used the Internet and social networking to generate worldwide citizen action in favor of climate mitigation, including a moderately successful campaign for colleges, cities, and others to divest from fossil fuel corporations. A “crowdfunding” initiative to raise capital from many small investors for solar energy projects in California quickly surpassed its goals. These and many similar actions are realizations of the hopeful vision of policy analyst and futurist Ernst Ulrich von Weizsäcker 20 years ago:

As a sign of a new culture, which could become vital to our survival in the new century, there might arise a credo of diversity, of ecological sustainability, of long-term thinking, of a slower pace of life . . . of a consciousness of boundaries (yet with a sense of world-wide citizenship), of things beyond financial worth, of self-reliance, of communal solidarity and a sense of the value of the commons.<sup>163</sup>

158. Leadership Council of the Sustainable Development Solutions Network, An Action Agenda for Sustainable Development: Report to the U.N. Secretary General, June 6, 2013, available at <http://unsdsn.org/2013/06/06/action-agenda-sustainable-development-report/>.

159. Naomi Klein, *Dancing the World Into Being: A Conversation With Idle No More’s Leanne Simpson*, YES MAG., Mar. 5, 2013, available at <http://www.yesmagazine.org/peace-justice/dancing-the-world-into-being/>.

160. Frank Biermann & Philipp Pattberg, *Global Environmental Governance: Taking Stock, Moving Forward*, 33 ANN. REV. ENVTL. RESOURCES (2008) 277-94, at 288.

161. As reported in Andrew Revkin’s DotEarth blog for the *New York Times*, June 25, 2012, available at <http://dotearth.blogs.nytimes.com/2012/06/25/beyond-rio-pursuing-ecological-citizenship/?src=rechp>.

162. See <http://www.economyfutures.org>.

163. ERNST ULRICH VON WEIZSÄCKER, *EARTH POLITICS* 211 (1994).

With such visions in mind, an ambitious agenda for a reimagined “environmental law” does not ask too much of the law, certainly not in view of the tremendous conservation challenges before us. From the early days of modern environmentalism, environmental law and environmental lawyers have been important contributors to the articulation and dissemination of environmental values and the creation of organizational structures to help realize them. At every level from local to international, they have drafted declarations of principles, proposed new policies and institutions, analyzed the successes and failures of policies and regulatory instruments, and counseled political leaders and social activists striving to advance conservation objec-

tives.<sup>164</sup> Environmental lawyers have laid much of the foundation for legislative and judicial reform of traditional rules and remedies; they have helped design incentive mechanisms to change conservation behavior; and they have creatively engaged larger institutions such as governments, corporations, and international organizations to lend their power and authority to the environmental cause. Having revolutionized the law in the 1960s and 1970s, environmental law can and should recapture that pioneering and creative spirit to help societies engage in the deeper social transformations necessary in the 21st century to assure a sustainable future.

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164. Some lawyers, with equal professional legitimacy, work to contain governmental power or to devise alternative approaches to agreed goals supposedly better adapted to the constraints of market competition, but they do so in part by appealing to those other parts of the law that, as Westerlund argued, *supra* at note 25, tend to counteract environmental law and thus become subjects of environmental law development themselves.