

# IS THERE A THERE THERE IN ENVIRONMENTAL LAW?

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I would like to thank my colleagues at Chicago-Kent with whom I discussed fragments of this article, especially Christopher Leslie and Nancy Marder. I would also like to thank those in the environmental law academic community with whom I have been privileged to share the task of developing environmental law out of the whole cloth since the now mythic '60s. The ideas expressed in this article are solely mine, but they reflect the influence of some 35 years of exchanges, formal and informal, with my colleagues. Space limitations prevent me from citing all the articles and books from which I have profited greatly over the years, but the chances are high that many relevant uncited articles are sitting in my office (read and unread); I apologize for their omission. In many cases, there is no excuse except advancing age and laziness.

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## I. INTRODUCTION: WHY THE “THERE” QUESTION IS IMPORTANT

### A. *The Hidden Weaknesses of Environmental Law*

As environmental law enters its fourth decade, it is now appropriate, if not imperative, to ask the question: what have environmentalism and environmental regulation contributed to the law? Gertrude Stein, the American expatriate writer, once described Oakland, California, where she spent much of her youth before fleeing to the East Coast and Paris, as a place where “there is no there there.”<sup>1</sup> In addition to stigmatizing the city of my birth,<sup>2</sup> her quip haunts all efforts to legitimize new, especially contested, ideas and methods in modern culture, from twelve tone music to environmental protection.<sup>3</sup> In this article, I leave the question of the

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1. The complete quotation is: “[W]hat was the use of my having come from Oakland it was not natural to have come from there yes write about it if I like or anything if I like but not there, there is no there there.” GERTRUDE STEIN, *EVERYBODY’S AUTOBIOGRAPHY* 289 (1937). The webmistress of Gertrude Stein Online posts that the quotation has no deep meaning and simply referred to her inability to find her house during her famous 1937 United States lecture tour, which was her first visit to the country of her birth since moving to Paris. Gertrude Stein Online, *Frequently and Rarely Asked Questions*, at <http://www.tenderbuotons.com/gsteononline/alice/.html> (last visited Feb. 27, 2003).

2. Unlike Ms. Stein, who was born in Allegheny, Pennsylvania but lived in Oakland from 1880 to 1891, I was born in Oakland but have never lived there. Still, the quotation has always been part of my life. My mother and father frequently quoted it when they apologized for the need to use an Oakland maternity hospital for my birth. A quick surf of the web reveals that Oakland has never been able to live down the Stein zinger.

3. Witness the intense reactions to the publication of the English language edition of Bjørn Lomborg’s book, *THE SKEPTICAL ENVIRONMENTALIST: MEASURING THE REAL STATE OF THE ENVIRONMENT* (Cambridge Univ. Press 2001) (1998), which questioned most of the current justifications for environmental protection. *Symposium on Bjørn Lomborg’s THE*

merits of post-modern culture to others and address only the question, does Ms. Stein's famous epigram apply to environmental law? The question may initially seem heretical because so much of environmental thinking has a theological cast to it.<sup>4</sup> Environmental law is often taken as a logical, non-contestable consequence of the imperative need for the immediate protection of the planetary "environment" from accelerated human degradation,<sup>5</sup> and no deviation is permitted from this confession. Questions of theology aside, the question may seem silly because lawyers widely, if not universally, assume that environmental law exists and there is good objective evidence that this is a correct assumption.

What we now call environmental law is very much embedded in the legal landscape. The area has developed in an astonishingly short period of time as a result of the rise of environmentalism as a political force in the late 1960s.<sup>6</sup> The field was created virtually out of whole cloth by a receptive Judiciary and Congress. In the 1960s, environmental protection was a marginal political idea. Lawyers followed the great common law tradition left open to socially marginal groups and pursued a "rule of law litigation" strategy.<sup>7</sup> To discipline public agencies through what we now call "public interest" litigation, they had to convince courts that something called environmental law existed, when in fact it did not. Creative lawyers used a few meager precedents and vague, seldom applied statutes to convince courts that public agencies had a duty to consider "environmental" interests and to take steps to avoid or mitigate adverse "environmental" impacts.<sup>8</sup> Lawyers skillfully created the fiction that the recognition of new environmental protection duties

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SKEPTICAL ENVIRONMENTALIST, 53 CASE W. RES. L. REV. 249 (2002) (exploring the book and the reactions of supporters and denouncers from a variety of legal and non-legal perspectives). See also Douglas A. Kysar, *Some Realism About Environmental Skepticism: The Implications of Bjørn Lomborg's The SKEPTICAL ENVIRONMENTALIST for Environmental Law and Policy*, 30 ECOLOGY L.Q. 223 (2003).

4. See Christopher H. Schroeder, *Prophets, Priests, and Pragmatists*, 87 MINN. L. REV. 1065 (2003) (stating environmentalism has both prophets who condemn the status quo and call for redemptive change, and more moderate, reformist priests).

5. For an articulation of the accelerating degradation thesis, see J. R. MCNEILL, *SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD* (2000).

6. For efforts to sort out the causes of the rapid rise of environmentalism, see SAMUEL P. HAYS, *BEAUTY, HEALTH, AND PERMANENCE: ENVIRONMENTAL POLITICS IN THE UNITED STATES, 1955-1985* (1987), and RICHARD N.L. ANDREWS, *MANAGING THE ENVIRONMENT, MANAGING OURSELVES: A HISTORY OF AMERICAN ENVIRONMENTAL POLICY* (1999).

7. See A. Dan Tarlock, *The Future of Environmental "Rule of Law" Litigation*, 17 PACE ENVTL. L. REV. 237 (2000), reprinted in 19 PACE ENVTL. L. REV. 575 (2002).

8. The most influential roadmap to "rule of law" litigation remains JOSEPH L. SAX, *DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION* (1971). See also David Sive, *Some Thoughts of an Environmental Lawyer in the Wilderness of Administrative Law*, 70 COLUM. L. REV. 612 (1970).

*merely* required courts to perform their traditional and constitutionally legitimate function of applying and enforcing, rather than creating, pre-existing rules.

Once Congress ratified many of the principles established in these lawsuits, such as non-governmental organization (“NGO”) standing, the need to consider alternatives to the proposed action, the need for a fuller administrative record and enacted legislation to limit air and water pollution, and the need to require environment impact assessments for a wide range of federal activities, the statutes and the cascade of cases interpreting them quickly took on the appearance of a mature legal system. The academy followed. Environmental law became a widely taught law school course<sup>9</sup> supported by a core of dedicated academic “specialists,” although the elite ivy league law schools continue to give the field scant recognition.

The legal profession never harbored any doubts about the legitimacy of environmental law; the most important driver in the rapid rise of environmental law was money. Environmental regulation changed the way that many industries and public bodies did business, and thus there was money to be made from interpreting these regulations for clients and defending them against public and NGO lawsuits. Practitioner demand for information about this new field quickly spawned a large number of law reviews and other specialized publications such as this one. The profession considers it a firmly established practice specialty as reflected in ABA and state bar association sections. In 2002, environmental law received the ultimate recognition; it got its own West key number when health was dropped from “health and environment.”

Environmental law’s rapid rise and great success is nonetheless a mixed blessing because it postponed consideration of the hard questions about the content and legitimacy of the field and environmental protection generally. The relative neglect of these difficult problems is neither surprising nor unknown. It is, however, troubling. The neglect of content and legitimacy is not surprising because environmental law, as we understand it, is still an infant area of the law. Environmental law grew so rapidly and quickly that there was no time, or need, to worry about its jurisprudential

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9. The 2002-2003 AALS Directory of Law Teachers lists 217 persons who have taught it 1-5 years, 110 who have taught it 6-10 years, and 130 senior teachers who have taught it more than 10 years. I did not attempt to eliminate people who have not taught it for years (e.g., Judge, and former Dean, Guido Calabresi) or who were listed in more than one category. For example, Professor Joseph Sax, who more than anyone else is responsible for defining the field, is listed as both a senior and a rookie environmental law teacher! The point is simply that there are a great many teachers of environmental law.

underpinnings.<sup>10</sup> It enjoyed the luxury of skipping the stages of debate over fundamentals and incremental growth and acceptance. Debates went directly to the important, but narrower, question about the merits of the suite of policy instruments available to achieve the Congressional protection objectives.<sup>11</sup> This “papering over” has not gone unnoticed. Over the years, many have observed that the impressive formal superstructure of environmental law masks the persistent doubts about the existence of a “there” in environmental law,<sup>12</sup> but the continued stream of law, cases, and regulations pushed these concerns to the background. However, as environmental law continues to mature, the largely neglected questions of content and legitimacy become more troubling and need to be addressed if the area is to sustain itself.

We often lose sight of three related but disturbing features of environmental law that make its future survival problematic. First, it is, in the span of legal time, an infant area of the law that may not necessarily live to maturity. Second, its survival is more problematic than other areas of law because it is not an organic mutation of the common law, or more generally, the western legal tradition. Third, as a result of the first two, environmental law remains largely unintegrated into our legal system; thus, it is vulnerable to marginalization as support for environmentalism ebbs and flows.<sup>13</sup>

As many have observed, environmental law has substantially influenced other, established areas of law such as administrative law, international law, property, torts, and water law as well as more remote subjects such as corporations, securities regulation, and intellectual property. However, when one sums up the cases, statutes, and administrative regulations that make up the core of

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10. I use the term “jurisprudence” simply as the search of the nature of law, as opposed to the understanding of legal doctrine. See ALF ROSS, ON LAW AND JUSTICE § 2 (1958). I do not endorse any of the competing philosophical theories offered to answer the question.

11. The book that framed the policy instrument debate is JOHN H. DALES, POLLUTION, PROPERTY AND PRICES (1968). See Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21 (2001); Douglas A. Kysar, *Law, Environment, and Vision*, 97 Nw. U. L. REV. 675 (2003) (giving modern analyses and summaries of the policy instrument debates).

12. See, e.g., John P. Dwyer, *The Pathology of Symbolic Legislation*, 17 ECOLOGY L.Q. 233 (1990); see also Alyson C. Flournoy, *In Search of an Environmental Ethic*, 28 COLUM. J. ENVTL. L. 63 (2003); Cass R. Sunstein, *Paradoxes of the Regulatory State*, 57 U. CHI. L. REV. 407 (1990).

13. See Richard J. Lazarus, *Meeting the Demands of Integration in the Evolution of Environmental Law: Reforming Environmental Criminal Law*, 83 GEO. L.J. 2407, 2413-19 (1995) (discussing the process of legal evolution that results in the assimilation of new ideas such as environmental protection and noting the instability of environmental law); see also William H. Rodgers, Jr., *The Lesson of the Red Squirrel: Consensus and Betrayal in the Environmental Statutes*, 5 J. CONTEMP. HEALTH L. & POL'Y 161 (1989).

what most people consider environmental law,<sup>14</sup> one is hard pressed to reduce them to a set of distinctive, fundamental principles, let alone rules<sup>15</sup> that can be applied to a wide range of current and future issues, as one can do in other areas of “real law.”<sup>16</sup>

*B. A Thesis: The Need For a Bounded, Dynamic Process of Environmental Protection*

My argument is that it is important to put a “there” in environmental law for the simple reason that environmentalism represents a potentially transformative, fundamental, if still semi-coherent and contested, paradigm shift in the ways in which we enjoy the use of our air, water, and soil planetary life support systems and our biodiversity heritage.<sup>17</sup> As the great American geographer Gilbert White has written:

People around the world in the 1990s are perceiving the earth as more than a globe to be surveyed, or developed for the public good in the short term, or to be protected from threats to its well-being both human and natural. It is all of these to some degree, but has additional dimensions. People in many cultures accept its scientific description as a matter of belief. They recognize a commitment to care for it in perpetuity. They accept reluctantly the obligation to come to terms with problems posed by growth in numbers and appetites. This is not simply an analysis of economic and social consequences of political policies toward environmental matters. The roots are a growing solemn sense of the individual as

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14. The teaching of environmental law is like dealing a deck of cards. The cards do not change, but the order and number displayed can, depending on the game. The leading environmental law casebooks are very similar in their organization and case selection, but the order of presentation and number of cards displayed varies considerably. *E.g.*, ROBERT GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY (4th ed. 2003); ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY (4th ed. 2003); ROGER FINDLEY ET AL., ENVIRONMENTAL LAW (6th ed. 2003); THOMAS J. SCHOENBAUM ET AL., ENVIRONMENTAL POLICY LAW (2002).

15. I use the distinction between rules and principles first articulated by Ronald Dworkin in his critique of positivism. Ronald M. Dworkin, *The Model of Rules*, 35 U. CHI. L. REV. 14 (1967).

16. *See infra* Section II: The “Real Law” Problem.

17. For an ambitious effort to illustrate how a desire to “connect” with nature influenced early environmental politics in Maine and Oregon, see RICHARD W. JUDD & CHRISTOPHER S. BEACH, NATURAL STATES: THE ENVIRONMENTAL IMAGINATION IN MAINE, OREGON, AND THE NATION (2003).

part of one human family for whom the earth is its spiritual home.<sup>18</sup>

Eastern Europe,<sup>19</sup> Central and East Asia,<sup>20</sup> and China are examples of the costs of continuing to view the planet simply as a storehouse of exploitable commodities. This said, the question remains, can we construct a stable legal regime to reflect this meta-value transition? I argue, then, an effective and long-lasting environmental law cannot be constructed around a series of abstract substantive principles. There is a reason that no Restatement (First) of Environmental Law exists or is in process. The candidate suite of principles such as advance environmental impact assessment, polluter pays, precaution, and sustainable development<sup>21</sup> are useful starting points but they can only serve as guideposts to structure a dynamic, but inevitably ad hoc, decision making processes.

The extremely complex and evolving moral and scientific nature of environmental problems<sup>22</sup> ensures that, for the foreseeable future, environmental law will be a law about the process of decision rather

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18. Gilbert White, *Reflections on Changing Perceptions of the Earth*, in 19 ANNUAL REVIEW OF ENERGY AND THE ENVIRONMENT 9 (1994).

19. ROGER MANSER, *FAILED TRANSITIONS: THE EASTERN EUROPEAN ECONOMY AND ENVIRONMENT SINCE THE FALL OF COMMUNISM* (1993).

20. JAMES DAVID FAHN, *A LAND ON FIRE: THE ENVIRONMENTAL CONSEQUENCES OF THE SOUTHEAST ASIAN BOOM* (2003).

21. For an unsuccessful attempt to create an international law of environmental torts around "the polluter pays," the precautionary principle, and the proximity principle, see *Beanal v. Freeport-McMoRan, Inc.*, 969 F. Supp. 362 (E.D. La. 1997), *aff'd*, 197 F.3d 161 (5th Cir. 1999).

Some may be puzzled by the omission of the public trust doctrine from this list. The argument, that the common law/constitutional doctrine (that the use of navigable waters and their beds are subject to public rights) can be extended to the principle that "the conservation of ecological values should be preferred to developmental ones," has attracted worldwide attention. However, outside of water law, the doctrine has not created a common law of environmental rights. See *Nat'l Audubon Soc'y v. Super. Ct.*, 658 P.2d 709 (Cal. 1983); *In re Water Use Permit Applications for Interim Instream Flow Standard Amendments*, 9 P.3d 409 (Haw. 2000). The trust doctrine is most effectively applied when it is the basis for legislation. For example, South Africa has used the doctrine to create environmental water reserves on individual watercourses in its post-Apartheid water code. National Water Act § 16 (1998). An extensive literature exists on the potential application of the public trust doctrine to environmental decisions. *E.g.*, Joseph L. Sax, *The Public Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986); William D. Ariza, *Democracy, Distrust, and the Public Trust: Process-Based Constitutional Theory, the Public Trust Doctrine, and the Search for a Substantive Environmental Value*, 45 UCLA L. REV. 385 (1997); Erin Ryan, *Public Trust and Distrust: The Theoretical Implications of the Public Trust Doctrine for Natural Resource Management*, 31 ENVTL. L. 477 (2001).

22. For an excellent exposition of how little we actually know about our planet, see VACLAV SMIL, *THE EARTH'S BIOSPHERE: EVOLUTION, DYNAMICS, AND CHANGE* (2d ed. 2003).

than a process of evolving decision rules. My argument is not, however, a simple reiteration of procedural versus substance debate that has been part of environmental law since the enactment of the National Environmental Policy Act of 1969 ("NEPA"). The thesis that environmental law is fated to be about process rather than predictable outcomes is equally not just a call for open-ended transparent, democratic decision-making as many environmentalists advocate.

Environmental problems are characterized by the need to reduce their inevitable uncertainty through the constant generation and application of new knowledge. They often do not, as do many other areas of the law, display a repetition of similar fact patterns. They must be rational processes constrained as a set of principles that ensure that they are responding to our understanding of what makes a problem environmental. Decision processes equally must be more than ad hoc, open-ended, stakeholder negotiations.<sup>23</sup> My argument builds on an idea advanced by Judge Hans Linde of the Oregon Supreme Court that courts should impose a right to due process of law making<sup>24</sup> and the newer theory of reflexive environmental law.<sup>25</sup> Environmental decisions should be made through science-based processes that use the various candidate principles of law that have emerged in the past four decades as rebuttable presumptions rather than hard rules to structure decisions. The best we can hope for are presumptions because, in the end, environmental law is a series of hypotheses that must be tested (and often modified) over a long time horizon by rigorous monitoring and experimentation.

This approach is designed to respond to three challenges that environmental protection faces today. First, its fundamental legitimacy continues to be questioned, and thus it remains highly vulnerable to political pressures and legal marginalization. Environmentalism will, of course, always be a product of representative government. However, there needs to be some legal drag on the amplitude of the political oscillations. Otherwise, the

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23. Richard B. Stewart, *Administrative Law in the Twenty-First Century*, 78 N.Y.U. L. REV. 437, 460 (2003) (reaching the same conclusion).

24. See Hans A. Linde, *Due Process of Law Making*, 55 NEB. L. REV. 197 (1976).

25. Gunther Teubner's theory of reflexive law is based on the development of a post-modern theory of law, premised on a constantly evolving knowledge base and multiple participants in problem solving. Reflexive law is proposed as a remedy for the inability of substantive, or as Americans would say, "instrumental," law principles to cope with new, complex social problems. See Gunther Teubner, *Substantive and Reflexive Elements in Modern Law*, 17 LAW & SOC'Y REV. 239 (1989). For possible applications to environmental law, see Eric W. Orts, *Reflexive Environmental Law*, 89 Nw. U. L. REV. 1227 (1995), and Sanford E. Gaines, *Reflexive Law as a Legal Paradigm for Sustainable Development*, 10 BUFF. ENVTL. L.J. 1 (2003).

environment simply becomes an equally weighted factor to be balanced against competing objectives, e.g., to be ultimately ignored. Second, the formal structure of environmental law increasingly functions as a set of background rules for negotiation. For a variety of reasons, environmental disputes are increasingly being addressed by multi-stakeholder processes.<sup>26</sup> The jury is still out on the efficacy of this reaction to the political gridlock that has prevented the reform of federal environmental laws. What is clear is the importance of maintaining a strong public legal background structure as a default rule<sup>27</sup> to measure the merits of the outcome. Third, the term “environmental” has become so all-encompassing that it has been robbed of any operative meaning; it needs contours.

## II. THE “REAL LAW” PROBLEM

Environmental law faces increasing difficulty in fulfilling the drag and bounded rationality functions because it arguably does not meet many of the conventional tests for “real law” in the United States or in the broader western legal tradition.<sup>28</sup> The question of what is “real law” is either simple or hopelessly complex. I define it roughly as the relatively stable, closed legal system described by H.L.A. Hart. Hart is one of the dominant figures of post World War II jurisprudence. His core idea was that law is a set of relatively narrow, formal rules which function to order human behavior by communicating preexisting binding standards.<sup>29</sup> Hart, of course,

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26. Professors Jody Freeman and Bradley C. Karkkainen, among others, have been tracking the break-up of the modern regulatory state and the role of public law in the emerging “lite” state. See Jody Freeman, *The Contracting State*, 28 FLA. ST. U. L. REV. 155 (2000); Bradley C. Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity and Dynamism*, 21 VA. ENVTL. L.J. 189 (2002). See generally MATTHEW A. CRENSON & BENJAMIN GINSBURG, *DOWNSIZING DEMOCRACY: HOW AMERICA SIDELINED ITS CITIZENS AND PRIVATIZED ITS PUBLIC* (2002).

27. This argument is well developed by Bradley C. Karkkainen, *Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward A Bounded Pragmatism*, 87 MINN. L. REV. 943 (2003). See also Freeman, *supra* note 26; Jody Freeman, *Extending Public Law Norms Through Privatization*, 116 HARV. L. REV. 1285 (2003).

28. Teemu Ruskola, *Legal Orientalism*, 101 MICH. L. REV. 179, 182-83 (2002), defines “real law” as either “formal legal rationality,” or the rule of law tradition that constrains state behavior. The historicity of law is linked with the concept of its supremacy over the political authorities; thus, “real law” usually exhibits the characteristics of (1) a distinctive or unique set of abstract core principles, or (2) a constitutional foundation.

29. This is a gross over-simplification of a philosophy evolved over time and has been subject to intense criticism and exegesis. However, the debate about how formalistic Hart's jurisprudence does not detract from the basic point that the Hart model of rules describes the strategy of much of environmental litigation. The Hart model focuses the court on the application of pre-existing rules rather than on more opened-ended moral justifications for the decision. See MICHAEL MARTIN, *THE LEGAL PHILOSOPHY OF H.L.A. HART: A CRITICAL APPRAISAL* 15-67 (1987); see also JEFFRIE G. MURPHY & JULES L. COLEMAN, *THE PHILOSOPHY OF LAW: AN INTRODUCTION TO JURISPRUDENCE* 42-60 (rev. ed. 1990).

recognized that a complete system of *a priori* rules was impossible, if not undesirable, and that judges must always exercise discretion at the margins,<sup>30</sup> but his project was to close the gap between rule and discretion by developing a theory of law as a consistent, coherent set of rules.

One does not need to enter into the extensive debate about the merits of Hart's theory to test environmental law against his definition of law.<sup>31</sup> My argument is that despite all the reservations, corrections, and counter theories, Hart's model of real law as formal law remains the dominant vision of what a legal system should look like; the important point is that his model, as well as the more open-ended alternatives, do not fit environmental law at all. To fit the Hart model of "real law," an area of law either has to have an internal set of over-arching rules that courts can use to develop doctrines that create identifiable, distinctive (if permeable) boundaries between other areas of law, or constitutional foundation. Formal law is, of course, only one possible definition of law.<sup>32</sup> However, some level of autonomous principles is a necessary component of permanence and acceptance.<sup>33</sup>

#### A. *The Lack of an Internal Set of Rules*

Environmental law, as now defined, is primarily a synthesis of pre-environmental era common law rules,<sup>34</sup> principles from other areas of law, and post-environmental era statutes which are lightly influenced by the application of concepts derived from ecology and other areas of science, economics, and ethics.<sup>35</sup> The primary reason that it lacks internal logic and consistency is because it is so new and radical. Hart's definition of a legal system assumes a pre-existing set of widely accepted legal doctrines limited to the conventional economic wealth, dignity, and status relations of a

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30. Hart distinguished between a core of certainty and a penumbra of uncertainty. H.L.A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 607 (1958).

31. The debate is largely about the range of discretion that judges have to decide cases at the margin of hard rules. Hart's leading critic is Ronald Dworkin. RONALD DWORKIN, *TAKING RIGHTS SERIOUSLY* (1977). For a good summary of the debate, and an attempt to synthesize the divergent positions, see NEIL MACCORMICK, *LEGAL REASONING AND LEGAL THEORY* 229-58 (1978).

32. See Guido Calabresi, *An Introduction to Legal Thought: Four Approaches to Law and to the Allocation of Body Parts*, 55 STAN. L. REV. 2113 (2003) (noting that formalism is only one of four approaches that have characterized law since the 1900s).

33. See Guido Calabresi, *Two Functions of Formalism*, 67 U. CHI. L. REV. 479 (2000).

34. For an examination of nuisance rules on air pollution regulation, see NOGA MORAG-LEVINE, *CHASING THE WIND: REGULATING AIR POLLUTION IN THE COMMON LAW STATE* (2003).

35. Christopher Stone, *Do Morals Matter? The Influence of Ethics on Courts and Congress in Determining U.S. Environmental Policies* 41 ("[R]elevance of moral philosophy (or any sort) to the working of government is infrequent.") (unpublished book) (on file with author).

well-ordered civil society, primarily contract, tort, property, and criminal law.<sup>36</sup> No such rules or doctrines exist to apply to environmental disputes because there is no longstanding social consensus about the central question of modern environmentalism - the "correct" human stewardship<sup>37</sup> relationship to the natural world. Thus, any new relationship has to be created not recognized.

Roughly speaking, throughout history, societies have adopted one of three views of nature. The early view of nature was that parts of it were sacred space,<sup>38</sup> but this gave way to the rational view that the earth was an unlimited treasure chest of commodities to be exploited for human progress, either recklessly or scientifically. The environmental movement has challenged the treasure chest view. The environmental movement has either recast the pagan view of nature as sacred space and a resource of intrinsic value, or as a modified treasure chest of ecosystem services to be managed for human progress.<sup>39</sup> The commodity and services treasure chest views continue to compete with each other and make it very difficult to posit any consistent set of rules about how humans should relate to nature. One can still drive a Hummer with a "Save the Rainforest" sticker on it and feel good about both choices.

### B. *The Lack of Constitutional Foundation*

Environmental law's legitimacy problems are compounded by the lack of a constitutional foundation in both the narrow and broad sense.<sup>40</sup> Environmental protection has almost no constitutional

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36. As Frederick Schauer has observed, "implicit in Hart's conception of formalism is the view that in the core, unlike in the penumbra, legal answers are often tolerably determinate." Frederick Schauer, *Formalism*, 97 YALE L.J. 509, 515 (1988).

37. JOHN PASSMORE, MAN'S RESPONSIBILITY FOR NATURE: ECOLOGICAL PROBLEMS AND WESTERN TRADITIONS 28-49 (1974) (surveying the theological and philosophical origins of the idea that humans bear some responsibility for nature).

38. See J. DONALD HUGHES, PAN'S TRAVAIL: ENVIRONMENTAL PROBLEMS OF THE ANCIENT GREEKS AND ROMANS (1994).

39. See James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000).

40. In addition to the United States' theory (that a constitution is a binding, written charter, it is intended to endure for a long period of time, and it is intended to exert positive, prior external limits on the exercise of political power) there is a broader definition: a set of principles that restrain the state. The second definition developed out of the long European struggle to assert control over the sovereign. The roots of this tradition are traced to 10th century disputes over rival papal claimants. This led to the fundamental western and Christian idea of divided authority, secular-church, pope-bishops, or the whole church. See BRIAN TIERNEY, RELIGION, LAW, AND THE GROWTH OF CONSTITUTIONAL THOUGHT 1150-1650 (1982). The long canonical debates worked out the fundamental idea that a person or body can still be subject to legal constraints. This is the idea that power could derive from representation. The result was a secular state controlled by popular sovereignty, a stunning advance in political theory, but it grew out of a long tradition of Catholic doctrine that the Church was the whole people.

foundation except as an exercise of the Commerce Power.<sup>41</sup> More generally, there are no over-arching general protection principles such as “keep nature in balance”<sup>42</sup> or “minimize long term health risks” equivalent to the emotive power of “rule of law,” “equal protection,” “freedom of speech and conscience,” and “due process,” which are at the heart of constitutionalism<sup>43</sup> that can be invoked to object to an anti-environmental decision. In fact, one of the many paradoxes of environmental law is that it has thrived in the absence of a firm constitutional foundation and in the face of Supreme Court indifference or hostility.<sup>44</sup>

Environmental law lacks a constitutional foundation because the distinctive features of it do not draw upon the philosophical, religious, and jurisprudential bases of the constitution, all of which are rooted in the enhancement of human dignity. Rather, as has long been, calls for a constitutional right to environmental quality assert for a fundamentally different conception of the role of government than the traditional protection of human rights and property embedded in our tradition.<sup>45</sup> Natural systems of non-

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41. Writing in the early 1970s, Philip Soper concluded that “[i]n view of the broad reach of the commerce power, it is difficult to imagine examples of federal action that could be justified only on the basis of some other constitutional authority.” Philip Soper, *The Constitutional Framework of Environmental Law*, in FEDERAL ENVIRONMENTAL LAW 20, 27-28 (1974). The Supreme Court’s post-*Lopez* Commerce Clause jurisprudence does not fundamentally contradict this statement, at least so far. See e.g., *Gibbs v. Babbitt*, 214 F.3d 483 (holding the ESA constitutional as applied to reintroduction of wolf); *Nat’l Ass’n of Home Builders v. Babbitt*, 130 F.3d 1041 (D.C. Cir. 1997) (finding the ESA constitutional because cumulative impacts of local species’ extinction risk can be aggregated to find interstate commerce nexus); *Nebraska v. EPA*, 331 F.3d 995 (D.C. Cir. 2003) (holding the Safe Drinking Water Act not per se unconstitutional because there are substantial numbers of interstate water sales).

42. The construct biodiversity has been advanced just for this purpose. DAVID TACKAS, *THE IDEA OF BIODIVERSITY: PHILOSOPHIES OF PARADISE* (1996). But a leading environmental law scholar finds the idea “too abstract a concept to be useful in building” political support for the conservation of nature. Holly Doremus, *Biodiversity and the Challenge of Saving the Ordinary*, 38 IDAHO L. REV. 325, 352 (2002). My colleague, Fred Bosselman, has exposed the incoherencies in the construct of biodiversity. Fred Bosselman, 12 N.Y.U. ENVTL. L.J. (forthcoming 2004).

43. The natural law basis of this thinking has been well documented. See, e.g., Paul E. Sigmund, *Carl Friedrich’s Contribution to the Theory of Constitutionalism-Comparative Government*, XX NOMOS 32 (1979).

44. Professor Richard J. Lazarus has demonstrated that the Supreme Court views environmental law as “merely an incidental factual context . . .” rather than as a distinct area of law and that the justices’ attitudes toward environmental protection “have become increasingly skeptical over time.” Richard J. Lazarus, *Restoring What’s Environmental About Environmental Law in the Supreme Court*, 47 UCLA L. REV. 703, 706 (2000).

45. The progressive ideas of international environmental protection duties and human rights share the idea of a new concept of sovereignty, which is premised on the affirmative obligation of states to care for their citizens. See Helen Stacy, *Relational Sovereignty*, 55 STAN. L. REV. 2029 (2003).

human flora and fauna, and statistical victims,<sup>46</sup> more than the dignity of actual human beings, are the focal point of environmental protection. And, an environmental right would be a right *to* affirmative government action rather than a right to be free *from* the exercise of arbitrary or oppressive state power.

The United States Constitution is understood as a general structure for making federal decisions and as a charter of negative liberties rather than as source of positive, generally aspirational, rights characteristic of most other constitutions of the world.<sup>47</sup> Thus, the distinctive, fundamental objectives of environmental protection — protection from long-term, low probability but potential serious public and other risks and biodiversity protection — do not fit in our constitutional jurisprudence. In addition to the negative/affirmative dichotomy, environmental protection does not protect relatively powerless minorities from the risk of government sponsored or sanctioned discrimination. The usual explanation is that environmental protection reflects the majority will and produces benefits that cut across racial, religious, and economic boundaries. In short, environmental protection does not single out discrete, relatively powerless minorities, although there will be environmental “civil rights” issues in the future.<sup>48</sup>

The historian Roderick Nash tried to solve this problem by arguing that environmental protection is a logical extension of the Enlightenment legacy of the recognition of human dignity other worthy subjects; I am not persuaded that the analogy is right.<sup>49</sup> The negative Enlightenment entitlements — freedom of belief and freedom from the arbitrary exercise of state power — cannot easily or meaningfully be extended to freedom from certain risk levels, let alone substantive resource allocations,<sup>50</sup> because the desired

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46. The abstract and speculative nature of toxic risk assessment has been much noted. *See, e.g.*, Lisa Heinzerling, *Environmental Law and the Present Future*, 87 GEO. L.J. 2025, 2042-43 (1999); Lisa Heinzerling, *The Rights of Statistical People*, 24 HARV. ENVTL. L. REV. 189 (2000).

47. Constituição Federal [C.F.] [Constitution] art. 225 (Braz.) (“All have right to an ecologically balanced environment.”); Konstitutsiia [KONST. RB 1991] art. 15 (Bulg.) (“The Republic of Bulgaria ensures the protection and conservation of the environment.”).

48. Proponents of environmental justice will object to the seeming insensitivity to the disparate impact of environmental regulations and decisions on the poor and minorities. *See, e.g.*, CLIFFORD RECHTSCHAFFEN & EILEEN GAUNA, ENVIRONMENTAL JUSTICE: LAW, POLICY, & REGULATION (2002). I do not dispute the fact that pollution-generating facilities may be concentrated in minority or low-income areas, and some regulations may not be sufficiently stringent to protect at-risk groups, especially minority women. However, environmental protection remains an example of majoritarianism because it seeks to provide benefits for all citizens rather than to deny these benefits to insular minorities.

49. RODERICK NASH, THE RIGHTS OF NATURE: A HISTORY OF ENVIRONMENTAL ETHICS (1989).

50. Joseph L. Sax, *The Search for Environmental Rights*, 6 J. LAND USE & ENVTL. L. 93 (1990).

outcome cannot be reduced to a consistent legally enforceable standard.<sup>51</sup> The benefits that environmental regulatory programs are designed to reduce, such as health risks or biodiversity conservation, are in the end examples of distributive, rather than corrective, justice. For this reason, they do not lend themselves to be the recognition of rights as opposed to inevitably provisional solutions that vary from situation to situation.<sup>52</sup> All people have a right to freedom of conscience, but not to have all forests and rivers be managed in the same way, or to a uniform baseline of toxic chemical risk protection.

A constitutional footing is not absolutely necessary for the effective implementation of new public policies as the spectacular success of environmental protection since 1970 illustrates. However, the greater the gap between the constitutional and legislative structure of a policy objective, the more an area of law is vulnerable to long run erosion through ossification, marginalization, or assimilation. The lack of constitutional footing makes it difficult to buffer the original public policy objectives against a hostile Executive and Judiciary. For example, both the labor and environmental movements are suffering from the lack of a constitutional or common law foundation in the face of the current Supreme Court's hostility to all non-Executive exercises of political power.

### C. Labor Law: A Case Study in Ossification

The rise and fall of labor law is an example of the ossification<sup>53</sup> of what was once a new and dynamic area of the law, but now suffers from a combination of legislative and judicial hostility. The parallels between labor and environmental law are not perfect, but they are instructive. In contrast to environmental regulation, proponents of labor unions had to overcome hostile Supreme Court decisions, which prohibited union activity and restricted the power of the government to regulate working conditions through congressional protection. The resulting legislation, which recognized the right to collective bargaining, became the basis for a

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51. This argument is developed at greater length in J.B. Ruhl, *The Metrics of Constitutional Amendments: And Why Proposed Environmental Quality Amendments Don't Measure Up*, 74 NOTRE DAME L. REV. 245, 275-80 (1999).

52. CASS J. SUNSTEIN, AFTER THE RIGHTS REVOLUTION: RECONCEIVING THE REGULATORY STATE 90-91 (1990). For a mildly critical analysis of this position, see Daniel A. Farber, *Playing the Baseline: Civil Rights, Environmental Law, and Statutory Interpretation*, 91 COLUM. L. REV. 676, 687-91 (1991).

53. This analysis is taken from Cynthia L. Estlund, *The Ossification of American Labor Law*, 102 COLUM. L. REV. 1527, 1579-87 (2002).

series of Supreme Court opinions that extended union protection in the name of fidelity to congressional purpose. But the Court never developed a constitutional basis for the protection of employee interests, and after the 1940s began to “deconstitutionalize” labor law<sup>54</sup> by developing First Amendment employee rights to refuse to pay dues unconnected to an immediate range of activities that directly and immediately benefit union members. The result is a law that leaves a basic regulatory structure intact, but renders it increasingly ineffective and removed from its original, distributional remedial purpose.

Environmental law, too, is vulnerable to becoming a gutted shell of what has been generally hailed, despite persistent arguments that monitored markets could do a better job, as an effective regulatory regime.<sup>55</sup> At the present time, the Constitution primarily functions with respect to environmental law as it does to any other area of the law.<sup>56</sup> It checks the exercise of state power rather than promotes the remedial purposes of environmental legislation. Constitutional doctrines such as equal protection, procedural due process, affirmative and negative commerce powers, state sovereign immunity, and the Takings Clause apply to environmental regulation as they apply to all administrative and legislative action. Courts also serve as a check on the elected (and appointed) branches of government.

Environmentalists sometimes think of environmental law as an exceptional area of the law that should be immune from constitutional and other judicially imposed constraints. The extreme version of exceptionalism is without merit; environmental regulation must be exercised in a lawful, non-arbitrary manner just as all exercise of government power must. However, there is a crucial difference between the reflexive validation of any environmental position and the Court’s failure to engage the idea of environmental protection as a new, but permanent public value, and to integrate it to its decisions. There is a serious risk that the Supreme Court and lower federal courts will invoke constitutionally based doctrines that undermine federal regulatory mandates.<sup>57</sup>

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54. *Id.*

55. For a spirited and detailed defense of the efficiency of command and control regulation, see Daniel H. Cole & Peter Z. Grossman, *When Is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887 (1999).

56. For a critical analysis of the internal inconsistencies in the current Supreme Court doctrines restricting the powers of federal and state governments to enact environmental protection legislation, see Robert V. Percival, “Greening” the Constitution--Harmonizing Environmental and Constitutional Values, 32 ENVTL. L. 809 (2002).

57. Christopher H. Schroeder, *Environmental Law, Congress, and the Court’s New*

*D. Extinction Through Integration or Disintegration*

Environmental law's soft core as opposed to a "hard" or "real law" one makes it a prime candidate for extinction through assimilation or disintegration. One of the primary characteristics of a distinct area of law is that it contains a relatively unique set of core principles distinguishing it from other areas of the law. One could dismiss environmental law, with considerable justification, as applied administrative law with a heavy dash of statutory construction law, if there is such an area of law. Many areas of law flourish without meeting this criteria, but a distinctive core along with the respect of the academy is important, if not necessary, to prevent their marginalization and perhaps extinction. Without a distinctive core and the self-study that the academy provides, an area of law will lose power in the judicial and political arena. It becomes a factor or screen to be considered from time to time rather than a consistent decision driver.

Environmental law also faces the additional problem of dismissal as just another example of "the law and . . ." problem. Academics have long debated whether an area of law is a set of relatively abstract, fundamental principles that can adapt to new technologies and societal conditions and preferences, or whether law is the product of a specific technology or societal change. The academy has always looked down on proposed categories of law that do not track the historic Roman categories of things, dialect, obligations, status, and actions<sup>58</sup> as faux areas of law. In addition to academic disdain, problem-specific courses run the risk of limited half-lives. In today's decentralized academic environment, a wide

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*Federalism Doctrine*, 78 IND. L.J. 413, 457 (2003) (finding narrow statutory construction as illustrated by *Solid Waste Agency v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001), "will cause a de facto contraction in federal problem solving abilities because the laws on the books will not soon be replaced by curative legislation."). Justice Scalia bashing has become a cottage industry and I will leave that to others, but his description of the Endangered Species Act ("ESA") in *Bennett v. Spear*, 520 U.S. 154 (1997), remains the most egregious environmental example of the substitution of a judge's personal beliefs for that of Congress. In the course of a justifiable extension of the citizen suit provision of the ESA to commodity user groups opposed to the enforcement of the ESA, he offered the following justification for the ESA's best available science and commercial data requirement: "While this no doubt serves to advance the ESA's overall goal of species preservation, we think it readily apparent that another objective (if not the primary one) is to avoid needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives." *Bennett*, 520 U.S. at 176. See also Robert A. Shapiro & William Buzbee, *Unidimensional Federalism: Power and Perspective in Commerce Clause Adjudication*, 88 CORNELL L. REV. 1199 (2003).

58. The argument that law should be general rather than specific is articulated in Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207 (1996).

range of subject areas and course offerings compete for legitimacy. Not all survive.

Environmental law can either evolve into a permanent area of the law, or the protection of environmental values could simply become a factor to be considered in a variety of established substantive contexts. A problem-specific context is often a necessary step in law's evolution, but the end product of this approach is often extinction or assimilation. Environmental law is one of the many legal products of the social ferment that lasted from the mid-1960s to Watergate. Environmental law was preceded by the rise of feminism, the civil rights movement, and the war on poverty. All of these moments in time have had profound influences on law and society, but the influences vary and often recede with time.

A specific focus often serves as a useful lens to understand the barriers that the law poses to social progress. However, once the problem is spotlighted, the subject disintegrates as a discrete legal subject and becomes integrated into the historic Roman-based categories as a new constraint or "factor." For example, law and poverty courses were very much in vogue in the late 1960s and early 1970s, reflecting the high political priority that structural poverty ameliorization enjoyed. The course illustrated the way in which different areas of the law reinforced poverty, and many of the reform ideas entered the legal mainstream. One cannot teach landlord-tenant law without examining the impact of certain rules on low-income tenants. But, eventually, the legal construct of poverty died as political priorities shifted, although courses such as property and contracts continue to be influenced by the development. Feminism may be undergoing a similar fate.<sup>59</sup> It is increasingly an important perspective to be considered in a wide range of areas, but not a separate area of law. Occasionally, the obsolescence is planned. Gaylaw is one of a few new legal areas with a reform agenda that seeks to eliminate the need for the area. Gaylaw's sole focus is to eliminate discrimination against same sex conduct and relationships to guarantee equal treatment for all people regardless of sexual orientation.<sup>60</sup> The Supreme Court has now immunized consensual, same-sex adult sexual relations from criminal sanctions.<sup>61</sup> Were the state to recognize gay marriage or create the full functional equivalent, there would be much less need

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59. See Catharine A. MacKinnon, *Mainstreaming Feminism in Legal Education*, 53 J. LEGAL EDUC. 199 (2003) (articulating a vision of what the "true" integration of feminism into the legal system and the academy might be).

60. WILLIAM N. ESKRIDGE, JR., *GAYLAW: CHALLENGING THE APARTHEID OF THE CLOSET* (1999).

61. *Lawrence v. Texas*, 123 S.Ct. 2472 (2003).

for that area of law. Sexual orientation could simply be added to the list of categories protected from a wide variety of discrimination in housing, the work place, and other areas.

Environmental law could suffer this fate because it, too, began as a lens course. Environmental law held up existing areas of the law such as nuisance, public land law, and administrative law to the lens of environmentalism to show the defects in existing law, which were largely designed to promote rational (at best) resource exploitation, and to address problems such as systemic pollution, long term risks rather than immediate injuries, and poorly planned environmentally insensitive public works projects. Despite its success to date, it is still possible that environmental law could suffer the fate of other lens courses: total assimilation and marginalization. However, its proponents have higher aspirations for it than as a transition stage to integration and its marginalization as a “sensitivity.” The thrust of environmental law is markedly different from what Judge Calabresi has called the “law and status” theory of law.<sup>62</sup>

In contrast to areas of the law that identify victims and devise strategies to end or ameliorate an unjustified inferior status, environmental law rests on the assumption that the imperatives of environmentalism require a permanent and fundamentally different approach to the use of the three bases of our planetary life support system: air, water, and soil. It follows that the external forces — economics, ethics, and science — that propel environmentalism should shape a new area of the law. Thus, environmentalism is not simply a new technology, such as the Internet, which can ultimately be organized by adapting established legal categories to it, or a new social movement with a limited half-life. The model, therefore, is not like the other social movements of the mid-1960s and other trendy but ephemeral areas such as law and literature, but like the earlier natural resource areas of water, oil and gas, mining, public land, and land use controls law. These areas grew from the special physical characteristics of a resource and the social dynamics that shaped the conflicts over the use of it, and as a result developed a coherent permanent body of law that continues to evolve.

### III. THREE JURISPRUDENTIAL SOURCES OF REAL LAW AND THEIR LIMITATIONS

Once one rejects the easy Holmes-Gray position that law is a reasoned prediction of how a court will decide a case,<sup>63</sup> there are

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62. Calabresi, *supra* note 32, at 2127-29.

63. Oliver Wendel Holmes, *The Path of Law*, in COLLECTED LEGAL PAPERS 168 (1920); *see*

three candidate jurisprudential answers to the real law problem in environmental law. First, environmental law can be characterized as positive law. Second, it can be seen as a textbook example of sociological jurisprudence. Third, it can be seen as a legal revolution which supplements the historic focus on human dignity with a new, dual focus of the interests of future generations and ecosystem integrity. This section examines the pros and cons of grounding environmental law in English positivism, sociological jurisprudence, and a legal revolution. It finds that all of them can contribute to an understanding of environmental law, but none is a complete explanation. The following section essays a new definition of environmental law.

### A. *The Case for Positivism*

#### 1. *Environmental Law Looks Like and is Positive Law*

Positivism is the most logical basis of environmental law because the subject is largely the product of legislative acts, administrative regulations, and judicial decisions interpreting the legislation.<sup>64</sup> Congress quickly responded to widespread public demands that the “environment” be protected with a decade of stringent regulatory programs.<sup>65</sup> If one defines law as the command of the sovereign and posits that all law is legislated,<sup>66</sup> environmental law is a field of “pure” positive law similar to many areas of law such as tax, securities regulation, or employment discrimination. A dense regulatory program such as that administered by the EPA and other government agencies has long been the foundation for the development of a new area of law.<sup>67</sup> The virtue of defining

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also JOHN CHIPMAN GRAY, *THE NATURE AND SOURCES OF THE LAW* § 276 (1909) (“[I]n truth, all the Law is Judge-made law.”).

64. GEORGE P. FLETCHER, *BASIC CONCEPTS OF LEGAL THOUGHT* 33 (1996) (stating that “the simplest working definition of positivism is this: Positivism holds that all law is enacted law.”).

65. Environmental law was the product of a unique moment in United States and world political history. Concern for the adverse consequences of human exploitation of nature had been building since the nineteenth century. More immediately, the foundations for the federalization of air and water pollution had been laid in the 1930s-50s. See Andrews, *supra* note 7, at 201-54; see also William L. Andreen, *The Evolution of Water Pollution Control in the United States: State, Local, and Federal Efforts, 1789-1972: Part I*, 22 *STAN. ENVTL. L.J.* 145 (2003).

66. MACCORMICK, *supra* note 31, at 60.

67. Mark Sagoff has characterized environmental protection as social rather than economic regulation to argue that efficiency should not be the primary criterion against which regulatory outcomes are measured. *THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT* (1988). But see Carol M. Rose, *Environmental Faust Succumbs to Temptations of Economic Mephistopheles, or Value by Any Other Name is Preference*, 87 *MICH. L. REV.* 1631 (1989) (noting the distinction has been much criticized).

environmental law as positive is that it grounds the field in the most widely accepted Anglo-American jurisprudential tradition and endows it with the needed capacity to adapt to changed knowledge. Ultimately, positivism reflects the views of Jeremy Bentham that the law is in constant need of reform and thus assumes that all law is changeable.<sup>68</sup> Adaptation to new knowledge and experimentation should be the hallmark of environmental law.<sup>69</sup>

Positive legislation is responsible for the successes of environmental law. The major achievements of the environmental decade, the Clean Air and Clean Water Acts, the Endangered Species Act, and the “Superfund” are justly celebrated as a major shift in United States resource policy.<sup>70</sup> The legislation and the early sympathetic judicial readings of them turned our air and watersheds from unlimited waste disposal sinks to limited access commons; they reduced large percentages of gross pollution. They also served as worldwide models of effective, enforceable environmental regulation.

## 2. *The Limits of Positivism*

The environmental legislation put in place during the environmental decade also illustrates the dangers and limits of positivism. Over time, our environmental legislation has become increasingly dysfunctional and immune to necessary adaptation to changed conditions. Environmental law’s habitually under-exposed radical nature means that changes in political priorities, including judicial interpretation, can reduce an ephemeral set of positive statutes and regulations into a legal system that fails to evolve to fulfill its initial remedial purpose. Environmental law is simply another field of statutory interpretation. The Clean Air Act has not been able to tame automobile use or limit CO<sub>2</sub> emissions. The Clean Water Act, along with market-driven de-industrialization, has reduced discharges from large point sources but not non-point source pollution. The Endangered Species Act is an Emergency Room procedure for species on the brink of extinction, rather than a broad mandate for biodiversity conservation.

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68. MACCORMICK, *supra* note 31, at 60.

69. Daniel A. Farber, *Environmental Protection As A Learning Experience*, 27 LOY. L.A. L. REV. 791 (1994). Ironically, other countries have used the United States’ litigation model to legislate new environmental rights. Brazil developed a new category of diffuse right called a transindividual right to allow class actions for pollution of commons. This categorization has given public interest litigation a firmer conceptual foundation than it enjoys in the United States. Código Comercial [C. Co.] art. 81 (Braz.). See also Antonio Gidi, *Class Actions in Brazil — A Model for Civil Law Countries*, 51 AM. J. COMP. L. 311, 349-56 (2003).

70. See RICHARD J. LAZARUS, *THE MAKING OF ENVIRONMENTAL LAW* (forthcoming 2004).

I am uneasy with a pure positivist answer because it ties environmental law too closely to the politics of environmentalism<sup>71</sup> since what goes up can go down.<sup>72</sup> At the present time, environmental law is undergoing a traditional Chinese torture death by slicing. For example, J.R. DeShazo and Jody Freeman have demonstrated that “legislators use their position on oversight and appropriations committees to divert the agency from compliance with the extremely specific requirements of the Endangered Species Act.”<sup>73</sup> The result is a severe sub-majoritarianism that undermines national environmental mandates. This argument is not simply a reaction to the extreme anti-environmentalism of the current administration. Rather, it reflects one of the fundamental ideas of the western legal tradition: there has to be some space between law and politics.

### B. Sociological Jurisprudence

As indicated above, one of the problems with pure positivism is that there is no need to worry about the utility of the substantive content of the law. In contrast, sociological jurisprudence has always been aware of the complex interplay between changing societal values and the need for purposeful legal rules, and principles to reflect these new values. Environmental law would seem to be a classic example of Roscoe Pound’s view that law is social

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71. The idea of an unlimited sovereign troubled Austin and his critics. See JOSEPH RAZ, THE CONCEPT OF A LEGAL SYSTEM 26-43 (1970); see also Richard J. Lazarus, *A Different Kind of “Republican Moment” in Environmental Law*, 87 MINN. L. REV. 999 (2003) (arguing that the success of environmental law is based on the bipartisan nature of environmental issues and the divided nature of the federal government, and that the current domination of all three branches of government by the Republican party and the diversion of public attention to the Post-September 11th world of fear and economic hardship does not bode well for the future of environmentalism).

72. For years, water law scholars have argued that states should integrate water quantity and quality considerations in water use permits. In fact, Justice O’Connor labeled the distinction between quantity and quality “artificial.” PUD No. 1 of *Jefferson County v. Wash. Dept. of Ecology*, 511 U.S. 700, 719 (1994). However, when the Washington State Department of Ecology actually started conditioning water rights permits, the legislature promptly prohibited it from using its water pollution authority to abrogate, supersede, impair, or condition the full exercise of water rights. Engrossed Substitute Senate Bill No. 38 (2003).

73. J.R. DeShazo & Jody Freeman, *The Congressional Competition to Control Delegated Power*, 81 TEX. L. REV. 1443, 1447 (2003). See also William Snape III & John M. Carter II, *Weakening the National Environmental Policy Act: How the Bush Administration Uses the Judicial System to Weaken Environmental Protections* (A Report of Judicial Accountability Project, Defenders of Wildlife) (2003), available at <http://www.defenders.org/publications/nepareport.pdf> (last visited Feb. 27, 2004) (describing multiple strategies that the Bush II Administration is using to circumvent NEPA). See generally Robin Kundis Craig, *Environmental Law Symposium: The First Year of the Bush Administration*, 25 W. NEW ENG. L. REV. 1 (2003).

engineering.<sup>74</sup> This theory posits that law reflects a clash of competing interests and has the potential to evolve as new interests are recognized.<sup>75</sup> Pound's jurisprudential theories fell out of favor in the 1930s under the spell of Freudian-influenced legal realism. A less developed version of his theory reemerged in the Henry Hart and Albert Sacks Harvard legal process school,<sup>76</sup> which was still in vogue at the beginning of the environmental decade.<sup>77</sup> Hart and Sacks developed a theory of adjudication that involved a constant interplay among three sources of law — rules, standards (rule-like norms), and principles<sup>78</sup> to permit reasoned judicial reform.<sup>79</sup>

The legal process approach legitimates an open-ended, progressive process of adjudication which allowed judges to test the validity of preexisting norms by reinterpreting these norms in light of contemporary social and economic conditions,<sup>80</sup> provided that the decision met the test of reasoned elaboration and proper consideration of the merits of deferring other law making institutions. Environmentalism is a changed social condition, and thus environmental law would seem to be a good candidate for reasoned legal change using the legislation as a guide. The problem is that environmental law has not developed in this fashion. A few early decisions invoked newly proclaimed general environmental principles to explain or justify an interpretation of a statute<sup>81</sup> or the

74. ROSCOE POUND, AN INTRODUCTION TO THE PHILOSOPHY OF LAW (1922).

75. In contrast to the pseudo-Darwinistic claims once advanced by some law and economics scholars, I do not argue that law evolves in a deterministic fashion to produce efficient rules. See Gillian K. Hadfield, *Bias in the Evolution of Legal Rules*, 80 GEO. L.J. 583 (1992).

76. HENRY M. HART, JR. & ALBERT M. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW (William Eskridge, Jr. & Phillip P. Frickey eds., 1994).

77. All good ideas return in a recycled and modified form. See Edward L. Rubin, *The New Legal Process, The Synthesis of Discourse, and the MicroAnalysis of Institutions*, 109 HARV. L. REV. 1393 (1996).

78. See ANTHONY J. SEBOK, LEGAL POSITIVISM IN AMERICAN JURISPRUDENCE 139-46 (1998) (giving an important rehabilitation of this theory).

79. See Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L. REV. 557 (1992); Kathleen M. Sullivan, *The Supreme Court, 1991 Term Foreword: The Justices of Rules and Standards*, 106 HARV. L. REV. 22, 57-69 (1992); MARK KELMAN, A GUIDE TO CRITICAL LEGAL STUDIES 15-63 (1987); FREDERICK SCHAUER, PLAYING BY THE RULES: A PHILOSOPHICAL EXAMINATION OF RULE-BASED DECISIONMAKING IN LAW AND IN LIFE 104 (1991).

80. Professor Margaret Jane Radin reaches this conclusion through Wiggstein's argument that rules only exist when there is widespread community acceptance. See Margaret Jane Radin, *Reconsidering the Rule of Law*, 69 B.U.L. REV. 781, 817-19 (1989).

81. See *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1043 (D.C. Cir. 1978). In rejecting the argument that the EPA must take the natural treatment capacity of the ocean into account in setting effluent limitations, the District of Columbia Circuit Court of Appeals bolstered its construction of the Clean Water Act with the observation that,

[m]ore fundamentally, the new approach implemented changing views as to the relative rights of the public and of industrial polluters. Hitherto, the right of the polluter was preeminent, unless the damage caused by

application of a common law or constitutional rule. However, these decisions have not resulted in the consistent development of a distinct environmental jurisprudence.

### C. *The Revolutionary Theory*

The most honest but challenging jurisprudential theory would be to characterize environmental law as a form of revolutionary law. Environmental law is a radical break with the Western legal tradition and the two manifestations of it in the United States, the common law and constitutionalism. Much of it seeks to protect two communities, natural systems and future generations, that have traditionally lacked a legal personality. Environmental law is further out of step with much of the western legal tradition because the hallmark of all great legal systems, common, civil and Islamic, is that they are backward looking systems that evolve slowly through a legal culture controlled by the governors of the system.<sup>82</sup> Adaptation to changed social conditions are often subordinated to the twin values of stability and predictability.

This does not mean, in Joseph Sax's wonderful phrase, that law is a civil suicide pact that prevents it from dealing with radical new concepts of social organizations, which environmentalism requires.<sup>83</sup> However, the protection of settled expectations remains the primary objective of the law and adaptation remains a secondary objective to be carefully cabined. This is a major problem for environmental law because it is forward looking with a vengeance, and has little respect for the past. The past is seen as the source of our current problems and a legacy to be rejected and replaced with a new paradigm of human-nature relations. As the historian Simon Schama has written:

environmental history offers some of the most original and challenging history now being written, it inevitably tells the same dismal tale: of land taken, exploited, exhausted; of traditional cultures said to

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the pollution could be proven. Henceforth, the right of the public to a clean environment would be preeminent, unless pollution treatment was impractical or unachievable.

*Id.*; see also *Ethyl Corp. v. E.P.A.*, 541 F.2d 1 (D.C. Cir. 1976) (rejection of mechanistic proof of cause-in-fact when statute is "precautionary in nature" and "on the frontiers of scientific knowledge."); *Environmental Def. Council v. Corps of Engineers of U.S. Army*, 470 F.2d 289 (8th Cir. 1972), *cert. denied*, 412 U.S. 931 (1973) (holding that ANEPA was intended to effect substantive changes in decisionmaking.)

82. See ALAN WATSON, *THE EVOLUTION OF LAW* 119 (1985).

83. Joseph L. Sax, Book Review, *Takings: Private Property and the Power of Eminent Domain*, 53 U. CHI. L. REV. 279, 282 (1986).

have lived in a relation of sacred reverence with the soil displaced by the reckless individualist, the capitalist aggressor.<sup>84</sup>

Legal revolutions do occur, but the fundamental legal change that they bring is often minimal because the revolution is more of a social/political rather than legal one. Professor Alan Watson classifies legal revolutions as (1) the clarification of prior, largely customary, regime, (2) the adoption of a new legal regime to match a political revolution, (3) the wholesale adoption of a code as part of the process of modernization, and (4) the rare case of one legal tradition being replaced by the second.<sup>85</sup> In most cases, the revolutions continue the backward looking tradition by incorporation of prior law. The United States experience with revolutions reinforces the backward looking legal nature of them. The United States has had two revolutions and shows little inclination to have a third. Neither the Revolutionary War nor the Civil War disturbed the underlying legal regime. In fact, they sought to recapture an ideal legal past. Political change generally occurs through “republican” moments, either when a non-partisan consensus emerges or one party is sufficiently powerful to force its agenda on the nation.<sup>86</sup>

Environmental law would stem to be a perfect case for another kind of revolutionary change, the post-modern transformative jurisprudence advocated by Roberto Unger and others in the critical legal studies movement.<sup>87</sup> It is non-formal, indeterminate law at its best<sup>88</sup> and is more rhetoric than law;<sup>89</sup> its ultimate objective is to destabilize and redistribute the boundaries of property.<sup>90</sup> However, no such legal revolution has occurred in environmental law. Instead,

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84. SIMON SCHAMA, *LANDSCAPE AND MEMORY* 13 (1995); see also WILLIAM CRONON, *CHANGES IN THE LAND: INDIANS, COLONISTS AND THE ECOLOGY OF NEW ENGLAND* (1983) (a classic example of the lost Eden school of environmental history).

85. Watson, *supra* note 82.

86. Daniel A. Farber, *Politics and Procedure in Environmental Law*, 8 J.L. ECON. & ORG. 59 (1992).

87. MALCOLM M. FEELEY & EDWARD L. RUBIN, *JUDICIAL POLICY MAKING AND THE MODERN STATE: HOW COURTS REFORMED AMERICA'S PRISONS* 243-44 (1998) (arguing that in post-modern society the rule of law is achieved through process and the institutional structure rather than to fidelity to existing text).

88. See Duncan Kennedy, *Toward a Critical Phenomenology of Judging*, in *THE RULE OF LAW: IDEAL OR IDEOLOGY?* 141 (A. Hutchinson and P. Monahan eds., 1987); Ruhl, *supra* note 51.

89. See JAMES BOYD WHITE, *HERACLES' BOW: ESSAYS ON THE RHETORIC AND POETICS OF LAW* 31-44 (1988).

90. See ROBERTO MANGABIERA UNGER, *WHAT SHOULD LEGAL ANALYSIS BECOME?* 152 (1996). For a proposal to apply this analysis to property, see Tony Arnold, *The Reconstruction of Property: Property as a Web of Interests*, 26 HARV. ENVTL. L. REV. 281 (2002).

we have followed one of two incremental, backward looking strategies. First, we have tried to use the courts as instruments of change by pursuing a rule of law strategy based on the fiction that courts were simply applying pre-existing duties.<sup>91</sup> Second, we have pretended that environmental law is consistent with liberal individualism because it is a modest extension of the principle that persons should be responsible when they cause harm to others.<sup>92</sup>

This fiction works tolerably for pollution that immediately damages persons or property, but it begins to break down for risk exposure protection and biodiversity conservation. The control of air and water pollution do have some roots in the common law,<sup>93</sup> but environmental law is more often a radical break rather than an incremental extension of the common law and the western legal tradition generally.<sup>94</sup> The interests that the law seeks to protect had no legal personality at common law and the definition of harm which it promotes was seldom recognized. Environmental law basically protects the interests of future generations in a sustainable planetary life support system<sup>95</sup> and natural system functions. Environmental law has sought to redefine harm as long term the risk of future illness or ecosystem malfunction rather than immediate manifestation of an injury mechanistically caused by an identifiable actor. These ideas continue to be bitterly contested. For example, there is some recognition of risk in the regulation of carcinogenic and mutagenic substances but the law of torts

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91. See Tarlock, *Environmental Rule of Law Litigation*, *supra* note 7.

92. *E.g.*, ROBYN ECKERSLEY, ENVIRONMENTALISM AND POLITICAL THEORY: TOWARD AN EOCENTRIC APPROACH (1992); R. GOODWIN, GREEN POLITICAL THEORY (1992); David A. Westbrook, *Liberal Environmental Jurisprudence*, 27 U.C. DAVIS L. REV. 619 (1994) (discussing that environmentalism is inconsistent with liberal values because it does not protect individual well-being); Geoffrey Wandesford-Smith, *Learning From Experience, Planning for the Future: Beyond the Parable (And Paradox?) of Environmentalists As Pin-Striped Pantheists*, 13 ECOLOGY L.Q. 725 (1986).

93. WILLIAM RODGERS, JR., ENVIRONMENTAL LAW, 112-22 (2d ed. 1994). For an articulation of the thesis that the Clean Air Act is not a revolutionary development but is deeply rooted in the common law of nuisance, see MORAG-LEVINE, CHASING THE WIND, *supra* note 34.

94. I use the broad definition of the western legal tradition put forth by Harold J. Berman in LAW AND REVOLUTION: THE FORMATION OF THE WESTERN LEGAL TRADITION 7-10 (1983). Professor Berman lists nine characteristics. His fifth is that "[i]n the western legal tradition law is conceived to be a coherent whole, an integrated system, a "body," and this body is conceived to be developing in time, over generations and centuries." *Id.* at 9.

95. EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS; INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY (1989); *see also* Daniel A. Farber, *From Here to Eternity: Environmental Law and Future Generations*, 2003 ILL. L. REV. 289 (2003). Professor Lisa Heinzerling offers an alternative, but not inconsistent categorization of the beneficiaries of environmental protection. Heinzerling, *The Rights of Statistical People*, *supra* note 46.

adheres rigorously to mechanistic theories of cause and has resisted the tort of risk creation.<sup>96</sup>

#### IV. THE PERSISTENCE OF PROCESS

##### A. *The Special Features of Environmental Decisionmaking*

The basic features of environmental decisionmaking such as the full assessment of potential adverse impacts, the application of state-of-the-art technology and beyond to reduce pollution, the attempted quantification of long term risks and the search for less environmentally destructive alternatives are so ingrained in contemporary thinking that we forget how novel and bitterly contested they recently were (and are once again) and how fundamentally they have changed the way that we now make a wide range of decisions. Environmental law was born as way to compel administrative agencies, private industry and local governments to adopt a new process of making decisions and to invest in pollution reduction technology. Prior to the 1960s, environmental values, as we now define them, existed under the rubric of conservation practices or aesthetic interests, but they were consistently given little weight in resource allocation and waste disposal decisions. Thus, there was limited assessment of the long adverse impacts of most activities and of the possibility of less damaging alternatives.

Environmental law changed all this. It was born out of the fight to stop a pump storage project at scenic Storm King Mountain on the Hudson River in New York State. The successful law suit to remand a Federal Power Commission license became the paradigm environmental law suit.<sup>97</sup> The plaintiffs convinced the court of appeals to read a broad regulatory statute, which at best conferred discretion on the agency to consider aesthetic values (a then much contested idea), to impose an affirmative duty to consider thoroughly environmental values and to justify more fully decisions not to protect environmental values once the objectors offered evidence of likely environmental degradation and a reasonable, less environmentally damaging alternative. The common thread that ties these concepts together is that they are almost all processes to

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96. Despite persistent argument that courts should become more receptive to probabilistic theories of cause, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), has raised rather than lowered the causation bar for toxic tort plaintiffs. Jean Macchiaroli Eggen, *Toxic Torts and Causation: The Challenge of Daubert After the First Decade*, 17 NAT. RES. & ENVTL. 213 (2003). When the tort has been recognized, the prima facie case is very difficult to meet. *E.g.*, *Potter v. Firestone Tire Co.*, 863 P.2d 795 (Cal. 1993).

97. *Scenic Hudson Preservation Conference v. FPC*, 354 F.2d 608 (2d Cir. 1965), *cert. denied*, 384 U.S. 941 (1996). For a more detailed history of the litigation see Oliver Houck, *Unfinished Stories*, 73 U. COLO. L. REV. 867, 869-80 (2002).

deal with of the central characteristics of environmental problems — pervasive uncertainty.<sup>98</sup>

### B. Process versus Procedure

Students of environmental law have often observed that what law that has emerged from environmental litigation is primary procedural rather than substantive. The procedural focus can be traced to the first cases that held that NEPA could be judicially enforced by the courts,<sup>99</sup> a view ultimately ratified by the Supreme Court.<sup>100</sup> The construction of NEPA as a procedural rather than substantive statute is the most striking example of the dominance of procedure over substance, but it is only one example. Once the Supreme Court moved away from the New Deal tradition of highly deferential review of informal agency action, courts had to reconcile more intrusive review with separation of powers principles. The focus on the process of decision and its internal logical coherence<sup>101</sup> rather than on the merits of the decision was the means reconciled the unprecedented response to environmentalism with the Constitution through the “hard look” doctrine.<sup>102</sup> However, the substance/procedure dichotomy was never as clear cut or stable as the courts pretended, and in fact intensive procedural review fundamentally changed the ways that agencies make decisions.

Environmental law’s continued focus on procedure rather than substance is often lamented as a major failing because we expect an area of law to come as close to a suite of interlocking substantive rules as possible. However, the hoped-for substantive rules are unlikely to emerge in the future. The basic reason is the science-based nature of environmental law precludes the definition of hard

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98. See Doremus, *supra* note 42, at 319-409. Professor Doremus identifies four distinctive characteristics of environmental problems: (1) pervasive uncertainty; (2) intractable value conflicts; (3) the need for collective action; and (4) the need for durable and dynamic solutions. These are present in most environmental controversies but the value conflicts, the need for collective action and the need for durable *but* dynamic solutions are all triggered by pervasive uncertainty. Uncertainty forces people to rely on empirical presumptions phrased as values, makes it impossible to rely solely on markets and common law suits to address many problems and makes all solutions contingent on the present state of knowledge. *Id.*

99. Calvert Cliffs Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n., 449 F.2d 1109 (D.C. Cir. 1971).

100. Stryker’s Bay Neighborhood Council v. Karlen, 444 U.S. 223 (1980); Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989).

101. Charles H. Koch, Jr., argues that judicial review of agency policy making is a discrete category different from review of their statutory authority, that *Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837 (1984), blurred this distinction but the Court is slowly recognizing the difference by focusing on the process by which policy was articulated, not simply on whether the discretion to do was delegated. Charles H. Koch, Jr., *Judicial Review of Administrative Policymaking*, 44 WM. & MARY L. REV. 375 (2002).

102. Citizens to Preserve Overflow Park v. Volpe, 401 U.S. 402 (1971).

rules and pushes the law toward process rather than consistent outcome. This is the reality with which environmentalism must live,<sup>103</sup> but it need not be a negative factor for two primary reasons.

First, the dichotomy between substance and procedure has never been one of kind,<sup>104</sup> especially in the new administrative law that developed in the 1970s.<sup>105</sup> Procedures which impose new, affirmative duties on agencies to assemble and assess information that had been largely ignored in the past were intended to change the nature of substantive decisions. Second, there is a crucial, but not generally articulated, distinction between procedure and process as the term is used in "post-modern discourse." Procedure refers to the due process-based rules that we mandate to promote accuracy ("truth"), put before, rationality and fairness in a wide variety of fora. Procedure is therefore ultimately a neutral term because, we are indifferent to the correctness of the outcome if the standards of rationality and fairness are met in the search for truth. Process has a different standard of legitimacy.

In post-modern or post-Newtonian science, process refers to the way that we deal with the levels of uncertainties that have crept into our once static views of how the world works, but it is not a neutral term in the same sense that procedure is. It is a search for understanding which does not substitute fairness for accuracy. "With the rise of science a dream was born that the ultimate ground of reality would be discovered in tangible material things such as atoms, molecules, and elementary particles. It now seems that these are all manifestations of some underlying process, of symmetry principles and constant transformation."<sup>106</sup> The fact knowledge is always a search and a debate about what we actually know does not exclude the use of guidelines to structure the process which is defined by the three primary objectives of environmentalism: (1) the reduction of the immediate and unrestrained use of air, soil and water media as waste disposal sinks; (2) the reduction of the long term public health and ecosystem degradation risks that result from exposure to toxic and other harmful substances; and (3) the conservation of biodiversity.

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103. See DANIELA FARBER, *ECO-PRAGMATISM MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD* (1999).

104. See Robert Cover, *For James William Moore: Some Reflections on A Reading of the Rules*, 84 *YALE L.J.* 718 (1975).

105. See Richard Stewart, *The Reformation of American Administrative Law*, 88 *HARV. L. REV.* 1667 (1975).

106. F. EDWARD PEAT, *FROM CERTAINTY TO UNCERTAINTY: THE STORY OF SCIENCE AND IDEAS IN THE TWENTIETH CENTURY* 69 (2002).

*C. Environmentalism: Science or Ethics?*

If we are to posit guidelines, the issue becomes their source. Environmentalism is fundamentally a science-based way of perceiving the plant. We now view the plant as an object to be conserved rather than heedlessly exploited. This question is how should we respond to this changed perception. To some, this is an ethical sea change. To others, it is a reflection of our increasing but maddeningly incomplete understanding of how natural systems operate under the stress of constant human manipulation. It has not been thought necessary to specify the precise reason to enact positive protection legislation because ethics and science are assumed to lead the same result: the need to restrain much human activity that modifies “nature”. Thus, environmental law is an unstable blend of science-informed ethical postulates. Economists might object to this characterization since it seems to exclude economics, which have played a major role in the design and justification of programs from pollution prevention to biodiversity conservation. However, economics, powerful as it is, primarily operates as a constraint (often powerful) on regulatory decisions made for a mix of ethical and scientific reasons.<sup>107</sup> Tension and inconsistency can be productive for a period of time but at some point, it is necessary to decide if law is environmental primarily based on ethics or science. Much is at stake. An ethically based environmental law should yield a series of “hard” rights both for natural systems and humans. These rules can be “confessed”; they do not depend on empirical verification. A science-based environmental law will inevitably lead to processes that require that constant production of knowledge.<sup>108</sup>

In the end, the choice is easy because the ethics project has not succeeded. Environmentalists have struggled mightily but unsuccessfully to construct a system of neo-Kantian environmental ethics that covers both humans and flora as fauna around Aldo Leopold's dictum that “[a] thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”<sup>109</sup> Environmental lawyers have long hoped that equilibrium ecology, as stated in Eugene Odum's classic text, would provide the scientific support to convince courts and legislatures to adopt nature's rules as legal rules. There are at

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107. Mark Sagoff, *Principles of Federal Pollution Control Law*, 71 MINN. L. REV. 19 (1986). *But see* Rose, *supra* note 67.

108. I have explored the influence of science and ethics more fully in *Environmental Law: Ethics or Science?*, 7 DULCE ENVTL. L. & POLICY F. 193 (1996).

109. ALDO LEOPOLD, A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE 224-25 (1949).

least three major problems with this project which relegate environmental ethics to a sensibility rather than a source of decision rules.

The first problem is the failure to develop a coherent, operational theory of environmental ethics that can be applied by judges. Even Leopold's most passionate defenders recognize that the whole "project" of environmental ethics has not succeeded in creating a convincing case for non-human rights and in developing substantive rules which are capable of making the inevitable choices among competing resource use options.<sup>110</sup> The second problem is that environmental ethics attempts to collapse a dichotomy, which is at the center of western thought. Environmental ethics rejects the is/ought distinction, which is said to separate science from morals. Unfortunately, science can contribute wisdom<sup>111</sup> but not the level of precision necessary to make hard choices so the dichotomy persists. The third problem is that attempts to collapse the sentient/non-sentient dichotomy, not just for large mammals but for all flora and fauna dichotomy.<sup>112</sup>

It is tempting to avoid the choice and argue that since environmentalism is an emerging philosophy or value system that posits that we living humans should assume science-based ethical stewardship obligations to conserve natural systems for ourselves as well as for future generations, and therefore we can define environmental law as institutionalized stewardship. Appealing as the idea is, it is not a good explanation of how the law surrounding environmental protection actually functions; environmental stewardship remains more a statement of aspiration rather than a positive description of law because, as a substantive matter, environmentalism is such a radical break with the western philosophical and legal tradition.

#### *D. The Problems of Science*

##### *1. The Limits of "Conservative" Science*

The failure of the ethical rights project forces environmentalism and environmental law to confront the strengths and limits of science, and the limits are many. Science is powerful but not transformative. As Professor Holly Doremus has observed,

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110. CHRISTOPHER STONE, *EARTH AND OTHER ETHICS* (1987).

111. *But see* EDWARD O. WILSON, *THE DIVERSITY OF LIFE* 357 (1992) ("[F]or what, in the final analysis, is morality but the command of conscience seasoned by a rational examination of the consequences.")

112. M. ZIMMERMAN, *CONTESTING EARTH'S FUTURE: RADICAL ECOLOGY AND POSTMODERNITY* 374-75 (1995).

“[b]ecause environmental problems are wicked, they cannot be solved objectively.”<sup>113</sup> Science thus is not a mechanical process of answers to “wicked” environmental questions so such as it is a tool box to help answer the questions. Environmental law is science-based; science is the primary but not controlling influence. At some point, the normative conclusions drawn from science must be recognized as much. Environmentalism has deep roots in the aesthetic and emotional appeal of nature worship as well as in rationality. However, the environmentalism that drives policy and law is a product of the Enlightenment’s faith in reason and knowledge, as opposed to theology, to benefit society.

It was the careful work of scientists such as Rachael Carson. Her book *Silent Spring*, along with a few others, played a pivotal role in alerting society to the dangers of the unrestrained and un-assessed use of ecosystems as sinks for chemicals, industrial wastes and the consequent loss of biodiversity. Society’s faith in science has the power to shape the environmental dialogue. Science seldom controls the final outcome of the dispute, but policy-makers must generally operate within its parameters to establish the legitimacy of a decision. We cannot paste over the problem that constructs such as biodiversity loss<sup>114</sup> conceal fundamental differences in perceptions shaped by different values. Scientists like Edmund Wilson hope these differences in understanding will narrow as science produces more information.<sup>115</sup> Information production is central, but the basic problem with science generating useable information is that it has not historically been geared to tell us what we need to know. We once assumed that science could tell us the rules to prevent pollution and conserve biodiversity but too often they have posed more questions than answers. For example, we have developed many indices of pollution but we still cannot define and measure the desired end state for a healthy river. Instead, we have turned to engineers to tell us how much a waste stream can be reduced or a polluted site cleaned up.

Science is frustrating to apply because there are many levels of contingency in science. The contingency that has special relevance to the attempt to apply science to many environmental disputes is the tension between regulatory and “hard” or theoretical science. For example, the Endangered Species Act requires scientists to provide clear answers to fuzzy questions that many scientists do not

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113. Holly Doremus, *Constitutive Law and Environmental Policy*, 22 STAN. ENVTL. L.J. 295, 332 (2003).

114. Fred Bosselman has suggested, it is not clear if “biodiversity” can ever be made into a scientifically credible guide for decision-making. Bosselman, *supra* note 42.

115. WILSON, *supra* note 111.

define as “scientific” such as whether a species is endangered or whether a specific project is likely to cause jeopardy, but jeopardy is a legal rather than scientific construct. Scientists are uncomfortable with answering questions like this for two reasons. First, it partially collapses the fact-value dichotomy which science has maintained to differentiate itself from the softer humanities and social sciences and to establish its authority. Scientists are asked to decide, without revealing that they have done so, not only how much risk the species will experience but how much risk is acceptable. Second, questions that require tight causal connections leave too little room for the contingencies and qualifications that “hard” science demands.

Science seeks truth, but approaches it through a continual process of experimentation and re-evaluation. Scientists are most comfortable giving answers as ranges of probability rather than bottom line, linear causal relationships. But, environmental protection statutes force them to practice regulatory science, which is science designed to answer, to the best extent possible, causal questions about management choices and a socially desired outcome, such as the preservation of a species from extinction or an ecosystem that functions more like it did prior to human intervention. Regulatory science requires scientists to contribute to the establishment of standards that have both a normative and scientific component and then to devise ways to measure whether these standards are being met over time.

## *2. Three Examples of Dynamic, Destabilizing Science*

Science often changes its views of the world in ways that can undermine laws built on them. Three examples follow.

### *a. Unbalanced Nature*

Much environmental law assumes that nature will be in balance if not disturbed. However, changes in ecology have undermined the simple faith that preventing changes in natural systems is a sufficient protection strategy and that general but hard substantive environmental protection rules could emerge from this process. As lawyers were busy looking to ecology and other science, scientists have been busy deconstructing all the notions of stability from ecosystem to the definition of a species and the hope of simple rules that this promised. Biologists have substituted non-equilibrium for equilibrium theories of ecosystem. “Nature” is no longer the simple

construct that it once seemed.<sup>116</sup> It has been deconstructed and reconstructed in multiple ways. Ecologists have moved away from the balance of nature theory, in favor of a more stochastic, dynamic system. Just as environmental lawyers were embracing equilibrium ecology, static views of nature were being replaced by more dynamic ones. The balance of nature or equilibrium paradigm has been replaced with a complex, stochastic or dynamic non-equilibrium one.

The images of nature which have influenced ecology are static, when in fact the kinds of resource use problems society faces require a dynamic view of nature and one which starts from the premises that human action is one of the principal forces operating on ecosystems and that system disturbances are both predictable and random. Ecosystems are patches or collections of conditions that exist for finite periods of time. The accelerating interaction between humans and the natural environment makes it impossible to return to an ideal state of nature. As one of the leading proponents of non-equilibrium ecology has written, “nature moves and changes and involves risks and uncertainties and . . . our own judgments of our actions must be made against this moving target.”<sup>117</sup> The net result is that it is more difficult to derive science-based objectives and standards than environmentalists initially assumed. These developments are disturbing to many in the environmental community. As one recent writer observed, “[t]he idea of risky nature is one that is hard for many people to swallow. Environmentalists recoil at the notion that precisely because it seems to give man license to transform nature at will.”<sup>118</sup> Finally, humans have transformed nature from sacred space to be revered by using “lightly” to a high-end commodity to be consumed by active, intensive use.<sup>119</sup>

#### *b. Deconstructed Species*

Science has not stopped with “unbalancing” nature. Almost every cornerstone of modern environmental protection is changing. For example, a species is not what we once thought it was because modern biologists reject the Linnaean hierarchy that forms the

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116. I have explored this paradigm shift in A. Dan Tarlock, *The Nonequilibrium Paradigm in Ecology and the Partial Unraveling of Environmental Law*, 27 LOY. L.A. L. REV. 1121 (1994).

117. DANIEL BOTKIN, *DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY* (1990).

118. STEPHEN BUDIANSKY, *NATURE'S KEEPERS: THE NEW SCIENCE OF NATURE MANAGEMENT* 98 (1995).

119. The question of whether nature is a source of redemption or just another recreational experience has been extensively debated. See Sarah Krakoff, *Mountains Without Handrails . . . Wilderness Without Cellphones*, 27 HARV. ENVTL. L. REV. 417 (2003).

basis for scientific and legal concepts of a species.<sup>120</sup> This thinking has progressed so far that biologists are considering the abolition of all Linnaean species ranks. One can read that “[to conserve biodiversity, it will be necessary to replace current classification methods and] develop valid measures of the diversity of lineage taking into account their actual properties and phylogenetic significance.”<sup>121</sup> Finally, to add insult to injury, the whole construct of biodiversity has been trashed as incoherent.<sup>122</sup>

*c. A New View of What Makes a Cancer Victim*

These developments are not limited to biodiversity but carry over into pollution regulation.<sup>123</sup> The basis for risk regulation has also potentially changed. Until recently, all participants in the debate have accepted two common assumptions. First, there is some need to protect the population at large and specific sub-populations of at-risk groups, such as children, from the adverse affects of *involuntary* exposures to specific pollutants. Second, it would be unfair and inefficient to shift the burden of protection to the individuals for a wide variety of pollution risks because of exposure. However, these assumptions are open to question in light of advances in genetic research which suggest that illness and genetic mutation have a much more complex interaction between an individual's genetic factors and environmental factors.

During the 1970s, when the environmental theory of cancer became the basis of federal cancer policy and risk regulation, the scientific issue centered the proper dose-response curve. The primary regulatory issue was whether or not there was a safe threshold of exposure. Federal agencies used the linear, no-threshold model which presumed “that the dose-response curve extends linearly to the origin (at least for low-level exposures), that there are no thresholds, and that a single hit is sufficient to induce cancer.”<sup>124</sup> This model was generally based on extrapolations from animal experiments to humans. Environmental and occupational health and safety regulation is still based on scientific inference and mathematical models based on animal studies.

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120. See Brent D. Mishler, *Getting Rid of Species?*, in SPECIES: NEW INTERDISCIPLINARY ESSAYS 307 (Robert A. Wilson ed.) (1999).

121. *Id.* at 313.

122. See Bosselman, *supra* note 42.

123. This portion is drawn from A. Dan Tarlock, *Genetic Susceptibility and Environmental Risk Assessment: An Emerging Link*, 30 ENVTL. L. REP. 10277 (2000).

124. ROBERT PROCTOR, *CANCER WARS: HOW POLITICS SHAPES WHAT WE KNOW AND DON'T KNOW ABOUT CANCER* 163 (1995).

Regulators have either had to assume that all persons subject to a specific exposure pathway are equally subject to the same health risk or they have calculated exposure levels for identifiable sub-populations for whom sufficient information exists which suggests that they are subject to higher exposure risks. These at risk groups might include children, asthmatics, pregnant women and members of particular ethnic groups.<sup>125</sup> Our assumption that pollution and work place regulation should be based on statistically observed population susceptibilities rather than the potentially more accurate individual genetic susceptibility to exposure to dangerous substances is at variance with advances in genetic research. Our understanding of the relationship between exposure to a toxic and harmful substance and the clinical appearance of cancer is still incomplete, but we now recognize that genetic sensitivity or susceptibility may kick in at any stage of carcinogenesis and may play a large role in explaining which risks actually materialize in specific individuals or sub-groups in the form of illness.<sup>126</sup> The actual risk to which an individual is subject is ultimately a function of an individual response to a given dose of a hazardous substance, and this response is a function of individual genetic susceptibility.<sup>127</sup>

Environmental law is still premised on the one-hit theory of cancer that posits that there are no safe exposure thresholds. As cancer researchers increasingly focus on genetic explanations of cancer, these theories are being replaced by theories that examine how environmental factors may act in conjunction with genetic and acquired susceptibility. The scientific validity of the one-hit theory has now been questioned by one of the originators of the theory,<sup>128</sup> and modern genetic theory suggests that cancer is part caused by the genetic susceptibility of individuals. In short, cancer is more likely to be the result of multiple hits rather than a single hit as

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125. *Dioxin/Organochlorine v. Clarke*, 57 F.3d 1519 (9th Cir. 1995), illustrates how extra-risk subpopulations are often factored out of risk assessments. See Catherine O'Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples*, 19 STAN. ENVTL. L.J. 3 (2000).

126. H. Vanio, Biomarkers in Metabolic Subtyping-Relevance for Environmental Cancer Control, 20 ARCH. TOXICOL. SUPPL. 303-10 (1998).

127. C.J. Portier & D. A. Bell, Genetic Susceptibility: Significance in Risk Assessment, *Toxicological Letter* 102 (1998).

128. Bruce N. Ames, *Six Common Errors Relating to Environmental Pollution*, 7 REG. TOXICOLOGY AND PHARMACOLOGY 281 (1987).

previously assumed.<sup>129</sup> But, the one-hit hypothesis may still be valid in some circumstances.

#### D. *The Role of Security*

The argument that the maddening complexity of environmental issues compels a process approach must acknowledge the need for certainty as a constraint on the inevitable open ended processes of environmental decisionmaking. One of the benefits of static decision making is that it reaches end points such as an EIS, an effluent limitation or a wetlands mitigation plan, and these points generate legitimate reliance interests. The trade off for compliance with a legal mandate is a high level of assurance that the assumed obligations, usually financial, will remain unchanged for a substantial period of time.<sup>130</sup> Ultimately, complete certainty in the environmental context is an illusion because one cannot predict what new information will teach us about the impact of our use of nature. The risk of future modification, either toward stricter or more relaxed obligations, is inherent in any regulation from a pollution standard to an ecosystem restoration plan. This said, environmental regulation has always tried to correlate the level of legitimate reliance on no change with the level of regulated community expenditure and the magnitude of the regulated activity. This rough proportionality standard will continue to define the certainty constraint.

#### V. FIVE CANDIDATE PRINCIPLES TO STRUCTURE ENVIRONMENTAL DECISION PROCESSES

The dynamic process-making of environmental decisions means that we can only hope to structure decisions with principles that allow us to identify decisions as legitimate efforts to advance environmental goals, but do not lock us into consistent but dysfunctional decisions.<sup>131</sup> I suggest the following candidate

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129. The shift in thinking and its possible regulatory consequences is summarized by the Presidential Commission on Risk Assessment and Risk Management, created by the 1990 Clean Air Act Amendments. The Presidential/Congressional Commission on Risk Assessment and Risk Management, *Risk Assessment and Risk Management in Regulatory Decision-Making* 63-78 (1997).

130. To induce private land owners to dedicate land for multiple species habitat conservation reserves in return for incidental take permits under the Endangered Species Act, the Department of Interior promulgated a "No Surprises Policy" which shifted the financial responsibility to the federal government to remedy the failure of the original reserve to fulfill the objects of the Act. See Fred Bosselman, *The Statutory and Constitutional Mandate for No Surprises Policy*, 24 *ECOLOGY L.Q.* 707 (1997).

131. See J.B. Ruhl, *Thinking of Environmental Law As a Complex Adaptive System: How to Clean Up the Environment By Making a Mess of Environmental Law*, 34 *HOUS. L. REV.* 933

principles. They are a mix of how environmental law has evolved and how it should evolve.

*A. Minimize Uncertainty Before and As You Act*

This principle is an expansion and correction of the more familiar first principle of environmental law that activities with potentially adverse environmental impacts, however defined, should be assessed before they are undertaken. It is codified in NEPA, but over time the original purpose of assessment — real risk and environmental damage minimization — has been lost. Assessment has too often become an end in and of itself rather than a means to obtain the necessary information for long-term, informed decisionmaking to achieve the necessary changes in the way that resources are used and managed.<sup>132</sup> The duty to minimize uncertainty is a continuing one during all phases of an activity. For example, it will often require monitoring and adaptive management for activities that will last over a long period of time.

Adaptive management was developed in the late 1970s as a criticism of static or deterministic environmental assessment. The basic argument was that “a fixed review of an independently designed policy”<sup>133</sup> was inconsistent with the experience of resource managers world-wide and with what has come to be called non-equilibrium ecology. The need for rigorous but flexible procedures to make decisions under conditions of uncertainty has a long intellectual pedigree. Howard Raiffa’s pioneering work in the 1960s on decision analysis, which led to his famous decision trees,<sup>134</sup> was one of the major influences on the development of the concept.<sup>135</sup> Adaptive management is designed to close the gap between the available information and the information needed to make sound environmental decisions. It posits a continuous process of acquiring and evaluating scientific information through the practice of regulatory science.<sup>136</sup>

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(1997).

132. This position is fully articulated in Bradley C. Karkkainen, *Toward A Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 COLUM. L. REV. 903 (2002).

133. ADAPTIVE ENVIRONMENTAL AND MANAGEMENT ASSESSMENT 119 (C.S. Holling ed., 1978).

134. Howard Raiffa, *DECISION ANALYSIS* (1968).

135. ADAPTIVE ENVIRONMENTAL AND MANAGEMENT ASSESSMENT, *supra* note 133, at 119.

136. Bruce Pardy, *Changing Nature: The Myth of the Inentability of Ecosystem Management*, 20 PACE ENVTL. L. REV. 675 (2003).

*B. Environmental Degradation Should Be A Last Resort After All Reasonable, Feasible Alternatives Have Been Exhausted*

This principle casts another pillar of environmental law: an activity that is likely to cause the degradation of media and ecosystems environmental values should only be undertaken if there are no acceptable alternatives. A general non-degradation standard for all resources is not possible for economic and ethical reasons; human society does not, as some radical environmentalists have argued,<sup>137</sup> have a duty to self-destruct. The most that we can do is to be highly skeptical of substantial departure from the baselines of environmental quality that we choose to establish. The search for alternatives has been too often subsumed in the NEPA process and has been subsumed under the idea of mitigation.<sup>138</sup> My rule would return to the pre-*Vermont Yankee*<sup>139</sup> duty to consider alternatives<sup>140</sup> and is broader than the assertion of any duty to mitigate. It assumes that environmental values are of equal dignity to developmental ones, and thus mitigation may not always be an acceptable solution. Mitigation is generally a substitute for full compliance, and is in economic terms, a second best<sup>141</sup> solution.

*C. Risk Can be a Legitimate Interim Basis for Prohibition of An Activity*

This principle attempts to strike a balance between the rejection of the due process-based common law background rule that mechanistic proof that an activity will cause demonstrable harm in the immediate future as a universal predicate for health and ecosystem protection regulation and the candidate replacement

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137. Jenkins, *Nature's Rights and Man's Duties*, in *LAW AND ECOLOGICAL CHALLENGE* 91 (E. Dias ed., 1978) ("Man will . . . confront the moral obligation to make himself extinct — to commit racial suicide.")

138. Two leading environmental law scholars, who represent a power company that seeks to comply with section 316 of the Clean Water Act by restoring an ecosystem around the power plant rather than eliminating fish killed through a closed cycle cooling retrofit, have set out in the case for mitigation a superior environmental compliance mechanism in Thomas J. Schoenbaum and Richard B. Stewart, *The Role of Mitigation and Conservation Measures in Achieving Compliance With Environmental Regulatory Statutes: Lessons From Section 316 of the Clean Water Act*, 8 N.Y.U. ENVTL. L.J. 237 (2000).

139. *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519 (1978) (holding that an agency's limitation of the scope of alternatives that it must consider was entitled to substantial deference).

140. *Natural Res. Def. Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972) (consideration of reasonable alternatives not per se limited to those that agency has the power to adopt).

141. Second best is a welfare economics theory that refers to "how to find the best compromise when some inefficiency" is inevitable in a particular allocation of resources. TIBOR SCITOVSKY, *WELFARE AND COMPETITION* 481 (1971). See generally *Symposium on Second-Best Theory and Law & Economics*, 73 *CHI.-KENT L. REV.* 1 (1998).

principle — the precautionary principle — endorsed in the 1992 Rio Declaration on Environment and Development.<sup>142</sup> The principle that a high degree of certainty about the adverse impacts of a substance or activity is not a necessary prerequisite to limit it is well established in United States environmental law. The Constitution does not require mechanistic proof of cause in fact for pollution and toxic substance regulation because a lesser standard of proof is appropriate for public health based regulation because liability can be justified as a form of taxes imposed on those who directly profit from harmful activities and which is fairly spread over larger segments of the population.<sup>143</sup>

The precautionary principle has, however, evolved, at least in the legal literature, from a limited tool to bridge the gap between current information and the societal desire to limit exposure to serious risk to a harder rule.<sup>144</sup> Critics have begun to “demonize” it as incoherent<sup>145</sup> and unfair compared to more rigorous decision methods such as risk analysis. The nub of the objection is the argument that once some potential, but uncertain risk of future

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142. U.N. Conference on Environment and Development: Rio Declaration on Environment and Development, UNCED, U.N. Doc. A/Conf.151/Rev. 1, 31 I.L.M. 874 (1992), Principle 15.

143. The Supreme Court recognized this principle when it approved liability “tax schemes,” but it is increasingly willing to impose constitutional limits on these schemes. *Usrey v. Turner Elkhorn Mining Co.*, 428 U.S. 1 (1976), upheld the Black Lung Benefits Act of 1972 which required coal operators to compensate miners who were no longer employed in the industry because the Act was “a rational measure to spread the costs of the . . . disabilities to those who have profited from the fruits of their labor. . .” *Id.* at 18. *Concrete Pipe & Products of California v. Construction Laborers Pension Trust for Southern California*, 508 U.S. 602 (1993), held that Congress could impose withdrawal liability from a pension fund although such liability was not contained in the contract. But the plurality opinion in *Eastern Enterprises v. Apfel*, 524 U.S. 498 (1998), held that the application of Coal Industry Retiree Health Benefit Act of 1992 was a taking as applied to a mining company that had ceased operations and did not participate in a series benefit plan established under National Bituminous Coal Wage Agreement. The Agreement required operators to contribute to retiree health plans so long as they remained in the coal business. *Eastern Enterprises*, 524 U.S. at 498. The opinion acknowledged that the case was not a classic takings case because there was no appropriation of a property interest and that Congress can impose retroactive liability in national legislation, which adjusts the benefits and burden of national economic life. However, it found that the Act interfered with the company's investment backed expectations. *Id.* “Our decisions . . . have left open the possibility that legislation might be unconstitutional if it imposes severe retroactive liability on a limited class of parties that could not have anticipated the liability, and the extent of that liability is substantially disproportionate to the parties' experience.” *Id.* at 528-29. Justice Kennedy concurred in the result but not in the Court's takings analysis because the Act under the Due Process Clause did “not affect an obligation relating to a specific property interest.” *Id.* at 544.

144. See generally THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION (David Freestone & Ellen Hey eds., 1996); PROTECTING PUBLIC HEALTH & THE ENVIRONMENT: IMPLEMENTING THE PRECAUTIONARY PRINCIPLE (Carolyn Raffensperfer & Joel Tickner eds., 1999).

145. Christopher D. Stone, *Is There a Precautionary Principle?*, 31 ENVTL. L. REP. 10790, 10792 (2001); Frank B. Cross, *Paradoxical Perils of the Precautionary Principle*, 53 WASH. & LEE L. REV. 851 (1996).

environmental harm is established, it is legitimate to prohibit an activity that leads to “bad,” “irrational” or inefficient choices.<sup>146</sup>

It is essential to separate the soundness of the basic idea that society can choose to minimize risks in the face of scientific and other uncertainty from the question of implementation.<sup>147</sup> The precautionary principle is firmly grounded in the scientific method.<sup>148</sup> Many of the concerns can be addressed through burden of proof standards and the addition of a crucial element that is often missing in debates about the precautionary principle: a feed back loop to trigger reevaluation of the initial decision. Proponents of the precautionary principle have argued that opponents of precaution should bear the burden of rebutting the exercise of the principle,<sup>149</sup> but given the risk that the precautionary principle could choke off a wide range of considerations, such as risk trade-offs, it seems more sensible to place the burden of justification on the government body that invokes it. This would ensure that alternative methods of minimizing the uncertainty, such as compensation, have been adequately explored, and that the principle is reserved for the most serious and largely irreversible risks.<sup>150</sup> In addition, the idea that once the principle is invoked to minimize risk, the decision is permanent should be excised. The precautionary principle needs to be linked to the idea of adaptive management. The existence of monitoring and adaptive feed-back mechanisms should be a major factor in validating the decision to limit an activity when the adverse impacts are uncertain.

#### *D. Polluters Must Continually Upgrade Waste Reduction and Processing Technology*

Environmentalism dethroned engineers from the preeminent position they enjoyed for most of the twentieth century, but much of the progress in environmental protection has come from compelling polluters to install state-of-the-art technology. Sources of media pollution should be rolled-backed by the installation of progressively higher standards of technology established by the government. This principle incorporates two ideas: (1) technology has a major role to

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146. *E.g.*, Jonathan H. Adler, *More Sorry Than Safe: Assessing the Precautionary Principle and the Proposed International Biosafety Protocol*, 35 TEX. INT'L L.J. 173 (2000). See David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U.L. REV. 1315, 1318-20 (2003), for an elegant rebuttal.

147. See John S. Applegate, *The Taming the Precautionary Principle*, 27 WM. & MARY ENVTL. L. & POL'Y REV. 13 (2002).

148. J.B. Ruhl, *The Battle Over Endangered Species Act Methodology*, 34 ENVTL. L. (forthcoming 2004).

149. Freestone & Hey, *supra* note 144, at 265.

150. See Stone, *supra* note 145, at 10797.

play in environmental protection; and (2) the level of technology required is a moving, not fixed, target.

*E. Environmental Decisionmaking Should Be Inclusive Rather Than Exclusive within the Limits of Rationality*

This final principle endorses the pluralistic nature of decision-making that has emerged from the efforts to force public and private actors to consider environmental values up to a point. Environmental law helped to undermine (but not overthrow) the New Deal model of the expert managerial or regulatory agency because outsiders offered a new perspective to the experts<sup>151</sup> and helped to expose many of the unstated, crucial assumptions in purported “objective” analysis.<sup>152</sup> The net result has been the development of hybrid forms of shared governance which depends as much on information disclosure to alter behavior as it does on command and control regulation.<sup>153</sup>

Increased lay participation in decision making to promote transparency and a broadened perspective is a laudable, democratic objective, but transparency and public participation come with costs such as delay, the introduction of extraneous issues and the rejection of science-based solutions. However, environmental policy and law must remain bonded by science. The relevant question is always: how can we bridge the gap between what we want from science and what it can supply? The goals of public participation are to legitimate the application of science to an informed lay public and to allow an avenue for relevant scientific and non-scientific perspectives. They should never be allowed to substitute deals for scientifically credible outcomes.

## VI. CONCLUSION

This summing up of environmental law may strike many as disappointing because it dismisses the possibility of powerful, general transformative nature-centered rules, emerging to tame the drive to exploit and modify all planetary life support systems. Instead, it argues that environmental law will for the foreseeable future be a messy process of adapting the contingencies and

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151. Barton H. Thompson, Jr., *The Continuing Innovation of Citizen Enforcement*, 2000 U. ILL. L. REV. 185 (2000), argues that participatory techniques such as citizen suits bolster democratic values.

152. See A. Dan Tarlock, *Who Owns Science?*, 10 PA. ST. ENVTL. L. REV. 135 (2002).

153. The pros and cons of “spotlighting” are examined in GREENING NAFTA: THE NORTH AMERICAN COMMISSION ON ENVIRONMENTAL COOPERATION (David L. Markell & John H. Knox eds., 2003), especially Chapters 11-15.

limitations of science to “wicked” problems informed by rebuttable principles. This hard road seems inevitable because of the radical nature of the objectives of environmental law. If protection is to evolve into a permanent check on the full range of resource consumption decisions, it must be grounded in the enlightenment values of knowledge and reason.<sup>154</sup>

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154. For a lucid account of the post World War II project of reasserting enlightenment values World War II and the Holocaust, see IRA IKATZNELSON, *DESOLATION AND ENLIGHTENMENT: POLITICAL KNOWLEDGE AFTER TOTAL WAR, TOTALITARIANISM, AND THE HOLOCAUST* (2003).