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# Consorting With the Forests: Rethinking Our Relationships to Natural Resources and How We Should Value Their Loss

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## INTRODUCTION

Assume that you have never been to Prince Frederick Sound, have no plans to go to Prince Frederick Sound, and you know nobody

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in particular who wants to go there. Prince Frederick Sound is a bay located along Alaska's southwestern shore and is rich in salmon, seal, otter, and harlequin duck. A mountain range surrounding most of the Sound rises steeply out of the water and prevents almost all nonboating human access to the area. Last month, an oil tanker spilled eleven million gallons of oil into Prince Frederick Sound. This month, someone knocks on your door and asks you how much you would be willing to pay to prevent the kind of environmental damage that will ensue from the oil spill. If, like most people, you would think about paying something to prevent the environmental damage—not because you had to, but because you valued an undamaged Sound—I invite you to think about where that value comes from.<sup>1</sup> In doing so, consider the following quotation from Aldo Leopold:

[T]he individual is a member of a community of interdependent parts . . . a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.<sup>2</sup>

As an ecologist, Leopold researched the interdependence of ecosystems, but almost every environmental law text includes his work,<sup>3</sup> not because he explains the balance of nature as a scientific, ecological matter, but because he proposes a community with nature as a moral imperative.<sup>4</sup> Leopold exhorts humanity to root its care for the envi-

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1. If you would not be tempted to pay anything, recognize that you are in the minority and that the majority is willing to pay a great deal. For example, the cumulative willingness to pay, as measured in individual interviews after the Exxon-Valdez spill, was estimated by plaintiff's expert to be \$9.33 billion. Richard T. Carson et al., *Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez*, in *THE NEW RULES FOR NATURAL RESOURCE DAMAGE ASSESSMENT AND CLAIMS UNDER CERCLA AND OPA 522* (1994) [hereinafter *THE NEW RULES*]. Exxon could have been liable for this \$9.33 billion in addition to its liability for the economic loss incurred by third parties as a result of the spill, and in addition to monies that it spent removing the oil from Prince William Sound.

The civil side of the Prince William Sound case between the United States and the State of Alaska (as plaintiffs) and Exxon (as defendant) settled for \$900 million. See *Proposed Settlement Between the State of Alaska, the United States and Exxon Corp.*, 56 Fed. Reg. 11636 (1991). Prior to settlement, Exxon had already spent in excess of \$2 billion for cleanup activities and reimbursements to government agencies. *Id.* at 11637.

2. ALDO LEOPOLD, *A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE* 204 (1968).

3. See *FREDERICK R. ANDERSON ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY* 10 (2d ed. 1990); *ROGER W. FINDLEY & DANIEL A. FARBER, CASES AND MATERIALS ON ENVIRONMENTAL LAW* 1 (3d ed. 1991); *ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY* 15 (1992); *ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW AND SOCIETY* 11 (1992); *WILLIAM M. TABB & LINDA A. MALONE, ENVIRONMENTAL LAW: CASES AND MATERIALS* 25 (1992).

4. As a scientific matter, "balance of nature" theories have been replaced by nonequilibrium paradigms, which posit that instead of existing in a balance, nature is in a constant state of change. See A. Dan Tarlock, *The Nonequilibrium Paradigm in Ecology and the Partial Unraveling of Environmental Law*, 27 *LOY. L.A. L. REV.* 1121, 1128 (1994).

ronment in an ethic that assumes an interconnection between the human and that which many refer to as "the natural." In the context of environmental law courses, Leopold's ethic explains why we bother with the regulatory morass that most people associate with environmental law. Yet we have never been particularly concerned with measuring exactly how much we value the natural. We have not, for instance, had to say that Prince Frederick Sound is "worth" \$9.33 billion.<sup>5</sup>

The Clean Water Act (CWA),<sup>6</sup> the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA),<sup>7</sup> and the Oil Pollution Prevention Act (OPA)<sup>8</sup> all contain natural resource damage provisions that create liability for "injury to, destruction of, loss of, or loss of use of, natural resources . . . ."<sup>9</sup> Assessing damages for injury to or destruction of those natural resources requires us to monetize the value we place on environmental resources. It requires us to set a price for Prince Frederick Sound. This article explores why the process of setting that price is legitimate and what the law reflects when such a judgment is rendered. Legitimizing this valuation and commodification<sup>10</sup> process requires exploring the subjective interconnection between humans and the environment, and the harm involved when that connection is damaged.

In doing so, this article challenges two basic assumptions that have underlain much of environmental scholarship. The first assumption is that the harm for which the law compensates when natural resources are damaged is the harm the natural resources themselves suffer, a claim repeatedly made by legal and environmental scholars.<sup>11</sup> The second assumption is that the right at stake when natural re-

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Leopold's call for respect and nondegradation can coexist with the nonequilibrium principle, however. Both ethical and scientific analyses suggest that there are reasons to discourage destructive, domination-induced change even if some change is inevitable. *Id.* at 1128-31.

5. See *supra* note 1.

6. 33 U.S.C. § 1321(f)(4) (1995).

7. 42 U.S.C. § 9607(a)(4)(C) (1995).

8. 33 U.S.C. § 2702(b)(2)(A) (1995).

9. The quoted language is that used in both CERCLA, 42 U.S.C. § 9607(a)(4)(C) (1995), and OPA, 33 U.S.C. § 2702(b)(2)(A) (1995). The language in the CWA is somewhat different, but substantively identical. See 33 U.S.C. § 1321(f)(4) (1995).

10. I use this term to refer to the process of characterizing and placing a dollar figure upon a good or value that is not generally marketable. Others have used it to refer to the subjective feelings that accompany placing a monetary value on a good or value. See Margaret J. Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849, 1909-12 (1987); Scott Altman, *(Com)modifying Experience*, 65 S. CAL. L. REV. 293, 299-302 (1991).

11. See Christopher D. Stone, *Should Trees Have Standing?: Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972); Lawrence H. Tribe, *Ways Not to Think About Plastic Trees: New Foundations for Environmental Law*, 83 YALE L.J. 1315, 1340 (1974); James Lovelock & Sidney Epton, *The Quest for Gaia*, NEW SCIENTIST, Feb. 1975, at 6.

sources suffer damage is a property right, a claim repeatedly made by environmental economists.<sup>12</sup> In rejecting these claims, this article argues that the harm at issue when humans destroy natural resources involves damage to a subjective, emotional connection that many people feel toward the environment. The damage for which society can legitimately compensate is analogous to the subjective damage associated with tort, not property law, and compensating for that tort only makes sense if human beings, not trees and fish and glacial bays, are the focus of the inquiry.

Section I of this article defines the contours of the natural resource damage cause of action by explaining who sues, on whose behalf they sue, and for what they sue. It is in this section that I take issue with the environmentalists' claim that trees should have standing and the economists' claim that the right at stake is a property right. Section II explores the nature of the human connection to the environment, how that connection is affected by natural resource damage loss, and why it is legitimate to compensate for the loss of that connection. Analysis of the subjective injury suggests that the law must limit compensation for the subjective harm associated with natural resource loss to those instances in which entire ecosystems are destroyed or in which individual resources cannot be replaced. I develop this hypothesis in Section III and argue that the natural resource damage regime, as currently administered, inappropriately allows recovery for the subjective harm people experience whenever a single natural resource is injured. This broad construction of the right at issue is inconsistent with a natural resource management system that contemplates and even encourages use and destruction of individual resources. Section IV explains how Contingent Valuation ("CV"), a damage assessment methodology that relies on questions like the one posed at the outset of this article, can appropriately capture people's sense of subjective loss stemming from natural resource damage.

CV is, quite simply, damage assessment by public opinion poll. CV asks people to quantify what it is worth to them to have non-damaged natural resources. For example, after the Exxon Valdez spill, people throughout the country were asked how much they would be willing to pay in increased taxes in order to fund certain mechanisms (e.g., a trailer ship or a double-hulled tanker) that could prevent comparable kinds of injuries.<sup>13</sup> As one might imagine, this kind of

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12. See generally Daniel S. Levy & David Friedman, *The Revenge of the Redwoods? Reconsidering Property Rights and the Economic Allocation of Natural Resources*, 61 U. CHI. L. REV. 493 (1994); Joseph L. Sax, *The Public Trust Doctrine In Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

13. The practitioners of this survey present their findings in Carson et al., *supra* note 1, at 522-80. For a complete examination of another contingent valuation survey assessing the nonuse value loss associated with oil spills, see ROBERT D. ROWE ET AL., FINAL RE-

conjectural evaluation technique invites heavy and diverse criticism. The regulated community is concerned about highly variable potential liability.<sup>14</sup> Economists are divided on the reliability of the methodology,<sup>15</sup> and legal commentary is split on the propriety of its use.<sup>16</sup>

At this point, CV has survived its critics' attacks and found a solid place in the legal and administrative framework of environmental protection.<sup>17</sup> The regulations implementing both CERCLA and OPA en-

PORT, CONTINGENT VALUATION OF NATURAL RESOURCE DAMAGE DUE TO THE NESTUCCA OIL SPILL (June 15, 1994) (on file with author).

14. See EXXON COMPANY, COMMENTS FOR THE ADMINISTRATIVE RECORD ON NOAA'S NRDA RULEMAKING UNDER THE OIL POLLUTION ACT (Dec. 18, 1991) (on file with author); see also Rebecca Thompson, *Expert Testimony on 'New Age' Numbers: The Use of Contingent Valuation to Assess Natural Resource Damages*, in THE NEW RULES, *supra* note 1, at 599.

15. See generally Paul R. Portney, *The Contingent Valuation Debate: Why Economists Should Care*, 8 J. ECON. PERSP. 3 (1994); W. Michael Hanemann, *Valuing the Environment through Contingent Valuation*, 8 J. ECON. PERSP. 19 (1994); Peter A. Diamond & Jerry A. Hausman, *Contingent Valuation: Is Some Number Better than No Number?*, 8 J. ECON. PERSP. 45 (1994). Compare William H. Desvousges et al., *Measuring Natural Resource Damages With Contingent Valuation: Tests of Validity and Reliability*, in CAMBRIDGE ECONOMICS, INC., CONTINGENT VALUATION: A CRITICAL ASSESSMENT, at Tab 5 (1992) [hereinafter EXXON SYMPOSIUM] (collection of essays presented at a two-day symposium in April 1993, all of which report on research funded by Exxon Company, U.S.A.); Peter A. Diamond et al., *Does Contingent Valuation Measure Preferences?: Experimental Evidence*, in EXXON SYMPOSIUM, at Tab 3 [hereinafter Diamond, *Preferences*]; Charles J. Cicchetti & Neil Peck, *Assessing Natural Resources Damages: The Case Against Contingent Value Survey Methods*, 4 NAT. RESOURCES & ENV'T 6 (1989); Donald H. Rosenthal & Robert H. Nelson, *Why Existence Value Should Not Be Used in Cost-Benefit Analysis*, 11 J. POL'Y ANALYSIS & MGMT. 116 (1992); DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, RELEASE OF CONTINGENT VALUATION REPORT, 58 Fed. Reg. 4610 (1993) [hereinafter NOAA CV REPORT]; John B. Loomis, *The Basics of Contingent Valuation Method*, in THE NEW RULES, *supra* note 1, at 586-89; KEVIN WARD & JOHN DUFFIELD, NATURAL RESOURCE DAMAGES: LAW AND ECONOMICS 308-09 (1992). For a discussion of methodological problems generally, see ROBERT C. MITCHELL & RICHARD T. CARSON, USING SURVEYS TO VALUE PUBLIC GOODS: THE CONTINGENT VALUATION METHOD 9-14, 295-306 (1989).

16. See Brian R. Binger et al., *The Use of Contingent Valuation Methodology in Natural Resource Damage Assessments: Legal Fact and Economic Fiction*, 89 NW. U. L. REV. 1029 (1995); Steven Shavell, *Should Contingent Valuation Estimates of the Nonuse Value of Natural Resources Be Used in Public Decisionmaking and the Liability System?*, in EXXON SYMPOSIUM, *supra* note 15, at Tab 2; Frank B. Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269, 339-41 (1989) [hereinafter Cross, *Damage Valuation*]; Frank B. Cross, *Restoring Restoration for Natural Resource Damages*, 24 U. TOLEDO L. REV. 319 (1993) [hereinafter Cross, *Restoring Restoration*] (Professor Cross severely limits his earlier endorsement of CV); John F. Daum, *Some Legal and Regulatory Aspects of Contingent Valuation*, in EXXON SYMPOSIUM, *supra* note 15, at Tab 9; Note, "Ask A Silly Question . . .": *Valuation of Natural Resource Damages*, 105 HARV. L. REV. 1981 (1992); Jeffrey C. Dobbins, *The Pain and Suffering of Environmental Loss: Using Contingent Valuation to Estimate Nonuse Damages*, 43 DUKE L.J. 879 (1994).

17. In part because of the controversy, NOAA empaneled a group of leading experts in the field to evaluate the reliability of CV. The panel included Edward Leamer, Paul Portney, Roy Randner, and Howard Schuman, and was chaired by two Nobel laureate economists, Kenneth Arrow and Robert Solow. NOAA CV REPORT, *supra* note 15, at 4602. In early 1993, the panel concluded that CV, properly used, was an appropriate

dorse CV as an acceptable means of evaluating people's sense of loss when the environment is damaged. CV studies are conducted regularly, and although no court decision has formally accepted a completed CV study, litigants (most importantly, the federal government) continue to commission CV studies that influence the course of settlement negotiations.<sup>18</sup> The administrative endorsement of CV reflects an attitude, found throughout the commentary, that because CV is the best available methodology to attempt to measure people's sense of loss,<sup>19</sup> the law must use CV if it is to compensate for that loss.<sup>20</sup> Moreover, advocates of CV seem persuaded by the argument that the reason to compensate for the loss is because it "indubitably exist[s]."<sup>21</sup> In Section IV, I add my name to the list of people who support the development of Contingent Valuation, but not simply because people feel hurt by the destruction of the environment, and not before answering the questions that are critical to CV's legitimacy. I respond to CV's critics, elaborate on the educational, political, and informational ad-

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means of measuring nonuse values. See NOAA CV REPORT, *supra* note 15, at 4610. The proposed regulations rely heavily on the panel's recommendations. See DEPARTMENT OF COMMERCE, NOTICE OF PROPOSED RULE MAKING, 59 Fed. Reg. 1062 (1994) [hereinafter NOAA PROPOSED REGS].

Among other things, the regulations' endorsement of CV means that if the government chooses to use CV as a means of damage assessment, the assessment is entitled to a presumption of legitimacy. Section 107(f)(2)(C) of CERCLA reads: "Any determination or assessment of damages to natural resources for the purposes of this chapter . . . made by a Federal or State trustee in accordance with the regulations promulgated under [this statute] shall have the force and effect of a rebuttable presumption on behalf of the trustee." 42 U.S.C. § 9607(f)(2)(C) (1995). OPA has a comparable presumption. 33 U.S.C. § 2706(e)(2) (1995). The United States Court of Appeals for the District of Columbia upheld the legitimacy of this presumption in *Ohio v. Department of Interior*, 880 F.2d 432, 480 (D.C. Cir. 1989).

18. Litigants prepared CV studies in the following actions: *In re Acushnet River & New Bedford Harbor*, 716 F. Supp. 676 (D. Mass. 1989); *Colorado v. United States Dept. of Army*, 707 F. Supp. 1562 (D. Colo. 1989); *Colorado v. Idarado Mining Co.*, 707 F. Supp. 1227 (D. Colo. 1989), *rev'd*, 916 F.2d 1486 (10th Cir. 1990), *cert. denied*, 499 U.S. 960 (1991); *Colorado v. Gulf & Western Indus.*, No. 83-C-2387 (D. Colo. June 24, 1988) (consent decree entered); *Montana v. Atlantic Richfield Co.*, No. CV-83-317 (D. Mont. 1983). See Binger et al., *supra* note 16, at 1034 n.18; see also WARD & DUFFIELD, *supra* note 15, at 353-60.

19. Other evaluation techniques used in the natural resource damage arena include: travel cost evaluation techniques (tabulating the amount people spend getting to a natural resource area); the factor income approach (tabulating the demonstrable increased cost associated with acquiring natural resources that used to be more plentiful (e.g., the increase in crop prices due to decreased groundwater supplies)); and the hedonic pricing model (determining the depreciation in land value associated with a natural resource damage loss, e.g., how much less property is worth if air pollution has significantly restricted views). See NOAA PROPOSED REGS, *supra* note 17, at 1142; WARD & DUFFIELD, *supra* note 15, at § 11. All of these techniques have only limited application, and most of them measure only use value, not nonuse value.

20. See NOAA PROPOSED REGS, *supra* note 17, at 1142-43; Cross, *Damage Valuation*, *supra* note 16, at 335; Dobbins, *supra* note 16, at 944-45.

21. Cross, *Damage Valuation*, *supra* note 16, at 286; Dobbins, *supra* note 16, at 908.

vantages of the methodology, and make the normative claim that encouraging people to think about their connection to the environment has beneficial effects that legitimate the use of and may outweigh the costs of CV.

## I

## THE CAUSE OF ACTION

A. *Who Sues and for What Do They Sue?*

Natural resource damage suits are brought by the federal government, state governments or Indian tribes, each sovereign using its *parens patriae* authority<sup>22</sup> to sue on behalf of the public as trustee for natural resources that are held in trust by the sovereign for the benefit of the public.<sup>23</sup> The corpus of the trust is the natural resources, and the public is the beneficiary class. The trustees who sue do so not on behalf of the resources themselves, but on behalf of the public. Thus in adopting the natural resource damage provisions, Congress neither gave trees standing nor vested the trustees with a mandate to “think like a mountain.”<sup>24</sup> When the government sues for natural resource damages, it collects on behalf of people who suffered injury, not on behalf of the resources themselves.

Natural resource injuries involve damage to both use and nonuse values.<sup>25</sup> Use values are those values associated with demonstrable human interaction with and use of a natural resource.<sup>26</sup> For instance, the market price of a fish, a mink, or a tree is a use value, as is a hunting license fee,<sup>27</sup> a national park admission fee, or the cost associated with the expense of traveling to natural resources. Nonuse values, also known as “existence values” or “passive use values,” are those values associated with the existence of the resource, regardless

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22. The Supreme Court first recognized the state's *parens patriae* authority to sue for damage to natural resources in *Georgia v. Tennessee Copper Co.*, 206 U.S. 230, 237 (1907) (the state “has an interest independent of and behind the titles of its citizens in all the earth and air within its domain.”). See also *Hudson County Water Co. v. McCarter*, 209 U.S. 349, 355-56 (1908).

23. 42 U.S.C. § 9607(f)(1) (1995) (“The President, or the authorized representative of any State, shall act on behalf of the public as trustee of such natural resources to recover for such damages.”). There are five federal government agencies that act as trustees: Agriculture (the Forest Service), Commerce (National Oceanic and Atmospheric Administration (NOAA)), Defense (DOD), Energy (DOE), and Interior (DOI). Only the DOI and Commerce have drafted natural resource damage assessment regulations.

24. See LEOPOLD, *supra* note 2, at 129.

25. See NOAA PROPOSED REGS, *supra* note 17, at 1073-74.

26. For a full description of use values and nonuse values, see Cross, *Damage Valuation*, *supra* note 16, at 281-97.

27. For a description of how our “use” of natural resources, particularly wildlife resources, has changed over time and how the law has reflected that change, see THOMAS A. LUND, *AMERICAN WILDLIFE LAW* 61 (1980).



of whether humans use it. There are three traditional categories of nonuse values: option value (the value individuals derive from knowing that they and others can use the resource); bequest value (the value of knowing that the resource will be available for use by future generations); and existence value (the value associated with knowing that the resource exists).<sup>28</sup>

This article focuses on nonuse values. Nonuse values are the more theoretically interesting component of natural resource damages because they involve a measurement problem that is particularly difficult for traditional economic modeling to capture<sup>29</sup> and is particularly taxing to legal notions of reliability and objectivity. The crux of the problem is that assessing damage to nonuse values involves putting a dollar figure on that which, by definition for many people, is priceless.<sup>30</sup> Part of what makes a natural resource a natural resource is that it has no price tag.<sup>31</sup>

Attempts to measure nonuse values often fail to distinguish nonuse values from the "intrinsic value" of natural resources. Given the current discourse of environmental thought it is easy to equate nonuse values with "intrinsic value." The regulations themselves suggest that nonuse values include "the value derived from protecting the resource for its own sake,"<sup>32</sup> and much recent environmental theory implores society to recognize the intrinsic value of natural resources. Animal rights proponents have suggested that "the most promising line of argument for explaining human rights . . . can rationally be extended to animals of some kind."<sup>33</sup> Deep Ecologists believe in the right of every

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28. See Cross, *Damage Valuation*, *supra* note 16, at 285. Some argue that the essence captured with existence value measurements is the "intrinsic worth" of the resource. See Dobbins, *supra* note 16, at 901-08. The problem with defining nonuse values in terms of intrinsic worth is explored *infra* text accompanying notes 37-45. For a more complete but also more abstract definition of nonuse values, see Binger et al., *supra* note 16, at 1066 (describing nonuse value as the difference between compensable value, as defined by the statute, and use value).

29. See NOAA CV REPORT, *supra* note 15, at 4610; MITCHELL & CARSON, *supra* note 15, at 87.

30. The proposition that we value natural resources in part because they are "priceless" has gained validity as environmental theory has advanced. In the early centuries of this country, people tended to think of natural resources as something to be controlled and sold, not preserved or enjoyed in their wild state. See LUND, *supra* note 27, at 15; see generally THOMAS BERRY, *THE DREAM OF EARTH* (1988).

31. A salmon steak one buys in the supermarket is dinner. The salmon one sees running up the Snake River is a natural resource. The extent to which it is legitimate to distinguish between these two fish (indeed, they could be the same fish) is explored further in this section.

32. NOAA PROPOSED REGS, *supra* note 17, at 1073.

33. Thus, it is argued, some animals have the same kind of intrinsic value that we associate with all human beings. See TOM REGAN, *ALL THAT DWELL THEREIN: ANIMAL RIGHTS AND HUMAN WRONGS* 95 (1982).

living thing to "live and blossom."<sup>34</sup> Holmes Rolston objects to the term "passive use" value<sup>35</sup> because the term "use" belies the objective of valuing the resource apart from human interaction with it.<sup>36</sup>

These theories address interesting and important moral issues regarding the intrinsic worth of natural resources.<sup>37</sup> These theories are not, however, the province of natural resource damage statutes because it is not the trees or the fish who are suing or on whose behalf the trustees are suing: trustees sue on behalf of *people*, and they sue to protect the instrumental (albeit nonuse) value of natural resources. Thus, in measuring nonuse value loss, the law is not capturing the intrinsic value (whatever it might be) of the tree, but is instead measuring the extent to which the public values the tree.<sup>38</sup> Human response to the environment must drive the assessment process<sup>39</sup> because "only humans can be actors in the legal system and it must follow that only human concerns could ever be addressed by it."<sup>40</sup>

As a philosophical and ethical matter, natural resources may have intrinsic value. As a legal matter, however, the majority of our environmental policies, including the natural resource damage statute it-

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34. Arne Naess, *The Shallow and the Deep, Long-Range Ecology Movement: A Summary*, INQUIRY, Spring 1973, at 16. See also HOLMES ROLSTON III, PHILOSOPHY GONE WILD: ESSAYS IN ENVIRONMENTAL ETHICS 118-42 (1986).

35. The new NOAA regulations use the term "passive use" values. NOAA PROPOSED REGS, *supra* note 17, at 1139.

36. Holmes Rolston III, *Valuing Wildlands*, 7 ENV. ETHICS 23, 36 n.11 (1985).

37. Intrinsic values may represent a truly incommensurable good. For a sampling of the plethora of recent literature on incommensurability, see generally Cass R. Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV. 779 (1994); Margaret J. Radin, *Compensation and Commensurability*, 43 DUKE L.J. 56 (1993); Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 COLUM. L. REV. 562, 601-05 (1992); Richard Warner, *Incommensurability as a Jurisprudential Puzzle*, 68 CHI.-KENT L. REV. 147 (1992); Altman, *(Com)modifying Experience*, *supra* note 10; JOHN FINNIS, MORAL ABSOLUTES (1991); Richard H. Pildes & Elizabeth S. Anderson, *Slinging Arrows at Democracy: Social Choice Theory, Value Pluralism, and Democratic Politics*, 90 COLUM. L. REV. 2121, 2145-66 (1990).

38. No member of the public can stake a claim to a particular tree, but the public does have a right to the idea of trees existing. See, e.g., NOAA CV REPORT, *supra* note 15, at 4602.

39. See MITCHELL & CARSON, *supra* note 15, at 66 n.18 ("Economic theory rejects the notion that trees have rights, but economic theory can accept the idea that trees have rights to the extent that humans are willing to pay for those rights."). Cf. REGAN, *supra* note 33, at 90-98. One might argue that economic theory's rejection of the notion that trees have rights does not necessitate a similar rejection by legal theory. However, if one assigns legal liability based on a damage assessment mechanism (i.e., CV) that is rooted in economic principles, and administered and validated by expert economists, one's legal theory must, at least for assessment purposes, accept the limitations of economic theory. See also Cross, *Damage Valuation*, *supra* note 16, at 296.

40. P.S. Elder, *Legal Rights for Nature—The Wrong Answer to the Right(s) Question*, 22 OSGOODE HALL L.J. 285, 291 (1984).

self,<sup>41</sup> are implemented to "manage" resources for human enjoyment, not to protect natural resources for the resources' own sake.<sup>42</sup> Those who care about protecting fish often care because they want to catch and eat those fish. The fact that many humans eagerly consume fish and many other living things, such as wheat, soy, ducks, and vegetables,<sup>43</sup> all of which constitute natural resources, belies the notion that society respects the intrinsic value of all individual natural resources. The government routinely grants licenses to kill natural resources for sport. Indeed, the right to kill those resources is part of what the law protects when it allows the trustees to sue for use value on behalf of those who enjoy fishing and hunting.<sup>44</sup> If the law were truly concerned with protecting the intrinsic worth of natural resources, it would not permit people to use or endanger natural resources by, for instance, fishing in a stream, hiking through the woods, or shipping oil

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41. CERCLA § 107(f)(1) states that no liability for natural resource loss can attach if the "damages to natural resources complained of were . . . identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement, or other comparable environmental analysis, and the decision to grant a permit or license authorizes such commitment of natural resources . . . ." 42 U.S.C. § 9607(f)(1) (1995). In other words, if the destruction of the resources was planned, one cannot sue to collect for the injury associated with the loss. This liability exception would be unconscionable if the statute respected the intrinsic worth of resources. The statute cannot in one sentence respect the intrinsic worth of resources, and, in the same paragraph, give license to destroy those resources.

42. See generally Federal Land, Policy and Management Act, 43 U.S.C. § 1701(a)(2) (1986) ("[T]he national interest will be best realized if the public lands' . . . present and future use is projected through . . . land use planning . . ."). Consider also the sign one views upon entering most national forests. Underneath or beside the Forest Service crest is the motto: "Land of Many Uses."

Some environmental statutes, most notably the Endangered Species Act, 16 U.S.C. § 1531-43 (1995), the Marine Mammal Protection Act, 16 U.S.C. § 1401-21 (1995), and the National Park Service Act, 16 U.S.C. § 1-18 (1992), are rooted in a preservation philosophy. The extent to which national parks are singled out for preservation treatment is the subject of a debate focusing on whether the parks should be preserved primarily for preservation's sake or for use by people. See generally JOHN C. FREEMUTH, NATIONAL PARKS AND THE POLITICS OF EXTERNAL THREATS 1-2 (1991); JOHN ISE, OUR NATIONAL PARK POLICY: A CRITICAL HISTORY 598-99 (1961); JOSEPH L. SAX, MOUNTAINS WITHOUT HANDRAILS (1980).

43. Damages are recoverable for "land, fish, wildlife, biota, air, water, ground water, drinking water supplies and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by [the trustee]." 42 U.S.C. § 9601(16) (1995); 33 U.S.C. § 2701(20) (1995).

44. The compensability of use value loss presupposes that human use of natural resources is expected and appropriate. The fact that one can currently collect use value for fish killed by an oil spill belies the notion that society values the intrinsic worth of those fish. The use value of a fish is the value (enjoyment and/or market price) that fish would have brought to the person who would have otherwise had an opportunity to kill it. To simultaneously compensate the animal rights activist who is hurt by the lost intrinsic value of the fish is nonsensical. The animal rights activist would have felt his loss whether the death of the fish was due to an oil spill or a fly fisherman. If society does not respect the intrinsic value of the fish when it is killed by the fly fisherman, society need not respect the intrinsic value of the fish when it is killed by the oil spill.

through Prince William Sound. If, on the other hand, people wish to use natural resources for activities such as fishing, hiking, and simply passing through, then they cannot simultaneously argue that the law must respect the intrinsic value of those resources.<sup>45</sup>

The primacy of the replacement remedy further exposes the incoherence of respecting "intrinsic" value in the natural resource damage context. Where possible, the law seeks to replace damaged natural resources. The legislative intent of the natural resource damage statutes speaks of "repairing," "restoring," "rehabilitating," and "replanting" destroyed natural resources.<sup>46</sup> In the major judicial review of the natural resource damage regulations, *State of Ohio v. Department Of Interior*,<sup>47</sup> the D.C. Circuit ruled that "Congress intended restoration costs to be the basic measure of recovery for harm to natural resources."<sup>48</sup> This endorsement of replacement as the remedy of choice is critical because it suggests that the goods at issue are not unique and individual intrinsic value need not be respected. Compare, for instance, the remedies we associate with a lost spouse or limb.<sup>49</sup> A replacement product could not make the victim whole, and most people would take offense at the suggestion that replacement should be the remedy of choice for such losses.<sup>50</sup>

On the other hand, most people take no offense at the thought of replacing a bird population, because it is not the birds themselves that people value but rather, the idea of birds.<sup>51</sup> It is, as the phrase "existence value" suggests, the existence of birds in general that people care

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45. Arguing from moral principles, one might suggest that using and interacting with the resource is permissible if the resource consents to such use and interaction. This rights rhetoric, when applied to inanimate and/or non-rational objects, is quite problematic, however. See JOHN PASSMORE, *MAN'S RESPONSIBILITY FOR NATURE* 107 (1974). Determining the wishes of a tree necessarily involves paternalistic judgment. One might presume, for instance, that even if dying, the tree would rather not be replaced. Human beings with inoperable cancer, for example, rarely want to be replaced.

46. See 126 CONG. REC. 21377, 30941-42, 30970-71 (1980).

47. See *Ohio v. Department of Interior*, 880 F.2d 432 (D.C. Cir. 1989).

48. *Id.* at 450. Commentators have also suggested that restoration is the remedy of choice. See Cross, *Damage Valuation*, *supra* note 16, at 327; Cross, *Restoring Restoration*, *supra* note 16, at 333-44; see also, Note, *Restoration as the Economically Efficient Remedy for Damage to Publicly Owned Natural Resources*, 91 COLUM. L. REV. 430 (1991).

49. This analogy is developed more fully in part II, *infra*.

50. See Warner, *supra*, note 37, at 157; Sunstein, *supra* note 37, at 803. These discussions suggest that the reason society generally abhors the idea of valuing life is that life is not instrumental to some social goal, but worthy in and of itself. Congress' endorsement of replacement suggests the opposite when it comes to natural resources. If Congress wanted to respect the intrinsic value of all birds it would not mandate replacement as a remedy of choice. Replacement is appropriate precisely because of the instrumental purpose natural resources perform for people. Natural resources help us achieve psychological and moral balance. See *infra* part II(A).

51. An extinct population cannot be replaced. Hence, replacement is only possible if no permanent damage has been inflicted upon the entire species.

about. It follows that we need not be concerned with damage done to any particular birds as long as the existence of birds is not jeopardized. Thus, when trustees sue to collect for lost nonuse value, they sue to collect for the value human beings garner from the existence of natural resources, not for the intrinsic value of any particular resource.<sup>52</sup>

### *B. Limitations of the Property Rights Paradigm*

Until recently, commentators and regulators assumed that the public, or the government on behalf of the public, owned natural resources and that damage to those resources was therefore damage to the public's property right.<sup>53</sup> As I will discuss below, this property paradigm is flawed because it fails to capture the essence of the harm involved with nonuse value loss. Nonetheless, the prevalence of the property paradigm has led to an important debate in the economic literature.

The debate revolved around how to structure Contingent Valuation questionnaires. "Willingness-To-Accept" (WTA) questions ask respondents how much money they would demand in order to accept the damage done to a given natural resource. "Willingness-To-Pay" (WTP) questions ask respondents how much they would be willing to pay in order to prevent damage done to a given natural resource. Results often differed depending on which sort of question was asked. This divergence troubled economists, who had presumed that either question should yield the same answer.<sup>54</sup> In theory, if person X values resource Y at "\$Z," then X should be equally happy paying \$Z to protect Y or receiving \$Z to forego any right to protect Y. Left with a critical choice over which format to choose, commentators and regulators endorsed the WTP format because its results seemed less variable.<sup>55</sup> This choice was made despite the widespread agreement that WTA was the theoretically appropriate methodology.

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52. To the extent the law does respect the intrinsic value of natural resources, it respects the intrinsic value of naturally evolved ecosystems and other resources that cannot be replaced. See *infra* part III.

53. See NOAA PROPOSED REGS, *supra* note 17, at 1161; William D. Schulze, *Use of Direct Methods for Valuing Natural Resource Damages*, in RAYMOND J. KOPP & V. KERRY SMITH, VALUING NATURAL ASSETS: THE ECONOMICS OF NATURAL RESOURCE DAMAGE ASSESSMENT 204, 219-21 (1993); WARD & DUFFIELD, *supra* note 15, at § 9.11; Cross, *Damage Valuation*, *supra* note 16, at 334.

54. Herbert Hovenkamp, *Legal Policy and the Endowment Effect*, 20 J. LEGAL STUD. 225, 225-29 (1991).

55. See NOAA PROPOSED REGS, *supra* note 17, at 1149-50; Peter A. Diamond & Jerry A. Hausman, *On Contingent Valuation Measurement of Nonuse Values*, in EXXON SYMPOSIUM, *supra* note 15, at Tab 1, § 3; WARD & DUFFIELD, *supra* note 15, at 201. The original DOI regulations endorsed awarding nonuse values only when those values were less than either the cost of replacement or the market value of the resource. See 43 C.F.R. § 11.35(b)(2) (1987). Even with that restriction, though, the "[d]epartment continue[d] to maintain that willingness to accept may be the criterion most germane to natural resource

Recently, Daniel Levy and David Friedman, building on the work of John Krutilla,<sup>56</sup> suggested that the divergence between the WTA and WTP results does not necessarily indicate economic measurement error, but instead reflects different conceptions of property rights for non-substitutable resources.<sup>57</sup> Levy and Friedman argue that WTA and WTP results should be comparable only when the goods at issue are not unique, and therefore money can act as a suitable replacement.<sup>58</sup> Because many natural resources are perceived as irreplaceable, one can and should expect to see differences between the WTA and WTP results.<sup>59</sup> Indeed, the higher WTA numbers indicate methodologically appropriate results for nonsubstitutable goods.

This analysis leads Levy and Friedman to argue that the government ought not abandon the WTA format, but must instead decide whether WTA is the appropriate question. That decision hinges on the definition of the property right at stake: "The determination of the conceptually appropriate form of CV query is a matter of property rights, not economics or psychology."<sup>60</sup> If X owns Y, then she should be asked a WTA question. If Y is owned by someone else, then X should be asked how much she would pay to buy Y. To use the authors' own example, if the public "owns" the Grand Canyon, then the one and only conceptually proper question to ask is WTA. If, on the other hand, the polluters have a pre-existing property right to pollute the Grand Canyon, then the only appropriate question to ask is WTP.<sup>61</sup> Levy and Friedman conclude that because the property right question is so critical, Congress should clearly define the property right so that the trustee can employ the proper methodology consistently with less risk of being hampered by lengthy and inconsistent court decisions.<sup>62</sup>

Levy and Friedman's analysis of the WTA/WTP quandary is sound, and their call to define the "property" right seems logical, but I submit that they (and the commentators and regulators before them) have assumed the wrong rights paradigm under which to analyze natu-

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damages, since the public has the property right to the injured natural resource." 51 Fed. Reg. 27721 (1986). The *Ohio* decision endorsed the WTA format for those rare instances in which CV would be appropriate. *Ohio v. Department of Interior*, 880 F.2d 432, 441 (D.C. Cir. 1989).

56. John Krutilla first raised the possibility of the existence of nonuse values in his seminal 1967 work, *Conservation Reconsidered*. John V. Krutilla, *Conservation Reconsidered*, 57 AM. ECON. REV. 777 (1967). Krutilla suggested that the divergence between WTP and WTA would be particularly large for what he called "grand scenic wonders." *Id.* at 786.

57. Levy & Friedman, *supra* note 12, at 509.

58. *See id.* at 509-13.

59. *See id.* at 513.

60. *Id.* at 509.

61. *Id.* at 514.

62. *Id.* at 509, 524.

ral resources and the nonuse values associated with them.<sup>63</sup> Property doctrine cannot capture the essence of the nonuse value right at stake. Consider traditional common law property rules surrounding three "typical" natural resources: a deer, a river, and the air over the Grand Canyon. The deer, considered wildlife originally, is "owned" by the person who kills it.<sup>64</sup> An ownership scheme based on destruction of resources is hardly an ownership scheme that respects the legitimacy of nonuse values. Rights to water in the river are, by definition, usufructuary rights, i.e., they imply use. There are not and never have been individual existence rights to water.<sup>65</sup> Finally, air disputes, particularly causes of action arising out of polluted air, are treated under nuisance law, a remarkably jumbled and confused doctrine<sup>66</sup> that does not require a defined ownership right in the damaged "good."<sup>67</sup> Thus, at common law, when ownership rights were assigned, they were assigned based on use of a resource, not based on any recognition of a right to the existence of resources. Hence, looking to common law private property paradigms in order to measure nonuse values will inevitably confound us because nonuse values have nothing to do with use.<sup>68</sup> As Carol Rose argues in her article, "Possession as the Origin of Property,"<sup>69</sup> the common law system of first possession "presupposed . . . a people whose activities with respect to the objects around them require an unequivocal delineation of lasting control so that those objects can be managed or traded,"<sup>70</sup> i.e., used. Common law

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63. For reasons discussed *infra* at text accompanying notes 212-15, the WTA/WTP problem disappears once one gets out of a property paradigm. Jury instructions in most cases involving the kind of subjective harm involved in natural resources damage cases rarely adopt a strict WTP or WTA format. See DOUGLAS LAYCOCK, *MODERN AMERICAN REMEDIES: CASES AND MATERIALS* 76-78 (2d ed. 1994).

64. See *Pierson v. Post*, 3 Cai. R. 175, 181 (N.Y. Sup. Ct. 1805); see generally, LUND, *supra* note 27.

65. See A. DAN TARLOCK, *THE LAW OF WATER RIGHTS & RESOURCES* §§ 3.02[1], 3.04[1] (1994). Even flow rights depend on use of the resource. See *id.* This may be changing somewhat—see, e.g., Colo. Rev. Stat. § 37-92-102, creating instream flow rights under Colorado law—but the substantive content of legislatively created rights to instream water is quite uncertain.

66. "It is not uncommon for commentators to describe [nuisance] as the least systematic area of the tort law, or to note that all too often, it serves as the dumping ground for many disparate wrongs that do not neatly fit into any recognized category." Richard A. Epstein, *Nuisance Law: Corrective Justice and Its Utilitarian Constraints*, 8 J. LEG. STUD. 49 (1979).

67. See generally, W. PAGE KEETON ET AL., *PROSSER AND KEETON ON THE LAW OF TORTS* § 86 (5th ed. 1984). Private nuisances are usually linked to private land (i.e., traditional property interests), but public nuisances are not.

68. Consider the following quotation from Felix Mendelssohn: "It appears . . . to be a particular mark of the beautiful, that it . . . pleases, even though it be not in our possession, and even though we be never so far removed from the desire to put it to our use." FRIEDRICH UEBERWEG, *HISTORY OF PHILOSOPHY* 528 (1875).

69. Carol M. Rose, *Possession as the Origin of Property*, 52 U. CHI. L. REV. 73 (1985).

70. *Id.* at 87.

notions of private property rights to natural resources entail human control or manipulation of natural resources and thereby "reflect the attitude that human beings are outsiders to nature."<sup>71</sup> The common law envisions objective human connections to natural resources and rights to certain uses of those resources. Nonuse values involve subjective connections to natural resources notwithstanding an absence of use.

As Rose has analyzed extensively, neither England nor the United States has had a property system based exclusively on private ownership. Anglo-American law has always recognized some form of "public" property,<sup>72</sup> and these notions of public ownership have helped preserve many natural resources. For instance, when the government assumes jurisdiction over certain animals, it can prohibit or restrict their capture.<sup>73</sup> Comparably, public legislation protects rivers for non-usufructuary reasons,<sup>74</sup> and public nuisance law protects interests as intangible as one's right to unobstructed travel on a public highway.<sup>75</sup> The problem with these attractive theoretical models of public ownership, however, is their limited practical utility. The notion of public rights may provide some procedural protection for natural resources, but it does little to advance an understanding of the substantive content of the public ownership interest.

Consider the public trust doctrine. In his 1969 article, Professor Joseph Sax reinvigorated a belief in public ownership theory and encouraged use of the public trust doctrine as a procedural tool to protect natural resources.<sup>76</sup> Many courts have invoked the doctrine to protect the environment.<sup>77</sup> A good example is *National Audubon Society v. Superior Court of Alpine County*.<sup>78</sup> In that case, the City of

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71. *Id.* at 88. All cultures do not share our historical perception of natural resources. Rose notes that Native Americans found the concept of natural resource "ownership" bewildering. *Id.*

72. Carol M. Rose, *The Comedy of the Commons: Custom, Commerce and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986).

73. See Endangered Species Act, 16 U.S.C. § 1531-43 (1995).

74. See Wild and Scenic Rivers Act, 16 U.S.C. § 1274 (1995).

75. See generally, KEETON ET AL., *supra* note 67, at § 86. Public nuisances can involve infringement of rights that have nothing to do with property interests.

76. See Sax, *supra* note 12. The notion that some natural resources are property held in trust by the government for the public has been percolating through the law since the days of the Romans. *Id.* at 475-78. Indeed, the trust paradigm provides the theoretical framework for the natural resource damage statutes, all of which acknowledge that natural resources are held in trust by the government for the people. See *supra* text accompanying notes 22-24.

77. For an extensive listing (by state) of major public trust doctrine cases brought since 1970, see Richard Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 644 n.77 (1986).

78. *National Audubon Soc'y v. Superior Court of Alpine County*, 658 P.2d 709, 718-19 (Cal. 1983).



Los Angeles had been granted permission to divert four of the five streams that fed Mono Lake, the second largest lake in California, located near the eastern entrance to Yosemite National Park. The diversionary activity was necessary in order to provide sufficient water for the citizens of Los Angeles, but the decreased water levels in Mono Lake exposed its bird population to coyotes and other predators.<sup>79</sup> In addition, "the scenic beauty and the ecological values of Mono Lake [were] imperiled" by the altered ecosystem.<sup>80</sup> The public, on whose behalf the public trust doctrine operates, was split: some Californians wanted to protect the lake, while others wanted cheaper water. Invoking the public trust doctrine, the Supreme Court of California held that "before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust and attempt so far as feasible, to avoid or minimize any harm to those interests."<sup>81</sup> The Court thereby ensured some procedural protection against feasibly avoidable natural resource destruction by vesting some sort of public trust property right in the people of California. In so doing, however, the Court did not dictate any outcome for the endangered natural resources,<sup>82</sup> nor did it give the public any right to compensation or redress if those resources were destroyed or damaged.

As the Mono Lake case aptly illustrates, what the public trust doctrine creates is a procedural "hard look" doctrine that requires courts to evaluate the public interest in certain natural resources before allowing the state to alter those resources.<sup>83</sup> This procedural protection is easily eroded, however.<sup>84</sup> It depends on an environmentally sensitive judiciary,<sup>85</sup> and does not reflect the modern environmental preference for preservation over access.<sup>86</sup> The doctrine assumes that judges or administrative bodies will be able to determine the interests of the beneficiary class of the trust, i.e., the public, even though the beneficiary population is enormous and its interests are

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79. *Id.* at 711.

80. *Id.*

81. *Id.* at 712.

82. "We do not dictate any particular allocation of water." *Id.* at 732.

83. See James L. Huffman, *Trusting the Public Interest to Judges: A Comment on the Public Trust Writings of Professors Sax, Wilkinson, Dunning & Johnson*, 63 DENV. U. L. REV. 565, 573 (1986); Joseph L. Sax, *Liberating the Public Trust Doctrine from Its Historical Shackles*, 14 U.C. DAVIS L. REV. 185 (1980).

84. See Huffman, *supra* note 83, at 573; Rose, *supra* note 72, at 722; Lazarus, *supra* note 77, at 711; Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. DAVIS L. REV. 269 (1980).

85. See Lazarus, *supra* note 77, at 711; Huffman, *supra* note 83, at 579.

86. See Lazarus, *supra* note 77, at 711. This preference is particularly relevant if one is interested in protecting loss of nonuse values.

quite diverse.<sup>87</sup> The beneficiary class includes the polluter, the animal rights activist, the fisherman, and the hiker, not to mention the consumers of water and the buyers of fish. The judiciary must also discern class interest notwithstanding class members' failure or inability to use the resource. Moreover, even if the judiciary feels comfortable determining that the public values the resource notwithstanding an absence of use, the public trust doctrine gives no guidance on how to determine the substantive content of that value.

The natural resource damage statutes assume a substantive component to people's rights to natural resources by mandating recovery when those rights are infringed. Natural resource damage rules require an economic assessment of the damage done when a lake is drained and a bird population is destroyed. A judge cannot determine that value in the abstract. She must discern that value from substantive evidence.

It may be that property, properly understood, is infinitely broader than that which is "objectively definable or identifiable, apart from social context."<sup>88</sup> It may also be that all "expectations in tangible or intangible things that are valued and protected by the law are property."<sup>89</sup> Nonuse values may be "property" because they are easily "identifiable," "intangible things," "protected by the law," but that property label does not help explain the content of the right at stake. The private property paradigm's reliance on use and control of resources to define the rights at stake and its failure to give substantive content to public ownership rights suggest that it is necessary to look beyond property law to find an appropriate legal rights rubric under which to analyze nonuse values.

## II

### THE NATURE OF THE HARM

#### A. *A Connection to Nature*

Accepting the compensability of nonuse values necessarily involves accepting the legitimacy of a non-demonstrable, subjectively experienced human connection to nature. Only if one embraces such a connection can one acknowledge the legal significance of a citizen not wanting an oil spill in Prince Frederick Sound even if that citizen has never been there, has no intention of going there, has no eco-

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87. Richard Lazarus has also argued that the extraordinary growth of regulatory protections for the environment make the public trust doctrine's procedural protection unnecessary. *Id.* at 698-702.

88. Laura S. Underkuffler, *On Property: An Essay*, 100 YALE L.J. 127, 128 (1990).

89. Cheryl I. Harris, *Whiteness as Property*, 106 HARV. L. REV. 1709, 1729 (1993).

conomic connection to the area, and has no connection to people who might wish to enjoy Prince Frederick Sound in the future.<sup>90</sup>

A myriad of different writers, ranging from botanists to politicians, have proclaimed and analyzed the human need for a connection to nature. In 1984, biologist Edward O. Wilson introduced the "biophilia" hypothesis,<sup>91</sup> which:

asserts the existence of a biologically based, inherent human need to affiliate with life and lifelike processes. This proposition suggests that human identity and personal fulfillment somehow depend on our relationship to nature. The human need for nature is linked not just to the material exploitation of the environment but also to the influence of the natural world on our emotional, cognitive, aesthetic, and even spiritual development.<sup>92</sup>

Botanist Hugh Iltis shares this belief in the genetic basis of our connection to nature: "[L]ike the need for love, the need for nature, the need for its diversity and beauty, has a genetic basis. We cannot reject nature from our lives because we cannot change our genes."<sup>93</sup>

Much of modern environmental philosophy draws a comparable parallel to family, suggesting that people cannot emotionally disassociate themselves from nature any more than they can emotionally disassociate themselves from those whom they love; natural environments are a part of our families.<sup>94</sup> Similarly, many Native American tribes speak of humanity's relationship to the environment in "kinship" not

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90. The kind of injury involved with nonuse value loss is something other than injury-in-fact as that concept has been defined by the Supreme Court. Even before the restrictive holding of *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 564 (1992) (holding that intent to visit threatened area in the future, without showing imminence of visitation, is inadequate to confer standing upon citizen suit plaintiffs), citizen standing depended on use value injury. See *Sierra Club v. Morton*, 405 U.S. 727, 735 (1972) ("[Sufficient] injury will be felt directly only by those who use [the area], and for whom the aesthetic and recreational values of the area will be lessened . . ."). Nonuse value injury, by definition, attaches regardless of use. Failure to meet the rigors of the injury-in-fact requirement is not fatal in this context, however, because the executive branch is acting as plaintiff. The separation of power concerns which underlie the injury-in-fact requirement disappear if the executive branch itself is "[v]indicating the public interest [by executing the laws]," as opposed to delegating that execution to citizens. See *Lujan*, 504 U.S. at 576-77; *Allen v. Wright*, 468 U.S. 737, 751-52 (1984); see generally Antonin Scalia, *The Doctrine of Standing as an Essential Element of the Separation of Powers*, 17 SUFFOLK U. L. REV. 881 (1983). For criticism of the separation of powers argument, see Cass R. Sunstein, *What's Standing After Lujan? Of Citizen Suits, "Injuries," and Article III*, 91 MICH. L. REV. 163, 209-23 (1992).

91. EDWARD O. WILSON, *BIOPHILIA* (1984).

92. Stephen R. Kellert, *The Biological Basis for Human Values of Nature*, in *THE BIOPHILIA HYPOTHESIS* (Stephen R. Kellert & Edward O. Wilson eds., 1993).

93. Hugh H. Iltis, *To the Taxonomist and the Ecologist, Whose Fight Is the Preservation of Nature?*, 17 *BIO-SCIENCE* 886, 887 (1967).

94. For the views of Deep Ecologists, see generally, *DEEP ECOLOGY* (William Devall & George Sessions eds., 1985). For an overview of the ecofeminist position, see Carolyn Merchant, *Ecofeminism and Feminist Theory*, in *REWEAVING THE WORLD: THE EMERGENCE OF ECOFEMINISM* 100 (Irene Diamond & Gloria F. Orenstein eds., 1990). Ernest Partridge suggests that "[t]here may be more truth than poetry in the worn metaphor

"rights" rhetoric.<sup>95</sup> Justice Stevens uses the familial analogy in his concurrence in *Lujan v. Defenders of Wildlife*.<sup>96</sup> "[Environmental injury] is comparable . . . to the interest in a relationship among family members that can be immediately harmed by the death of an absent member."<sup>97</sup>

Al Gore and others argue for the existence of the human connection to nature in more psychological terms. Stressing that people are now ignoring their innate need for the natural, these authors argue that humanity's current relationship to the natural environment is dysfunctional. The dysfunctionality grows from a perceived, but artificial, dichotomy between humans and nature.<sup>98</sup> Ultimately the dichotomy robs humanity of that which is necessary to a full life because it denies humanity's psychological need to feel connected to the world. Paul Shepherd suggests that "human consciousness, including abstract rational thought, is an extension of the environment . . . . [L]acking a rich and complex natural environment to support . . . a rich and complex intelligence, human intelligence may atrophy."<sup>99</sup>

Others have written that recognition of this human connection to nature is a moral imperative. Ethicist Ernest Partridge argues that "[w]e need nature as a moral resource—as [the] source of wonder, amazement, admiration, humility, perspective and solicitude" that makes us human.<sup>100</sup> Lawrence Tribe suggests that "[t]o recognize that humanity is a part of nature and the natural order a constituent part of humanity is to acknowledge that something deeper and more complex

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'Mother Nature.' " Ernest Partridge, *Nature as a Moral Resource*, 6 ENVTL. ETHICS 101, 110 (1984).

95. Carol M. Rose, *Environmental Faust Succumbs to Temptations of Economic Mephistopheles, or, Value by Any Other Name Is Preference*, 87 MICH. L. REV. 1631, 1644 (1989) (reviewing MARK SAGOFF, *THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW AND THE ENVIRONMENT* (1988)); Rose, *supra* note 69, at 87 n.59. Early environmentalist John Muir also wrote in familial terms: "going to the mountains is going home." JOHN MUIR, *OUR NATIONAL PARKS* 1 (1909).

96. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 581-89 (1992).

97. *Id.* at 584 n.2.

98. AL GORE, *EARTH IN THE BALANCE: ECOLOGY AND THE HUMAN SPIRIT* 216-37 (1992). See also, Holmes Rolston III, *Is There an Ecological Ethic?*, ETHICS 85 (1975). The roots of this schism between humans and nature has been linked to Cartesian philosophy and the subject/object dualism that denies the interconnection of all. See C. Mark Cowell, *Ecological Restoration and Environmental Ethics*, 15 ENVTL. ETHICS 19, 27 (1993). Others have rooted the schism in Judeo-Christian philosophy which removes God from the natural world. See generally PASSMORE, *supra* note 45.

99. Paul Shephard, *Introduction: Ecology and Man—A Viewpoint*, in *THE SUBVERSIVE SCIENCE: ESSAYS TOWARD AN ECOLOGY OF MAN* 1, 4 (Paul Shepard & Daniel McKinley eds., 1969). See also WINIFRED GALLAGHER, *THE POWER OF PLACE: HOW OUR SURROUNDINGS SHAPE OUR THOUGHTS, EMOTIONS AND ACTIONS* 207-08 (1993).

100. Partridge, *supra* note 94, at 130. See also Ernest Partridge, *Are We Ready for an Ecological Morality?*, 4 ENVTL. ETHICS 175, 188-90 (1982).

than the customary polarities must be articulated and experienced if the immanent and transcendent are somehow to be united."<sup>101</sup>

Whether one roots humanity's connection to the environment in biology, psychology, or morality, the emerging principle suggests that humans need connection to nature, and that humanity benefits from that connection.<sup>102</sup> The legitimacy and importance of recognizing this connection as a legal matter finds support in the existence of other subjectively felt connections that the law protects and encourages. For instance, by protecting religious and artistic expression, the law honors the subjective benefit that comes from feeling connected to a religious congregation or tradition<sup>103</sup> and it honors the emotional benefits that art can engender.<sup>104</sup> People who feel a connection to nature reap this same kind of emotional benefit. Indeed for many, religious and artistic expression cannot be separated from respect for and connection to natural environments.<sup>105</sup>

Some people may repudiate the importance or even the existence of an interconnection between humans and nature. Woody Allen is reported to have said, "I am two with nature."<sup>106</sup> He, and no doubt others, reject any unifying emotional bond to nature. Presumably,

101. Tribe, *supra* note 11, at 1340.

102. Not all people necessarily feel this benefit. See *infra* text accompanying note 106. Whether any particular person has benefitted from this sense of connection, and how many people actively benefit from the connection, is irrelevant to the questions of whether the connection can exist and whether, as a normative matter, it is important to allow the connection to flourish.

103. See, e.g., *Walz v. Tax Comm'n of New York*, 397 U.S. 664, 672-73 (1969). ("[Religious] entities that exist in a harmonious relationship to the community at large and that foster its 'moral or mental improvement' [can receive preferential tax treatment] . . . . The state has an affirmative policy that considers these groups as beneficial and stabilizing influences in community life and finds [support for these groups] useful, desirable and in the public interest."). Justice Brennan's concurrence in *Walz* offers comparable support. *Id.* at 689 (citing *Washington Ethical Soc'y v. District of Columbia*, 249 F.2d 127, 129 (D.C. Cir. 1957) ("The government may properly [support religious institutions because they] contribute to the diversity of association, viewpoint, and enterprise essential to a vigorous, pluralistic society.")).

104. See NATIONAL FOUNDATION ON THE ARTS AND THE HUMANITIES ACT OF 1965, H.R. REP. NO. 618, 8th Cong., 1st Sess. (1965), reprinted in 1965 U.S.C.A.N. 3186, 3190 ("The function of the proposed Foundation [on the Arts and the Humanities is to give] . . . key recognition to the values of the humanities and the arts . . . . The arts flourish best in a climate in which they are fully understood and appreciated; and the arts translate into tangible, creative, and abiding form, the scope of human knowledge.").

105. Many root their connection to nature in a belief in the supernatural. See DEEP ECOLOGY, *supra* note 94; REWEAVING THE WORLD, *supra* note 94; see generally, RODERICK F. NASH, THE RIGHTS OF NATURE: A HISTORY OF ENVIRONMENTAL ETHICS 87-120 (1989). As Mark Sagoff has noted, the first conservationists were artists. SAGOFF, *supra* note 95; see also Holmes Rolston III, *Values in Nature*, 3 ENVTL. ETHICS 113, 127 (1981) ("Nature generates poetry, philosophy, and religion, not less than science, and at its deepest educational capacity we are awed and humbled by staring into the stormy surf or the midnight sky.").

106. ERIC LAX, WOODY ALLEN: A BIOGRAPHY 39 (1992).

these people are not hurt by the destruction of the natural and nothing says that they have to be; the nonuse value associated with their loss is zero. But other people do experience loss when natural environments are destroyed. Only by accepting the idea of a bond between human beings and nature can one explain why people feel detrimentally affected by the destruction of natural resources that they may never have heard of, been to, or seen.

### *B. The Loss of Connection*

Once one recognizes the existence of a human connection to the natural environment, one can begin to understand the character of the harm involved when natural environments are damaged. People feel a sense of loss when that to which they feel connected, and that which is necessary to their psychological and moral well-being, suffers damage. Critically, the loss suffered is not akin to the kind of loss that people feel when their cars are stolen. It is not their property that has been damaged: it is a part of themselves.<sup>107</sup> Thus, the proper parallel is not to property law, but to torts.<sup>108</sup>

There are three doctrines—dignitary torts, nominal damages, and pain and suffering—that present appropriate parallels for the kind of injuries felt by people when they are denied their connection to nature. Dignitary torts, among them assault, false imprisonment, intentional infliction of emotional distress, alienation of affection,<sup>109</sup> and invasion of privacy all incorporate the law's recognition of the legitimacy of subjective connections to others and of an expectation of emotional integrity.<sup>110</sup> Interference with an individual's emotional integrity gives rise to a cause of action, notwithstanding the absence of

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107. Arne Naess tells of a Norwegian shepherd who subjected himself to arrest for refusing to move from a river that was to be dammed. When asked why, the shepherd responded "[the river] is a part of myself." CHRISTOPHER MANES, *GREEN RAGE: RADICAL ENVIRONMENTALISM AND THE UNMAKING OF CIVILIZATION* 139 (1990).

108. The suggestion that the law is moving beyond a regime of property rights and towards protection of subjectively experienced personality rights like reputation and privacy was made well over 100 years ago. See Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890).

109. An invaluable colleague, Jacob Corré, has suggested that the best way to conceptualize environmental nonuse value actions is to think of "loss of consortium for a forest." For this, and for so many other pieces of Jacob's brilliance and humor, I am greatly indebted.

110. The Supreme Court recently endorsed the long-standing trend toward expanding legal recognition of psychological harm. *Consolidated Rail Corp. v. Gottshall*, No. 92-1956, 1994 U.S. LEXIS 4821 (June 24, 1994). See also Peter A. Bell, *The Bell Tolls: Toward Full Tort Recovery for Psychic Injury*, 36 U. FLA. L. REV. 333 (1984).

tangible injury or objectively demonstrable economic damage.<sup>111</sup> These claims are described as injuries "to the personality."<sup>112</sup>

Similarly, with nominal damages, the law recognizes a subjective expectation of physical integrity, even in cases where no objective damage results from the violation of that integrity. For example, the law awards damages when a doctor operates on the wrong ear, even though the operation did not do any demonstrable physical damage to the ear.<sup>113</sup> The law fashions these nominal damages based on some nonverified and nonverifiable conception of the subjective harm suffered by the plaintiff.<sup>114</sup>

Pain and suffering damages, the subject of much debate for some time,<sup>115</sup> compensate for a comparable kind of subjective injury.<sup>116</sup> Many scholars question the legitimacy of awarding monetary damages for pain and suffering. The proper focus for this discussion, however, is not whether it is appropriate for the law to place a monetary pain and suffering figure on loss,<sup>117</sup> but what the loss itself is. In particular, pain and suffering awards compensate not just for having to experience pain, but also for the sense of violation that accompanies the injury. Exploring the nature of pain and suffering harm helps define the injury people experience when natural environments are damaged.

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111. See KEETON ET AL., *supra* note 67, at 933.

112. See RESTATEMENT (SECOND) OF TORTS, ch. 2, §§ 13-48 (1979) (entitled "Intentional Invasion of Interests in Personality"); see also DAN B. DOBBS, *HANDBOOK ON THE LAW OF REMEDIES* 509 (1973).

113. See *Mohr v. Williams*, 104 N.W. 12, 15-16 (Minn. 1905).

114. See KEETON ET AL., *supra* note 67, at 845.

115. See Richard L. Abel, *A Critique of Torts*, 37 UCLA L. REV. 785, 804-06 (1990); Louis L. Jaffee, *Damages for Personal Injury: The Impact of Insurance*, 18 LAW & CONTEMP. PROBS. 219 (1953); RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* § 6.12 (3d ed. 1986); Randall R. Bovbjerg et al., *Valuing Life and Limb in Tort: Scheduling "Pain and Suffering,"* 83 NW. U. L. REV. 908 (1989); Alan Schwartz, *Proposal for Products Liability Reform: A Theoretical Synthesis*, 97 YALE L.J. 353 (1988); STEPHEN D. SUGARMAN, *DOING AWAY WITH PERSONAL INJURY LAW: NEW COMPENSATION MECHANISMS FOR VICTIMS, CONSUMERS & BUSINESS* (1989).

116. The exact nature of the harm for which the damages are supposed to compensate is unclear. No one claims to know what pain and suffering "compensates" or "pays" for. The RESTATEMENT (SECOND) OF TORTS comments that pain and suffering damages do not directly compensate for "pain and suffering" because that figure would be impossible to calculate. *Id.* at § 907 (1979). Much of the recent debate on pain and suffering damages has centered on the problem of incommensurability. See *supra* note 37. For purposes of this discussion, what is relevant is not whether compensation is possible or whether damages are appropriate, but what the nature of the harm is. Few deny that accident victims experience pain and suffering. Once we know what the harm is, we can decide whether it is a harm that we think the legal system should recognize. See MITCHELL & CARSON, *supra* note 15, at 66 n.18.

117. For a normative discussion of this issue, see generally Abel, *supra* note 115; Radin, *supra* note 37; SUGARMAN, *supra* note 115.

Consider an industrial worker who severs her finger completely. Modern medicine provides a prosthetic device that allows the person to return to work and function in all ways as she did before. Immediate pain after the injury is minimal because her body goes into shock; she undergoes anesthesia for the operation, and is provided with a steady diet of pain killers during recovery. Taking the pain killers as directed, she never feels the pain associated with attaching the prosthesis to the severed nerve endings. Assume further that there is no ongoing pain associated with the wearing of the prosthesis and, because she has adequate health insurance and worker's compensation, she does not suffer any economic injury.<sup>118</sup> If this plaintiff can still collect pain and suffering damages notwithstanding the absence of any physical pain or economic loss, it is because she has suffered the violation that accompanies the loss of her original finger.<sup>119</sup> Every time she looks at her prosthesis she will experience that violation, the subjective sense of which is comparable to the violation felt by the person whose doctor operated on the wrong ear, or the person whose privacy is invaded. That which had been hers, to do with as she pleased, has been infringed upon by someone or something else without her consent and against her will. Pain and suffering damages thus compensate a victim for the loss of something that is uniquely and subjectively part of that victim.

For natural resource purposes, this pain and suffering analogy suggests that if people feel a psychological connection to nature, and by virtue of that connection experience nature as part of themselves, then damage to nature is damage to people. Compensation for the sense of violation many people feel when the natural is destroyed is therefore not compensation for the natural environment itself, any more than pain and suffering awards pay for a lost finger. Instead, nonuse value and pain and suffering loss represent the sense of violation humans feel when they have lost a part of themselves. The essence of nonuse valuation involves trying to capture the part of the self that feels damaged when natural resources are damaged. Because people's connection to nature can operate at a purely subjective level, the nature of the harm done when the natural is damaged is comparable to the subjective sense of violation people feel when purely subjec-

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118. This scenario is highly improbable. Almost all injuries involve incidental damages that are not covered by either health insurance or worker's compensation. Consider the baby-sitters one has to hire, the cabs one has to take, the food one has delivered instead of cooking for oneself. All of these economic damages inevitably follow from any form of temporary disability. Nonetheless, for purposes of argument, we shall assume that our plaintiff has family members who are willing to provide all of these services without expectation of repayment.

119. One can think of this problem in economic terms. If she would have been willing to pay something to avoid the experience, then she has experienced a loss.



tive interests, like privacy, companionship, and a sense of physical integrity have been compromised. Paul Shephard writes that destruction of the natural environment is "an amputation of man."<sup>120</sup> The law already recognizes the subjective sense of violation felt for amputations apart from physical pain, and the subjective sense of harm felt by one family member when physical injury has been done to another family member.<sup>121</sup> It follows that the law can recognize the subjective sense of violation felt by people when the environment is injured. Nonuse value measurements capture the harm experienced when a person's ability to feel connected to the natural world is damaged. They capture the sense of violation people experience when they lose a part of what makes them whole.

### C. *Why Compensate for This Loss?*

Thus, nominal damages, dignitary torts "to the personality" or to family members, and pain and suffering damages are all examples of subjective injury for which the law compensates, just as it compensates for the subjective loss experienced when natural environments are injured.<sup>122</sup> There are many other comparable kinds of subjective injury for which the law does not compensate, however. For example, one may experience regret and suffering upon hearing of an airplane crash that kills dozens of people, or a nuclear power plant leak that pollutes an entire community's water and air systems, or a mine accident that kills 400 miners.<sup>123</sup> Many people are deeply troubled by the death and injury to others in such disasters because they feel a sense of connection to the injured people similar to the connection they feel toward an injured environment. Upon reflection, it may seem odd that the law should recognize a sense of connection to populations of fish and

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120. Shephard, *supra* note 99, at 4.

121. The law has long recognized connections to family members by giving rights of compensation to third party family members who were not themselves injured, but were sufficiently connected to the injured party. Thus, the law recognizes claims for wrongful death, intentional infliction of emotional distress, and loss of companionship for members of immediate families. See KEETON ET AL., *supra* note 67, at 915 ("[T]he law of torts is concerned not only with the protection of interests of personality and of property, tangible or intangible, but also with what may be called "relational" interests . . . . An interference with the continuance of the relation, unimpaired may be redressed by a tort action . . ."). As noted above, Justice Stevens drew on this analogy in his concurrence in *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 584 n.2 (1992). See *supra* notes 94-97 and accompanying text.

122. See *supra* part II.B.

123. All of these examples involve communities (even if temporary ones) of people. Irrational as it may seem, it is "news" and "tragedy" when 400 miners are killed in one accident, even though 400 people are killed in auto accidents in this country every 4 days. See U.S. STATISTICAL ABSTRACT 620 (1994). This is yet another reflection of the whole being greater than the sum of its parts. When communities and groups of things are destroyed there is a greater sense of loss. This idea is developed in part III, *infra*.

trees when it does not recognize a connection to groups of people. I will suggest two reasons for treating environmental losses more like the loss of a family member than like an airplane crash.

The first reason is rooted in deterrence theory. In order to fully internalize the costs of natural resource damage and thereby properly structure economic incentives, the law must force those who harm the environment to compensate for the nonuse value loss associated with natural resource damage.<sup>124</sup> Without such an internalization of cost, people will have inadequate incentive to minimize natural resource destruction.

When someone is killed or injured in a plane crash, the injured's family members, because of their unique relationship to the injured, can recover the direct pecuniary expenses (e.g., medical and funeral expenses, lost wages) and the intangible damages (loss of comfort and companionship, loss of consortium, and various forms of mental distress) incurred as a result of the injury.<sup>125</sup> Assigning liability for these damages deters potentially harmful conduct and encourages adequate precaution. As long as the damages associated with the injury are genuine, these liabilities work to effect optimal levels of deterrence because they incorporate the costs borne by the injured parties.<sup>126</sup>

When natural resources are damaged, there are no lost wages or funeral expenses, and there are no family members entitled to collect for loss of consortium. Therefore, direct pecuniary losses are minimal,<sup>127</sup> and because there are no surrogates for the uniquely situated family members who may recover for the intangible loss, nonuse value is the only cognizable non-pecuniary loss. Accordingly, if nonuse value was not legally cognizable, the non-pecuniary loss would go unaddressed and most of the costs born by injured parties would not be incorporated into a liability scheme.

Admittedly, as currently structured, the legal system also underdeters plane crashes because the cost associated with the greater public's sense of loss after an air disaster is not internalized in a damage measure either, but at least there are other significant tangible

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124. This argument only applies to prospective liability under OPA and CERCLA. 33 U.S.C. § 2702 (1995); 42 U.S.C. § 9607 (1995). CERCLA also imposes retroactive liability, however. See 42 U.S.C. § 9607(a)(2)-(4) (1995) (liability attaches for past acts of ownership, operation, transportation, generation or disposal); *United States v. Northeastern Pharmaceutical & Chem. Co., Inc.*, 810 F.2d 726, 732-34 (8th Cir. 1986). Because it is impossible to affect incentives *ex post*, incentive arguments are inapplicable to CERCLA's retroactive liability scheme. See Raymond J. Kopp and V. Kerry Smith, *Natural Resource Damage Assessment: The Road Ahead*, in VALUING NATURAL ASSETS, *supra* note 53, at 309.

125. See generally, KEETON ET AL., *supra* note 67, at § 127.

126. See POSNER, *supra* note 115, at § 6.12.

127. Use values constitute direct pecuniary losses, but they often fail to capture most of the value associated with a resource. See *infra* text accompanying note 128.

and intangible recoverable losses that encourage appropriate precaution. The law may not have effected perfect deterrence for airplane crashes, but the variety of causes of action available significantly deters the likelihood of the injury. Moreover, society may be willing to tolerate some underdeterrence of airplane crashes given the transaction costs (litigation expenses, measurement expenses, and the risk of excessive recovery) associated with the difficulties of measuring harm to the greater public.

These same transaction costs exist in the environmental context, but giving them overriding credence when natural resources are damaged means effectively ignoring most of the damage associated with natural resource injury. Use values are the equivalent of direct pecuniary losses, but use value recovery will always be artificially low because "prices" for natural resources (park entrance fees, fishing licenses) are set low enough to maximize use, not profit. The extent to which the public values use of the resource is not adequately reflected in the use value recovery. The extent to which the public values *non-use* of the resource is wholly absent from the recovery. Ignoring non-use value loss will inevitably lead to significant underdeterrence of avoidable natural resource loss.<sup>128</sup>

The second reason to be particularly concerned with capturing the subjective loss involved with natural resource injury stems from society's need to overcome a historical disrespect for the importance of nature. Technology has enabled humanity to destroy the natural, often without even realizing that it has done so. The natural environment itself has neither rights nor a voice with which to cry out when humanity damages it. Without legal recognition of people's connection to the natural, society may carelessly destroy that from which its members can garner strength and solace.<sup>129</sup> Until recently, most people thought of natural environments as territories to be conquered, rather than communities with which they needed connection.<sup>130</sup> If society has previously undervalued the benefits of protecting and cultivating a connection to nature, it may now need to endorse rules that promote its members' sense of connection to nature. Legal recognition of humans' subjective connection to the environment should help curb the tendency to destroy unthinkingly that which humans need for full, enriching lives. In 1991, biologist Stephen Jay Gould wrote that

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128. The problems of extinction and irreversibility may counsel for erring in the direction of overdeterrence.

129. See, e.g., RACHEL CARSON, *SILENT SPRING* 42 (1962) (describing the mysterious damage to crops and people that resulted from the production of war materials and insecticides at the Rocky Mountain Arsenal in Colorado).

130. See generally NASH, *supra* note 105. Not everyone has done this. Native Americans and other indigenous populations, for instance, have always valued the natural as part of their community. See Radin, *supra* note 37.

"[w]e cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature . . . for we will not fight to save what we do not love."<sup>131</sup> If, as a normative matter, people agree that a connection to the environment is something that they want to foster,<sup>132</sup> and if people are particularly worried about losing their connection to the environment, then compensating for the loss associated with injury to people's connection to nature is sound policy and sound law.

### III

#### WHEN ARE WE HURT?

##### A. *The Violation*

The sense of violation associated with any injury is a function of how the injury occurred, not just the fact of the injury.<sup>133</sup> With dignitary and personal injury torts, there is no cause of action if the manner of loss warrants no feeling of violation.<sup>134</sup> Comparably, in the environmental context, the sense of violation people feel when someone damages nature depends on the means by which the damage is done, not the mere incident of damage.<sup>135</sup> "Destruction" to the natural environment wrought by nature itself does not give rise to a legally cognizable harm because the sorrow people feel when a volcano destroys a bird population is not the same as the sense of violation they feel after an oil spill destroys that bird population.<sup>136</sup> Holmes wrote that "even a dog distinguishes between being stumbled over and being

131. Stephen J. Gould, *Unenchanted Evening*, NATURAL HISTORY, Sept. 1991, at 4.

132. This normative proposition is developed more fully in part IV, *infra*.

133. If someone scares me by mistake, I rarely have an action for assault, and I cannot collect for false imprisonment unless someone intended to confine me. See KEETON ET AL., *supra* note 67, at 52-53. Most dignitary torts require intent on the part of the tortfeasor. See RESTATEMENT (SECOND) OF TORTS, ch. 2 (1979).

134. One cannot collect damages for an injury if the proximate cause cannot be linked to someone else's breach of a duty of care. Thus, one might argue that the only difference between the plaintiff who lost her finger in a work accident and the plaintiff who lost her finger in a climbing accident is the existence of a tortfeasor. I am suggesting that there is a subjective difference, however. The subjective sense of violation that the plaintiff feels is greater if someone else caused the damage.

Tort reformers, despite advocating the elimination of pain and suffering awards as they now exist, acknowledge the importance of incorporating "the subject nature of how the injury occurred" into the damage determination. See Bovbjerg et al., *supra* note 115, at 976 n.84.

135. Robert Elliot suggests that there is a disvalue associated with an act of destruction—it attaches to the act itself, not just to its consequences. Robert Elliot, *Extinction, Restoration, Naturalness*, 16 ENVTL. ETHICS 135, 142 (1994).

136. See Clayton P. Gillette & James E. Krier, *Risk, Courts, and Agencies*, 138 U. PA. L. REV. 1027, 1077-78 (1990), *citing* Mark Sagoff, *Technological Risk: A Budget of Distinctions* 2-15 (1986) (unpublished manuscript, on file with author).

kicked.”<sup>137</sup> Volcanoes stumble over the natural environment; humans kick it.<sup>138</sup>

From a legal perspective, limiting natural resource damage loss recovery to human-caused destruction is the only plausible option. One is not likely to get a sizable recovery from the volcano that kills a bird population. More importantly, however, law is a human construct, created to judge human action; it does not exist to judge (nor could it govern) the conduct of volcanoes.

Human-caused destruction need not be intentional to be actionable, however. The harm people feel at natural resource damage loss may come in part from the fear that human civilization and its technological and toxic advances have grown too dominating. This domination may lead to destruction regardless of intent. Indeed, the essence of the concern may be that without even trying, humanity is destroying the natural world around us. As Robert Elliot writes: “For better or for worse, we are not just another species. It is accurate to say that as creatures of culture and technology we have transcended nature . . . Technology insulate[s] [us] from natural processes . . . and [allows] massive intervention in ecosystems.”<sup>139</sup> Part of what people value in natural resources is the majesty of nature’s own processes apart from significant human domination. Some human interaction with the natural is inevitable and desirable. Some destruction and extinction are inevitable,<sup>140</sup> but scientists, ethicists, and lawyers recognize “the principal lesson of ecology: Unregulated, humans harm ecosystems and the magnitude of human intervention is often too great.”<sup>141</sup> The price of society’s ability to transcend nature is the moral responsibility to understand and curtail humanity’s ability to destroy it. Recognizing nonuse value loss helps to moderate the magnitude of human intervention.

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137. OLIVER WENDELL HOLMES, *THE COMMON LAW* 3 (1881).

138. Humans can stumble over the natural environment too. Some human interaction with nature is inevitable, and some “destruction” of the natural environment inevitably accompanies human interaction with it. We tread on and eat plants; some of us eat animals; our wastes take up natural space. Moreover, all living things change and deteriorate over time. It is not the fact of change or deterioration that constitutes natural resource damage, nor is all human damage to the environment actionable. Environmental injury should be actionable when human-caused change constitutes a sufficiently violent interruption of the natural evolutionary progression (a progression that includes some human interaction). The immediate severity of the damage caused by the substances that give rise to natural resource liability under CERCLA (hazardous substances, *see* 42 U.S.C. § 9601(14) (1995)) and OPA (oil, *see* 33 U.S.C. § 2702(a) (1995)) is likely to constitute such a violent interruption.

139. Elliot, *supra* note 135, at 143.

140. *See* Tarlock, *supra* note 4, at 1131.

141. *Id.*

*B. The Ecosystemic Whole*

"Natural resources" are defined by federal law as: "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources."<sup>142</sup> Damage to any of these resources, or to their "services,"<sup>143</sup> constitutes injury<sup>144</sup> for which all compensable damages are recoverable.<sup>145</sup> Implicit in this approach to injury quantification is the division of natural ecosystems into their component parts. This kind of division, comparable to biologists' division of the biotic world into species, makes sense for some purposes. For instance, E.O. Wilson argues that taxonomic classification makes science possible.<sup>146</sup> Without some classifying, we would not be able to comprehend the intricacy of the diversity inherent in all ecosystems.<sup>147</sup> Legally, classification makes liability easier to conceptualize. If the injury is defined as damage to "X" (i.e., a resource), then the defendant is responsible for doing that which is necessary to fix "X."<sup>148</sup>

The classification approach is also conducive to use value quantification. We tend to "use" individual resources. We fish for fish. We watch whales. We drink water. But the categorization approach is inapposite to a discussion of nonuse values. Dividing an ecosystem into its constituent parts is inconsistent with both the way humans are subjectively connected to nature and the way nature operates. People go "to the mountains" or "to the woods" or "to the ocean" to experience the environment. One does not achieve that experience by buying fish at the market, watching the show at Sea World, or drinking

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142. 42 U.S.C. § 9601(16) (1995); 33 U.S.C. § 2701(20) (1995).

143. Natural resource services are defined as "the physical and biological functions performed by the resource including the human uses of those functions. These services are the result of the physical, chemical, or biological quality of the resource." 43 C.F.R. § 11.14(nn) (1994). See also NOAA PROPOSED REGS, *supra* note 17, at 1169. For example, a small fish might perform the "service" of providing a food source for a larger fish. A wetland might perform the "service" of providing a breeding ground for mosquitoes. Thus, by incorporating the concept of "services," the regulations incorporate a kind of ecosystemic approach (albeit an insufficient one) into the injury determination process.

144. The CERCLA regulations define injury by dividing up the world of natural resources into five categories and describing what sort of contamination or "measurable adverse change" in each resource constitutes injury. See 42 C.F.R. § 11.14(v) (1994); 42 C.F.R. § 11.62(b)-(f) (1986). The OPA regulations do not detail what constitutes injury to any particular category of resource, but instead define injury in a broad sense as any "adverse change in a natural resource or impairment of a service provided by a resource." NOAA PROPOSED REGS, *supra* note 17, at 1072.

145. NOAA PROPOSED REGS, *supra* note 17, at 1073. Compensable values include all lost use and nonuse values. *Id.*

146. See EDWARD O. WILSON, *THE DIVERSITY OF LIFE* 49 (1992).

147. *Id.*

148. The clear preference of the statutes is to fix "X" by replacing it. See *supra* notes 46-50 and accompanying text.

water from the tap.<sup>149</sup> The subjective connection to nature that legitimates the concept of nonuse values involves relating to natural communities as both natural, i.e., apart from human manipulation, and whole, i.e., a collection of interdependent parts.<sup>150</sup> Part of what the law tries to capture with the concept of nonuse values is the extra value associated with the whole amounting to more than the sum of its parts.

Focusing on the categorization of individual natural resources also creates false choices, as the spotted owl controversy in the Pacific Northwest demonstrates. For various reasons, politicians phrased the question as one of "owls" versus "people." The real debate, however, was not about the lives of owls or people. Environmentalists used the spotted owl as a weapon to protect the old-growth forest ecosystem. It was the ecosystem that environmentalists were concerned with saving.<sup>151</sup> The Endangered Species Act<sup>152</sup> provided the procedural vehicle. A major concern of the compromise proposal in this controversy has nothing to do with owls or trees. Instead, it focuses on the Northwest's salmon population and river habitats that would have been severely damaged had the timber industry continued its logging activity.<sup>153</sup> The problem is not merely that damage to trees will do damage to rivers which will do damage to salmon; the problem is that

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149. Some people may experience a sense of transcendence when looking at an individual flower planted in the median strip of a highway or when looking into the eyes of a bear in the zoo. Elimination of the flower or the bear would constitute some loss to that person and that person might be willing to pay to prevent that loss. Recognizing nonuse value for this loss is inappropriate, however, because that person should be able to recapture the sense of transcendence once the flower and bear have been replaced. The lost nonuse value would be temporary and minimal. See *infra* part III.C.1.

150. This discussion may suggest that one may have to actually experience a natural environment (a particular mountain range or ocean bay) before one can feel a connection to that environment. If this is true, then one should not be able to value Prince Frederick Sound until one has been there. One may come to "know" an environment without actually experiencing it, however. The fact that people are tempted to pay money notwithstanding any experience with Prince Frederick Sound suggests that personal experience with the particular environment in question is not necessary. It may be that in order to feel the connection to nature one has to have experienced some natural ecosystem somewhere in order to know the transcendence, but as long as one has internal knowledge of the ability to connect to nature, the connection can be felt to all natural environments.

151. See Vincent J. Schedelski, *Most Unhappy with Clinton Forest Plan: Loggers, Environmentalists Both Sue*, CHI. TRIB., July 10, 1994, at A15 ("At the heart of the suit brought by more than a dozen environmental groups is the charge that the existing forest management plan won't effectively protect the deteriorating Pacific Northwest environment.").

152. 16 U.S.C. §§ 1533, 1538 (1995).

153. See Rory Marshall, *Leaders Seek Cooperation on Land Management*, SEATTLE TIMES, Feb. 16, 1994, at B3; Eric Pryne, *Clinton Offers an Incentive to Preserve Wildlife—Landowners Would Be Insured Against Future Restrictions*, SEATTLE TIMES, Feb. 17, 1994, at A1.

the law misdirects its energy if it conceptualizes the forest in terms of its constituent parts.<sup>154</sup>

Ecologists and environmental ethicists have long understood this point. "The implication of all biocentric and literally, universal ethical philosophy from Aldo Leopold onwards is that the whole is more important than any of the parts."<sup>155</sup> Robert Bartlett writes:

The primary fact or presumption of ecology is interdependence, reflected in the aphorisms that "every thing is connected to everything else" and you can't do just one thing. . . . Each [complex system of interacting processes]—of which a human being is one—can survive, like a flame, only so long as it can interact with surrounding systems . . . .<sup>156</sup>

Ernest Partridge writes, "[l]ife forms in natural communities do, in fact, interact and they are best understood as functioning components in integrated systems, rather than as discrete aggregates that happen to share physical space."<sup>157</sup> Holmes Rolston states: "A species is what it is inseparably from its environment."<sup>158</sup> Thus, the current tendency to isolate natural resources and evaluate them apart from the ecosystems in which they dwell is inconsistent with the human experience of nonuse value and with ecological science.<sup>159</sup> The focus must be on ecosystems.

### *C. Nonuse Value: Recovery Implications*

#### *1. Theory*

Focusing on ecosystems has significant practical and theoretical implications for when nonuse values should be awarded. An ecosystemic approach suggests that if environmental damage is limited to a few resources within an ecosystem and the ecosystem is still essen-

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154. The economists may also be misdirecting their energy. CV practitioners note that even when asked to, people do not focus on constituent parts. "Our understanding of respondent behavior in the CV setting, is that when people are asked to value an amenity . . . they make a holistic judgment." MITCHELL & CARSON, *supra* note 15, at 67.

155. See NASH, *supra* note 105, at 158.

156. Robert V. Bartlett, *Ecological Rationality: Reason and Environmental Policy*, 8 ENVTL. ETHICS 221, 230-32 (1986).

157. Partridge, *supra* note 94, at 126.

158. Rolston, *supra* note 34, at 215.

159. Another problem with the resource categorization approach to damage assessment is the tendency to undercategorize. The interdependence of ecosystems means that each "resource" is also a "resource service." As Bartlett writes, "everything is connected to everything else." Bartlett, *supra* note 156, at 230. It is difficult to determine if "one" resource, such as a river, is one resource or thousands of different resources. If the law undercategorizes, it runs the risk of creating or "restoring" less stable ecosystems. See WILSON, *supra* note 146, at 73-74. Undercategorization also works against the fundamental evolutionary trend. "Science has given us many doubts, but it has given us at least one certainty: the trend of evolution is to elaborate and diversify the biota." LEOPOLD, *supra* note 2, at 215.



tially intact, the law should not demand compensation for nonuse value loss because there has not been any permanent damage to that from which people garner nonuse value. The whole has not been lost because the injured resources can be replaced and the whole can be maintained. Therefore, the law should only award nonuse value recovery if the ecosystem suffers permanent damage or if it is impossible to replace the individual resources.<sup>160</sup> The more resources that are damaged, the higher the likelihood of ecosystem damage.<sup>161</sup> Particular species might be critical to an ecosystem's survival,<sup>162</sup> but unless the "community of nature" to which humans connect and from which they receive a subjective benefit sustains permanent damage, nonuse value recovery is inappropriate.

Species can repopulate themselves,<sup>163</sup> and science gives humans the ability to restock and import resource populations. If individual resources repopulate themselves or if they are replaced, their existence is not compromised and neither is the existence of the ecosystem. Consider, for example, an excessive chromium discharge into a river. The discharge immediately kills 400 fish and injures the river's vegetation and other biota. Some plants and smaller organisms in the river die. Left alone, without any remedial help, the river would almost certainly recover to baseline conditions within five years.<sup>164</sup> With human intervention, possibly involving restocking the river with

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160. Harry Bader has suggested a comparable ecosystem theory in the public trust doctrine context. "Biotic systems are too complex, and our scientific understanding too rudimentary, to attempt to isolate individual components as essential. Instead, the public trust doctrine must be used to maintain the general health of natural systems." Harry R. Bader, *Antaeus and the Public Trust Doctrine: A New Approach to Substantive Environmental Protection in the Common Law*, 19 B.C. ENVTL. AFF. L. REV. 749, 756 (1992).

161. WILSON, *supra* note 146, at 181.

162. If a "keystone" species, without which an ecosystem cannot function, suffers significant damage, the chances of ecosystem damage are greater. *Id.* at 164.

163. *Id.* at 192. This assumes, of course, that the injury does not involve destruction of an entire species. If an entire species is eliminated by a destructive act of humanity, then the irreplaceable loss experienced by the population would be the same as ecosystem loss and merits nonuse value compensation.

164. Because ecosystems are in a constant state of change, they can never return to an absolute baseline, nor should people expect them to. The proposed regulations accept this position by defining baseline conditions as "conditions that would have existed at the assessment area had the discharge of oil or release of the hazardous substance under investigation not occurred." 43 C.F.R. § 11.14(e) (1994). See also NOAA PROPOSED REGS, *supra* note 17, at 1168. This kind of uncertainty is inevitable in environmental law. See Daniel A. Farber, *Environmental Protection as a Learning Experience*, 27 LOY. L.A. L. REV. 791 (1994); *Lead Indus. Ass'n, Inc. v. EPA*, 647 F.2d 1130, 1154 (1980).

For a discussion of the inevitable problems with the concept of "perfect restoration" of natural environments, see Cross, *Restoring Restoration*, *supra* note 16, at 334-35.

healthy fish and replacing some of the vegetation, the river can recover within two years.<sup>165</sup>

As a counterexample, consider a slow leak of PCBs onto the land adjacent to the river. The PCBs kill much of the river's vegetation, and seriously weaken the vegetation near the river. The land by the river begins to erode and the river becomes silty. The siltiness in turn changes the river biota upon which the fish had fed. Without food, the fish begin to die. By the time anyone recognizes that the PCBs caused the fish population's decline, the entire ecosystem has been fundamentally altered.<sup>166</sup> Restocking the river with new fish or replanting vegetation will be pointless. Dredging silt from the river will not in and of itself bring back the original biotic composition. Replanting, replacing, and dredging all at once will involve a comprehensive replacement of an entire ecosystem. Too many resources have been damaged for this to be considered a problem of individual resource injury. All the resources and the services they provided have sustained damage, and attempts at restoration with this level of damage would constitute re-creation, not restoration. That which would come to exist would do so primarily by virtue of human intervention, not natural evolution. In a situation like this, nonuse value recovery is appropriate because the ecosystem cannot be replaced.<sup>167</sup>

There is, inevitably, a line drawing problem implicit in the distinction between resource-specific and ecosystemic damage. Ultimately, it is a line that scientists and not lawyers must draw because biologists and ecologists best understand the nature and extent of biological interconnection within various ecosystems. The nonscientists among us can find guidance in the art analogy of Alistair Gunn, however. Gunn suggests that restoration of the environment is much like restoration

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165. Chromium deposits in the river sediment would most likely be removed pursuant to a removal action, CERCLA section 104(a), 42 U.S.C. § 9604(a) (1995), and would not be considered part of the natural resource damage action.

166. The Mono Lake case, discussed *supra* at text accompanying notes 78-83, is a good example of ecosystemic damage. *National Audubon Soc'y v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983). Even if water levels were restored, it is not clear that the coyote and bird populations that have been affected by the changes would come back. The Florida Everglades are also an example. Flood control measures have altered water flows which, in turn, have altered the sustainability of plant and bird life. It is not clear that the original ecosystem can be replaced. See generally *EVERGLADES: THE ECOSYSTEM AND ITS RESTORATION* (Steven M. Davis & John C. Ogden eds., 1994) (suggesting that any attempt to restore remnant Everglades marshes will require water delivery plans that simulate lengthy flood phases).

167. WILSON, *supra* note 146, at 180 ("We know some species fit together in twos and threes, but not how the whole community fits together."). See also Partridge, *supra* note 94, at 107 ("It is practically and logically impossible to know all there is to know, even generally and abstractly about life communities . . . since we cannot fully understand the ecosystem, we cannot completely manage and control it.").

of a painting.<sup>168</sup> When one restores a painting, one does not expect to view the exact original after the restoration is complete. One restores the painting to the extent one thinks it possible to maintain the integrity of the original piece of art as the work of the original artist, as opposed to the work of the restorer. Similarly, one should restore natural resources only to the extent that one can maintain the integrity, and organic nature, of natural ecosystems. At some point, the restoration replaces too much, and the new ecosystem, like an overly restored painting, cannot be considered original. Ultimately, the distinction between restoration and re-creation is a subjective determination, but it is not an unprincipled or arbitrary distinction, and it is a determination properly placed within the scope of administrative expertise.<sup>169</sup> The same ecologists and biologists who have drafted the regulations defining injury to natural resources and natural resource services should be capable of drafting regulations that codify how to go about determining ecosystem loss.<sup>170</sup>

The human connection to the environment is a connection to the ecosystem as a whole. As long as the ecosystem remains fundamentally intact, the human connection is not lost. If the ecosystem is lost, the damage is permanent.<sup>171</sup> The complexity and delicacy of natural ecosystems are such that replacing all of the resources within them

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168. Alistair S. Gunn, *The Restoration of Species and Natural Environments*, 13 ENVTL. ETHICS 291, 293 (1991).

169. As a nonscientist, I can think of several suggestions. For instance, if more than a certain number of resources were significantly damaged, ecosystem loss could be assumed. Support for this suggestion is found in WILSON, *supra* note 146, at 181 ("As the knife [cutting out species] cuts deeper its effects will spread with increasing severity through a large but indeterminate community."). Additionally, ecosystemic damage could be assumed if, even with restoration efforts, baseline conditions could not be restored for at least 10 years. Ten years of disruption may effectively prevent experts from determining what restoration would be, because after a sufficient lapse of time those experts would have no way of knowing what the ecosystem would have looked like "but for" the release of the hazardous substance or the oil spill. *Id.*

170. A 1992 National Research Council report divided threatened ecosystems into three categories: (1) those that will recover without extensive intervention; (2) those that can be significantly restored with appropriate action; and (3) those that cannot be restored to a meaningful degree even with extensive intervention. See NATIONAL RESEARCH COUNCIL, WATER SCIENCE AND TECHNOLOGY BOARD, RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY AND PUBLIC POLICY 5 (1992).

Scientists' knowledge of ecosystems cannot be complete. Another reason to be wary of the resource classification approach is that the study of resources within a community does not necessarily reveal very much about how the ecosystem itself functions. See WILSON, *supra* note 146, at 180.

171. One might argue that just as people only have a right to the existence of birds, not to any particular bird, people only have a right to the existence of ecosystems, not to any particular ecosystem. The problem with this argument is that people have a right to naturally evolved ecosystems, just as people have a right to natural birds and natural trees. Manicured gardens and fabricated rain forests, for example, cannot create the sense of majesty and transcendence engendered by feeling a part of that which is beyond human control.

will not replace the system itself.<sup>172</sup> Scientists may be able to create a new ecosystem, but they cannot replace the old one.<sup>173</sup> The inability to replace ecosystems legitimates compensating for the loss associated with ecosystem destruction. Thus, the law can legitimately demand compensation for the intrinsic value of naturally-evolved ecosystems even though it does not recognize the intrinsic value of each component part of that ecosystem. Ecosystems, unlike individual resources, are irreplaceable.

## 2. Regulations

Current regulations may implicitly distinguish between ecosystemic and non-ecosystemic loss by limiting nonuse value recovery to "major" disruptions. Damages for minor impact, or "Type A" disruptions, are determined by a computer model that does not include a nonuse value measure.<sup>174</sup> Reviewing this model in *Colorado v. DOI*,<sup>175</sup> the D.C. Circuit held that nonuse values should be factored into the computer model to the extent that they can be reasonably calculated.<sup>176</sup> Accordingly, regulators plan to include nonuse values in the OPA regulations eventually, but have not yet determined how to include those values.<sup>177</sup> By definition, however, the kinds of damage that Type A covers are minor, almost certainly non-ecosystemic losses. Nonuse value recovery is therefore inappropriate except for the small amount of option value lost during the pendency of restoration. Thus, the *Colorado* decision incorrectly held that nonuse value must be incorporated into Type A models.<sup>178</sup>

For more serious environmental impacts, the regulations mandate "Type B" assessments to "determine the type and extent of short- and long-term injury, destruction, or loss," to "identify the best available procedures to determine such damages . . . [and to] take into consideration factors including, but not limited to, replacement value, use value, and ability of the ecosystem or resource to recover."<sup>179</sup> Drafted after the D.C. Circuit's mandate that replacement cost be used as the measure of recovery in Type B situations,<sup>180</sup> the current regulations

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172. This analysis also suggests that if a particular resource (i.e., a unique species) is completely destroyed, recovery is appropriate because replacement is impossible.

173. See *supra* note 167.

174. See 43 C.F.R. § 11.40 (1988); NOAA PROPOSED REGS, *supra* note 17, at 1173.

175. *Colorado v. United States Dep't of Interior*, 880 F.2d 481 (D.C. Cir. 1989).

176. *Id.* at 490-91.

177. NOAA PROPOSED REGS, *supra* note 17, at 1119.

178. Given the relatively minor amounts of money involved, the cost of assessing the option value loss would probably exceed the loss recovered. A system of fines would be a more appropriate means of recovering for the minimal nonuse value loss associated with minor spills.

179. 42 U.S.C. § 9651(c)(2)(B) (1995).

180. *Ohio v. United States Dep't of Interior*, 880 F.2d 432, 459 (D.C. Cir. 1989).

outline five different "restoration alternatives."<sup>181</sup> These alternatives include natural recovery,<sup>182</sup> restoration,<sup>183</sup> rehabilitation,<sup>184</sup> replacement,<sup>185</sup> and acquisition of equivalent resources.<sup>186</sup> The first two alternatives, "natural recovery" and "restoration," involve either doing nothing or tinkering with various resources so that the ecosystem can return to its baseline conditions. The natural system remains essentially unmanipulated. The last two alternatives, "replacement" or "acquisition of equivalent resources," require abandoning the injured ecosystem and trying to re-create something new elsewhere.<sup>187</sup> The trustees have discretion to choose which of these alternatives is appropriate<sup>188</sup> and to choose whether or not to sue for the nonuse value associated with the loss.<sup>189</sup>

The discretion vested in the trustees suggests that the current regulations fail to recognize that by choosing among these alternatives, the trustee necessarily decides whether nonuse value recovery is appropriate because nonuse value recovery is only appropriate if the alternative chosen suggests that there has been ecosystemic harm. If the trustee decides that a re-creation is necessary, the trustee is implicitly deciding that there has been permanent ecosystemic harm. According to the regulations, however, the discretionary decision about whether to sue for nonuse value loss is separate from the decision as to which restoration alternative to choose.<sup>190</sup> The bifurcation of these

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181. NOAA PROPOSED REGS, *supra* note 17, at 1133.

182. "The natural recovery alternative is based upon the process of natural succession following a discharge whereby the injured resource is left to recover without any intervention by man." *Id.*

183. "Restoration" is defined as "actions undertaken to return injured natural resources and/or services to their baseline conditions." *Id.*

184. "Rehabilitation" is defined as "actions to bring injured natural resources and/or services to a state different from baseline conditions but still beneficial to the environment and public." *Id.*

185. "Replacement" is defined as "actions that substitute natural resources and/or services that provide the same or comparable natural resources and/or services as those injured. Replacement, as opposed to 'direct' restoration, results from restoration actions taken away from the affected site to furnish or create equivalent natural resources and/or services within the region." *Id.*

186. "Acquisition of equivalent resources" is defined as "obtaining natural resources and/or services that the trustee determines are comparable to those injured . . . . Acquisition of equivalent resources is distinguished from replacement of resources by the fact that the acquired resources already exist rather than being created or enhanced." *Id.*

187. "Replacement" appears to mean something between returning the ecosystem to its baseline conditions and creating a new ecosystem. The propriety of measuring nonuse value loss in these instances depends on whether the "replaced" ecosystem is more akin to a restored painting or a reproduction. *Id.*

188. The regulations state that "[o]f all alternatives that achieve similar benefits and meet the goals and objectives of restoration, the most cost-effective alternatives should be chosen." *Id.* at 1135.

189. *Id.* at 1152.

190. *Id.* at 1135.

two decisions is theoretically flawed. The current regulations expressly state that nonuse value recovery is appropriate even when resource damage is temporary.<sup>191</sup> This policy suggests a basic misunderstanding of the nature of ecosystemic harm because it allows people to place a monetary figure on the value of a replaceable resource.<sup>192</sup> In essence, the policy allows people to monetize the intrinsic value of the resource.<sup>193</sup>

In sum, the current taxonomy of the natural resource compensation scheme is inconsistent with the human experience of nature that justifies compensation for nonuse value loss in the first instance. In the nonuse value context, we should abandon classification and focus instead on ecosystemic harm. It is natural ecosystems that generate the human connection and sense of fulfillment that people want to protect, if not encourage, and it is the irreplaceable loss of those natural ecosystems that generates nonuse value loss for which replacement strategies are inadequate. This approach implies that replacement of individual species is a sufficient remedy if the essence of the organic ecosystem remains intact. When damage is done to the totality of the ecosystem, however, nonuse damage value has been lost.<sup>194</sup> In the

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191. *Id.* at 1073-74.

192. Some people feel nonuse value loss when a replaceable resource is injured. They feel nonuse value loss when only one bird is killed and they feel loss regardless of how the bird was killed. Presumably, these people would be willing to pay \$10, \$20, or even \$100 to prevent such loss and that willingness could be incorporated into CV survey results. Whatever the moral legitimacy of these feelings, however, allowing that loss to be recognized is fundamentally inconsistent with current natural resource policy. As explained above, except for those endangered species and national park areas that are singled out for preservation treatment (*see supra* note 42), we do not protect the intrinsic value of our natural resources. Compensating the person who is willing to pay for any act of destruction to natural resources, regardless of the replaceability of those resources, is akin to legally recognizing the harm felt by the animal rights activist who is hurt every time someone kills a salmon for sport. The harm to the activist is perfectly real; she would probably be willing to spend money in order to avoid it; but that does not make it legally cognizable.

193. *See supra* note 10 and accompanying text. It is possible, given the discretion afforded the trustees as to whether to pursue nonuse value recovery, that the trustees will only tabulate nonuse value loss when there has been significant enough damage to necessitate the replacement or acquisition options. If this is the case, practice will appropriately follow theory and the trustee will only collect damages for nonuse value loss when the ecosystem is damaged.

194. Professor Cross has suggested that the law use contingent valuation (CV) results as the measuring stick against which the cost of restoration should be compared. Cross, *Damage Valuation*, *supra* note 16, at 334-39. If CV results are higher than restoration costs, then restoration costs are the appropriate remedy. The first problem with Cross's solution is that it requires CV surveys as a matter of course, in order to determine whether restoration or nonuse value costs are higher. Given the time and expense involved with CV studies, it is questionable whether we want to employ them as a matter of course.

Second, although I agree with Cross that replacement is a sufficient remedy when possible, I disagree with him on a theoretical level. Cross argues that we should forgo replacement (and replacement costs as a measure of damages) when replacement is financially implausible. If the costs of restoring are more than the results rendered by a CV

next section, I turn to why contingent valuation is an appropriate means of capturing the properly cabined sense of loss.

#### IV WHY CONTINGENT VALUATION?

The above analysis suggests that the destruction of natural environments causes harm to people because it weakens their connection to the natural world. The quantification of nonuse value measures the extent of that harm. Contingent valuation (CV) is the only assessment vehicle thought capable of such quantification.<sup>195</sup> The DOI and NOAA have proposed CV as the preferred nonuse value assessment methodology,<sup>196</sup> and as such it is entitled to a statutory presumption of legitimacy.<sup>197</sup> CV's detractors, however, question its accuracy, criticize its data source, and condemn its variability. Much of this criticism stems from a distrust of or disdain for trying to measure an inherently subjective and variable value. The question of whether to compensate for nonuse value loss, however, is distinct from the question of whether CV is a sufficiently reliable tool to measure that loss. If one accepts the legitimacy of nonuse value recovery, one must accept the degree of variability that is intrinsic in any subjective measurement. In the following section, I respond to four principal criticisms of CV and then explain the advantages offered by CV surveys.

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study, then the CV study should be the measure of damages. I argue that society should forgo replacement not when it is financially implausible, but when it is scientifically impossible. If ecologists cannot replace the resources and recreate the ecosystemic whole from which people gather value, then the law should demand compensation for the loss suffered by permanent damage to the ecosystem. That loss is measured in a CV study. Moreover, Professor Cross's interpretation of sufficient replacement is quite different than my suggestion that anything constituting ecosystem loss justifies nonuse value measurement. Cross argues that because nature is constantly changing, people need not worry about restoring environments to their baseline conditions. Cross, *Restoring Restoration*, *supra* note 16, at 334. He also argues that a desire to create a natural environment free from human influence is impossible. My argument is that the destruction of ecosystems is substantively different than their evolution, and therefore restoration efforts are a necessary remedial measure. Society must not fail to restore simply because human influence on the environment is inevitable. At the point where human influence constitutes destruction, replacement is impossible and it is legitimate to assess nonuse value loss.

If the essence of existence value is feeling a connection to natural communities that flourish without human domination, then human-created ecosystems are insufficient remedies. Human interaction with the natural may be inevitable (*see, e.g.*, STEPHEN BUDIANSKY, *THE COVENANT OF THE WILD: WHY ANIMALS CHOSE DOMESTICATION* 4 (1992)), but human domination of it is not.

195. See William H. Desvousges & Sara P. Hudson, *Contingent Valuation: Is it Accurate Enough for Damage Assessments?*, in *THE NEW RULES*, *supra* note 1, at 506-07.

196. See NOAA PROPOSED REGS, *supra* note 17; NATURAL RESOURCE DAMAGE ASSESSMENTS, PROPOSED REGS, DEPARTMENT OF INTERIOR, 59 Fed. Reg. 23,098, 23,102 (1994) [hereinafter DOI PROPOSED REGS].

197. See *Ohio v. United States Dep't of Interior*, 880 F.2d 432, 477-80 (D.C. Cir. 1989).

*A. A Response to CV's Critics*

First, critics of CV rightly point to the phenomenon referred to as "embedding."<sup>198</sup> Survey results indicate that some respondents value a subset of a resource just as much as they value the entire resource, thereby embedding the value of the entire resource into their value of the subset. These respondents indicate that they would pay the same amount to prevent the death of 20 birds or 20,000 birds.

In light of the earlier analysis concerning when nonuse value should be awarded, however, the embedding problem may disappear. The survey question should not ask how much one would pay to prevent the death of one bird or twenty birds. Twenty birds can be replaced. Instead, the question should reflect the holistic nature of the harm and ask how much respondents would pay to prevent the damage that was done to an ecosystem. The survey should describe the damage done to the whole and ask respondents how much they would pay to prevent the total loss, not how much they would pay for each damaged resource.<sup>199</sup> As two prominent CV practitioners have noted, this holistic approach is the way people already tend to think about the loss.<sup>200</sup> Thus, the ecosystemic approach to nonuse value recovery will diminish the embedding problem that many have found troubling.

A second major criticism of CV rests on a belief that the results are unreliable because people are unfamiliar with environmental science and unaccustomed to placing an accurate monetary figure on the environment.<sup>201</sup> One practitioner reported a respondent's attempt to arrive at a monetary figure as follows: "I don't really know . . . this is confusing," and "I have no idea."<sup>202</sup> These responses may give one pause at first, but they are no different from the reactions of most jurors when first confronted with a case involving mathematic or statistical complexity, or the sentiments of most people when first sitting down to do their taxes. That people are initially daunted by a task

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198. See Binger et al., *supra* note 16, at 1070; Desvousges et al., *supra* note 15, at 23; Diamond & Hausman, *supra* note 15, at 50-54; Cross, *Restoring Restoration*, *supra* note 16, at 330.

199. It could be that people will embed ecosystems as well. In other words, they will be willing to pay the same amount to prevent the destruction of one ecosystem as they would to prevent the destruction of twenty ecosystems. Because the ecosystemic approach to nonuse value loss assessment has yet to be employed, this problem is conjectural at this point, but is a subject worthy of future analysis.

200. See MITCHELL & CARSON, *supra* note 15, at 67 ("Our understanding of respondent behavior in the CV setting is that when people are asked to value an amenity . . . they make a holistic judgment.").

201. See David A. Schkade & John W. Payne, *Where Do the Numbers Come From?: How People Respond to Contingent Valuation Questions*, in EXXON SYMPOSIUM, *supra* note 15, at Tab 6, p. 17; William H. Desvousges & Sara P. Hudson, *supra* note 195, at 506, 509; Cross, *Restoring Restoration*, *supra* note 16, at 329.

202. Schkade & Payne, *supra* note 201, at 17.



does not mean that they are incapable of performing the task in a reasonable manner. In the extensive work done on jury decisionmaking,<sup>203</sup> there is no evidence to suggest that lay people are ultimately unable to analyze difficult questions, and scholars have questioned assumptions that jurors are incapable of understanding complex cases.<sup>204</sup>

It is worth noting that CV surveys do not require respondents to understand exactly how natural resources are interdependent, or why oil deposits may escape cleanup efforts. Instead, survey respondents must understand only that natural resources are interdependent and that, for instance, oil deposits may seep far enough into the sand to preclude effective removal. Respondents do not have to understand the science of how the removal process works; they just have to understand that it does (or does not) work.

CV survey respondents initially have difficulty not because they lack a scientific background, but because they are being asked to contemplate something new. This should not disqualify the respondents; evaluating new situations is a part of life. Human beings frequently face this kind of quandary. As others have noted in regard to incommensurable goods, the fact that people must choose between things that they are not accustomed to evaluating does not make their decisions unreasoned or incorrect; it just makes them hard.<sup>205</sup> No one would suggest that a parent who had to decide whether or not to pay for her child's heart transplant was incapable of the task just because she found the decision daunting or difficult. Nor would anyone suggest that she made an incorrect or inappropriate decision simply because other people might answer the question differently.

Respondents' inexperience may mean that the resulting values will be different than those that would obtain if experts were responding to the questions. This tension between lay people and experts is familiar to environmental law, however, particularly in the area of risk assessment, where experts and lay people routinely assess problems differently.<sup>206</sup> Experts can tell us objectively that people have a higher chance of dying in an automobile accident than in a nuclear

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203. The most ambitious project was the University of Chicago Jury Project, conducted in the 1950s by Harry Kalven and Hans Zeisel. The results are analyzed in HARRY KALVEN & HANS ZEISEL, *THE AMERICAN JURY* (1966). For a collection of recent scholarship on the subject, see VERDICT: ASSESSING THE CIVIL JURY SYSTEM (R. Litan ed., 1993) [hereinafter VERDICT].

204. See Stephen A. Saltzburg, *Improving the Quality of Jury Decisionmaking*, in VERDICT, *supra* note 203, at 341, 348.

205. Sunstein, *supra* note 37, at 810.

206. Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 40, 48 (1995) ("Average citizens tend to operate from within a different (than expert) system of valuing risks: as a result they invoke a radically different and much more complex and unruly conception of rationality in deciding among regulatory policies.").

power cataclysm. The public, for whatever reason, may or may not wish to regulate automotive traffic and nuclear power in a manner that reflects those objective risk levels.<sup>207</sup> Ignoring public sentiment and setting policy based solely on what the experts say robs the citizenry of its right to determine what the government should protect it from. Many people endorse relying on or incorporating lay values into risk assessments notwithstanding the divergence between expert and lay quantification of risk because recognizing lay opinion serves democratic values.<sup>208</sup> Comparable democratic values support relying on, or at least incorporating lay values into CV. Moreover, in the natural resource damage area, expert opinion is arguably irrelevant because only lay people know the answer to how much they value their connection to the environment. It is the values of lay people that matter.

The third major criticism of CV maintains that CV survey results are flawed because responses reflect the ethical preferences of the respondents. Economists refer to this as the “warm glow” effect because respondents, allegedly, take pride in answering the questions in accordance with their ethical beliefs.<sup>209</sup> Diamond and Hausman, two leading opponents of CV, contend that “compensatory damage assessments should not take into account ethical values.”<sup>210</sup> This blanket assertion is unsupported in their work and is inconsistent with the law of damages. Juries are made up of people who come to the damage assessment process with some set of ethical norms. The law does not ask jurors to check their sense of right and wrong at the door of the courtroom. Indeed, jurors are supposed to render “fair” results precisely because they are capable of sympathizing with the parties in interest. It is this sympathy that suggests ethical consideration, and it is because we believe that this sort of ethical consideration is a good thing that we maintain and still require a jury system. As Harry Kalven wrote over thirty years ago: “The jury, with its common sense and feel of the community is the expert tribunal for the two great distinctive issues posed by the common law: drawing the profile of negligence and handling the individual pricing of damages.”<sup>211</sup> There

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207. In assessing whether they want to regulate risk, lay people tend to place much more weight than do experts on the voluntariness of the risk, its uncertainty, its latency, and whether it is catastrophic. *Id.*

208. See *id.*; Gillette & Krier, *supra* note 136, at 1027, 1076-80. Cf. STEPHEN BREYER, *BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION* (1993). For an analysis of how Justice Breyer's book fails to incorporate democratic ideals, see Lisa Heinzerling, *Political Science*, 62 U. CHI. L. REV. 449 (1995) (reviewing *VICIOUS CIRCLE*).

209. Brian Binger suggests that the warm glow effect may be a subset of the embedding problem. Binger et al., *supra* note 16, at 1070. Even if such a characterization is appropriate, the warm glow criticisms are misplaced.

210. Diamond & Hausman, *supra* note 55, at 9.

211. Harry Kalven, Jr., *The Dignity of the Civil Jury*, 50 VA. L. REV. 1055, 1058 (1964).

is a human element, which necessarily involves an ethical component, to the law of damages and, Diamond and Hausman notwithstanding, there is nothing necessarily wrong with that.<sup>212</sup>

The critics' skepticism stemming from the warm glow effect suggests another criticism that lingers beneath the surface of most of the attacks on CV. The critics are looking for objectively verifiable answers to the questions they are asking. They are looking for answers that are going to stay constant across different respondents and slightly different questions.<sup>213</sup> The law does not work that way. Jury-determined damage awards are varied. Even when judges determine damage awards, results are varied.<sup>214</sup> Results differ based on judge or jury makeup, based on who the parties are, and based on who the lawyers are. This is common knowledge and few suggest that the inevitable inconsistencies require dispensing with the courtroom as a proper forum for damage determination. Recent scholarship on the jury strongly endorses the reliability and propriety of the jury system despite its inevitable vagaries.<sup>215</sup>

There is no single right answer to most damage determination questions. Jurors listen to testimony and view charts and numbers, but ultimately the interpretation of those charts and numbers is subjective. It is people who render the final damage assessment, not graphs. If straight math could provide answers that we knew to be true each time and that we trusted to be just each time, there would be no need for juries. Comparably, if there were objective measures for determining people's subjective valuation of the environment, there would be no need for contingent valuation surveys.

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212. There are also ways to design a CV questionnaire so that people understand the costs of making "ethically correct" decisions. For instance, when the payment vehicle is designed as a lump-sum tax, and people are asked if they would be willing to pay extra in taxes in order to prevent some form of environmental calamity, people are less likely to exaggerate their willingness to pay just because they think it is the right thing to do. See NOAA CV REPORT, *supra* note 15, at 4606; NOAA PROPOSED REGS, *supra* note 17, at 1159; MITCHELL & CARSON, *supra* note 15, at 296. This payment mechanism also makes respondents less likely to give higher answers simply because they know they will not actually have to pay the amount they are suggesting. See *id.*

213. See, e.g., Shavell, *supra* note 16, at 11.

214. Marc Galanter, *The Regulatory Function of the Civil Jury*, in VERDICT, *supra* note 203, at 87.

215. *Id.* at 70 n.15. See also H. Lee Sarokin & G. Thomas Munsterman, *Recent Innovations in Civil Jury Trial Procedures*, in VERDICT, *supra* note 203, at 378-79. The authors cite a 1987 survey which found that both federal and state judges strongly support the jury system. When asked to articulate the most important change, if any, that should be made to the civil jury system, 12% of the federal and 16% of the state judges thought that juries should be eliminated in complex cases. That was the most frequent suggestion, but the percentage of judges who thought it necessary was remarkably low. The second most frequent suggestion from the judges was to clarify jury instructions. *Id.* In general, CV survey questions are much clearer and require much less doctrinal jargon than do jury instructions.

Finally, some critics point to the WTA/WTP question format variation as a reason to question the reliability of CV surveys.<sup>216</sup> This criticism loses much of its force once the rights rubric is changed from property doctrine to tort doctrine, however. Both formats are somewhat misguided. As a general rule, in the tort area, courts reject both WTA and WTP questions. Courts forbid arguments that implore the jury to put themselves in the position of the plaintiff or to determine how much they would pay someone to suffer certain injuries on their behalf.<sup>217</sup> Instead, courts ask juries to exercise their sound judgement of what is "fair and right,"<sup>218</sup> without explaining their thought processes. Sound judgment is the best measurement tool. The recent work done on alternative CV payment vehicles suggests that CV surveys do a remarkably good job of forcing respondents to exercise sound judgment. Although essentially adopting a WTP format, the questions are rarely asked in an open-ended manner, and there are numerous alternative payment vehicles.<sup>219</sup> Proponents of CV agree that payment vehicles should appropriately reflect their factual scenarios.

Moreover, the proposed regulations require numerous reliability checks. The trustees must take steps to craft a reliable sample, maximize response, and document the rationale for determinations made.<sup>220</sup> The trustee must employ an "experienced survey research organization."<sup>221</sup> Trustees must determine whether respondents understand the description of the natural resource injuries and the recommended prevention and restoration programs.<sup>222</sup> Survey administrators must also remind respondents about the expenditures associated with their choices.<sup>223</sup> With regard to the embedding "prob-

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216. See *supra* text accompanying notes 53-63.

217. See generally, *Botta v. Brunner*, 138 A.2d 713, 718 (N.J. Sup. Ct. 1958); LAYCOCK, *supra* note 63, at 76-77.

218. *Braddock v. Seaboard Air Line R.R. Co.*, 80 So. 2d 662, 666 (Fla. 1955).

219. Different payment vehicles include bidding games (giving the respondent a dollar amount and seeing how much more he will pay), payment-card formats (giving the respondent a payment card indicating how much his household already pays for other kinds of public goods (national parks, the space program, education) and then seeing how much he would pay), dichotomous-choice questions (sending the respondent a dollar figure and seeing if he would pay it (different dollar figures are sent to different households)), and contingent-ranking techniques (asking the respondent to rank various combinations of environmental quality with dollar figures). See WARD & DUFFIELD, *supra* note 15, at 288-90.

220. See also NOAA PROPOSED REGS, *supra* note 17, at 1183; DOI PROPOSED REGS, *supra* note 196, at 23,102.

221. NOAA PROPOSED REGS, *supra* note 17, at 1183.

222. *Id.*; DOI PROPOSED REGS, *supra* note 196, at 23,101.

223. DOI PROPOSED REGS, *supra* note 196, at 23,101-02; NOAA PROPOSED REGS, *supra* note 17, at 1183. The referendum voting format is preferred, and trustees rejecting it must document their rationale for doing so. NOAA PROPOSED REGS, *supra* note 17, at 1183. Respondents are asked whether they would vote for a referendum requiring them to

lem" in particular, the regulations require trustees to demonstrate that aggregate WTP across all respondents increases or decreases as the scope of environmental damage expands or contracts.<sup>224</sup> Thus, there are numerous reliability checks in place.

In sum, only individual members of the lay public can know how much they, as individuals, value their subjective connection to the environment. If the CV survey questions reflect the holistic nature of the harm, and if respondents are properly educated about what they are valuing, there is no reason to believe that lay respondents will not give considered, sound, and appropriate answers to appropriately designed questions.

### *B. A Positive Endorsement*

The arguments for CV go beyond refutation of its critics. CV surveys afford unique opportunities for citizen education and participation, and they produce data that is essential to shaping environmental policy. Any assessment of CV's propriety must weigh both the flaws and the attributes of CV methodology.

#### *1. Education*

When CV survey administrators explain the relevant environmental facts to the diverse population answering a survey, they educate the respondent population. This education is critical to the reliability of the survey and is enormously beneficial to the public.<sup>225</sup> All parties agree that the reliability of contingent valuation surveys depends upon the respondents understanding what it is that they are being asked to measure.<sup>226</sup> Initially, people may think that no birds or fish will ever return to a damaged area, or they may think that the area itself will be forever covered with oil slicks, or they may believe that once the oil is removed from the surface of the water all the potential damage will have been eliminated. Survey administrators must teach respondents that some birds will be replaced, that some oil

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pay a set price and thereby prevent the kind of environmental damage at issue. Set prices are used because open-ended WTP questions reduce the credibility of the program. *Id.*

224. DOI PROPOSED REGS, *supra* note 196, at 23,103; NOAA PROPOSED REGS, *supra* note 17, at 1183. The trustee is to accomplish that goal by first identifying the scope of the injury and then administering a split sample, with some groups getting variant scenarios, to insure that respondents respond differently to environmental injuries of varying severity. *Id.*

225. The NOAA expert panel comments: "In conducting the survey, it is necessary to educate the respondent about the natural resource itself, the facts surrounding a spill and the impacts of the spill on the environment. This education process greatly changes the respondent's information set." NOAA PROPOSED REGS, *supra* note 17, at 1147.

226. Shavell, *supra* note 16, at 11; Carson et al., *supra* note 1, at 522, 539-40; Diamond & Hausman, *supra* note 55, at 10-11; NOAA PROPOSED REGS, *supra* note 17, at 1159-60.

slicks can be removed, but that other oils can remain trapped beneath the surface of beaches.<sup>227</sup>

Permitting respondents to answer the questions when they are ignorant of what is known about how the environment will be affected is akin to allowing a jury to decide a personal injury case without first being educated on the effects of the injury and the prospects for recovery. In both situations, the damage assessors would have to make assumptions about facts and issues not before them. To avoid such assumptions, survey administrators must make certain that respondents know enough to provide responses that are relevant to the questions that the law seeks to answer. The survey itself performs this educative function, as it explains the nature of the injury, the context of the damage, and the forecast for the future. Thus, the surveys have a significant positive externality: respondents emerge as more educated and environmentally conscious citizens. Respondents can never know the full extent of any environmental damage described, because no one knows the full extent of that damage. Even experts do not know what Prince William Sound will look like in twenty years. Ecology is not the predictive science that it once appeared to be.<sup>228</sup> Still, respondents can learn what scientists know, just as juries can be taught what experts know. Respondents, like juries, can then render damage assessments based on what they have learned.<sup>229</sup>

This educational process can affect how respondents relate to and value the environment. As they learn more about resource losses in general and in specific instances, people may come to value these losses more (if they learn that spilled oil can get caught underneath rocks and beneath the surface of beaches), or less (if they learn that bird populations can be replaced). In addition, people may respond emotionally when learning about resource destruction.<sup>230</sup> Survey administrators do not instruct respondents to feel concerned, but respondents' concern may grow as a function of being surveyed. One can well imagine feeling connected to the ecosystem of Prince William Sound after seeing pictures of it covered in oil. That empathy is likely to generate higher nonuse value numbers.

Critics have pointed to this potential for the survey to increase the value it is trying to measure as a reason to reject CV.<sup>231</sup> They maintain that it is unacceptable for the survey to "create the very non-

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227. See Keith Schneider, *In Aftermath of Oil Spill, Alaska Sound is Altered*, N.Y. TIMES, July 7, 1994, at A16.

228. See Fred P. Bosselman & A. Dan Tarlock, *The Influence of Ecological Science on American Law: An Introduction*, 69 CHI.-KENT L. REV. 847, 864-69 (1994).

229. See, e.g., Saltzburg, *supra* note 204, at 363-64.

230. See Note, *supra* note 16, at 1986; Cross, *Restoring Restoration*, *supra* note 16, at 331.

231. Cross, *Restoring Restoration*, *supra* note 16, at 331.

use value it purports to measure.”<sup>232</sup> Whether it is inappropriate for the law to create or enhance the value it measures, however, is a function of one’s normative assessment of the value. If alienation from nature leads to alienation from our moral and psychological core, the law may wish to enhance nonuse value; fostering that value is not necessarily bad, if holding the value does people good.<sup>233</sup> As Guido Calabresi writes: “Law, unlike economics, is not concerned only, or even primarily with reduction of costs, ‘given tastes.’ [Law] is fundamentally concerned with shaping tastes.”<sup>234</sup>

People who are uncomfortable with the idea of government making such normative judgments might consider the prevalence with which the government already shapes emotional tastes. National parks and other environmental programs are heavily subsidized so that people can gain appreciation for natural landscapes.<sup>235</sup> The government heavily subsidizes arts and religion so that people may benefit from the psychological connections engendered by religious and artistic activities. Tax deductions for religious organizations facilitate human connections to God, whatever form that spirit may take, and government sponsorship of the National Endowment for the Arts (NEA) encourages people to become more engaged in and aware of artistic expression throughout society.<sup>236</sup> The educative component of CV studies is comparable to government sponsorship of other areas of subjective development in that it facilitates a human connection to the environment by exposing people to and involving them in the environmental valuation process.<sup>237</sup>

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232. Note, *supra* note 16, at 1986.

233. The theoreticians who have given contour to the essence of our connection to the environment view that human connection to the environment as critical to the well-being of natural environments and humanity.

234. GUIDO CALABRESI, *IDEALS, BELIEFS, ATTITUDES, AND THE LAW* 84 (1985). Calabresi also suggests that one of the reasons the law compensates for the emotional damage suffered when family members get injured is because “[o]ur society does not want people to become callous about seeing their children or spouses killed. Therefore, if denial of damages in such cases led to callousness, we would especially want damages to be awarded.” *Id.* Comparably, if we are concerned with people growing callous about their lost connection to the environment, we should be concerned with awarding damages for that loss.

235. See Park Service Organization Act, 16 U.S.C. § 460(k)(3) (1993); 16 U.S.C. § 460(l)(6)(a) (1985); Federal Land, Policy and Management Act, 43 U.S.C. § 1701 (1986); National Environmental Policy Act, 42 U.S.C. § 4321, 4331(b)(2) (1994). See also *Berman v. Parker*, 348 U.S. 26, 33 (1954) (the concept of public welfare includes spiritual, physical and aesthetic values); *Conservation Law Foundation of New England, Inc. v. Secretary of the Interior*, 864 F.2d 954 (1st Cir. 1989) (National Seashore Act prohibits DOI from allowing uses of Cape Cod that are incompatible with aesthetic values).

236. See *supra* notes 103-04 and accompanying text.

237. This educative component can create or encourage previously unrecognized non-use value, but it cannot find that value where it does not exist. Despite CV’s potential reinforcement of tentatively felt nonuse values, there is nothing coercive or mandatory about the survey. Respondents like Woody Allen are free to value their connection to

Some people wish to discontinue NEA funding because they do not believe that society benefits from becoming engaged in or aware of some of what the NEA funds.<sup>238</sup> Other people believe that government should not encourage any form of religious activity.<sup>239</sup> Comparably, there may be some who believe that the public will not benefit from becoming more engaged in and aware of the natural environment around us. These problems go to the political, not the legal legitimacy of CV, however, and critics taking these views must reckon with the demonstrable social benefits of the surveys.

## 2. Participation

Basic civic republicanism posits that the role of government is to include different voices in the process of governing and to foster discussion of indeterminate political issues.<sup>240</sup> CV surveys require and facilitate precisely this kind of participation. Of necessity, CV surveys involve the public in critical decisionmaking, and they require and encourage the participation of people who often have played a minimal (if any) role in shaping America's environmental policy. Most of this country's environmental policy debate is conducted in Washington D.C. by the government, the regulated community, and large, centralized nongovernmental organizations.<sup>241</sup> The pilot studies for the CV survey following the Exxon Valdez spill, by contrast, were conducted in private homes in San Jose, California; Toledo and Dayton, Ohio; and five rural counties in Georgia.<sup>242</sup> The final surveys were administered to 1600 dwelling units representing 61 counties throughout the United States.<sup>243</sup> The inclusiveness and comprehensiveness necessary to ensure CV's reliability in statistical terms necessarily requires educating and empowering significant numbers of people who are otherwise absent from the environmental dialogue.

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natural environments at zero. *See supra* text accompanying note 106. This zero value should be considered. The current regulations, by disregarding zero measurements, may not weigh the zero values appropriately. *See* DOI PROPOSED REGS, *supra* note 196, at 23,104; *see also* Binger et al., *supra* note 16, at 1101. CV surveys should be viewed as NEA grants that create in one person a newly discovered love for Bertold Brecht, while driving someone else from the theater forever.

238. *See*, Frank Rich, *Trail of Lies*, N.Y. TIMES, July 17, 1994, at A17.

239. This was the position of the plaintiffs in *Walz v. Tax Comm'n of New York*, 397 U.S. 664 (1969).

240. *See* Frank Michelman, *Law's Republic*, 97 YALE L.J. 1493, 1526-28 (1988); Cass R. Sunstein, *Beyond the Republican Revival*, 97 YALE L.J. 1539, 1549 (1988).

241. *See* Dorceta Taylor, *Can The Environmental Movement Attract and Maintain the Support of Minorities?*, in RACE AND THE INCIDENCE OF ENVIRONMENTAL HAZARDS 28-36 (Bunyan Bryant & Paul Mohai eds., 1992).

242. *See* Carson et al., *Contingent Valuation and Lost Passive Use*, in THE NEW RULES, *supra* note 1, at 522, 534-35.

243. *Id.* at 558. Non-English speaking households were excluded from the survey. *Id.* at 559-60.



### 3. Data

CV surveys also provide critical information that would otherwise be unavailable. The law needs CV studies because it has no guidance on how much people value their subjective connection to the environment. Evidence suggests that people put a higher value on the environment than our environmental policy reflects. A 1989 New York Times poll found eighty percent of the population agreeing with the proposition that "[p]rotecting the environment is so important that requirements and standards cannot be too high, and continuing environmental improvements must be made regardless of cost."<sup>244</sup> It is unlikely that the general public is truly willing to make all environmental improvements regardless of cost, but it is possible that the legal system has been considerably undervaluing people's valuation of the environment. The ubiquity of environmental issues in political races and the rise of general environmental consciousness certainly suggest a previous undervaluation.<sup>245</sup> CV surveys indicate how severe the undervaluation has been.

The regulated community is shocked by the numbers generated by CV surveys, but that shock may be the function of values rooted in a bygone era that did not respect the human connection to nature. Maybe people do value their subjective connection to Prince William Sound at \$9.3 billion dollars.<sup>246</sup> On the other hand, maybe people do not fully realize how expensive environmental protection is and, once they come to appreciate the expense, they will temper their zeal for environmental protection. The problem right now, in the nascent stages of our environmental consciousness, is that we do not know how much people value their subjective connection to the environment. CV surveys provide a flexible assessment process that can reflect changing attitudes and gather the information that the legal and political communities need to proceed with an emerging natural resource valuation policy. This kind of dynamic approach is critical in an area with as much uncertainty and as many unknowns as environmental law.<sup>247</sup>

CV, like pain and suffering damages, is criticized for its variability, inconsistency, and incorporation of theoretically irrelevant fac-

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244. See Robert Suro, *Grass-Roots Groups Show Power Battling Pollution Close to Home*, N.Y. TIMES, July 2, 1989, at A1.

245. See generally Riley E. Dunlap, *Public Opinion and Environmental Policy*, in ENVIRONMENTAL POLITICS AND POLICY: THEORIES AND EVIDENCE 4 (James Lester ed., 1989); Mark Sagoff, *Settling America or the Concept of Place in Environmental Ethics*, 12 J. ENERGY NAT. RESOURCES & ENVTL. L. 349, 414-16 (1992). Some recent political activity suggests that politicians believe we have overvalued our need for the natural environment. CV surveys can also tell us how much we have overvalued this need.

246. See *supra* note 1.

247. See Farber, *supra* note 164, at 798; Tarlock, *supra* note 4, at 1139-40.

tors.<sup>248</sup> In the pain and suffering arena, these criticisms have led to attempts to rationalize and unify the law of damages. The proposals for pain and suffering reform, however, call for schemes that base fines and awards on past damages determinations.<sup>249</sup> Pain and suffering reformers do not like the variability within the current system, but in crafting new proposals they rely on a pre-established norm as to what might be an appropriate amount of compensation for the subjective injury. Accordingly, they base their figures on the average awards that juries made in the past.<sup>250</sup>

This methodology is also used by federal courts faced with the analogous dilemma of ascertaining damages for constitutional tort violations.<sup>251</sup> In determining the appropriate award for the invasion of a constitutional right that does not have an objective, monetized value, the Supreme Court mandates that courts adopt "common law rules of damages to provide fair compensation."<sup>252</sup> Courts determine what is fair by looking at past awards in similar cases.<sup>253</sup> In the environmental area, the law needs the guidance of CV results to establish a fair norm in the first instance.<sup>254</sup> Once the law has a rough idea of the nonuse value associated with particular natural resources, it may be appropriate to use a grid or system of fines similar to the ones tort reformers propose, but the law should base environmental fines on the kinds of results that CV surveys generate. The legal system needs

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248. Cf. Bovbjerg et al., *supra* note 115, at 908-20; James F. Blumstein et al., *Beyond Tort Reform: Developing Better Tools for Assessing Damages for Personal Injury*, 8 YALE J. REG. 171, 172-75 (1991); Abel, *supra* note 115, at 79; SUGARMAN, *supra* note 115.

249. See Blumstein et al., *supra* note 248, at 178-79.

250. Fine systems are thought to generate consistency because judges look to previous awards for guidance and usually feel compelled to justify any deviation from the precedential norm. Some may prefer a system of fines because it is likely to be administered by judges, not juries. Judges are thought to be less variable. It is not clear, however, that natural resource damage fines would not be set by juries. Three federal courts have ruled that defendants are entitled to a jury trial on natural resource damage claims under CERCLA. *United States v. City of Seattle*, No. C90-395WD, 1991 WL 208805 (W.D. Wash. Jan. 23, 1991); *In re Acushnet River & New Bedford Harbor: Proceedings re: Alleged PCB Pollution*, 712 F. Supp. 1019 (D. Mass. 1989); *United States v. Allied Chem. Co.*, No. C-83-5898-FMS, 1990 WL 263611 (N.D. Cal. June 27, 1990). Moreover, there is some indication that systems that rely on judges send just as many "indistinct and distorted signals" as do jury-based systems. See Galanter, *supra* note 214, at 87.

251. See *Carey v. Piphus*, 435 U.S. 247 (1977).

252. *Id.* at 258.

253. See, e.g. *Matlock v. Barnes*, 932 F.2d 658, 667 (7th Cir. 1990).

254. A survey of the environmental statutes' fine provisions suggests that \$25,000 per day is the appropriate amount for all violations. See CERCLA § 106(b)(1), 42 U.S.C. § 9606(b)(1) (1995); RCRA § 3008(a)(3), 42 U.S.C. § 6928(a)(3) (1995); FIFRA § 14(a)(1), 7 U.S.C. § 136(a)(1) (1995); TSCA § 16(a)(1), 15 U.S.C. § 2615(a)(1) (1995). Setting a nonuse value fine of \$25,000 per accident, per acre of spill, or per species might encourage consistency, but it is just as arbitrary as CV results, if not more so.

CV results in order to establish a fair assessment of nonuse value loss.<sup>255</sup>

Fines are an alternative to CV surveys and, in theory, they are an alternative that can serve many of the functions of the current regime. The government can use the money collected to acquire equivalent resources in order to protect other sites.<sup>256</sup> If set high enough, fines can internalize the costs of nonuse value loss that results from the destruction of natural environments and make a symbolic statement about the importance of human connection to the environment. Significant fine penalties send a clear message that destruction of the environment involves loss above and beyond that captured by traditional market measurements.<sup>257</sup>

Ultimately, the question of whether a system of fines is a more appropriate vehicle than CV surveys for recognizing natural resource damage loss is a question of which costs society wants to bear. CV surveys are costly in terms of both administration and variability.<sup>258</sup> They are expensive and their susceptibility to diverse outcomes may

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255. Another form of tort "reform" involves damage caps. The recent rush to impose caps on pain and suffering awards and medical malpractice awards suggests a distrust of juries. If there is comparable distrust of CV respondents, Congress could also set a cap on CV awards, or, as the proposed regulations already suggest, simply halve the results generated by the survey. NOAA PROPOSED REGS, *supra* note 17, at 1183.

256. As a policy matter, it might be appropriate to use the funds generated by nonuse value recovery to pay for preservation efforts or to alleviate our need to "use" natural resources to the extent we do. For instance, the funds could be used to acquire more national park land in which human use of the environment is more severely restricted. Currently, the U.S. Forest Service frequently logs the forests it controls as a means of funding recreational activities in the same or other national forests. Nonuse value recovery could alleviate the need for so much logging and thereby decrease the likelihood of future injury. CERCLA provides that any "[s]ums recovered by the United States Government as trustee under this subsection shall be [available] for use only to restore, replace, or acquire the equivalent of such natural resources." CERCLA Section 107(f)(1), 42 U.S.C. § 9607(f)(1) (1995). OPA creates a revolving fund into which the trustee can deposit nonuse value damages and from which the trustee can draw monies that are needed to assess damages at other sites. 33 U.S.C. § 2706(f) (1995). Presumably, both statutes would allow the trustee to use such monies to purchase and maintain protected lands.

257. Three states, Alaska, Florida, and Ohio, have opted out of CV determination and for a system of fines in their natural resource damage regimes. *See supra* note 254.

258. If fines are the more appropriate vehicle to capture this kind of subjective measurement, one might ask why the recent tort reform movements impose caps on jury awards instead of fines. If the problem is vagaries and inconsistency in the process, caps are an insufficient response because there is still plenty of room for inconsistency below the cap. If the concerns about vagaries and inconsistency are instead veiled complaints about the size of the awards (as the cap response would seem to suggest), then we might want to question whether the concern about the size is shared by the entire population (a cross-section of which is supposed to sit on juries), or only by the interest groups that had remarkable success in passing the damage cap legislation. Similarly, if the concern about the vagaries of CV results is a veiled complaint about the size of CV results, society may want to scrutinize the complaints particularly closely given the self-interest and political power of those who would be liable for any large awards.

encourage litigation.<sup>259</sup> The government money spent on the surveys themselves, on the experts administering them, and on the lawyers fighting about their validity might be better spent on preservation and restoration efforts. This is a cogent and powerful argument, familiar to anyone versed in law and economics literature, but it is an argument that ignores the advantages of contingent valuation. The social benefits of CV do not necessarily outweigh its costs, but in the legal community's haste to evaluate the propriety of this new methodology, people must be mindful of CV's benefits and the subjective nature of the rights at stake.

Over one hundred years ago, de Tocqueville extolled the educative potential of the American jury system.<sup>260</sup> CV surveys present comparable educational advantages and provide citizens with an opportunity to participate in the issues on the forefront of shaping how America's political and legal system should respond to environmental damage. Sacrificing concrete yet flexible attempts to measure nonuse value means sacrificing society's potential to assess realistically the degree to which it values the environment. In addition, abandoning CV studies because they are costly and render diverse results suggests that we must also abandon a cornerstone of our civil judicial system—damage determinations made by juries. Whatever the underlying dispute, leaving damage determinations in the hands of lay people necessarily involves a level of subjectivity that removes certainty from the damage assessment process. Yet, in the nonuse value context, it is precisely those lay people—and only those lay people—who can answer the questions being asked.

### CONCLUSION

To properly assess nonuse value, the law must reconceptualize the human loss associated with natural resource damage as an emotional injury to the person, not a deprivation of a property right. The loss associated with environmental degradation is the loss that humans experience when their subjective connection to the environment is damaged. The legitimacy of compensating for this loss requires recognizing that the injury does not involve the loss of any individual resource's intrinsic value, but is instead people's sense of loss associated

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259. It is not clear that properly administered CV surveys will continue to render diverse results. See Loomis, *supra* note 15, at 588, 596; WARD & DUFFIELD, *supra* note 15, at 346. However, inconsistent results have been a frequent complaint within the economic community. See MITCHELL & CARSON, *supra* note 15, at 46-47; Diamond, *Preferences*, *supra* note 15, at 1-2. Assuming some inconsistency remains, however, it is likely that uncertain liability outcomes will discourage settlement. See generally, POSNER, *supra* note 115, at 511.

260. See ALEXIS DE TOCQUEVILLE, *DEMOCRACY IN AMERICA* 275 (Gerald Lawrence trans., 1969).

with the destruction of ecosystems. When irreplaceable natural communities are destroyed, the human connection to nature has been injured.

Contingent valuation, the current means of assessing the psychological injury associated with natural resource loss, is a crucial vehicle for measuring damages because it allows people to assess their own subjective sense of loss. Although costly in some respects, contingent valuation serves important educational and participatory functions, and it cannot be dismissed as legally insufficient simply because it fails the test of absolute consistency. The cost of a more predictable and consistent system of damages is a removed, hierarchical, and ultimately arbitrary assessment of subjectively felt harm. CV surveys leave the assessment of subjective damage in the hands of those whose loss the surveys attempt to measure, and they help society learn how much it collectively cares about the environment. More methodological work may need to be done on contingent valuation, but that work must proceed in light of society's evolving understanding of how environmental loss affects people, and with a firm nod toward established jurisprudence that accepts the legitimacy of subjective injury.