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THE EXOSKELETON OF ENVIRONMENTAL LAW: WHY THE BREADTH, DEPTH, AND LONGEVITY OF ENVIRONMENTAL LAW MATTERS FOR JUDICIAL REVIEW

Sanne H. Knudsen*

Environmental law is pragmatic, inevitable, and intentional. In the aggregate, the numerous federal environmental statutes are not simply a patchwork of ad hoc responses or momentary political breakthroughs to isolated public health problems and resource concerns. Together, they are a group of repeated, legislatively-backed commitments to embrace self-restraint for self-preservation.

Self-restraint and discipline are the essence of environmental law. Indeed, if one studies the patterns and repeated choices in environmental law's many statutory texts, one can start to appreciate environmental law's indispensable role in society: it serves as an enduring "exoskeleton," a sort of protective armor created over time to protect ourselves from collective action problems that inevitably arise in a world of biophysical limits.

Appreciating the exoskeleton—that is, appreciating the broader statutory and historical context in which these laws exist—has implications for the interpretation and implementation of environmental statutes. It has implications for the weight that regulators and jurists ought to give enacted purpose statements when interpreting the laws, for reviewing agency decisions made in the face of scientific uncertainty, and for the robust review that ought to be given to agency inaction.

Absent a corrected understanding of environmental law, one that aligns the fundamental purpose of the laws with its implementation, the full fervor of Congressional commitment to self-restraint will continue to be met with judicial microscoping, apathy, and sidestepping.

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INTRODUCTION

It is no particular revelation to say that environmental law is a complex area informed by technical expertise, ever-evolving scientific understandings, and detailed statutes. Unfortunately, that complexity can at times hide what ought to be in plain sight—the inevitable, indispensable, and intentional role of environmental law in a functioning society. What's more, the implementation and interpretation of environmental law suffers when regulators and jurists lose sight of its essence.

To unpack the essence of environmental law, we might start with three simple and connected truths. First, the Earth does not have an endless supply of timber, clean water, breathable air, iron ore, or fossil fuels.[1] And of course, the Earth's capacity to assimilate waste from all manner of industrial complexes and

[1] In his examination of how natural abundance has shaped American society, environmental historian Donald Worster draws on the work of Walter Prescott Webb to emphasize "the big and hard-to-deny point that Nature puts limits on humans." DONALD WORSTER, SHRINKING THE EARTH: THE RISE AND DECLINE OF AMERICAN ABUNDANCE 35 (2016). As Worster recounts, in Webb's 1952 writing of the *Great Frontier*, Webb cautioned that "[t]he land has only so much to offer . . . There is a limit beyond which we cannot go . . . ." *Id.*

consumption is also bounded; waste and pollution must go somewhere and that somewhere has a finite ability to receive waste.[2]

It is because the Earth is limited as both a source of natural capital and a sink for waste absorption that environmental laws exist.[3] In fact, the instrument of law is uniquely qualified to set limits of scale and ensure that the cumulative impacts of individual behavior do not exceed the productive or absorptive capacities of nature's bounty.[4] Ideally, laws allow market forces to allocate within but not beyond the bounds of nature's capacity.[5]

Second, while *environmentalism* has a reputation for lofty ideals and an almost religious devotion to nature,[6] environmental *law* is a rational and pragmatically indispensable element of a society interested in self-preservation. Even a free-market advocate like Richard Epstein didn't mince words when he explained that "[i]f no one can breathe or eat, then markets too will quickly die of asphyxiation. The only way, therefore, to avoid the catastrophe is to recognize that a system of unrestrained externalities, unrestrained pollution, and unrestrained destruction is going to lead to that unacceptable outcome."[7] At the start of her book *Nature's Trust*, Mary Christina Wood is equally dark and direct: "any government that fails to

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[2] HERMAN E. DALY, BEYOND GROWTH: THE ECONOMICS OF SUSTAINABLE DEVELOPMENT 7–8 (1996) (explaining that by accepting the economy as a subsystem within the environment, "we move from 'empty-world' economics to 'full-world' economics—from a world where inputs to and outputs from the economy are unconstrained, to a world in which they are increasingly constrained by the depletion and pollution of a finite environment").

[3] *See id.* at 17 ("[F]ree institutions include not only the institution of individual freedom in the competitive marketplace (freedom from monopoly), but also the social, collective freedom to democratically enact rules for the common good . . . [T]he market solution to the efficient allocation problem presupposes a political solution to the problems of sustainable scale and just distribution."); *id.* at 13–14 ("There are two prior problems that have to be solved politically as the precondition for the market to work [to solve the problem of efficient allocation of resources]. We must politically and socially limit the total scale of resource throughput for key resources to a level that is sustainable. . . . Second, the rights to deplete or pollute up to the scale limit are no longer free good, but valuable assets. . . . The just distribution of initial ownership has to be settled socially.").

[4] *See* WORSTER, *supra* note 1, at 68–69 (concluding, in the context of a case study on the failures of fisheries in Nantucket to appreciate the limits of natural abundance, that "[w]hales were saved only by the passage of laws and the exercise of moral restraint").

[5] *See* DALY, *supra* note 2, at 52 (noting that a "tradeable pollution permits scheme . . . is a beautiful example of the independence and proper relationship among allocation, distribution, and scale").

[6] *See generally* THOMAS R. DUNLOP, FAITH IN NATURE: ENVIRONMENTALISM AS RELIGIOUS QUEST (2004).

[7] Richard A. Epstein, *Regulation—and Contract—in Environmental Law*, 93 W. VA. L. REV. 859, 861 (1991); *see also id.* ("No matter how strong a devotee you are of the free market[—]and I'm a pretty strong one[—]if you talk first about contract and second about regulation in environmental law, then you have got the order backwards. In terms of relevant significance, you have to talk about regulation first and contracts second.").

protect its natural resources consigns its citizens to misery[—]and often death."[8] In fact, environmental laws are so commonplace that one might view them as inevitable—they are simply tools that rational actors would predictably invoke to give order and stability to a limited set of resources.

Third, environmental laws exist as a result of intentional choices—they reflect repeated, democratic decisions over a long period of time. They choose self-restraint in the face of powerful, countervailing individual interests.[9] In other words, the existence of environmental law is not a fluke. The values advanced by environmental laws are not accidental; they are intentional. In that sense, environmental laws are more than a pragmatic need for survival or technocratic reflections of biophysical limits.[10] They are also normatively-driven choices so that future generations inherit something better than a more polluted planet with fewer resources.[11] They embody a deliberate commitment to the future prosperity of a nation. They give shape and promise to a fundamental American ideal: that of prosperity in perpetuity. They do so through self-restraint and self-discipline in pursuit of collective preservation. That is the essence of environmental law.

Still, the values that animate environmental law are not embraced at the level one would expect if one were familiar with the breadth, depth, and longevity of its legislative text. Professor William H. Rodgers, author of the leading treatise on environmental law and well-known sage in the field, laments the "'decline' in the legal elevation of the environmental values that were within reach in the early 1970s."[12] This decline, he notes, is curious given that "these values linger on in the legislative text . . . ."[13] Likewise, in his book *Environment in the Balance*, Johnathan Cannon studies the Supreme Court's amenability to environmental values in statutory interpretation.[14] Cannon observes that the U.S. Supreme Court largely embraced environmental values at the start of the modern environmental movement but "has since distanced itself and adopted a more neutral and often even skeptical

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[8] MARY CHRISTINA WOOD, NATURE'S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE 6 (2014).

[9] *See infra* Part I; *infra* note 167 and accompanying text.

[10] *Cf.* DOUGLAS A. KYSAR, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY 16–17 (2010) (arguing that the questions at the heart of environmental law cannot be answered by the purported objectivity of welfare economics because environmental law is normative in nature).

[11] The idea that environmental law is a manifestation of a deeper cultural response to declining natural resources is also consistent with historian Donald Worster's telling of the settling of America. *See, e.g.*, WORSTER, *supra* note 1, at 8 ("Beginning in the mid-nineteenth century a growing number of citizens began taking their country's ecological shrinkage seriously and launched an ambitious and successful movement to conserve natural resources, reduce their waste, and preserve natural beauty.").

[12] WILLIAM H. RODGERS, JR. & ELIZABETH BURLESON, RODGERS ENVIRONMENTAL LAW § 5:25 (2d ed.), Westlaw ENVIRLAW (database updated Nov. 2021).

[13] *Id.*

[14] JOHNATHAN Z. CANNON, ENVIRONMENT IN THE BALANCE: THE GREEN MOVEMENT AND THE SUPREME COURT 2 (2015).

stance in its environmental decisions."[15] Richard Lazarus has made similar observations: "The Supreme Court's attitude towards environmental law during the past three decades has generally been marked by apathy, but with the Justices exhibiting increasing signs of skepticism and some hostility."[16]

And so it seems, we need to ask: If environmental law as an act of self-restraint is so foundational to an ordered society, why does environmental law spend so much time playing defense against the rhetoric that suggests economic growth or individual freedom is undermined by environmental regulation?[17] In a field where high-stakes problems are daunting and nature's laws are unforgiving, why isn't the precaution built into environmental laws more fully embraced?[18] Why is regulatory inaction to systemic environmental harm inadequately checked by judicial review?[19] Why do we keep retelling the same story—of the irreparable, costly harms that plague the health and security of our children because the laws that exist have not been implemented by agencies with the tenacity they demand?[20]

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[15] *Id.*

[16] Richard J. Lazarus, *Restoring What's Environmental About Environmental Law in the Supreme Court*, 47 UCLA L. REV. 703, 771 (2000) [Lazarus, *Restoring What's Environmental*]; *see also* J.B. Ruhl, *The Endangered Species Act's Fall from Grace in the Supreme Court*, 36 HARV. ENV'T L. REV. 487, 490 (2012).

[17] *See* KYSAR, *supra* note 10, at 1 ("By now, the story of modern American environmental law has been redacted into a familiar script," one in which environmental regulation needs to be justified "from a scientific risk assessment and tailored to reflect only the level of environmental or human health protection that is acceptable in light of corresponding costs."); CANNON, *supra* note 14, at 24–25 (describing the tension between environmentalists and welfare economics and highlighting Robert Nelson's conclusion in *The New Holy Wars* that the "epochal struggle between [environmentalism and economics] is unavoidable").

[18] *See, e.g.*, Cass R. Sunstein, *Beyond the Precautionary Principle*, 151 U. PA. L. REV. 1003, 1004, 1008 (2003) (describing the principle as "unhelpful" and "paralyzing").

[19] *See, e.g.*, Norton v. S. Utah Wilderness All., 542 U.S. 55, 60–61 (2004) (dismissing the claim by characterizing it as government inaction, despite ongoing and irreparable damage to lands managed by the Bureau of Land Management, and despite a statutory command directing the agency to avoid unnecessary and undue degradation of the lands in question).

[20] For an example of how irreparable harms result from regulatory inaction, consider the story of chlorpyrifos, a widely used crop pesticide regulated under the Food Drug and Cosmetic Act. Despite concerns raised in a 2007 petition for review over neurological impacts to children as a result of in utero exposure to chlorpyrifos residue on food, and despite the EPA's own science concluding that the existing tolerance levels were not protective enough, EPA delayed making a final, and therefore judicially reviewable decision, until 2019. *See* League of United Latin Am. Citizens v. Regan, 996 F.3d 673, 677 (9th Cir. 2021). By the time the Ninth Circuit Court of Appeals concluded in a 2021 opinion that the EPA's refusal to regulate was arbitrary and capricious, *id.* at 697, 14 years had passed since the initial petition and an unknown number of children had been put at risk. This, despite that a federal law unequivocally places the burden on the EPA to show safety as a precondition to setting residue tolerances. *Id.* at 678. *See also* WOOD, *supra* note 8, at 74 (critiquing agency

Again, at first glance, the answer may be that the laws are complex; that the collective action and public health problems that they address are complicated.[21] Indeed, they are. The answer may also be that the agencies who implement the laws are given too much discretion, which then hamstrings the judiciary in its ability to give meaningful effect to the underlying purpose of the laws.[22] There is truth to this too.

But the problem may also be simpler—that, in dissecting their complexity and microscoping their details, those who implement and interpret environmental laws have gotten lost in the nuance and failed to appreciate that restraint is a feature, not a bug, of environmental law. That feature is one that Americans have repeatedly embraced through legislation time and again.

By considering environmental law as a series of repeated choices made over a long historical arc, this Article offers a corrected understanding of environmental law. Namely, it advances a view that is at once unapologetic and unifying. By looking to the text of the statutory commands, individually and in the aggregate, by considering their collective regulatory reach and vast legal infrastructure, and by considering the historical arc of which their passage is a part, one might start to appreciate that this body of law serves a distinctive and purposeful role in society—as an "exoskeleton" of sorts. In biology, an exoskeleton is a "rigid external covering for the body in some invertebrate animals, especially arthropods, providing both support and protection."[23] That exoskeleton is a useful evolutionary development necessary for species survival.[24] Similarly, one can imagine environmental laws, in the aggregate, as forming an armor that society uses to protect itself from the biophysical realities of nature and the consequences of collective use. The intentionality of that armor is reflected in the depth, breadth, and longevity of environmental law.

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use of discretion to undermine environmental law and asserting that "some agencies use technical discretion as free rein to contravene statutory intent").

[21] *See* RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 38–41 (2004) [LAZARUS, MAKING OF ENVIRONMENTAL LAW].

[22] WOOD, *supra* note 8, at 6–7.

[23] *Exoskeleton*, *in* CONCISE OXFORD AMERICAN DICTIONARY (Erin McKean, Constance Baboukis, Carol Braham, Alan Hartley, Christine A. Lindberg, Johanna Baboukis, Orin Hargraves, Archie Hobson, Marina Padakis & Grant Barrett eds., 2006).

[24] Darja Obradovic Wagner & Per Aspenberg, *Where Did Bone Come From?* 82 ACTA ORTHOPAEDICA 393, 394 (2011) (Though it also had drawbacks, the "exoskeleton added speed to the evolution of animal life in general and created opportunities for animals to expand their activity radius by using calcified extremities and protection shields . . . ."). *But see* Anne Holden, *Exoskeleton Evolution*, CAL. ACAD. OF SCIS. (Mar. 1, 2011), https://www.calacademy.org/explore-science/exoskeleton-evolution [https://perma.cc/6BD3-56XR] ("Despite arthropods' prevalence and diversity, scientists still disagree on when their most distinctive feature—the exoskeleton—evolved.") *Cf.* Neil Bowdler, *Rise of the Human Exoskeletons*, BBC (Mar. 4, 2014), https://www.bbc.com/news/technology-26418358 [https://perma.cc/9E9L-6UAS] ("Robotic or mechanical exoskeletons could offer humans the kind of protection, support and strength they afford in nature.").

For regulators and jurists, the intentionality embodied by this idea of an exoskeleton has at least three foundational implications: (1) the enacted purpose statements contained in environmental statutes deserve a consistent and weighted role in statutory interpretation; (2) the use of scaffolding and reinforcing regulatory commands often seen in environmental statutes suggest jurists ought to place a thumb on the scale of precaution when reviewing agency decisions; and (3) the underlying values of restraint suggest that regulatory inaction by agencies ought to be met with more skepticism than it currently receives.

For environmental laws to come into existence, legislators had to come together and choose against the status quo of unbridled consumption.[25] And they did that, time and time again. In fact, the United States was, for a long time, heralded as a leader in environmental protection because of the boldness of its laws in prioritizing human and ecological health above undisciplined and short-term growth.[26] When it enacted the Endangered Species Act (ESA) in 1973,[27] Congress intended "to halt and reverse the trend toward species extinction, whatever the cost."[28] When it

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[25] *See* KYSAR, *supra* note 10, at 116 ("[D]emocratically enacted environmental laws seek to protect certain interests from shortsighted destruction by land development, pollution, and other potentially harmful activities. . . . [W]e seek to enshrine the collective values and aims of our better selves . . . ."). In suggesting that the weight given to values encoded in environmental laws ought to carry weight by virtue of their emergence from a rigorous process of legislative adoption, one can finds support in the principle of institutional settlement. *See* William N. Eskridge, Jr. & Gary Peller, *The New Public Law Movement: Moderation as a Postmodern Cultural Form*, 89 MICH. L. REV. 707, 722 (1991) ("The principle of institutional settlement expresses the judgment that decisions which are the duly arrived at result of duly established procedures [for making decisions] of this kind ought to be accepted as binding upon the whole society unless and until they are duly changed." (alterations in original) (quoting 1 HENRY M. HART, JR., & ALBERT K. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW 4–5 (tent. ed. 1958))). Still, one ought to be cautious in suggesting that the principle of institutional settlement avoids the problem of determining the driving values of the underlying statute. *Id.* at 723–24.

[26] *See* Maria Ivanova & Daniel C. Esty, *Reclaiming U.S. Leadership in Global Environmental Governance*, 28 SAIS REV. INT'L AFFS. 57, 69 (2008) ("In the 1970s and 1980s, new international environmental organizations were created and old ones reformed, international environmental treaties were initiated and immediately signed, partnerships were forged, and funding mobilized. Moreover, U.S. commitment internationally translated into consistent domestic compliance with international environmental law. At the core of these achievements, lay individual and collective leadership and a vision for the United States as a uniting force in a divided world."); *see also* William H. Rodgers, Jr., *The Seven Statutory Wonders of U.S. Environmental Law: Origins and Morphology*, 27 LOY. L.A. L. REV. 1009, 1011 (1994) ("NEPA is the most frequently copied and most frequently cited of all U.S. domestic environmental laws.").

[27] Pub. L. No. 93-205, 87 Stat. 884 (codified as amended at 16 U.S.C. §§ 1531–1544).

[28] Tenn. Valley Auth. v. Hill, 437 U.S. 153, 184 (1978); *see also id.* at 194 ("Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities, thereby adopting a policy which it described as 'institutionalized caution.'").

enacted the Clean Water Act in 1972,[29] Congress aggressively announced a vision where America's waterways would be free from pollutant discharges by 1985[30] and that a cost-blind, health-based approach would boldly prohibit "the discharge of toxic pollutants in toxic amounts."[31] Similar commitments to ecological preservation and public health lie at the heart of the Clean Air Act,[32] the Toxic Substances Control Act (TSCA),[33] the Safe Drinking Water Act,[34] the National Forest Management Act (NFMA),[35] the Resource Conservation and Recovery Act (RCRA),[36] the

[29] Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251–1389).

[30] 33 U.S.C. § 1251(a)(1).

[31] 33 U.S.C. § 1251(a)(3). For a thorough history of the Clean Water Act's approach to regulating toxic pollutants and for a description of the aggressive, health-based approach contained in the 1972 amendments and then changed in the 1977 amendments, see Oliver A. Houck, *The Regulation of Toxic Pollutants Under the Clean Water Act*, 21 ENV'T L. REP. 10528, 10533 (1991); *see also id.* at 10532 (discussing the bold aspirations of the Clean Water Act, and noting that "[t]hese findings of Congress were no accident. They were the product of nearly two years of hearing and debate. . . . The shift in approach was more than mechanical; it was ideological. The 'use of any river, lake, stream or ocean as a waste treatment system' was, henceforth, 'unacceptable'").

[32] 42 U.S.C. § 7401(b)(1) (declaring that one of the purposes of the Act is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population."); 136 CONG. REC. 34989 (1990) (statement of Rep. John Dingell) ("It has been my privilege as a Member of Congress to participate in the writing of every clean air bill ever passed. None of those previous measures remotely approaches the complexity or comprehensiveness of the bill we are considering today. . . . This bill's impact will be felt in virtually every aspect of human endeavor and nearly every economic activity. . . . We will also be fulfilling our responsibility to the American people who have told us that they are willing to make some sacrifices in pursuit of a cleaner environment.").

[33] For a detailed review of TSCA's history and Congress's intent to tackle health threats resulting from unchecked chemicals, see David Markell, *An Overview of TSCA, Its History and Key Underlying Assumptions, and Its Place in Environmental Regulation*, 32 WASH. U. J. L. & POL'Y 333, 340 (2010); *see also id.* at 337 (discussing then-EPA Administrator Russell Train's pronouncement that TSCA was "one of the most important pieces of preventive medicine legislation ever passed by Congress") (internal quotation marks omitted) (quoting another source); *see also* Sanne H. Knudsen, *Regulating Cumulative Risk*, 101 MINN. L. REV. 2313, 2367–71 (2017) (discussing TSCA's broad authorities with the theoretical capacity for regulating even cumulative risk).

[34] 42 U.S.C. § 300g-1(b)(1)(C). When prioritizing which unregulated contaminants to develop national drinking water standards for, Congress directs the EPA to "select contaminants that present the greatest public health concern." *Id.*

[35] 16 U.S.C. § 1600(6) ("[T]he Forest Service, by virtue of its statutory authority for management of the National Forest System, . . . has both a responsibility and an opportunity to be a leader in assuring that the Nation maintains a natural resource conservation posture that will meet the requirements of our people in perpetuity.").

[36] *See* 42 U.S.C. § 6901(b) (finding that waste disposal "can present a danger to human health and the environment," among other concerns); H.R. REP. NO. 94-1491, pt. 1, at 3 (1976) (explaining that the "overriding concern" of Congress when drafting the legislation

Comprehensive Environmental Response Compensation and Liability Act (CERCLA),[37] the Wilderness Act,[38] and the National Environmental Policy Act (NEPA).[39]

Consider too that these laws—many of which are nearly half a century old—reflect the conviction of the people, the insights of scholars, and the bold leadership of lawmakers. The laws come from the courage of scientists like Rachel Carson who embraced the role of evidence-based advocates.[40] They grow out of grassroots organization: the coming together of professors and students, scientists and soccer moms, anglers and hippies to elevate environmental consciousness to a movement that would give Earth its own day in 1971.[41] Together, these laws more fully capture the teachings of classical economic thought, paying homage to the oft-ignored cautions that economic growth must inevitably give way to the limits of natural capital.[42] Moreover, these laws embody a decades-long cultural shift away from

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was "the effect on the population and the environment of the disposal of discarded hazardous wastes—those which by virtue of their composition or longevity are harmful, toxic or lethal").

[37] While CERCLA is notorious for its lack of clarity, see John Copeland Nagle, *CERCLA's Mistakes*, 38 WM. & MARY L. REV. 1405, 1405 (1997), the U.S. Supreme Court has distilled CERCLA's purpose as follows: "In 1980, [CERCLA] to address the serious environmental and health risks posed by industrial pollution. The Act seeks to promote the timely cleanup of hazardous waste sites and to ensure that the costs of such cleanup efforts [are] borne by those responsible for the contamination." Atl. Richfield Co. v. Christian, 140 S. Ct. 1335, 1345 (2020) (citations omitted) (internal quotation marks omitted).

[38] Wilderness Act of 1964, § 2(a), 16 U.S.C. § 1131(a) (proclaiming that the wilderness areas "shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness . . . .").

[39] The congressional declared purposes of NEPA are "[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality." 42 U.S.C § 4321.

[40] *See, e.g.*, RACHEL CARSON, SILENT SPRING (1962); *see also* Frank Graham, Jr., *Fifty Years After Silent Spring Attacks on Science Continue*, YALE ENV'T 360 (June 21, 2012), https://e360.yale.edu/features/fifty_years_after_rachel_carsons_silent_spring_assacult_on_science_continues [https://perma.cc/V9QD-WAQS] ("When Silent Spring was published in 1962, author Rachel Carson was subjected to vicious personal assaults that had nothing do with the science or the merits of pesticide use.").

[41] *See* ADAM ROME, THE GENIUS OF EARTH DAY: HOW A 1970 TEACH-IN UNEXPECTEDLY MADE THE FIRST GREEN GENERATION 10 (2013) ("In the course of the 1950s and 1960s, many liberal Democrats, scientists, middle-class women, young critics of American institutions, and conservationists become more concerned about environmental issues. Though the activists in those groups did not become a concerted force until Earth Day brought them together, they made Earth Day possible.").

[42] DALY, *supra* note 2, at 23 ("The biophysical limits to growth arise from three interrelated conditions: finitude, entropy, and ecological interdependence."); WORSTER,

America's reflexive allegiance to "uncontrolled growth."[43] They embody a collective decision to shape a future America on something other than ad hoc individual choices.[44] In the end, the values embodied in the laws have been remarkably durable.[45]

The point is, if we study the history of American settlement as told by Donald Worster,[46] and the cultural movement behind Earth Day as examined by Adam Rome;[47] if we consider the maturing philosophical relationship between man and nature as described by Jedediah Purdy;[48] and if we take seriously the complete teachings of classical economists and the work of Herman Daly,[49] we start to see environmental law not as a sideshow, a product of a bygone era, or a disrupting nuisance to economic progress. Rather, we see it as an indispensable and intentional part of the societal blueprint for how to keep America prosperous and protect the quality of life for current and future generations of Americans.[50] In other words, we might start to appreciate environmental law as a sort of exoskeleton.

With all that in mind, Part I takes up the first major task of this Article—to show that an exoskeleton exists by examining environmental laws in the aggregate. It considers their comprehensive regulatory reach, extensive legal infrastructure, enacted purpose statements, and regulatory choices to show how the exoskeleton is the culmination of a pattern of choices codified over time. Even if no one set out to

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supra note 1, at 41–56 (explaining that Adam Smith's Wealth of Nation's was as much a commentary on limits on abundance; and similarly discussing the works of various classical economists like David Ricardo, John Stuart Mill, Stanley Jevons, and Thomas Malthus, all of whom cautioned that resources are not infinite and neither then is economic productivity).

[43] *See* KARL BOYD BROOKS, BEFORE EARTH DAY: THE ORIGINS OF AMERICAN ENVIRONMENTAL LAW, 1945–1970, at 6–7 (2009) ("Environmental law did not appear in a revolutionary moment of intense national creativity after 1969. A slower, more complicated, evolutionary process of legal change laid down environmental law's foundation before the first Earth Day."); WORSTER, *supra* note 1, at 107 ("The rise of the conservation movement, in contrast, suggested that a substantial number of Americans were beginning to question that linear progression and to look for more than a future of endless and assured wealth. . . . They sought not an end to all growth but an end to uncontrolled and unlimited growth, which spoiled the earth for their children or themselves.").

[44] *Cf.* KYSAR, *supra* note 10, at 101 (arguing that the "individually inscribed" interests reflected in the welfare-economic approach to environmental law "work to obscure much of the reason behind publicly enacted environmental, health and safety laws," which center on "interests that arise on the collective level").

[45] CANNON, *supra* note 14, at 7 (discussing social science studies evidencing that "attitudes, beliefs, and values associated with environmentalism are measurably present and durable among the American public").

[46] WORSTER, *supra* note 1.

[47] ROME, *supra* note 41.

[48] JEDEDIAH PURDY, AFTER NATURE: A POLITICS FOR THE ANTHROPOCENE (2015).

[49] DALY, *supra* note 2.

[50] *See, e.g.*, WORSTER, *supra* note 1, at 7 ("[T]he earth has been a powerful agent in human history, both when it was replete with resources and when it could no longer offer the old abundance.").

create an exoskeleton, which surely they did not, the result of many repeated decisions to turn to law as a primary tool for setting bounds on waste and planning for a future with bountiful natural resources has become exactly that—an exoskeleton that serves to protect current and future generations. Over time that exoskeleton has proven to be durable.

The second major task of this Article, taken up in Part II, is to show how an understanding of the exoskeleton—that aggregate pattern of choices and intentionality in repeated form—ought to shape judicial review. Overall, appreciating the whole of the enterprise allows regulators and courts to make more sophisticated decisions, ones that more consistently embrace the underlying values of resource conservation that animate the individual statutes. In particular, the exoskeleton has implications for the weight that regulators and jurists ought to give enacted purpose statements when interpreting the laws, for reviewing agency decisions made in the face of scientific uncertainty, and for the rigorous review that ought to be given to agency inaction.

An astute reader might note that the sketch of environmental law's exoskeleton, as laid out so far, makes no distinction between natural resource laws (like the National Forest Management Act or the Wilderness Act) and pollution control laws (like the Clean Air Act and the Clean Water Act). That is deliberate. While in practice and in scholarship there is sometimes a divide between the domains of natural resource management and pollution control regulation, the basis for those distinctions is artificial if one considers the underlying biophysical necessity of environmental law.[51] Put in that light, natural resource laws simply deal with the limits of the Earth's capacity to serve as a source of raw materials whereas pollution control laws simply deal with the Earth's capacity to serve as a sink for waste from industrial processes. Laws in both domains are responses to the limits of nature, whether as a source or a sink. Laws in both domains are, at their core, acts of self-restraint for the purposes of self-preservation—they reflect the eventual creation of an exoskeleton that is but a natural, evolutionary impulse. Accordingly, in this examination of the breadth, depth, and longevity of environmental laws, no meaningful distinction is created in an exoskeleton that is meant to protect both the productive and assimilative capacities of nature.

I. ENVIRONMENTAL LAW'S EXOSKELETON—THE BREADTH, DEPTH, AND TEXTUAL PATTERNS OF INTENTIONALITY

The conservation and public health values that animate environmental law are not embraced at the level one would expect if one were familiar with the breadth,

[51] For a discussion of natural resources law as a separate field, but also a recognition that some case books have begun breaking down boundaries "in recognition of nature's seamlessness," see Robert L. Fischman, *What Is Natural Resources Law?* 78 U. COLO. L. REV. 717, 717–18 (2007); *see also* Robert L. Fischman, *The Divides of Environmental Law and the Problem of Harm in the Endangered Species Act*, 83 IND. L.J. 661, 664 (2008) ("Dividing environmental law into its two subject-matter strands may hinder integrated understanding and resolution of environmental problems.").

depth, and longevity of its many legislative texts. To address that shortcoming, this Part examines the major federal environmental statutes in the aggregate—studying their comprehensive regulatory reach, enacted purpose statements, and repeated regulatory choices.

In the end, that examination illustrates what ought to be an obvious truth: as a Nation we have chosen self-restraint,[52] though not always and not necessarily consistently. For a long time in American history, this was not the case. But beginning in the postwar era of the 1940s[53] and solidifying in the heyday of the 1970s Earth Day teach-ins,[54] America chose to actively codify what conservationists and enlightened economists had counseled for years; that is, in a world of finite resources, the use and disposal of resources must be managed and conserved for future prosperity.[55] That repeated codification is more than random. Over time, the repeat codifications form the exoskeleton of environmental law.

Admittedly, finding a unifying theme in environmental law is not an easy task and is sure to be met with skepticism by even sympathetic observers. In fact, in the quest to find cohesion in environmental law,[56] some scholars have been successful[57]

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[52] The idea that environmental law is an act of self-preservation in the face of collective action problems, while perhaps not so framed, is reflected in foundational works like Garrett Hardin's *Tragedy of the Commons*, an essay suggesting restraint through regulation as the "prescription for the problem of overuse." CANNON, *supra* note 14, at 16–17 (2015) (discussing the tension between autonomy and collective restraint that undergirds the environmental movement); *see also* Garrett Hardin, 162 SCI. 1243 (1968). That theme was picked up again by Jedidiah Purdy in his book *After Nature*, wherein he urges that "self-restraint" is "exactly what environmental politics needs" in the future. *See* PURDY, *supra* note 48, at 256 (2015). Consistent with that insight, but taking it a step further, this work urges that self-restraint is already a unifying value that environmental law has long injected into the American experience.

[53] *See* BROOKS, *supra* note 43, at 7–8.

[54] *See* ROME, *supra* note 41, at 209.

[55] *See, e.g.*, DALY, *supra* note 2 *passim*; WORSTER, *supra* note 1 *passim*.

[56] *See, e.g.*, Joseph L. Sax, *The Search for Environmental Rights*, 6 J. LAND USE & ENV'T L. 93, 94 (1990); Alyson C. Flournoy, *In Search of an Environmental Ethic*, 28 COLUM. J. ENV'T L. 63, 64–71 (2003); Holly Doremus, *Shaping the Future: The Dialectic of Law and Environmental Values*, 37 U.C. DAVIS L. REV. 233, 234–35 (2003); David Driesen, *The Ends and Means of Pollution Control: Toward a Positive Theory of Environmental Law*, 2017 UTAH L. REV. 57, 58–64; Todd Aagaard, *Environmental Law as a Legal Field: An Inquiry in Legal Taxonomy,* 95 CORNELL L. REV. 222, 222–26 (2010); Sanne H. Knudsen, *The Flip Side of* Michigan v. EPA*: Are Cumulative Impacts Centrally Relevant*? 1 UTAH L. REV. 1, 1–6 (2018); Mark Sagoff, *The Principles of Federal Pollution Control Law*, 71 MINN. L. REV. 19, 32 (1986).

[57] Douglas Kysar has offered up the precautionary principle as a more suitable guidepost than welfare economics for this sometimes illusive environmental ethic. KYSAR, *supra* note 10, at 2–3. Mary Wood argues that the trust principles underlying environmental law transcend its statutes and exist as a co-constitutional check on government-sanctioned resource degradation. WOOD, *supra* note 8, at 14–17. David Driesen looked for a positive theory of environmental law in regulatory choices and found varying degrees of normative

while others have not.[58] Most poignantly, Dan Tarlock questions whether there is a "there there" in environmental law and concludes that there is not, even if there should be.[59] Still others skip the search for unifying ethics and focus instead on the wisdom of various objective frameworks and regulatory choices as serving individual statutory commands for resource protection.[60] There are even those who

commitments. Driesen, *supra* note 56, at 58. In his book *After Nature*, Jedediah Purdy reaches beyond law and identifies four major animating philosophies of the human-nature relationship during the settlement of the United States. PURDY, *supra* note 48, at 31–45.

[58] *E.g.*, A. Dan Tarlock, *Is There a There There in Environmental Law?* 19 J. LAND USE & ENV'T LAW 213, 217–18 (2004). Alyson Flournoy, searching for an environmental ethic, has identified that "[o]ne might take the volume of law, as many people do, as proof that our society shares some set of values or norms governing human interactions with the environment, what we might call an 'environmental ethic.'" Flournoy, *supra* note 56, at 65. She then rebutted this point, arguing that "despite this impressive consensus and legacy, it is not clear that environmental laws do reflect any clearly articulated ethic that should be called environmental." *Id.* at 66. Similarly, Eric Freyfogle, a notable champion of community orientations to land use generally and private property specifically, has remarked "[t]ry as we might, we cannot piece together Congress's pronouncements into a coherent moral order, or even into a premeditated vision of ecological well-being." Eric Freyfogle, *The Ethical Strands of Environmental Law*, 1994 U. ILL. L. REV. 819, 840 (1994). Todd Aagaard too has explored the very idea of environmental law as a legal field and concluded that there are "no core principles that unify all of substantive environmental law doctrine." Aagaard, *supra* note 56, at 226*; see also* David A. Westbrook, *Liberal Environmental Jurisprudence*, 7 U.C. DAVIS L. REV. 619, 621, 624–25 (1994) ("[E]nvironmental law is not a discipline, because it lacks the professional consensus on a coherent internal organization of materials a discipline requires."); *see also* Tracy Hester, Robert Percival, Irma Russell, Victor Flatt & Joel Mintz, *Restating Environmental Law*, 40 COLUM. J. ENV'T L. 1, 4 (2015) ("Other scholars have also questioned whether the entire field of U.S. environmental law remains too immature and undeveloped to benefit from a comprehensive Restatement . . . ."). For a concise description of the literature on whether the Supreme Court has approached environmental law as a separate field, see Michael Burger, *Environmental Law/Environmental Literature*, 40 ECOLOGY L.Q. 1, 9 (2013).

[59] By looking for a "there there" Tarlock is seeking a unifying substantive principle in environmental law. *See* Tarlock, *supra* note 58, at 217–18. Tarlock offers up principles that could guide environmental law but argues, in its current form, environmental law is better defined by process than substance. *Id*. at 219–20.

[60] Richard Revesz and Michael Livermore, for example, urge the utility of cost-benefit analysis as an objective framework for resolving the inevitable trade-offs at the heart of environmental resource disputes. *See, e.g.*, RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH (2008). In fact, Revesz and Livermore have gone even further at times, arguing that cost-benefit analysis would actually serve environmental goals better than the seemingly more directly value-laden health-based standards. Richard L. Revesz & Michael A. Livermore, *Rethinking Health-Based Environmental Standards*, 89 N.Y.U. L. REV. 1184, 1258–64 (2014).

question the wisdom of regulation as the appropriate path towards environmental quality.[61]

It is fair to say that scholars are all over the map in their quest to untangle the Gordian knot of how to create a society that balances individual freedom with collective restraint such that nature can continue to nurture. Indeed, the human energy devoted to untangling that knot is part of a long history and itself a testament to a collective endeavor. One might say, if there is no "there there,"[62] then why are we here and how come the path is so worn?

Ultimately, the view of environmental law advanced here aligns with those scholars who urge that a common animating environmental ethic exists and is an essential part of legal discourse.[63] To that end, this Article stands firmly in agreement with Richard Lazarus who urges that environmental values "should be entitled to

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[61] While recognizing a "collective concern with nature" as a feature of societies capable of a long-term view, Epstein nonetheless urges that the answers to resolving use conflicts lie outside the realm of regulation entirely and ought to be resolved through private law. *See* Richard A. Epstein, *From Common Law to Environmental Protection: How the Modern Environmental Movement Has Lost Its Way*, 23 SUP. CT. ECON. REV. 141, 143 (2015) ("I think that the conventional account seriously overstates the case for comprehensive regulation to deal with these environmental issues. There is indeed a real need for such agencies, but also an equal need to confine their substantive operation so it conforms to the set of common law entitlements as fashioned through the law of nuisance and kindred areas."); *see also* Roger Meiners & Bruce Yandle, *Common Law and the Conceit of Modern Environmental Policy*, 7 GEO. MASON L. REV. 923, 923–25 (1999) ("In short, many who care about the environment are deeply concerned about the failings of federal regulatory efforts and the environmental prospects if the federal regulatory engine continues along the same track. . . . The common law, combined with various state-level controls, was doing a better job addressing most environmental problems than the federal monopoly, which directed most environmental policy for the last part of this century."). *But cf.* James L. Huffman, *Beware of Greens in Praise of the Common Law*, 58 CASE W. RES. L. REV. 813, 815 (2008) ("It was widely agreed that the piecemeal methods of the common law could not make a dent in the pervasive environmental problems facing the nation and the planet. But there was a small band of contrarians who argued that the common law might still have some relevance to the solving of environmental challenges.").

[62] This phrase comes from Tarlock, *supra* note 58, at 214.

[63] In that way, this work answers the call of Holly Doremus, whose writings "encourage a vigorous public discussion of the values served by our environmental policies" in order to ensure the success of those policies. Doremus, *supra* note 56, at 234. This work espouses the wisdom of Eric Freyfogle, who views a communitarian mindset to land use as the keystone to meaningful stewardship of nature's resources. Freyfogle, *supra* note 58, at 843 ("As we seek to live more ethically and sensitively toward the land, we will likely come to understand that land-use rules are not simply matters for each person to decide separately. We will view them as matters of community concern, in much the same way that issues of murder and rape are matters for the community.") And this work accepts the pragmatism in Daniel Farber's admonition that "without having any overall vision of the field, it is unclear how either agencies or courts can produce a halfway coherent approach to environmental law." Daniel A. Farber, *Foreword*, 32 ECOLOGY L.Q. 383, 387 (2005).

substantial weight in the balancing of competing considerations."[64] But unlike Lazarus, who urges that a sophisticated understanding of environmental law comes from appreciating the complexity of the problems that environmental laws try to solve, this Article urges that understanding the sophistication of environmental law lies in appreciating its simplicity. That is, the reason why environmental values should be given weight is not because the laws and problems are complex but because the fundamental aims of the statutes, when viewed in the aggregate, are eerily direct.

To that end, Part I.A starts by surveying the breadth and depth of environmental law's vast legal infrastructure as evidence of Congressional commitment to comprehensive regulation. Part I.B probes deeper by examining how Congressional commitment is further evidenced not just by structure but by text, namely enacted purpose statements and patterns of specific regulatory choices that prioritize public health and long-term sustainability. Finally, Part I.C considers the historical context of the modern statutory era, concluding that the commands found in federal environmental statutes are part of a longer arc of evolving commitment to resource protection in the settlement of the United States.

A. Intentionality Through Breadth and Depth: The Regulatory Reach and Supporting Legal Infrastructure of Environmental Law

Individually and together, environmental laws at the federal, state and local level create a comprehensive system of regulation reaching a nearly complete range of natural resources, from water to air to soil to waste to wildlife. That breadth is matched by depth, as evidenced by the profound legal infrastructure created by environmental laws. Together the depth and breadth of the legal landscape are products not of a singular decade or in response to a singular event, but of a sustained American commitment to protecting nature from unbridled and haphazard consumption.[65]

1. Breadth of Environmental Law

Consider the breadth and reach of federal statutes alone. The Clean Water Act, an iconic cornerstone of U.S. environmental law, prohibits any discharge of any pollutants into waters of the United States without a permit.[66] Pollutant is defined broadly to cover toxins as well as dirt.[67] The jurisdictional scope over waters of the United States is likewise broad.[68] It reaches beyond major rivers like the Mississippi or Missouri, offering protection to non-navigable tributaries, wetlands, and some

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[64] Lazarus, *Restoring What's Environmental, supra* note 16, at 706.

[65] *See infra* Part I.C.

[66] 33 U.S.C. § 1311(a).

[67] 33 U.S.C. § 1362(6).

[68] 33 U.S.C. § 1362(7) (defining "navigable waters" to mean "the waters of the United States"); United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 133 (1985) ("Congress chose to define the waters covered by the Act broadly.").

intermittent streams.[69] While the scope of the Clean Water Act has certainly attracted controversy, the jurisdictional reach is an inevitable consequence of the physical reality: Water is an interconnected resource; to protect water quality, therefore, one has to fully commit or else not bother.[70] Indeed, Congress was committed to providing regulatory jurisdiction to the full extent allowed by the Constitution.[71] Not surprisingly, the Clean Water Act is so comprehensive that the U.S. Supreme Court has declared that it occupies the field of water pollution control and preempts federal common law.[72]

The Clean Air Act is similarly bold, taking on the complicated and important task of ensuring Americans have clean air to breathe. Indeed, the immensity of the undertaking is matched only by the enormity of the legal infrastructure created to

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[69] 40 C.F.R. § 120.2; *see also* Nat. Res. Def. Council, Inc. v. Callaway, 392 F. Supp. 685, 686 (D.D.C. 1975) (holding that the U.S. Army Corps of Engineers erred in reading the Clean Water Act so narrowly as to include only traditionally navigable-in-fact waterways); United States v. Ashland Oil & Transp. Co., 504 F.2d 1317, 1329–30 (6th Cir. 1974) (holding that Congress intended to control discharge of pollutants into non-navigable tributaries which flowed into navigable waters, and that this exercise of authority was constitutional); United States v. Holland, 373 F. Supp. 665, 673 (M.D. Fla. 1974) (holding that Congress intended to address "the pollution of non-navigable mosquito canals and mangrove wetland areas").

[70] *See* Cnty. of Maui v. Haw. Wildlife Fund, 140 S. Ct. 1462, 1474–76 (2020) (recognizing that all water is connected and holding that the Clean Water Act prohibits even "functional equivalent of a direct discharge" of pollutants into waters of the United States through groundwater in order to avoid creating "a serious loophole" in the Act's permitting scheme).

[71] *See* Nat. Res. Def. Council, Inc. v. Callaway, 392 F. Supp. 685, 685 (D.D.C. 1975); *see also* Jerry Jackson & Sarah V. Armitage, *United States v. Riverside Bayview Homes: A Questionable Interpretation of § 404*, 14 ENV'T L. REP. NEWS & ANALYSIS 10366, 10368 (1984) ("The courts have universally ruled that this meant the geographic scope of the Clean Water Act was as broad as Congress' practically unlimited power under the Commerce Clause. The Supreme Court has approvingly taken note of this judicial approach."). *But cf.* Solid Wate Agency of N. Cook Cnty. v. U.S. Army Corps of Eng'rs, 531 U.S. 159, 174 (2001) (invoking the constitutional avoidance canon to avoid the federalism concerns that would arise if the Clean Water Act's jurisdictional reach extended to the limits of the Commerce Clause to reach wholly isolated intrastate wetlands).

[72] *See* City of Milwaukee v. Illinois (*Milwaukee II*), 451 U.S. 304, 317–19 (1981) ("Congress' intent in enacting the Amendments was clearly to establish an all-encompassing program of water pollution regulation."). Note, however, that the Clean Water Act and Clean Air Act both contain saving clause provisions. 33 U.S.C. § 1370; 42 U.S.C. § 7416. For that reason, the Supreme Court held in *International Paper Co. v. Ouellette* that the Clean Water Act's savings clause allow certain state common law claims to exist alongside federal regulations. 479 U.S. 481, 497–99 (1987). The Supreme Court has not yet ruled on whether the Clean Air Act's substantially similar saving clause would permit state common law claims to survive. *See* Am. Elec. Power Co. v. Connecticut, 131 S. Ct. 2527, 2540 (2011) ("In light of our holding that the Clean Air Act displaces federal common law, the availability . . . of a state lawsuit depends, *inter alia*, on the preemptive effect of the federal Act." (citing *Int'l Paper Co.*, 479 U.S. at 489, 491, 497)).

achieve it. To that end, the Clean Air Act utilizes a variety of tactics ranging from permits to planning, from health-based to technology-forcing standards, from mobile source to stationary source regulations, from end-of-pipe controls to ambient air quality standards, from federal requirements to state-lead efforts.[73] From toxics to particulates, the Clean Air Act's definition of "pollutant" is virtually all-encompassing.[74] Like the Clean Water Act, the Clean Air Act occupies its field and preempts federal common law.[75] That the breadth of the Clean Air Act gives it flexibility to address emerging issues is a keystone of its durability, as the Supreme Court recognized when it concluded the Act was aggressive enough in scope to regulate carbon dioxide emissions.[76]

In other areas too, Congress took decisive action to tackle systemic issues. The ESA, another American icon, is formidable in its "regulatory firepower"[77] when it comes to protecting species from extinction. It extends to private and public lands, protects both listed species and their habitat, prohibits a broad range of activities from outright killing to harassment, and creates categories of listed species to broaden protections to threatened and not just endangered species.[78] It is no wonder that historian Roderick Nash dubbed the ESA "the strongest American legal expression to date of environmental ethics."[79]

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[73] For an in-depth look at the largess of the Clean Air Act's many regulatory programs and why the Act has been so durable over many political eras in the U.S., see LESSONS FROM THE CLEAN AIR ACT: BUILDING DURABILITY AND ADAPTABILITY INTO US CLIMATE AND ENERGY POLICY (Ann Carlson & Dallas Burtraw eds., 2019).

[74] *See* Massachusetts v. EPA, 549 U.S. 497, 528–29 (2007) (explaining that the "sweeping definition of 'air pollutant'" under the Act "embraces all airborne compounds of whatever stripe").

[75] *See Am. Elec. Power Co.*, 131 S. Ct. at 2540.

[76] *Massachusetts*, 549 U.S. at 532 ("While the Congresses that drafted § 202(a)(1) might not have appreciated the possibility that burning fossil fuels could lead to global warming, they did understand that without regulatory flexibility, changing circumstances and scientific developments would soon render the Clean Air Act obsolete. The broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall such obsolescence.").

[77] J.B. Ruhl, *Keeping the Endangered Species Act Relevant*, 19 DUKE ENV'T. L. & POL'Y F. 275, 281 (2008).

[78] NAT'L RSCH. COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 2 (1995) ("The strength of the ESA lies with its stringent mandates constraining the actions of private parties and public agencies. Once a species is listed as threatened or endangered, it becomes entitled to shelter under the act's protective umbrella, a far-reaching array of provisions."). For a useful summary of the ESA's regulatory programs, and a more detailed discussion of the scope and limits of the Act's regulatory power, see Ruhl, *supra* note 77, at 280–82. For a discussion of ESA's application to private lands, see ROBERT MELTZ, CONG. RSCH. SERV., RL31796, THE ENDANGERED SPECIES ACT (ESA) AND CLAIMS OF PROPERTY RIGHTS "TAKINGS" (2013), https://fas.org/sgp/crs/misc/RL31796.pdf [https://perma.cc/9B35-2LQ7].

[79] RODERICK F. NASH, RIGHTS OF NATURE: A HISTORY OF ENVIRONMENTAL ETHICS 175 (1989).

Chemicals legislation too is notably broad in its scope. TSCA, first adopted in 1976[80] and amended in 2016,[81] regulates all chemicals manufactured or sold in the United States, except pesticides (which are regulated by the Federal Insecticide, Fungicide, and Rodenticide Act).[82] TSCA charges the EPA with gathering and organizing information about the over 84,000 chemicals sold in the U.S. marketplace; it allows the EPA to require testing of new and existing chemicals where data regarding toxicity was deficient; and it authorizes a ban on chemicals that pose an unreasonable risk of injury to human health or the environment.[83] True, TSCA turned out to be ineffective,[84] but its origins reflect an aggressive attempt to protect human health.[85]

Just as the ESA covers imperiled species and TSCA covers chemicals, RCRA[86] covers waste disposal. Congress considered RCRA one of the "last remaining loopholes in environmental law" and plugged that gap with a notoriously complex cradle-to-grave regulatory structure.[87] If RCRA nonetheless fails to prevent environmental contamination through its front-end regulation, CERCLA serves as a backstop to impose strict liability in a dramatic strict, joint and several fashion.[88]

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[80] Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (1976) (codified as amended at 15 U.S.C. §§ 2601–2629).

[81] Frank R. Lautenberg Chemical Safety for the 21st Century Act, Pub. L. No. 114-182, 130 Stat. 448 (2016).

[82] 7 U.S.C. §§ 136–136y.

[83] For a detailed discussion of TSCA regulatory scope, see Markell, *supra* note 33, at 340–50. For a discussion of how TSCA fits in with other chemicals legislation, see Knudsen, *supra* note 33, at 2375–85.

[84] For a taste of scholarship critiquing old TSCA, see Knudsen, *supra* note 33, at 2315 n.6. Roughly, old TSCA's problems can be distilled into problems of (1) too little gatekeeping before new chemicals were allowed to enter the marketplace by placing the burden on EPA to show chemicals were unsafe rather than placing the burden on manufacturers to show safety; (2) too many hurdles for EPA to show chemicals posed "unreasonable risk of injury"; and (3) not enough support for EPA to adopt chemical bans or use restrictions over less burdensome information disclosure even when EPA did conclude chemicals posed "unreasonable risk of injury." *Id.* at 2367–75.

[85] *See id.* at 2368 ("The conferees intend that the Administrator have authority to protect health and the environment.").

[86] 42 U.S.C. §§ 6901–6908a.

[87] For a useful introduction to RCRA's history and complexity, see Susan M. McMichael, *RCRA's Statutory and Regulatory Framework*, 40 ENV'T L. REP. 10432 (2010).

[88] *See* Justin R. Pidot & Dale Ratliff, *The Common Law of Liable Party CERCLA Claims*, 70 STAN. L. REV. 191, 209 (2018) ("CERCLA's dramatic scope lies in its creation of a broad set of PRPs, multiple pathways for remediation, and expansive liability rules.") (citing LAZARUS, MAKING OF ENVIRONMENTAL LAW, *supra* note 21, at 108–09). For a view of how EPA took aggressive positions on its authority under CERLCA in the early years of implementation, see Phillip D. Reed, *CERCLA Litigation Update: The Emerging Law of Generator Liability*, 14 ENV'T L. REP. 10224, 10224 (1984) ("EPA has interpreted CERCLA to sidestep certain common law causation and culpability requirements, putting the burden of cleaning up old chemical dumps on hazardous substance generators and other responsible

And then there is NEPA.[89] No single act comes closer to offering an exoskeleton to federal decision-making than NEPA. This umbrella statute requires all federal agencies, from the Department of Transportation to the Department of Housing and Urban Development to the U.S. Fish and Wildlife Service, to study the environmental impacts of their proposed actions before finalizing decisions.[90] NEPA's application to all federal agencies and all major federal actions shows Congress intended to raise environmental consciousness in all aspects of government decision-making.[91] Senator Henry Jackson, the statute's author, did not equivocate when explaining the significance of NEPA:

> A statement of environmental policy is more than a statement of what we believe as a people and as a Nation. It establishes priorities and gives expression to our national goals and aspirations. It provides a statutory foundation to which administrators may refer for guidance in making decisions which find environmental values in conflict with other values.[92]

While the substantive commands of NEPA have been excised from the legislation by courts,[93] the procedural commands have become a bedrock of federal agency decision-making. Through procedure, NEPA shines a light on the environmental impacts of agency actions and ensures that agency decisions will at least be informed, if not wise.[94]

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private parties first, essentially relegating the Superfund to cases where no 'financially viable' private parties can be found.").

[89] 42 U.S.C. §§ 4321–4370m-12. "President Nixon signed [NEPA] into law on January 1, 1970. *Welcome*, NEPA, https://ceq.doe.gov/ [https://perma.cc/7U7F-497C] (last visited July 29, 2022).

[90] 42 U.S.C. § 4332(C) (directing all federal agencies to prepare environmental impact statements for their proposed actions); 40 C.F.R. § 1508.1(k) (2022) (defining "[f]ederal agency" as "all agencies of the Federal Government").

[91] *See* Dinah Bear, *NEPA: Substance or Merely Process?*, 8 F. APPLIED RSCH. & PUB. POL'Y 85, 86 (1993) ("NEPA's environmental impact assessment process was intended to be, and should be viewed as, an important means to achieve the goal of integrating environmental values into decision making in a wise and balanced manner."). For a discussion of the substantive dimensions of NEPA, see Nicholas C. Yost, *NEPA's Promise – Partially Fulfilled*, 20 ENV'T L. 533 (1990). For a discussion of NEPA's success in injecting an environmental consciousness into decision-making even in its weakened procedural form, see ENV'T L. INST., NEPA SUCCESS STORIES: CELEBRATING 40 YEARS OF TRANSPARENCY AND OPEN GOVERNMENT (2010), https://www.eli.org/sites/default/files/eli-pubs/d20-03.pdf [perma.cc/6ZVK-GHN2].

[92] Yost, *supra* note 91, at 533 (quoting 115 CONG. REC. 40, 416 (1969)).

[93] RODGERS & BURLESON, *supra* note 12, at § 7:45 ("That National Environmental Policy Act (NEPA) could be distorted into a legal 'something' that is entirely indifferent to the physical environment would have astounded its creators.").

[94] Russell E. Train, *Foreword* to ENV'T L. INST., NEPA SUCCESS STORIES: CELEBRATING 40 YEARS OF TRANSPARENCY AND OPEN GOVERNMENT 3 (2010) ("NEPA democratized decision-making.").

These statutes cover water, air, chemicals, waste disposal, site contamination, even generic governmental decision-making—and these are just some of the laws. Not yet mentioned are many of the natural resource statutes including the Wilderness Act,[95] the National Forest Management Act,[96] the Federal Land Policy and Management Act (FLPMA),[97] and the National Park Service Organic Act of 1916.[98] And then there are a host of less-discussed statutes liked the Outer Continental Shelf Lands Act,[99] the Emergency Planning and Community Right-to-Know Act,[100] the Surface Mining Reclamation and Control Act,[101] and the Marine Mammal Protection Act.[102] In sum, U.S. environmental laws cover numerous facets of human interaction with the environment.

To further complete the picture of cultural commitment to environmental protection, one would surely need to consider the multitude of state laws—some of which exist at the constitutional level[103] and many of which tackle the uncomfortable issues of land use directly.[104] Indeed, nearly every facet of human interaction with

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[95] 16 U.S.C. §§ 1131–1136.

[96] 16 U.S.C. §§ 1600–1687.

[97] 43 U.S.C. §§ 1701–1787.

[98] Pub. L. No. 64-235, 39 Stat. 535. The original Act, previously located at 16 U.S.C. §§ 1–4, was recodified in 2014 alongside other provisions related to the national park system and management at 54 U.S.C. §§ 100101–104909. *See* Pub. L. No. 113-287, 128 Stat 3094 (2014). Many of these provisions focus on natural resource and environmental management. *E.g.*, 54 U.S.C. §§ 100701–100755.

[99] 43 U.S.C. §§ 1331–1356b.

[100] 42 U.S.C. §§ 11001–11050.

[101] 30 U.S.C. §§ 1201–1328.

[102] 16 U.S.C. §§ 1361–1423h.

[103] *See, e.g.*, ALASKA CONST., art. VIII § 2 ("The legislature shall provide for the utilization, development, and conservation of all natural resources belonging to the State, including land and waters, for the maximum benefit of its people.").

[104] *See, e.g.*, ALA. CODE § 11-19-4 (requiring land use restrictions for areas prone to flooding); CONN. GEN. STAT. 16a-27(c), (d) (requiring a state plan of conservation and development that takes into account risks associated with natural hazards like flooding, coastal erosion, high winds and wildfires); KING COUNTY, WASH., CODE § 21A.16.010–.370, https://kingcounty.gov/council/legislation/kc_code/24_30_Title_21A.aspx (setting forth development standards for landscaping and water use for King County, Washington); SEATTLE, WASH., MUN. CODE § 23-22-058, https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT23LAUSCO_SUBTITLE_IIPLRE_CH23.22SU_SUBCHAPTER_IIPRPLCO_23.22.058ENCRAR [https://perma.cc/PX24-WTAR] ("No plat shall be approved by the Hearing Examiner covering any land situated in a riparian corridor, wetland and wetland buffer, or steep slope and steep slope buffer unless in compliance with the applicable provisions of Section 25.09.240."); *see also Development Regulations and Zoning*, MUN. RSCH. SERVS. CTR., https://mrsc.org/Home/Explore-Topics/Planning/Development-Regulations/Development-Regulations-and-Zoning.aspx [https://perma.cc/S8A7-QZ9Q] (last updated Aug. 25, 2022) (providing "an overview of development regulations and zoning codes in Washington State"). For a historic perspective on state and municipal land use codes, see Ernest J.T. Loo, *State Land Use Statutes: A Comparative Analysis*, 45

nature is regulated at either the federal, state, or local level: from hazardous waste disposal to recycling and garbage collection; from power plants to in-stream flows; and from water use to pesticide application. In the aggregate, the multi-layered, multi-faceted web of legal protections at every level of government reveal a noteworthy intentionality.

Of course, individual pieces of legislation may appear, and have been variously described, as ad hoc reactions to disastrous events. The Clean Water Act of 1972 found political will when the Cuyahoga River caught on fire for the third time, or so the story goes.[105] The Clean Air Act of 1970 was enacted only after the skies of Steel City were blackened by unregulated production.[106] The soot-encrusted stone on bridges over the Ohio River bear the marks of history to this day. The Oil Pollution Control Act was born of the ecological wreckage and public outcry from the Exxon Valdez Oil Spill in Alaska's previously pristine Prince William Sound.[107] Reaching further back in history, the regulation of grazing on federal lands traces its roots to the Taylor Grazing Act of 1934, a statute enacted at the same time that the Dust Bowl deposited Midwestern dirt on the steps of Congress in Washington, D.C.[108] The ESA, not surprisingly, was a response to historically accelerated extinction rates.[109]

FORDHAM L. REV. 1154 (1977) ("[T]he recognition that land is a valuable and limited resource, the concern for environmental protection, and the realization that land development often has effects which extend beyond the immediate environs of the development site have prompted national and state efforts to provide for state control over land use.").

[105] *See* Johnathan H. Adler, *Fables of the Cuyahoga: Reconstructing a History of Environmental Protection*, 14 FORDHAM ENV'T. L.J. 89 (2002) (telling the tale of the Cuyahoga river and the effects it had on environmental law); s*ee also* Ariel Wittenberg, *Did a Burning River Really Fuel Landmark Law's Passage?*, E&E NEWS (June 18, 2019, 1:05 PM), https://www.eenews.net/stories/1060582811 [https://perma.cc/Q6W6-SBMD].

[106] *Clean Air Act Requirements and History*, EPA, https://www.epa.gov/clean-air-act-overview/clean-air-act-requirements-and-history [https://perma.cc/QY27-NU2U] (last visited July 19, 2022) ("Dense, visible smog in many of the nation's cities and industrial centers helped to prompt passage of the 1970 legislation at the height of the national environmental movement.").

[107] All Things Considered, *A Look at the 1990 Oil Pollution Act*, NPR (June 15, 2010, 3:00 PM), https://www.npr.org/2010/06/15/127862906/a-look-at-the-1990-oil-pollution-act [https://perma.cc/722G-HVA6]; *see also* JONATHAN L. RAMSEUR, CONG. RSCH. SERV. RL33705, OIL SPILLS IN U.S. COASTAL WATERS: BACKGROUND, GOVERNANCE, AND ISSUES FOR CONGRESS (2010).

[108] Pub. Lands Council v. Babbitt, 529 U.S. 728, 733 (2000) ("The devastating storms of the Dust Bowl were in the words of one Senator 'the most tragic, the most impressive lobbyist, that ha[s] ever come to this Capitol.'"). For a history and critique of the conditions that led to the Dust Bowl, see DONALD WORSTER, THE DUST BOWL: THE SOUTHERN PLAINS IN THE 1930S (1979).

[109] *See* 16 U.S.C. §§ 1531(a)(1)–(2) (noting concern for species that have gone extinct and are in danger of becoming extinct as a result of "economic growth and development untempered by adequate concern and conservation"); *see also* Tenn. Valley Auth. v. Hill, 437 U.S. 153, 184 (1978) ("The plain intent of Congress in enacting this statute was to halt

The dominant stories about the reactive posture of environmental legislation gives the impression, even among scholars, that environmental law is ad hoc.[110] For example, Todd Aagaard has argued that use conflicts are the defining feature of environmental laws and, as such, it is not possible to attribute broader cohesion to the body of law as embodying a unifying ethical impulse.[111] More specifically, Aagaard argues that statutory lawmaking, unlike judicial lawmaking, "lacks a similar coherence-favoring force." [112] He explains that "[l]egislatures enact and amend different statutes in different lawmaking moments, each associated with its own particular context and its own set of compromises."[113] Richard Lazarus, in his examination of the Supreme Court's environmental decisions from the 1970s through 1990s, suggests that the ad hoc perception of environmental law is at play in the courts as well: "[T]he opinions and votes of the Justices suggest the relative absence of any notion that environmental law is a distinct area of law, as opposed to just a collection of legal issues incidentally arising in a factual setting in which environmental protection concerns are what is at stake."[114]

Given the individual stories of how federal environmental statutes were born of momentary awakenings, it is not very surprising that courts, scholars and others with an interest in the subject might see environmental law as a reactionary field. After all, disaster does repeatedly appear to serve as political inspiration. Still, if one looks beyond individual statutes and moments in time, one might start to formulate a different picture. That picture is one of intentionality—the development of an exoskeleton that is the product of aggregate legislative responses and repeated commitments in space and time.

This is especially so if one delves a little more deeply into the idea that the fervor of legislative action repeats not only over a broad range of issues but also over a remarkable period of time. Many of the comprehensive and landmark environmental statutes enacted in the 1970s were the culmination of a longer, iterative process of refining the laws needed to provide the protections desired.[115] The Clean Water Act of 1972 has roots in the Rivers and Harbors Act of 1899 and was preceded more immediately by the Water Quality Act of 1965 and the Water

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and reverse the trend toward species extinction, whatever the cost."); *see also* Shannon Petersen, *Congress and Charismatic Megafauna: A Legislative History of the Endangered Species Act*, 29 ENV'T. L. 463, 464 (1999) (discussing the ESA's legislative history and whether the ESA was meant to protect less charismatic species).

[110] *Cf.* Driesen, *supra* note 56, at 59–60 (observing that regulatory reformers do not often see a positive vision of environmental law, but "see a mass of complex statutory provisions exhibiting little rhyme or reason").

[111] Aagaard, *supra* note 56, at 252.

[112] *Id.* at 232.

[113] *Id.*

[114] Lazarus, *Restoring What's Environmental, supra* note 16, at 737.

[115] *See, e.g.*, RODGERS & BURLESON, *supra* note 12, at § 13:1; *see also infra* Part II.B.

Quality Improvement Act of 1970.[116] In fact, it was originally enacted in 1948 and amended several times before 1972.[117] With each amendment, Congress strengthened controls to reflect a deepening commitment of constituents "ready to follow more and stricter rules."[118]

The Clean Air Act of 1970 had similarly deep roots and a historical trajectory likewise bending towards more, not less, restraint.[119] The 1955 Air Pollution Control Act marked one of the first efforts to benchmark the relationship between emissions and human health through science.[120] Federally funded research spurred more air quality lawmaking at the federal level—first with the 1963 Clean Air Act, then the 1970 Amendments to the Clean Air Act, and then again in 1990 with additional amendments.[121] Like water pollution control efforts, the air pollution control laws have become stronger over time, responding to science and iteratively recommitting to the goal of healthy air.[122]

In natural resources and public lands management, a trend towards stewardship and self-restraint is also prevalent. The ESA of 1973 was the bold refinement and extension of statutes like the Endangered Species Preservation Act of 1966 and the Endangered Species Conservation Act of 1969;[123] and long before that, Congress took its "first significant direct step toward national wildlife regulation" by passing the Lacey Act of 1900.[124] BLM land management saw a similar upgrade in resource management.[125] The Taylor Grazing Act of 1934,[126] which largely presumed cattle grazing to be the dominant use on federal rangelands, gave way to the Multiple Use

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[116] For a timeline and compendium of water pollution control efforts in the U.S. since the 1800s, see RODGERS & BURLESON, *supra* note 12, at § 14:1. For a "[narrative-history] of federal involvement in water pollution control," see William L. Andreen, *The Evolution of Water Pollution Control in the United States—State, Local, and Federal Efforts, 1789–1972: Part II*, 22 STAN. ENV'T L.J. 215, 216 (2003). For a history of developments at the state and local level, see William L. Andreen, *The Evolution of Water Pollution Control in the United States—State, Local, and Federal Efforts, 1789–1972: Part I*, 22 STAN. ENV'T L.J. 145 (2003).

[117] *See* RODGERS & BURLESON, *supra* note 12.

[118] BROOKS, *supra* note 43, at 125.

[119] *Id.* at 133–39; *see also* Christopher D. Ahlers, *Origins of the Clean Air Act: A New Interpretation*, 45 ENV'T L. 75, 76–77 (2015) (offering a counter-narrative to "[t]he traditional view of historians of environmental law . . . that the Clean Air Act (CAA) was passed in 1970 in response to the Year of the Environment").

[120] *See* Pub. L. No. 84-159, 69 Stat. 322.

[121] *See* BROOKS, *supra* note 43, at 136; *see also* Ahlers, *supra* note 119, at 124.

[122] *See* BROOKS, *supra* note 43, at 134.

[123] *Endangered Species Act Milestones: Pre 1973*, U.S. FISH & WILDLIFE SERV., https://fws.gov/node/266462 [https://perma.cc/ZB6G-E8XJ] (last visited July 29, 2022).

[124] Petersen, *supra* note 109, at 469.

[125] For an insightful discussion of changing attitudes and law in public lands management, see Robert Keiter, *Change Comes to the Public Lands: New Forces, Directions, and Policies*, 46 FOUND. J. NAT. RES. ENERGY L. 3 (2000) [hereinafter Keiter, *Change Comes to the Public Lands*].

[126] Pub. L. No. 73-482, 48 Stat. 1269 (codified as amended at 43 U.S.C. §§ 315–315r).

Sustained Yield Act of 1960 (MUSY),[127] which required the management of public lands for multiple uses ranging from grazing to recreation "in the combination that will best meet the needs of the American people."[128] No single use was given priority over another, reflecting a significant change in values that had come before.[129] MUSY later gave way to the modern FLPMA of 1976,[130] which provided much-needed cohesion to the BLM's inventorying and resource planning of predominantly Western rangelands.[131]

Though the 1970s are known for being the "environmental decade,"[132] Congress continued to refine and renew commitments to environmental protections in the decades since (albeit at a much slower pace).[133] The Clean Water Act Amendments of 1987, for example, set firmer deadlines and provided more nuance in order to accelerate the EPA's progress on regulating storm water discharge.[134] Similarly, to rectify some of the shortcomings of the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Congress enacted the Food Quality Protection Act (FQPA) of 1996.[135] The FQPA dialed up protections from pesticide residue on food by prohibiting the reregistration of food-use pesticides without a safe residue tolerance.[136] The setting of safety tolerances specifically called for assessing aggregate exposure and considering the particular vulnerabilities of cumulative chemical exposure in children.[137] Also in the area of chemicals legislation, Congress more recently enacted amendments to TSCA to shift the burden to manufacturers of

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[127] Pub. L. No. 86-517, 74 Stat. 215 (codified as amended at 16 USC §§ 528–531).

[128] 16 U.S.C. § 531(a).

[129] ANTHONY GODFREY, THE EVER-CHANGING VIEW: A HISTORY OF THE NATIONAL FORESTS IN CALIFORNIA 399 (2005) (explaining that "timber, range, water, recreation and wildlife . . . [f]or the first time . . . were contained in one law, with no single use having priority over another").

[130] Pub. L. No. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701–1787).

[131] *See* Pub. Lands Council v. Babbitt, 529 U.S. 728, 733–39 (2000); *see also* Roger Flynn, *Daybreak on the Land: The Coming of Age of the Federal Land Policy and Management Act of 1976*, 29 VT. L. REV. 815, 816–21 (2005).

[132] *See* LAZARUS, MAKING OF ENVIRONMENTAL LAW, *supra* note 21, at 67 ("The 1970s were an extraordinary decade for environmental law.").

[133] *See* Richard J. Lazarus, *Congressional Descent: The Demise of Deliberative Democracy in Environmental Law*, 94 GEO. L.J. 619, 629 (2006) [hereinafter Lazarus, *Congressional Descent*] ("Since 1990, however, congressional passage of new significant environmental authorization legislation has virtually ground to a halt.").

[134] Lawrence R. Liebesman & Elliott P. Laws, *The Water Quality Act of 1987: A Major Step in Assuring the Quality of the Nation's Waters*, 17 ENV'T L. REP. 10311, 10323–25 (1987) (expounding on the history of the 1987 amendments to the Clean Water Act).

[135] Food Quality Protection Act of 1996, Pub. L. No. 104-170, § 405, 110 Stat. 1489 (codified as amended at 21 U.S.C. § 346(a)). For a brief history of FIFRA and the FQPA, see Knudsen, *supra* note 33, at 2375–79.

[136] *See* League of United Latin Am. Citizens v. Regan, 996 F.3d 673, 677 (9th Cir. 2021).

[137] 21 U.S.C. § 346a(b)(2)(C)(i); *see also* Knudsen, *supra* note 33, at 2379 nn.298–301 & accompanying text.

showing that new chemicals are safe before they are sold in U.S. markets.[138] Even in the wake of *Tennessee Valley Authority v. Hill*,[139] which laid bare the teeth of the ESA and was expected to trigger legislative rollbacks, Congress left the most consequential protections for endangered species in place.[140]

Time and again, where the commands of the original legislation fell short, Congress returned with greater vigor in legislative amendments. In the end, what has emerged is an impressive pattern of responding to the degradation and depletion of resources with systemic legal frameworks. Not only that, but the breadth and repetition of legislative action suggest that environmental laws are more than a political checklist seeking only to satisfy a temporary news cycle of concern. It suggests that the values are durable and intentionally so.[141]

When examining the longevity of Congress's commitment to the enterprise of environmental protection, there is a notable caveat: Congress's appetite for meaningful reform of environmental laws has dropped off in recent decades. Professor Richard Lazarus in his article, *Congressional Descent*, observed that "between 1970 and the early part of the twenty-first century, Congress's ability to serve a constructive role in the ongoing process of environmental lawmaking has virtually disappeared."[142] Professor Sandra Zellmer has also taken stock of congressional inaction and used the Clean Air Act of 1990 as the stopping point for "any meaningful action."[143] While these assessments come before the bipartisan support for TSCA reform that brought meaningful change to chemicals regulation in 2016, the lack of Congressional action on climate change is surely an indictment of political prioritization of environmental health and human survival.

Still, disappointing as it may be that Congress has not continued to revisit and refine its approach to environmental protection with the fervor of the 1970s and 1980s, strong laws remain on the books. In fact, Professor Rodgers has remarked that some of the laws are so steadfastly accepted as part of the regulatory fabric that they functionally have a pseudo-constitutional status.[144] At the end of the day, for all the talk about backlash on environmental regulation, the comprehensive legislative

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[138] Frank R. Lautenberg Chemical Safety for the 21st Century Act, Pub. L. No. 114-182, 130 Stat. 448 (2016).

[139] 437 U.S. 153 (1978).

[140] For a detailed narrative of the political machinations surrounding the *TVA v. Hill* litigation, see ELIZABETH GARRETT, *The Story of* TVA v. Hill*: Congress Has the Last Word*, *in* STATUTORY INTERPRETATION STORIES 79, 85–86 (William N. Eskridge Jr., Philip P. Frickey & Elizabeth Garrett, eds., 1st ed. 2011) (noting that Congress crafted a "targeted response" to *TVA v. Hill*, as a legislative compromise that preserved the ESA's general protections, but allowed for a committee to exempt certain projects).

[141] *See supra* note 45 and accompanying text.

[142] Lazarus, *Congressional Descent*, *supra* note 133, at 621–22; *see also* RODGERS & BURLESON, *supra* note 12, at § 7:31 ("The Lazarus article on *Congressional Descent* is a must-read on the status of U.S. environmental laws in today's world.").

[143] Sandra Zellmer, *Treading Water While Congress Ignores the Nation's Environment*, 88 NOTRE DAME L. REV. 2323, 2324 (2013).

[144] *See* Rodgers, *supra* note 26, at 1013 (asserting that certain environmental laws "have become virtually repeal-proof" and reached a "kind of functional constitutional law").

commands that create an exoskeleton of protection stay with us. And Congress continues to appropriate funds to carry out the missions of its legislative commands.[145]

As long as they remain, these laws deserve respect under the principle of institutional settlement. That principle, which some prominent legal process theorists have called central to the idea of law, calls for the whole of society to accept as binding "decisions which are the duly arrived at result of duly established procedures . . . ."[146] In the legislative process, the constitutional guarantees of bicameralism and presentment legitimize the ultimate decisions and demand respect. Put another way, the legislative process is often a contentious one, fraught with skepticism, and riddled with self-dealing. Thus, when the process concludes with a piece of complex legislation that undeniably advances values of self-restraint, those values cannot be sidestepped by apathy. The respect counseled by the principle of institutional settlement is even more critical when the legislative process repeatedly chooses self-restraint across a comprehensive range of resources.

2. Depth of Environmental Law

It is not just the breadth and staying power of environmental law that is impressive. The breadth is also supported by depth. The legal infrastructure that these laws create is vast, layered, and enduring. It is consistent with a Congress committed to actually addressing complex resource use dilemmas and setting priorities. It is consistent with the construction of an exoskeleton that is intended to protect public health and welfare.[147]

Take, for example, the Clean Water Act. It utilizes a scaffolding of pollution control techniques, from permitting of individual point sources to setting of ambient water quality standards, from state certification of federally issued permits to EPA oversight on wetlands permits issued by the U.S. Army Corps of Engineers, from technology forcing limits to assessments of total maximum daily loads (TMDLs).[148]

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[145] CLAUDIA COPELAND, CONG. RSCH. SERV., RL30030, CLEAN WATER ACT: SUMMARY OF THE LAW 1 (2016), https://fas.org/sgp/crs/misc/RL30030.pdf [https://perma.cc/3LBE-FWLL].

[146] William N. Eskridge, Jr. & Philip P. Frickey, *The Making of the Legal Process*, 107 HARV. L. REV. 2031, 2045 (1994) (quoting 1 HENRY M. HART, JR., & ALBERT K. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW 4–5 (tent. ed. 1958)).

[147] The vast infrastructure has also been subject of critique by those who see it as an ineffective bureaucracy. *E.g.*, Richard B. Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENV'T L. 153, 154 (1988) (stating "the system has grown to the point where it amounts to nothing less than a massive effort at Soviet-style central planning of the economy to achieve environmental goals").

[148] For a general discussion the intentional reach of the Clean Water Act with an emphasis on point sources, see City of Milwaukee v. Illinois & Michigan, 451 U.S. 304, 318 (1981) (stating "Congress' intent in enacting the Amendments was clearly to establish an all-

The totality of the programs and regulatory devices reflects a legislative commitment to actually achieving the stated goals of maintaining and achieving the "chemical, physical, and biological integrity of the Nation's waters."[149] Indeed, implementing the various commands of the Clean Water Act requires fiscal commitment. According to a 2016 report by the Congressional Research Service, "more than 65,000 conventional industrial and municipal dischargers must obtain permits from the EPA (or qualified states) under the act's National Pollutant Discharge Elimination System (NPDES) program (authorized in Section 402 of the act)."[150] Such permits are similarly "required for more than 150,000 industrial and municipal sources of stormwater discharges."[151] Separate permits are required under Section 404 of the Act for wetlands disturbance or dredge and fill.[152]

Undoubtedly, the infrastructure of the Clean Water Act reflects more than a half-hearted response to water pollution, and this pattern is repeated. Consider RCRA and its cradle to grave approach to waste regulation.[153] Consider too the Clean Air Act and its many title programs that target stationary source[154] as well as mobile source emissions,[155] criteria pollutants[156] as well as hazardous air pollutants,[157] federal setting of new source performance standards,[158] and mandatory state implementation plans.[159] Similarly, in the area of forest or rangeland

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encompassing program of water pollution regulation"). For a discussion of the Clean Water Act's use of water quality standards and TMDLS to reach beyond point source problems, see Oliver A. Houck, *The Clean Water Act Returns (Again): Part I, TMDLs and the Chesapeake Bay*, 41 ENV'T L. REP. NEWS & ANALYSIS 10208, 10208 (2011) (arguing that "[t]he CWA, with multiple paths to its destination, is reinventing itself once more"). For a discussion on limits of the Act with respect to groundwater, see Damien Schiff, *Keeping the Clean Water Act Cooperatively Federal—Or, Why the Clean Water Act Does Not Directly Regulate Groundwater Pollution*, 42 WM. & MARY ENV'T L. & POL'Y REV. 447, 448 (2018); *but cf.* Cnty. of Maui v. Hawaii Wildlife Fund, 140 S. Ct. 1462, 1470 (2020) (concluding that the reach of the Act "is significantly broader than the total exclusion of all discharges through groundwater"). For a discussion of 401 certification and its power to address nonpoint source pollution, see Debra L. Donahue, *The Untapped Power of Clean Water Act Section 401*, 23 ECOLOGY L.Q. 201, 206 (1996).

[149] 33 U.S.C. § 1251(a).

[150] COPELAND, *supra* note 145, at 5.

[151] *Id.*

[152] 33 U.S.C. § 1344(a).

[153] *See* McMichael, *supra* note 87; *see also* CAROLINE N. BROUN & JAMES T. O'REILLY, 1 RCRA AND SUPERFUND: A PRACTICE GUIDE § 2:4, Westlaw RCRASFPGF (3d ed., 2022 update).

[154] While the stationary source requirements are located in several parts of the Clean Air Act, those related to the prevention of significant deterioration (PSD) program are found at 42 U.S.C. §§ 7470–7479.

[155] 42 U.S.C. §§ 7521–7554, 7581–7590.

[156] 42 U.S.C. § 7408.

[157] 42 U.S.C. § 7412.

[158] 42 U.S.C. § 7411.

[159] 42 U.S.C. § 7410.

management, there are layers of required planning and impacts analysis to ensure federal public lands are not degraded from inadvertent overuse.[160]

Permitting,[161] technology standards,[162] planning,[163] volumes of associated regulations,[164] and penalties for violations[165] all add up to a body of commands designed to throw a significant weight of the law behind environmental protection.

In sum, the breadth and depth of environmental laws evidence the intentional donning of an exoskeleton meant to serve as a counterweight to other shorter-term impulses often accompanied by unbridled consumption.

Of course, there are those who use the breadth of environmental law to fuel a deregulatory agenda, attacking the EPA's efforts to protect public health as government overreach and undue interference with individual freedoms.[166] Hidden in the rhetoric is a kernel of truth—American environmentalism exists in tension with what social scientists have identified as the dominant paradigm of beliefs that reflect "faith in material abundance and support for private property rights, a laissez-faire economy, and limited governmental regulation."[167] Laws that further environmental values are, therefore, prone to attack by disposition.

What makes environmental laws prone to attack also underscores the need for respect. To that end, one can imagine the substantial inertia that is required for Congress to enact laws that run counter to the dominant paradigm. That means these laws were successfully adopted and have persevered for decades despite well-heeled

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[160] *See generally* Keiter, *Change Comes to the Public Lands, supra* note 125 (discussing regional planning and ecosystem management).

[161] *See, e.g.*, 33 U.S.C. § 1342 (setting forth the Clean Water Act's National Pollution Discharge Elimination System permitting requirements).

[162] *See, e.g.*, 33 U.S.C. §1317(a)(2) (setting forth the Clean Water Act provisions for technology based standards for controlling discharge of toxic pollutants require that toxic pollutants "shall be subject to effluent limitations resulting from the application of the best available technology economically achievable" for the applicable category of points sources).

[163] *See, e.g.*, 33 U.S.C. §1313(d) (setting forth the Clean Water Act provisions requiring states to prepare total maximum daily load (TMDL) for water bodies not meeting their water quality standards function as planning tools); *see also Clean Water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)*, EPA, https://www.epa.gov/tmdl [https://perma.cc/2QXP-8AHX] (describing TMDL as "the starting point or planning tool for restoring water quality").

[164] For just a snapshot of the environmental regulations enacted by EPA and pertaining mainly to pollution control laws (not even counting the natural resource management regulations), see 40 C.F.R. §§ 1.1–1900.2.

[165] *See, e.g.*, 33 U.S.C. § 1319 (authorizing penalties for up to $25,000 per Clean Water Act violation per day).

[166] *See EPA Regulatory Overreach: Impacts on American Competitiveness: Hearing Before the H. Comm. on Sci., Space & Tech.*, 114th Cong. 114–21 (2015), https://www.govinfo.gov/content/pkg/CHRG-114hhrg95226/html/CHRG-114hhrg95226.htm [https://perma.cc/Y25Y-ZN2M].

[167] CANNON, *supra* note 14, at 7.

litigation and intense industry lobbying intent on their demise.[168] In fact, the laws have not only endured, but they have been amended chiefly to strengthen their weaknesses.[169] It is precisely because environmental laws counter the dominant paradigm that we might rightfully observe that what exists is not a fluke; we did not come by environmental law's exoskeleton lightly. It exists only because of intentionality.

B. Textual Evidence of Intentionality: Enacted Purpose Statements and Supporting Regulatory Choices

Even if one agrees that the broad patterns in the breadth, depth, and staying power of environmental law's codification portend a sort of ethic expressed in an exoskeleton, the more difficult question is the degree to which Congress meant to prioritize conservation values (that is, the values of self-restraint) above competing values like short-term economic growth. To answer that question, one has to look more closely at the text of the statutes. Like the regulatory reach and substantial legal infrastructure, the text compels an understanding of environmental law as part of a deliberate cultural shift towards self-restraint. The relevant text lies both in the enacted purpose statements and in the detailed regulatory choices selected to accomplish those purposes.

1. Enacted Purpose Statements

The textual exploration of environmental laws should include the enacted purpose statements—that is, the legislative statements of policy encoded in the laws themselves.[170] Indeed, because of the complexity of many environmental statutes and the problems they are meant to address, it is easy to lose sight of their driving goals upon implementation. But losing sight of the ultimate goal weakens the prospect of achieving it. Conversely, testing outcomes and interpretations against the fundamental aims can give shape to discretion and clarify complexity. Indeed, Professor Bill Rodgers, author of the leading treatise on environmental law, has

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[168] *See, e.g.*, Kyle C. Meng & Ashwin Rode, *The Social Cost of Lobbying over Climate Policy*, 9 NATURE CLIMATE CHANGE 472–76 (2019) ("This paper examines how lobbying spending on the Waxman–Markey bill, the most prominent and promising United States climate regulation so far, altered its likelihood of being implemented.").

[169] *But cf.* Lazarus, *Congressional Descent*, *supra* note 133, at 632 ("With the stalling of Congress's normal avenues for environmental lawmaking, a second type of legislation has quietly established its dominance over environmental law: appropriations legislation.").

[170] Other scholars have written articles advancing the claim that purpose statements deserve a more prominent place in statutory interpretation. *See* Kevin M. Stack, *The Enacted Purposes Canon*, 105 IOWA L. REV. 283 (2019) [hereinafter Stack, *Enacted Purposes Canon*]; Jarrod Shobe, *Enacted Legislative Findings and Purposes*, 86 U. CHI. L. REV. 669, 671–75 (2019).

keenly observed that "[t]he 'complexities' of the Clean Air Act are put in better focus when one appreciates its driving purpose—to protect public health."[171]

Part III.B will take up the task of explaining why, individually, enacted purpose statements of environmental laws should be given weight in judicial review. For now, it is sufficient to provide some examples on how, when examined in the aggregate, the purpose statements of major and even lesser-known environmental laws are consistent with the notion of environmental law as an exoskeleton.

If, for the moment, we accept enacted purpose statements as direct windows to legislative intent, it is hard not to appreciate the stewardship ethic (or ethic of self-restraint) that lies at the heart of environmental laws, individually and collectively. For the most straightforward illustration, consider the Congressional declaration of purpose for NEPA: "The purposes of this chapter are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; [and] to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man."[172] The Act then sets forth an unequivocal set of national environmental policies, declaring among other things that the federal government has a continuing responsibility to serve as "trustee of the environment for succeeding generations;" to ensure Americans have "safe, healthful, productive, and esthetically and culturally pleasing surroundings;" and to assure that the environment is used in a manner "without degradation, risk to health or safety, or other undesirable and unintended consequences."[173] Congress even states that each person has a responsibility to contribute to the preservation of the environment.[174] Bear in mind that NEPA is a directive towards all federal agencies.[175] Through NEPA, Congress made clear that whatever else might drive policy in the U.S., stewardship of the environment is a priority.

If NEPA stood alone, one might question its usefulness in evidencing a broad cultural commitment to environmental responsibility. But NEPA does not stand alone. NEPA stands among numerous other statutes in which Congress repeatedly declares a vision for America's future where a healthy environment is a cornerstone of prosperity. In the Clean Water Act, Congress's aim was nothing short of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's water."[176] To achieve that goal, Congress called for the elimination of pollutant discharges by 1985 and the prohibition on discharges of toxins in toxic

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[171] RODGERS, JR. & BURLESON, *supra* note 12, at § 6:2; *see also* Robert W. Adler, *The Decline and (Possible) Renewal of Aspiration in the Clean Water Act*, 88 WASH. L. REV. 759, 761 (2013) ("At times, however, this degree of complexity obscures the relatively straightforward . . . objective" of the Clean Water Act.).

[172] 42 U.S.C. § 4321.

[173] 42 U.S.C. § 4331(b)(3).

[174] 42 U.S.C. § 4331(c).

[175] 42 U.S.C. § 4332(2) (requiring "all agencies of the Federal Government" to comply with NEPA's objectives).

[176] 33 U.S.C. § 1251(a).

amounts.[177] Whatever the details of the implementation, the ultimate goal does not lack clarity. And in the Clean Air Act, Congress is clear about the government's responsibility in controlling the complex collective action problem that is air pollution.[178] The ESA, not surprisingly, is meant to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."[179]

Even lesser-known environmental laws like the Surface Mining Control Act lead with the purpose of "establish[ing] a nationwide program to protect society and the environment from the adverse effects of surface coal mining operations."[180] To be sure, that Act also recognizes the importance of coal to provide for energy needs,[181] but the clear statement of environmental protection sits at the helm. In the Marine Mammal Protection Act Congress does not equivocate in its pronouncement that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic," and "that the primary objective of their management should be to maintain the health and stability of the marine ecosystem."[182]

In the public lands realm, the Wilderness Act gets most of the attention for its almost poetic devotion to protect wilderness, "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."[183] Less poetic, but still devoted, the work horse lands operated by the Forest Service and BLM express a steadfast commitment to restraint. In NFMA, Congress declares that "the Forest Service, by virtue of its statutory authority for management of the National Forest System, . . . has both a responsibility and an opportunity to be a leader in assuring that the Nation maintains a natural resource conservation posture that will meet the requirements of our people in perpetuity."[184] NFMA's close cousin FLPMA, which draws on the notoriously broad concept of multiple use, directs the Bureau of Land Management (BLM) to utilize resources "in the combination that will best meet the present and future needs of the American people."[185] In doing so, Congress puts an unmistakable priority on land health over economic gains, directing the BLM to engage in the "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being

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[177] 33 U.S.C. § 1251(a)(1), (3).

[178] 42 U.S.C. § 7401(a)(2) ("[T]he growth in the amount and complexity of air pollution brought about by urbanization, industrial development, and the increasing use of motor vehicles, has resulted in mounting dangers to the public health and welfare . . . ."); *id.* at (a)(3)–(4) ("[A]ir pollution control at its source is the primary responsibility of States and local government" but that federal leadership is "essential").

[179] 16 U.S.C. § 1531(b).

[180] 30 U.S.C. § 1202(a).

[181] 30 U.S.C. § 1202(f).

[182] 16 U.S.C. § 1361(6).

[183] 16 U.S.C. § 1131(c).

[184] 16 U.S.C. § 1600(6).

[185] 43 U.S.C. § 1702(c).

given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."[186] More specifically, in the development of land use plans, the Secretary must "weigh long-term benefits to the public against short-term benefits."[187]

Bear in mind that these are not statements uttered on the debate floor or explanations found in committee reports. This is not legislative history. It is legislative text providing a direct window to legislative intent. For that reason, the boldness of these aspirations is indispensable to anyone trying to understand whether environmental laws embody the intentionality urged here.

2. Regulatory Choices in Support of Purpose Statements

Purpose statements are not textual islands. They are backed by regulatory choices.[188] Those choices and the substantial infrastructure necessary to support them demonstrate a commitment to environmental protection that is more than political lip service.[189]

In particular, three patterns of regulatory choices are worth exploring. First, are the cascading regulatory commands and multiple layers of oversight that characterize many of the major federal statutes. Second, are the so-called "showstoppers"—the legislative commands with clear prioritization of environmental or public health protection over any single project or permit application. Third, are the legislative designs driving a one-way, downward ratcheting of pollution. These are the action-forcing provisions that harness science, technology and human innovation in a way that raises the bar on degradation. Some examples help illustrate the point.

(a) Examples of Cascading Regulatory Commands

The Clean Water Act is a good example of how major federal environmental statutes use a variety of regulatory approaches to reinforce the core purpose of protecting water quality. The Act begins with a prohibition on pollution: no discharges from point sources into waters of the United States without a permit.[190]

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[186] *Id*.

[187] 43 U.S.C. § 1712(c)(7).

[188] *See* Adler, *supra* note 171, at 771 ("Congress included in the CWA specific operative provisions designed to implement the major aspirations in the statute's opening statement, making it more difficult to simply ignore those aspirations as the product of lofty legislative pronouncements.").

[189] For an examination of the various categories of regulatory choices contained in environmental legislation and a conception of the normative principles those choices are meant to serve, see Driesen, *supra* note 56.

[190] 33 U.S.C. § 1311(a).

There is, in other words, no entitlement to pollute.[191] Permission, obtained through an orderly system that considers both technological feasibility and impacts on the receiving water, is required.[192] The extensive permitting scheme is backed up by State-adopted ambient water quality standards; effluent limits and other permit conditions are developed to ensure the receiving water meet water quality standards.[193] If not, the permit can be denied.[194] Within the permitting system for point sources there are multiple regulatory tools at play—technology-forcing standards;[195] water-quality based standards;[196] margins of safety;[197] monitoring and reporting requirements;[198] hefty fines for violations;[199] and citizen suits.[200]

The NPDES permitting system, intricate in its own right, is not the sum total of the Clean Water Act's regulatory approach. Sitting below the surface of the elaborate point source permitting system is an equally complex system for protecting water bodies that fail to meet water quality standards despite the permits. To that end, when the permitting system fails to adequately protect water bodies from the

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[191] *See* S. REP. NO. 92-414, at 3709 (1972) (Conf. Rep.) ("The Committee believes that the no-discharge declaration in Section 13 of the 1899 Refuse Act is useful as an enforcement tool. Therefore, [Section 301 of the Clean Water Act] declares the discharge of pollutants unlawful. The Committee believes it is important to clarify this point: No one has the right to pollute. But the Committee recognizes the impracticality of any effort to halt all pollution immediately. Therefore, this section provides an exception if the discharge meets the requirements of this section, Section 402, and others listed in the bill."); *see also* Carmen E. Pavel, *A Legal Conventionalist Approach to Pollution*, L. & PHIL. 337, 338 (2016).

[192] *See* DAVID HAIR & PRAVIN RANA, EPA, NPDES PERMIT WRITERS' MANUAL 1-3 to 1-7 (2010), https://www.epa.gov/sites/default/files/2015-09/documents/pwm_2010.pdf [https://perma.cc/MV7Y-LA6H] (discussing the elements of the NPDES program, and pointing out that a NPDES permit "provides two types of control: technology-based limitations . . . and water quality-based limitations").

[193] *See id. at* 3-3.

[194] 40 C.F.R. § 122.64(a)(3); *e.g.*, Memorandum from Chris Montague-Breakwell, Watershed Resources Unit Supervisor, Washington Water Quality Program, to Rich Doenges, Section Manager, Washington Dept. of Ecology (Sept. 20, 2018) (providing an example of permit denial on this basis in Washington) https://ecology.wa.gov/DOE/files/6c/6c380b6d-1ef1-441e-8136-f4e8d7eebb48.pdf [https://perma.cc/Q9FA-5KRQ].

[195] 33 U.S.C. § 1311(b).

[196] 33 U.S.C. § 1311(m)(2).

[197] *Id.*; *see also* Driesen, *supra* note 56, at 71 (discussing margin of safety requirements alongside purpose statements to illustrate that "the choice of an effects-based goal embraces a normative commitment to health and environmental protection. It gives that commitment primacy over competing values").

[198] 40 C.F.R. § 122.41(j).

[199] 33 U.S.C. § 1319(d), (g).

[200] 33 U.S.C. § 1319(g)(6)(B); *see also* David R. Hodas, *Enforcement of Environmental Law in a Triangular Federal System: Can Three Not Be a Crowd When Enforcement Authority Is Shared by the United States, the States, and Their Citizens?*, 54 MD. L. REV. 1552, 1561 (1995) ("[O]nly extensive use of citizen suits as private attorneys general can safeguard the enforcement system from collapse and prevent states from using lax environmental enforcement as an economic development tool.").

aggregate impacts of point and nonpoint sources, the Act introduces the idea of TMDLs.[201] A TMDL is the total amount of any given pollutant that can be added to a water body and still meet water quality standards, with a margin of safety built in.[202] The TMDL is used to perform a holistic analysis of point and nonpoint source inputs to the water body; States are expected to use the TMDL to allocate pollutant loads among the various sources and regulate accordingly.[203]

The Clean Water Act also uses overlapping authorities to protect against agency capture and provide safeguards for environmental health. For example, through the Section 401 certification process, federal power is fortified with state and tribal power to place conditions on federal permits that would degrade the water quality below state standards.[204] In 2017, the Washington Department of Ecology used its 401 certification authority to deny a federal dredge and fill permit for what would have been the largest coal export terminal in North America along the Columbia River.[205] Similarly, the EPA is given oversight authority on wetlands or "dredge and fill" permits issued by the U.S. Army Corps of Engineers.[206] In cases where the project would cause an "unacceptable adverse environmental impact," the EPA can veto the permit and prevent the project from moving forward.[207] These overlapping authorities and regulatory checks reflect a prioritization of environmental health even in a regulatory scheme that operates largely on pragmatism and trade-offs.

The Clean Water Act is not unique in its multiple layers of regulatory complexity. The Clean Air Act is similarly structured to achieve strong public health goals through interlacing commands. It has legislative drivers that unequivocally prioritize human health over economic consideration.[208] To that end, the National

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[201] 33 U.S.C. § 1313(d); *see also* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY AND IMPLEMENTATION (1999); Oliver Houck, *TMDLs IV: The Final Frontier*, 29 ENV'T L. REP. NEWS & ANALYSIS 10469 (1999).

[202] 33 U.S.C. § 1313(d)(1)(C); *see also* 40 C.F.R. § 130.2 (setting forth TDML regulations).

[203] Jocelyn B. Garovoy, *"A Breathtaking Assertion of Power"? Not Quite.* Pronsolino v. Nastri *and the Still Limited Role of Federal Regulation of Nonpoint Source Pollution*, 30 ECOLOGY L.Q. 543, 555 (2003) ("[U]nder the Clean Water Act, it remains the responsibility of each state to develop and enforce load allocations after EPA imposes a TMDL.").

[204] 33 U.S.C. § 1341(d); PUD No. 1 of Jefferson City. v. Wash. Dep't of Ecology, 511 U.S. 700, 712–13 (1994).

[205] Jeff Zenk, *Millennium Bulk Terminals Longview*, WASH. STATE DEP'T OF ECOLOGY, https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-at-Ecology/Millennium [https://perma.cc/G3U9-UBAA] (last visited July 19, 2022).

[206] 33 U.S.C. § 1344(c).

[207] *Id.* The EPA does not initiate this oversight process often, only 13 times since 1972 despite over 68,000 permits issued each year. *See Clean Water Act: Section 404(c) "Veto Authority,"* EPA, https://www.epa.gov/sites/production/files/2016-03/documents/404c.pdf [https://perma.cc/N8AV-T3W5] (last visited on July 19, 2022).

[208] *See* David M. Driesen, *Should Congress Direct the EPA to Allow Serious Harms to Public Health to Continue?: Cost-Benefit Tests and NAAQS Under the Clean Air Act*, 11

Ambient Air Quality Standards (NAAQS), which are the foundation of the Act's many regulatory triggers, are health-based standards set without consideration of cost or technological feasibility.[209] A mandatory margin of safety is imbedded in the Act.[210] Once NAAQS are set, individual states prepare implementation plans to spell out how they will achieve or maintain NAAQS.[211] The stringency of the implementation measures required depends on whether an airshed is meeting air quality standards (attainment) or not meeting those standards (nonattainment).[212] For areas not in attainment, the plans must make "reasonable further progress" towards bringing the area into attainment—the Act is designed to work towards attaining the public health standards.[213] And the layers of authority are overlapping; where states fail to submit an approvable plan, for example, the EPA is given the power to substitute a federal one.[214]

Separate from the state implementation plans, the type of control technology that new sources or existing sources undergoing major modifications will be required to adopt in any given airshed depends on whether that airshed meets the NAAQS.[215] Not surprisingly, new sources in nonattainment areas (those that don't meet the NAAQS) must comply with the most stringent of the technological standards.[216] There is more leniency in technology standards in areas that do meet the NAAQS.[217] In these ways, technology standards are tied to the quality of ambient air, and more aggressive pollution control is required in airsheds with poor air quality. Put slightly differently, the health-based NAAQS ultimately drive the new source technology standards. So, despite the complexity of the Clean Air Act, the structure is logical if one understands that the end goal of the multi-layered regulatory system lies in ensuring the air we breathe doesn't make us sick. Like the

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TUL. ENV'T. L.J. 217, 218 (1998). For a discussion of "key statutory features" of the Clean Air Act in support of its public health goals, see David M. Driesen, Thomas M. Keck & Brandon T. Metroka, *Half a Century of Supreme Court Clean Air Act Interpretation: Purposivism, Textualism, Dynamism, and Activism*, 75 WASH. & LEE L. REV. 1781, 1788–91 (2018).

[209] Whitman v. Am. Trucking Ass'n, 531 U.S. 457, 492–93 (2001) (Breyer, J., concurring); Lead Indus. Ass'n v. EPA, 647 F.2d 1130, 1148 (D.C. Cir. 1980).

[210] 42 U.S.C. § 7409(b)(1).

[211] 42 U.S.C. § 7410(a)(1). For a brief explanation, see the EPA Website, *NAAQS Implementation Process*, EPA, https://www.epa.gov/criteria-air-pollutants/naaqs-implementation-process [https://perma.cc/4NAZ-UWQT] (last visited July 19, 2022).

[212] 42 U.S.C. §§ 7410, 7502.

[213] 42 U.S.C. § 7502.

[214] 42 U.S.C. § 7410.

[215] For a basic explanation of the New Source Review program, see *Fact Sheet: New Source Review*, EPA, https://www.epa.gov/sites/default/files/2015-12/documents/nsrbasics factsheet103106.pdf [https://perma.cc/64QS-AXVR] (last visited July 19, 2022).

[216] *Id.*; *see* 42 U.S.C. § 7502(c)(5) (setting out plan requirements for new sources in nonattainment areas); *id.* § 7503(a)(2) (imposing LAER standards on new sources constructed in nonattainment areas).

[217] *See Fact Sheet*, *supra* note 215; 42 U.S.C. § 7475(a)(4) (imposing BACT standards on new sources constructed in attainment areas).

Clean Water Act, stiff penalty provisions and citizen suits reinforce Congress's commitment to compliance.[218]

The ESA's regulatory elements are also an example of cascading commands that foster foundational aims.[219] To start, the Act's listing decisions are exclusively scientific ones, not economic.[220] Once a species is listed, the Act takes at least three protection approaches that support species recovery and conservation.[221] First, the ESA protects both species and the habitats upon which they depend.[222] Second, the ESA creates two major classes of listed species—threatened and endangered—so that protection is available to species before they reach the brink of extinction, thus allowing listing of not just species in danger of extinction but also those threatened species that are "likely to become endangered."[223] Lastly, the Act protects individual members of a species as well as the species as a whole. For individuals, Section 9 imposes strict prohibitions against taking individual members of the listed species,

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[218] 42 U.S.C. § 7413 (setting forth penalties); 42 U.S.C. § 7604 (allowing citizen suits).

[219] *See, e.g.*, Dale D. Goble, *Of Wolves and Welfare Ranching*, 16 HARV. ENV'T L. REV. 101, 106–10 (1992) (explaining how the various provisions of the ESA fit together and concluding that "[t]he ESA thus embodies a coherent statement of national policy"); *see also* J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 88 B.U. L. REV. 1, 32 (2008) ("Section 4 establishes a package of programs aimed at identifying imperiled species . . . .").

[220] 16 U.S.C. § 1533(b)(1)(A); *see also* Holly Doremus, *Listing Decisions Under the Endangered Species Act*: *Why Better Science Isn't Always Better Policy*, 75 WASH. U. L.Q. 1029, 1036 (1997); Kristin Carden, *Bridging the Divide: The Role of Science in Species Conservation Law*, 30 HARV. ENV'T L. REV. 165, 258–59 (2006).

[221] For a discussion of conservation duty and how it fits into the Act, see J.B. Ruhl, *Section 7(a)(1) of the "New" Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies' Duty to Conserve Species*, 25 ENV'T L. 1107, 1107 (1995). For a discussion of the recovery goals, see Federico Cheever, *Recovery Planning, the Courts and the Endangered Species Act*, 16 NAT. RES. & ENV'T 106, 106 (2001) ("According to the United States Fish and Wildlife Service (FWS) [r]ecovery is the cornerstone and ultimate purpose of the endangered species program." (internal quotation marks omitted)). Importantly, the recovery goals of the Act are advanced more through its layered protections than from the Section 4(f) recovery plans themselves. *See id.* at 108 ("For more than a decade environmental groups tried without success to entice federal courts into finding the provisions of recovery plans enforceable."). *Cf.* Ruhl, *supra* note 219, at 38 ("[R]ecovery plans are not necessarily meaningless.").

[222] *See* 16 U.S.C. § 1538(a)(1)(B) (making the "take" of endangered species unlawful); 16 U.S.C. § 1533(b)(2) (requiring designation of critical habitat). For a detailed examination of the how the ESA protects habitat for listed species, both in theory and practice, see Dave Owen, *Critical Habitat and the Challenge of Regulating Small Harms*, 64 FLA. L. REV. 141, 149 (2012) ("The ESA's focus on habitat is no coincidence. For decades, scientists have been warning that habitat loss is the single most important threat to biodiversity, and Congress was well aware of this threat when it enacted the statute.").

[223] 16 U.S.C. § 1533(a)(1).

defining "take" broadly.[224] For species-level impacts, Section 7 requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure their actions do not jeopardize the existence of the species or their habitat.[225] This last approach—one that sets boundaries on individual action and maintains a separate regulatory eye on collective impacts—is similar to the Clean Air Act's and Clean Water Act's regulation of stationary or point sources while also including regulatory tools aimed squarely at ambient levels of pollution. In all, like its counterparts (that is, the other major federal environmental statutes), the ESA is designed to engage in species conservation at multiple levels with various regulatory methods.

Even more notoriously flexible natural resource management statutes like NFMA (governing national forests) and FLPMA (governing national rangelands) contain regulatory instruments and statutory commands that embody self-restraint. The extensive, multi-level planning and inventory obligations of these statutes chafe against wanton waste and ad hoc consumption of limited resources.[226] Together they impose an environmental consciousness through intentional planning on over 400 million acres of federal public land.[227] In addition, substantive mandates actively serve the expressly stated goals of serving "future needs"[228] and ensuring that resources meet the needs of the American people in "perpetuity."[229] To that end, FLPMA warns against "unnecessary and undue degradation"[230] and fortifies the BLM's authority to remove lands from grazing use despite a strong history to the

[224] 16 U.S.C. § 1538(a)(1)(B) (prohibiting the "take" of species); 16 U.S.C. § 1532(19) (defining "take"); *see also* Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 698 (1995) (explaining why a broad reading of the take prohibition is appropriate). Exceptions to the take prohibitions are made through permits, but those exceptions are narrowly defined and backed by substantial process and expert analysis. *See* 16 U.S.C. § 1539; Goble, *supra* note 219, at 123 ("[A] narrow interpretation of § 10(a) is structurally consistent with the ESA, which is characterized by broad prohibitions and narrow, well-defined exceptions.").

[225] 16 U.S.C. § 1536(a)(2).

[226] *See* Robert B. Keiter, *Public Lands and Law Reform: Putting Theory, Policy, and Practice in Perspective*, 2005 UTAH L. REV. 1127, 1181 (2005) [hereinafter Keiter, *Public Lands and Law Reform*] ("The genesis of the current legal-planning model probably dates from 1976 when Congress passed the NFMA and the FLPMA, giving both the Forest Service and BLM significant new integrated resource management and planning responsibilities.").

[227] The BLM manages 244.4 million acres, and the Forest Service manages 192.9 million acres. CAROL HARDY VINCENT, LAURA A. HANSON & LUCAS F. BERMEJO, CONG. RSCH. SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 1 (2020), https://fas.org/sgp/crs/misc/R42346.pdf [https://perma.cc/E4FS-PGGZ].

[228] 43 U.S.C. § 1702(c).

[229] 16 U.S.C. § 1600(6).

[230] 43 U.S.C. § 1732(b) ("In managing the public lands the Secretary shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands.").

contrary.[231] NFMA more forcefully imposes a diversity mandate to conserve forests for something other than timber.[232] Both statutes recognize the multiple needs and interests that our public lands are meant to serve, not just extractive desires. Both statutes plan for the future and in doing so house a complex and layered process for engaging in self-restraint. As public lands scholar Robert Keiter observed, "[c]ombined with more detailed prescriptive standards, public participation obligations, and judicial review opportunities, the result is a complex, highly legalized planning and decision process for managing public resources."[233]

(b) Examples of Showstoppers

Cascading regulatory commands are an important feature of environmental statutes—one that evidences Congress's seriousness in supporting its stated purposes. A second major feature of these laws are the so-called "showstoppers." That is, the commands that prioritize environmental values over any single project. The Clean Water Act, for instance, gives states that power over federally issued permits through the 401 certification process and the EPA that power through the 404(c) veto authority.[234] The Wilderness Act contains several prohibitions that serve as showstoppers for development and road-building.[235] Section 4(f) of the Department of Transportation Act has long been considered a showstopper because it prohibits the Federal Highway Administration from approving the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless "(1) there is no prudent and feasible alternative to using that land; and (2) the program or project includes all possible planning to minimize harm to the [property] resulting from the use."[236] Likewise, the ESA is equipped with showstoppers. As illustrated by *TVA v. Hill*, Section 7 can fully halt

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[231] Pub. Lands Council v. Babbitt, 529 U.S. 728, 738 (2000) ("The FLPMA strengthened the Department's existing authority to remove or add land from grazing use, allowing such modification pursuant to a land use plan . . . ." (citing 43 U.S.C. §§ 1712, 1714)).

[232] 16 U.S.C. § 1604; *see also* George Cameron Coggins & Robert L. Glicksman, *Nontimber Resources—Diversity (and Biodiversity)*, 2 PUB. NAT. RES. L. § 16:59 (2d ed. 2022) ("Congress evidently intended that the Forest Service treat wildlife as a 'controlling, co-equal factor in forest management.' Forestry interests have argued unsuccessfully that, despite the adoption of the NFMA, Congress intended forest production to be the predominant use of the national forests and that the statutory diversity requirement . . . improperly subordinated timber concerns to wildlife preservation.").

[233] Keiter, *Public Lands and Law Reform, supra* note 226, at 1180.

[234] *See supra* notes 205, 207 and accompanying text.

[235] *See* National Strategy for Public Transportation Security, 16 U.S.C. § 1133(c); *see also* ROSS GORTE, CONG. RSCH. SERV., RL 7-5700, WILDERNESS LAWS: STATUTORY PROVISIONS AND PROHIBITED AND PERMITTED USES (Feb. 22, 2011) ("The Wilderness Act, directly and by cross-reference in virtually all subsequent wilderness statutes, generally prohibits commercial activities, motorized uses, and roads, structures, and facilities in units of the National Wilderness Preservation System designated by acts of Congress.").

[236] 49 U.S.C. 303(c).

substantial projects if they will jeopardize the continued existence of a listed species.[237] When put to the ultimate test, the ESA is not a balancing statute. It draws ire precisely because it has teeth.[238] And yet, like many of the complex environmental statutes, firm priorities coexist with an operational-level flexibility that is practically necessary when dealing in issues of land use and habitat protection.[239]

(c) Examples of Unidirectional Commands

In addition to the scaffolding of commands and showstoppers, there is one more pattern of regulatory design worth considering: the unidirectional operation of statutory commands. For example, in the Clean Water Act and the Clean Air Act, the technology-forcing commands operate as one-way ratchets to reduce pollutant loads over time. That is, they are meant to drive technological innovation within industries such that the pollutant loading from equivalent economic productivity is reduced over time.[240] In the Clean Water Act's commands related to water quality standards there exists an even more straightforward expression of Congress's unidirectional expectations—the anti-degradation policy.[241] That is, all water quality standards are supposed to contain a statement protecting waters from further

[237] *See generally* Tenn. Valley Auth. v. Hill, 437 U.S. 153 (1978) (examining Section 7 of the Endangered Species Act of 1973).

[238] Jonathan H. Adler, *The Science Charade in Species Conservation*, 24 SUP. CT. ECON. REV. 109, 111, 127 (2016) ("[The ESA] imposes significant regulatory constraints on economic activities that may harm endangered species. . . . What is controversial about the ESA is not that species are listed on 'bad science,' but that environmental activists and progressive administrations tend to prefer a more precautionary and pro-regulatory approach to species conservation than do many industries and anti-regulatory administrations.").

[239] The ESA, for example, allows greater flexibility in the taking of threatened species by giving the U.S. Fish and Wildlife Service the authority to adopt so-called "4(d) regulations" to define what constitutes a take as "necessary and advisable to the conservation of the species." 16 U.S.C. § 1533(d).

[240] *See* Thomas O. McGarity, *Radical Technology-Forcing in Environmental Regulation*, 27 LOY. L.A. L. REV. 943, 944 (1994) ("American courts have generally been reluctant to engage in radical technology-forcing in common-law nuisance actions. . . . Partially in response to this judicial tentativeness, Congress enacted the first round of environmental statute amendments in the early 1970s" and "spoke of the need to 'force technology' to meet the needs of a more environmentally sensitive public.").

[241] 33 U.S.C. § 1313(d)(4)(B); PUD No. 1 of Jefferson City. v. Wash. Dep't of Ecology, 511 U.S. 700, 705 (1994) (explaining that "[a] 1987 amendment to the Clean Water Act makes clear that § 303 also contains an 'antidegradation policy'—that is, a policy requiring that state standards be sufficient to maintain existing beneficial uses of navigable waters, preventing their further degradation. Specifically, the Act permits the revision of certain effluent limitations or water quality standards 'only if such revision is subject to and consistent with the antidegradation policy established under this section'") (quoting 33 U.S.C. § 1313(d)(4)(B)).

degradation.[242] There are also anti-backsliding provisions applicable to individual permits.[243] Similarly, in the Clean Air Act, the prevention of significant deterioration (PSD) program emerged from the concept that areas already meeting ambient air quality standards for criteria pollutants should be regulated so as to maintain their air quality.[244]

The ESA, albeit in a different setting, is structurally designed towards recovery[245] by imposing a conservation duty on all federal agencies[246] and providing protection to endangered and threatened species,[247] as well as their habitat.[248] Likewise, the BLM, in overseeing 245 million acres of public lands under the mandates of FLMPA, is told to keep forward momentum in land health by preventing "unnecessary and undue degradation."[249] And though not quite as directed of a mandate, the Forest Service, in order to keep national forests from becoming "tree farms," is tasked with "provid[ing] for diversity of plant and animal communities" in NMFA's so-called diversity mandate.[250]

Unidirectional expectations, showstoppers, scaffolded protections—these are all manifestations of the intentionality of environmental law. Add to that the citizen

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[242] *See* 40 C.F.R. 131.6(d) (stating that EPA regulations require state water quality standards to meet the antidegradation policy standards set out in section 131.12).

[243] 33 U.S.C 1342(o).

[244] *See* 42 U.S.C. §§ 7470–7492; Env't Def. v. Duke Energy Corp., 549 U.S. 561, 567–68 (2007) (explaining that the PSD program was "aimed at giving added protection to air quality in certain parts of the country 'notwithstanding attainment and maintenance of' the NAAQS"); *see also* Craig N. Oren, *Prevention of Significant Deterioration: Control-Compelling Versus Site-Shifting*, 74 IOWA L. REV. 1, 10 (1988) (providing a brief summary of the PSD program's origin story).

[245] 16 U.S.C. 1531(b) (declaring the purpose of the Act to conserve listed species and their habitat); 16 U.S.C. 1531(c)(3) (defining "conserve" to mean "bring[ing] any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary"); *cf.* J. Michael Scott, Dale D. Goble, Leona K. Svancara, & Anna Pidgorna, *By the Numbers*, *in* THE ENDANGERED SPECIES ACT AT THIRTY, VOLUME 1: RENEWING THE CONSERVATION PROMISE 35 (Dale D. Goble, J. Michael Scott & Frank W. Davis, eds., 2006), https://digitalcommons.unl.edu/usgsstaffpub/719 [https://perma.cc/QYQ4-RATM] ("Our findings suggest that success [of the ESA] is a continuum (J. M. Scott et al., forthcoming) but that delisting or downlisting are widely accepted measures.").

[246] *See* Goble, *supra* note 219 and accompanying text.

[247] *See supra* notes 222–225 and accompanying text.

[248] 16 U.S.C. § 1533(b)(1)(A).

[249] 43 U.S.C. § 1732(b).

[250] 16 U.S.C. § 1604(g)(3)(B). For an explanation of what the diversity mandate was meant to accomplish in light of the legislative history of NFMA, see CHARLES F. WILKINSON AND H. MICHAEL ANDERSON, LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS 173 (1987) ("[S]ection 6(g)(3)(B) has three complementary meanings in the context of timber planning. . . . These three elements, when taken together, require the Forest Service to look at the forest as an ecological whole and to ensure that, over time, the forest is not converted to a 'tree farm.'").

suit provisions and stiff penalties and one can't help but take environmental law seriously as a project of self-preservation through collective action.[251]

C. The Long Arc of Environmental Law's Intentionality

So far, this Part has offered up a view of environmental law as an exoskeleton—drawing on the collective suite of environmental laws to underscore a pattern of enduring commitment to self-restraint. In urging that view, this Part has looked chiefly to the major federal environmental statutes, both individually and collectively, including their text and the substantial legal infrastructure created by them, and their broad purpose statements and detailed regulatory choices.

To see that environmental law codifies a commitment to self-restraint, it is useful to look beyond law and beyond the relatively narrow timeframe in which several keystone statutes were enacted; one has to situate the environmental laws of the 1970s in a deeper, longer history of America's relationship with nature. In doing so, one can start to appreciate environmental law as a decades-long shift in American thinking away from unbridled consumption and towards intentional self-restraint.

1. The Common Narrative of Environmental Law

In telling the story of environmental law's emergence in the U.S., many commentators start with the late 1960s and early 1970s.[252] Richard Lazarus, in his book *Making Environmental Law*, starts his legal history in 1965.[253] Environmental law textbooks, too, routinely focus on the 1970s as the moment of conception despite

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[251] *See* Sanne H. Knudsen, *Remedying the Misuse of Nature*, 2012 UTAH L. REV. 141, 150 (2012) ("[O]ur willingness to accept an impressive amount of environmental regulation reflects a common understanding that some limits on industrial society and land use are necessary to preserve a healthy civilization."); *see also* Robert J. Goldstein, *Green Wood in the Bundle of Sticks: Fitting Environmental Ethics and Ecology into Real Property Law*, 25 B.C. ENV'T AFF. L. REV. 347, 385 (1998) ("The whole body of environmental laws that have been enacted over the course of the past forty years are a testament to that policy and to the willingness of society to exact economic costs for the sake of that policy. . . . [These laws] demonstrate the movement of society toward the understanding that preservation and protection of our natural environment is a positive value, and a widespread one.").

[252] *See* BROOKS, *supra* note 43, at 5 ("Most histories have conventionally dated American environmental law's emergence to the 'environmental decade' of the 1970s, trigged by a handful of publicized events that occurred in the late 1960s."); *see also id.* at 127. Of course, many scholars—including Lazarus—have also recognized the deeper roots of environmental law. *See, e.g.*, Huffman, *supra* note 61, at 814 ("Environmental law, as a field of study and legal practice, arose long after environmental problems entered the consciousness of American leaders and policy makers.").

[253] *See* LAZARUS, MAKING OF ENVIRONMENTAL LAW, *supra* note 21, at 52–53 ("By the 1960s, Congress was ready and able to enact a series of new environmental statutes . . . . Congress also passed a host of laws in the 1960s that, while more consumer oriented in their focus, simultaneously served as important legislative precedents for 1970s environmental legislation.").

obligatory nods to common law origins.[254] Dan Tarlock, as he sets out to uncover whether environmental law has a substantive essence, asserts that environmental law was created out of "whole cloth" in the late 1960s.[255]

There are good reasons why the common narrative focuses on the early 1970s as the genesis of environmental law. After all, the Santa Barbara Oil Spill fouled California waters in 1969.[256] The Cuyahoga River caught on fire (yet again) in 1969.[257] The dangers of DDT and other toxins were painfully exposed in the publishing of Rachel Carson's *Silent Spring* in 1962.[258] The First Earth Day ignited a broad movement of concerned scientists, teachers, students, doctors, politicians, and pastors in April 1970.[259] And, of course, the frameworks of the major federal environmental statutes were enacted in the wake of this acute environmental consciousness: The Wilderness Act of 1964,[260] NEPA of 1969,[261] the Clean Air Act of 1970,[262] the Clean Water Act Amendments of 1972,[263] TSCA of 1976,[264] NFMA of 1976,[265] and FLPMA of 1976.[266]

It was a busy decade to be sure. The environment was top of mind in America. In January 1970, President Richard Nixon "dedicated one-third of his State of the Union address to environmental problems."[267] And that was in the middle of the Vietnam War.[268]

Unfortunately, the common narrative—that environmental law was largely a product of the 1970s—leaves an impression that there is no durable commitment to environmental stewardship in the United States; that the law was a product of a certain era, and that environmental law is simply a collection of ad hoc reactions to

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[254] BROOKS, *supra* note 43, at 9.

[255] Tarlock, *supra* note 58, at 215.

[256] LYNN G. LLEWELLYN & CLARE PEISER, NAT'L BUREAU OF STANDARDS, NEPA AND THE ENVIRONMENTAL MOVEMENT: A BRIEF HISTORY 4 (1973), https://nvlpubs.nist.gov/nistpubs/Legacy/IR/nbsir73-218.pdf [https://perma.cc/RY89-4NS4] ("In the final analysis, the loss of the Torrey Canyon, the Santa Barbara spill, and other subsequent incidents appeared to have considerable impact on public opinion.").

[257] Mark Urycki, *50 Years Later: Cuyahoga River Called Poster Child for Clean Water Act*, NPR (June 18, 2019, 4:58 AM), https://www.npr.org/2019/06/18/733615959/50-years-later-burning-cuyahoga-river-called-poster-child-for-clean-water-act [https://perma.cc/ZAD4-XU5Z].

[258] *See* CARSON, *supra* note 40.

[259] *See* ROME, *supra* note 41, at 165–208.

[260] Pub. L. No. 88-577, 78 Stat. 890 (codified as amended at 16 U.S.C. §§ 1131–1136).

[261] Pub. L. No. 91-190, 83 Stat. 852 (codified as amended at 42 U.S.C. §§ 4321–4347).

[262] Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended at 42 U.S.C. §§ 7401–7675).

[263] Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251–1389).

[264] Pub. L. No. 94-469, 90 Stat. 2003 (codified as amended at 15 U.S.C. §§ 2601–2629).

[265] Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended at 16 U.S.C. §§ 1600–1614).

[266] Pub. L. No. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701–1787).

[267] Urycki, *supra* note 257.

[268] *Id.*

palpable environmental disasters. For some, this narrative feeds into the conclusion that environmental law is immature and that there is no "there there."[269]

2. Beyond the Common Narrative

The common narrative may be a shorthand way of talking about environmental law's history, but it is not complete. In taking a longer view of environmental law and placing it in the broader context of conservation and economic discourse, in assembling both the dominant and not-so voices of the past, a more robust story emerges.

Focusing specifically on the post-war time period of 1945 to 1970, environmental historian Karl Boyd Brooks advances directly the thesis that environmental law's roots emerged long before the 1970s.[270] With the Great Depression and WWII in the rear-view, Brooks describes the 1940s as a time when fewer citizens accepted that "professionals" would adequately deal with the growing environmental crisis.[271] Instead of sitting idly by, citizens called for new laws to ensure commitments to curbing unbridled resource use and pollution.[272] The calls were answered, in statutes and common law, at the state and federal level.[273]

In that post-war period, several federal statutes were adopted in rapid succession: the 1946 Fish and Wildlife Coordination Act;[274] the 1947 Federal Insecticide, Fungicide and Rodenticide Act;[275] the 1948 Federal Water Pollution Control Act;[276] the 1955 Air Pollution Control Act;[277] the "the Delaney Clause" of the 1958 Food and Drug Act Amendments;[278] the 1960 Multiple Use/Sustained Yield Act;[279] and other lesser-known statutes as well.[280] Like the environmental statutes adopted in the 1970s, these laws addressed a range of resources including toxics, water pollution, air pollution, and public land use. They also introduced science and informational transparency as a backbone of environmental decision-making.[281] In one form or another, the laws of the postwar era laid the legal

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[269] Tarlock, *supra* note 58, at 217.

[270] BROOKS, *supra* note 43, at 6 ("Environmental law did not appear in a revolutionary moment of intense national creativity after 1969.").

[271] *Id.* at 38–39.

[272] *Id.* at 35–36 ("This old-fashioned belief in postwar consensus overstates the American public's passivity in the face of environmental challenges . . . . Recent social and cultural studies of postwar America have punctured older stereotypes of bland unity, suggest a better appreciation of postwar environmental politics' sharper edge.").

[273] *Id.* at 38–39.

[274] Pub. L. No. 79-732, 60 Stat. 1080.

[275] Pub. L. No. 80-104, 61 Stat. 163.

[276] Pub. L. No. 80-845, 62 Stat. 1155.

[277] Pub. L. No. 84-159, 69 Stat. 322.

[278] Pub. L. No. 85-929, § 409(c)(3)(A), 72 Stat. 1786.

[279] Pub. L. No. 86-517, 74 Stat. 215.

[280] BROOKS, *supra* note 43, at 58–59.

[281] *Id.* at 7, 38, 43–45, 50.

groundwork for modern environmental regulation.[282] This is a very different story than one where environmental law was simply a product of the 1970s appearing from "whole cloth."[283]

Not only were the comprehensive environmental statutes of the 1970s rooted in earlier federal laws, but the federal laws often had even deeper roots at the state level and in common law.[284] To that end, the timing and trends of federal environmental protection and natural resource management statutes tell only part of the story. At the state level, citizens, legislators, and regulators worked at the forefront of creating legal frameworks to address major environmental issues.[285] Those efforts often later translated into broader national legislation.[286]

Even before American concerns for environmental degradation were codified in law, the common law provided increasingly fertile ground for elevating public interests over private.[287] Indeed, despite the comprehensive web of environmental legislation in existence, common law doctrines of public nuisance law and public trust doctrine are still deployed with vigor and regularity.[288]

The cultural shifts that Brooks highlights for the postwar period are further contextualized and rooted in even deeper history by the work of prominent environmental historian Donald Worster.[289] In *Shrinking the Earth*, Worster traces the nascent calls for conservation in America to George Marsh and his publication of *Man and Nature* in 1864.[290] It was a "doomsday warning, announcing that the

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[282] *Id.* at 128 ("Federal environmental lawmaking did surge in the 1970s. Congress and executive branch agencies made volumes of new laws. Yet the most important laws—especially keystones as the 1972 'Clean Water Act' and the 1970 'Clean Air Act'—ratified jurisdictional shifts that began at least a decade or more earlier.").

[283] *Cf.* Tarlock, *supra* note 58, at 215.

[284] *Id.* at 130 (explaining how environmental law scholar William H. Rodgers had recognized in his 1977 treatise on environmental law that many of the federal legislative efforts of the 1970s were "still . . . rooted deeply in the past, expressing principles well accepted for generations").

[285] The story of the Clean Air Act's emergence on the federal scene is retold by Brooks to emphasize this precise point. *See* BROOKS, *supra* note 43, at 63, 133–34 ("During the 'long decade' between 1947 and 1960—an era that historians have conventionally dismissed as environmentally indifferent—Californians' air quality lawmaking generated a sophisticated regulatory system.").

[286] *Id.* at 133 ("[S]tates and localities made the first important strides in cleaning the air . . . .").

[287] *See* Sagoff, *supra* note 56, at 32 ("For centuries, common law courts have protected individuals from injuries of the sort typically caused by pollution.").

[288] Alexandra B. Klass, *Common Law and Federalism in the Age of the Regulatory State*, 92 IOWA L. REV. 545, 547 (2007) ("[C]hallenges facing today's efforts to enact and enforce federal law addressing current environmental issues such as global warming, water pollution, and air toxins make a renewed focus on state common law both timely and fruitful.").

[289] *See* WORSTER, *supra* note 1.

[290] *Id.* at 78–80.

species must learn to live within limits of the earth or lose its civilization."[291] And, importantly for his role in the eventual emergence of environmental law, Marsh called for government to facilitate restraint: "Conservation required a stronger government informed by science and awakened to its responsibilities to legislate, preserve, and regulate on behalf of all the people and indeed all forms of life."[292]

While it would take time for the role of government in conservation to take the shape it holds today, the outlines of that shape became more palpable at the turn of the twentieth century. Even at that time, when many believed natural resources were incapable of exhaustion, there were leaders in thought and politics that counseled for planning and restraint, for preservation and deliberate use.[293] Consider President Theodore Roosevelt and his vision for protecting public spaces. Roosevelt took seriously the threat of resource exhaustion. He called for change and did more than his presidential counterparts had or would to ensure the U.S. government played a role in protecting resources for the future.[294] By creating the system of wildlife refuges in 1903, setting aside public lands as national monuments (including land that would eventually become the Grand Canyon National Park), Roosevelt earned his reputation as one of the most important political figures in U.S. history to protect and preserve land for future generations.[295]

Aside Roosevelt stood the likes of John Muir[296] and Gifford Pinchot.[297] And before them, George Marsh.[298] And after them, numerous intellectual voices—Fairfield Osborn, William Vogt, and Aldo Leopold—would continue to warn of nature's limits and call for a conservation ethic.[299] Indeed, there have always been those who have had the courage of conviction to counsel for deliberate decision-making aimed at utilizing nature's bounty to achieve "the greatest good for the greatest number of people for the longest period of time."[300]

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[291] *Id.* at 80; *see also id.* at 81 ("Marsh's book represents an important intellectual moment in the transition from an age of plenty to an age of limits.").

[292] *Id.* at 85.

[293] Just one year before President Roosevelt proclaimed "[t]he time has come for a change" in the unconstrained approach to natural resource use, *id.* at 108–09, Simon Patten, a professor of political economy at the University of Pennsylvania's Wharton School of Finance, declared in *The New Basis of Civilization* that "scarcity belonged to the past . . . ." *Id.* at 91.

[294] *Id.* at 111.

[295] Worster observes that "[n]o one did more to conserve wild nature for its own sake." *Id.* He further noted, "Roosevelt gave his country the greatest expanse of protected public spaces on the planet. . . ." *Id.*

[296] Muir, though a friend of Roosevelt, disagreed with his brand of conservation, opting instead for a conservation ethic that did not firstly attempt to preserve technocratic promises of continued abundance. *Id.* at 115, 119.

[297] *Id.* at 88, 110, 117.

[298] *Id.* at 84–85.

[299] *Id.* at 139–41, 200.

[300] *Id.* at 113 (quoting William John McGee and discussing his influence on Roosevelt and the first head of the U.S. Forest Service, Gifford Pinchot).

Of course, lost in this recounting are the less admirable, and sometimes outright troubling, personalities and beliefs that animated some influential thinkers.[301] Also lost in the list of oft-celebrated giants are marginalized voices—of women, of indigenous communities, and of the economically or racially oppressed—who offered valuable insights on the need for and methods of conservation but whose voices have taken longer to be heard. In addition to the illuminating science and advocacy work of Rachel Carson, for over 60 years, biologist Jane Goodall, armed with binoculars and curiosity, has reshaped human insights about our relationship with the natural world.[302] Then there is the American political economist Elinor Ostrom, who challenged conventional wisdom by showing that we should look beyond the market versus state dichotomy when considering how to manage common pool resources against overexploitation.[303] Sociologist Robert Bullard, sometimes referred to as "the father of environmental justice," used his expertise to shine a light on racial disparities in exposure to environmental pollution.[304] There are many others too, like Winona La Duke[305] and Warren Washington,[306] whose work through advocacy and science has shaped views on the environment.

This Article does not portend to fill the gaps of under-recognized contributions of marginalized voices, if even one could. But, in assembling some of the voices, one can appreciate that there is a long and rich history of calls for conservation. There is also a long and rich history of tension between accepting natural limits and pressing for endless growth. Indeed, many prominent classical economists have recognized those limits.[307] How many people pause to recall that when Adam Smith wrote *The Wealth of Nations* in 1776, he accepted economic growth was assuredly

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[301] *See, e.g.*, Jedediah Purdy, *Environmentalism's Racist History*, NEW YORKER (August 13, 2015), https://www.newyorker.com/news/news-desk/environmentalisms-racist-history [https://perma.cc/U3HL-AUD9].

[302] *See About Jane*, JANE GOODALL INST., https://janegoodall.org/our-story/about-jane/ [https://perma.cc/RW2N-QMH2] (last visited July 19, 2022).

[303] In 2009, Dr. Ostrom became the first woman to receive a Nobel Prize in Economic Sciences. *See* Elinor Ostorm, *Beyond Markets and States: Polycentric Governance of Complex Economic Systems,* PRIZE LECTURE, (Dec. 8, 2009), https://www.nobelprize.org/uploads/2018/06/ostrom_lecture.pdf [https://perma.cc/XK8J-TSQT].

[304] *See Biography*, DR. ROBERT BULLARD: FATHER OF ENVIRONMENTAL JUSTICE, https://drrobertbullard.com/biography/ [https://perma.cc/Y59K-AWC5] (last visited July 19, 2022).

[305] *See Winona LaDuke*, NAT'L WOMEN'S HIST. MUSEUM (April 2021), https://www.womenshistory.org/education-resources/biographies/winona-laduke [https://perma.cc/C5BM-45PS].

[306] Dr. Washington won the Tyler Prize for Environmental Achievement in 2019 alongside Dr. Michael Mann for his "pioneering" work in climate science. *See 2019 Tyler Laureates*, TYLER PRIZE FOR ENVIRONMENTAL ACHIEVEMENT, https://tylerprize.org/laureates/past-laureates/2019-tyler-laureates/ [https://perma.cc/T3C8-EH8X] (last visited July 19, 2022).

[307] In this regard, Worster's work as a historian echoes the themes of environmental economist Herman Daly. *See* DALY, *supra* note 2.

limited by nature's capital?[308] Or that John Stuart Mill accepted that natural limits would not necessarily be a bad thing?[309] Or that Stanley Jevons cautioned that coalfields—"undeniably powerful"—were "gifts of nature," not machines?[310] These are the same hard facts that Herman Daly recounts in the modern era.[311]

Still, calls for stewardship routinely encountered resistance by those who viewed conservation as a threat to economic growth and development.[312] Those voices and the growing appetite for conservation continued to compete with America's economic thirst and steadfast commitment to economic growth, just as it had at the turn of the century.[313] Even Roosevelt urged that "conservation means development as much as it does protection."[314]

This tension between economic growth and accepting biophysical limits of growth is consistent with the findings of social scientists who have suggested that environmentalism exists as a counterweight to the so-called dominant paradigm of "faith in material abundance and support for private property rights, a laissez-faire economy, and limited government regulation."[315]

So how do the historical accounts by Worster and Brooks highlighted here further the claim that environmental law is an exoskeleton, an intentional codification of a cultural shift decades in the making? Putting insights from Brooks and Worster together, the common narrative of environmental law's creation would expand in a few notable ways.

First, the narrative ought to recognize that environmental laws emerged as a codified part of American life earlier; laws intentionally aimed at bettering air and water quality, controlling toxics, and managing public lands resources beyond extraction interests appeared on the books well before the 1970s.[316] And it is not just that such laws were adopted before the 1970s, but that they were consistently adopted in a post-industrial America. That suggests they were not an aberration but part of the progression of a well-ordered society.

Second, while environmental laws embody values, law did not create values. Rather, the stewardship values embodied in law are the cultural culmination of many decades' shift in thinking.[317] As reflected by Worster's work recounting of a rich

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[308] WORSTER, *supra* note 1, at 45–47 ("Many economists who came after Smith . . . echoed his optimism while ignoring his old-world residue of pessimism.").

[309] *Id.* at 53 ("But more than his predecessors, . . . [h]e doubted that growth could be sustained forever and doubted that endless growth was good for the human spirit.").

[310] *Id.* at 52–53.

[311] DALY, *supra* note 2.

[312] *Id.* at 36.

[313] WORSTER, *supra* note 1, at 118 (explaining that, in the words of Harvard economist John Kenneth Galbraith, "no other social goal . . . is more strongly avowed [in the new industrial state] than economic growth.").

[314] *Id.* at 112.

[315] *See* CANNON, *supra* note 14, at 6–7 (discussing social science's view of American environmentalism existing in tension with the dominant paradigm).

[316] *See supra* notes 115–131 and accompanying text.

[317] *See* Tarlock, *supra* note 58.

and long intellectual discourse on natural limits, the laws that emerged in the 1960s and 1970s found momentum across far more diverse voices than the common narrative of environmental law's alleged birth in the 1970s acknowledges.[318] In that sense, they codify a deeper and more deliberate shift in the management of the natural world.[319]

Finally, the values embodied in environmental laws were not easily accepted. Because they ran counter to powerful economic interests, one can also appreciate the political inertia that would be required to codify self-restraint through environmental law. If one appreciates that, one can more easily see that environmental laws are intentional and should be given due weight as a collective and repeated choice to heed the extractive and absorptive limits of nature.

II. BRINGING A DEEPER UNDERSTANDING OF ENVIRONMENTAL LAW'S PATTERNS, PURPOSE, AND REPEATED CHOICES INTO JUDICIAL DISCOURSE

Part I embraces a view of environmental law not as a sideshow interest or fleeting product of a time, but as an intentional and indispensable piece of the ongoing settling of America. The technical details of the statutes might be complex, but the purposes that the major laws are meant to achieve are eerily direct.

What does that mean, practically speaking, for the implementation of environmental law? How should a deeper understanding of environmental law's patterns, infrastructure, purpose, and historical context become translated into regulatory decision-making or judicial discourse?

While a complete answer to those questions is part of a larger project, this Part urges courts to approach environmental law with greater respect for its intentionality in three ways. First, by taking judicial notice of environmental law's exoskeleton—that is to recognize its role as a collective body of laws intended to set boundaries on degradation. Second, by giving weight to enacted purpose statements in judicial review and statutory interpretation. Third, by placing a thumb on the scale for agency decisions that err on the side of caution, or by adopting a more protective approach to human health and the environment.

Each of these suggestions advance a more sophisticated approach to the collective and individual aims of environmental statutes when faced with the task of parsing out the meaning of individual words and provisions. Indeed, courts that fail

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[318] While Worster's entire book, *Shrinking the Earth*, is really devoted to examining the idea of natural limits to growth, in Chapter 9 Worster sums up the complexity of the evolution of this understanding by simultaneously observing that those who have questioned the Earth's capacity for limitless growth have long been met with resistance. *See, e.g.*, WORSTER, *supra* note 1, at 183–84; *id.* at 189 ("Any view of nature that is inconsistent with the findings of science sooner or later loses credibility . . . . Thus it may be prophetic that the scientific community today tells us that we live in a world of natural limits and human vulnerability."); *id.* ("[t]he origins of this emerging picture of planetary limits lie among nineteenth century geologists and physicists . . . .").

[319] *See also* PURDY, *supra* note 48.

to understand environmental laws in their collective context risk taking too narrow a view and thus undermining the remarkably straightforward values of environmental law.

A. Take Judicial Notice of the Exoskeleton

Richard Lazarus has argued that the Supreme Court would benefit from a more sophisticated understanding of environmental law:

> The Justices simply do not perceive environmental law beyond its expression in some formal statutory enactments and its presentation of yet another incidental context for their resolution of what are the truly significant crosscutting issues of law and lawmaking processes. They lack any special appreciation or caring for the ends environmental law seeks to accomplish or for the challenges for lawmaking institutions and processes presented by the problems addressed by environmental law.[320]

To reduce this blind spot, Lazarus urges judges to approach environmental law as a distinct body of law that is intended to resolve a particularly complex set of interconnected injuries.[321]

Taking judicial notice of environmental law's exoskeleton would also move the judiciary towards greater sophistication in this area—but not because environmental law is defined by the complexity of its injuries so much as because environmental law is defined by the tenacity of its response to those injuries. A sophisticated understanding of environmental law is not just a function of appreciating uniquely complex injuries, as Lazarus suggests, but also a function of understanding environmental law as a body of laws serving as an intentional counterweight to a dominant economic paradigm and to the degradation that comes from unregulated use of common resources. In other words, if one understands that the whole point of environmental law is to impose self-restraint for the common good, one is less likely to fight the reality that environmental regulations often constrain private behavior.

What would taking judicial notice of environmental law's exoskeleton look like? When resolving issues of environmental law, judges would check their inclination to zoom in and microscope issues as technical or isolated pieces. This is not to say that careful and detailed work isn't also necessary, but the first move should be understanding where the narrow issue fits into the larger landscape. Indeed, Justice Antonin Scalia and Bryan Garner have observed that "[p]erhaps no interpretive fault is more common than the failure to follow the whole-text canon, which calls on the judicial interpreter to consider the entire text, in view of its

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[320] Lazarus, *Restoring What's Environmental, supra* note 16, at 743.
[321] *Id.* at 744–45.

structure and of the physical and logical relation of its many parts."[322] Much longer ago, taking a broad view, James McCauley Landis urged in *Statutes and Sources of Law* that judges seek to distill the purpose of a law and use that distillation to advance the law.[323] Henry Hart and Albert Sacks too expressed an impulse to understand purpose at a broader level: "The purpose of a statute must always be treated as including not only an immediate purpose or group of related purposes but a larger and subtler purpose as to how the particular statute is to be fitted into the legal system as a whole."[324]

Robert Adler and Brian House have examined this tendency of "atomization" in the context of the Clean Water Act's conduit cases, arguing that "excessive focus on individual words or phrases (the 'atoms' or 'molecules' in the text) prevents the reader from understanding how those words or phrases relate to the whole statute."[325] In a similar vein, I urge that the patterns of repeated choices in environmental law—its exoskeleton—can aid in the distillation of a statute's purpose.

Doing so would not be a radical notion. The Supreme Court has on occasion considered the legal landscape in which a particular statute is situated in order to take stock of Congressional intent. For instance, in *FDA v. Brown & Williamson*, the Court looked to a broader statutory landscape in the area of tobacco regulation when deciding whether Congress intended to give the Federal Drug Administration the power to regulate tobacco as a drug under the Food, Drug, and Cosmetics Act (FDCA).[326] The Court understood that "[i]n determining whether Congress has spoken directly to the FDA's authority to regulate tobacco, we must also consider in greater detail the tobacco-specific legislation that Congress has enacted over the past 35 years."[327] In this way, the Court explained that "the meaning of one statute may be affected by other Acts, particularly where Congress has spoken subsequently and more specifically to the topic at hand."[328] Specifically, the Court considered the patchwork of laws that Congress had enacted to regulate various aspects of tobacco

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[322] Robert Adler & Brian House, *Atomizing the Clean Water Act: Ignoring the Whole Statute and Asking the Wrong Questions*, 50 ENV'T L. 45, 49 n.13 (2020) (quoting ANTONIN SCALIA & BRYAN A. GARNER, READING LAW: THE INTERPRETATION OF LEGAL TEXTS 167 (2012)); *see also* Sturgeon v. Frost, 577 U.S. 424, 438 (2016) ("Statutory language cannot be construed in a vacuum." (internal quotation marks omitted)); Weyerhaeuser Co. v. U.S. Fish & Wildlife Serv., 139 S. Ct. 361, 368 (2018) ("[S]tatutory language cannot be construed in a vacuum, and so we must also consider critical habitat in its statutory context." (internal quotation marks omitted)).

[323] James McCauley Landis, *Statutes and the Sources of Law*, 2 HARV. J. ON LEGIS. 7, 10, 25–26 (1965).

[324] Kevin M. Stack, *Interpreting Regulations*, 111 MICH. L. REV. 355, 386 (2012) [hereinafter, Stack, *Interpreting Regulations*] (citing HENRY M. HART, JR. & ALBERT M. SACKS, THE LEGAL PROCESS 1377 (William N. Eskridge, Jr. & Philip P. Frickey eds., 1994)).

[325] Adler & House, *supra* note 322, at 48. Note that Adler and House published their article before the Supreme Court's decision in *County of Maui v. Hawaii Wildlife Fund*.

[326] 529 U.S. 120, 143 (2000).

[327] *Id.*

[328] *Id.* at 133 (citations omitted).

to ascertain whether Congress intended to give the Food and Drug Administration power to regulate tobacco under the Food, Drug and Cosmetic Act.[329] In other words, Congress's behavior and regulatory history with respect to tobacco informed the intended scope of the statute at issue.

Lower courts too have sought insight to congressional intent asking how various statutes fit together. For example, in response to a citizen suit brought under the Clean Water Act involving releases from coal ash ponds, the Sixth Circuit Court of Appeals looked to "other environmental statutes [to] demonstrate why adopting either of Plaintiffs' theories of liability would be untenable."[330] Specifically, the court looked to the relationship between the Clean Water Act and RCRA, which are to be read as "complementary statutes."[331] The court reasoned that "coal ash is solid waste, and RCRA is specifically designed to cover solid waste."[332] Regulating the release at issue under the Clean Water Act, therefore, would undermine the regulatory mechanisms devised by Congress since jurisdiction under RCRA and the Clean Water Act are mutually exclusive by statute.[333] In reaching this conclusion, the court also took note of the fact that the EPA had adopted a regulation covering coal ash storage and treatment under RCRA.[334] In this way, the court looked beyond some narrow, atomized terms in the Clean Water Act to aid its interpretation.[335]

Of course, one should be careful not to engage in a reflexive or wholesale adoption of the landscape level approach to statutory interpretation applied in cases like *FDA v. Brown & Williamson*. Looking outside the principal statute would be inappropriate, for example, if used as a method for undercutting congressional intent as expressed in the text of the relevant statute. For an example of what not to do, one might consider the Supreme Court's decision in *West Virginia v. EPA*, in which the Court takes a step back from detailed statutory analysis by invoking the major questions doctrine and asking more simply whether Congress spoke with enough specificity to conclude that the EPA has the power under the Clean Air Act's Section 111(d) to regulate existing power plants using beyond the fenceline measures.[336] Unlike in *Brown & Williamson*, and unlike the methodology advanced here, in *West*

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[329] *Id.* at 143.

[330] Ky. Waterways All. v. Ky. Utils. Co., 905 F.3d 925, 937 (6th Cir. 2018), *abrogated by* Cty. of Maui v. Haw. Wildlife Fund, 140 S. Ct. 1462 (2020) (analyzing whether the Clean Water Act applies to discharges to groundwater).

[331] *Id.* ("[S]tatutes that 'pertain to the same subject' may be treated 'as if they were one law,' because 'whenever Congress passes a new statute, it acts aware of all previous statutes on the same subject.'" (quoting Erlenbaugh v. United States, 409 U.S. 239, 243–44 (1972))).

[332] *Id.* at 938.

[333] *Id.* at 937.

[334] *Id.* at 938.

[335] *Id.* at 937–38.

[336] *See* 142 S.Ct. 2587, 2608–2616 (2022).

Virginia v. EPA the Court claimed to understand Congressional intent by looking at less text, not more.[337]

Likewise, none of this is to say that some general concept of an exoskeleton could ever trump specific statutory text, just like statements of purpose don't trump specific text.[338] At the same time, however, the enacted purpose statements, the unidirectional trendlines, the fortification of substantive mandates with beefed up enforcement authorities and citizen suits—these are the features of many environmental laws that reflect a normative bent of statutes to protect environmental and human health. That normative bent, in turn, puts an important bumper on the range of acceptable agency decisions even when legislative commands contain less precision and more discretion.[339] Understanding that normative bent as an intentional and important piece of the American blueprint should make it clear that the laws mean what they say.

Senator Orrin Hatch from Utah once remarked that "[t]ext without context often invites confusion and judicial adventurism."[340] The exoskeleton of environmental law can provide a much-needed reference point for anyone who sits at the crossroads of a contentious environmental dispute with competing cultural interests at stake. Knowing that environmental law is, by design and necessity, a counterweight to dominant economic impulses can help illuminate why sometimes judicial restraint in environmental law is itself a form of judicial activism.[341]

B. Give Enacted Purpose Statements Appropriate Weight

Of all the ways that courts could give effect to environmental law's exoskeleton, the most straightforward is to give weight to enacted purpose statements on issues of statutory interpretation and judicial review of agency decisions. For instance, when the Supreme Court in *TVA v. Hill*[342] took seriously

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[337] *See id.* at 2641 (Kagan, J., dissenting) ("When [textualism] would frustrate broader goals, special canons like the 'major questions doctrine' magically appear as get- out-of-text-free cards.").

[338] Sturgeon v. Frost, 139 S. Ct. 1066, 1086 (2019) ("[S]tatements of purpose, . . . by their nature, 'cannot override [a statute's] operative language.'" (alteration in original)).

[339] *Cf.* WOOD, *supra* note 8, at 60–63 (arguing that the discretion in environmental statutes doom the laws to fail because agencies are ultimately captured by industry and the discretion is therefore subverted).

[340] Orrin Hatch, *Legislative History: Tool of Construction or Destruction*, 11 HARV. J. L. & PUB. POL'Y 43, 43 (1988).

[341] *See* Richard E. Levy & Robert L. Glicksman, *Judicial Activism and Restraint in the Supreme Court's Environmental Law Decisions*, 42 VAND. L. REV. 343, 347 (1989) ("[T]he Court has invoked principles of judicial restraint toward administrative agencies to justify decisions with pro-development consequences that are inconsistent with congressional intent.").

[342] 437 U.S. 153, 174 (1978).

congressional intent to give protection of endangered species "the highest of priorities," the Court gave appropriate weight to the animating values of the ESA.[343]

Some are sure to bristle at the simplicity of this suggestion. After all, many environmental statutes are complex and technical in their details. It is not hard to find incongruities within the text of statutes whose purpose statement is otherwise straightforward. This is because environmental problems are necessarily intertwined with social problems and economic consequences; environmental laws all grapple at some level with striking the balance between the present and future, planning and flexibility, and precaution and overregulation. The Clean Air Act, for instance, sets health-based, cost-blind air quality standards for certain criteria pollutants.[344] Those standards trigger other regulatory requirements under the Act, some of which require the EPA to take cost into account, like when it decides what constitutes best available control technology for stationary source emissions.[345] Also, there are provisions that are silent on the issue of cost, like those dealing with mercury emissions.[346] In these multilayered webs of statutory instruction, discerning a singular priority can be difficult.

Skepticism over placing too much weight on purpose statements is also to be expected given that anyone familiar with the legislative process knows that statutes are products of politics and compromise. Indeed, leading legal process theorists like Henry Hart and Albert Sacks[347] have been roundly criticized over many decades for suggesting that a singular purpose can be ascribed to enacted legislation or that legislators can be treated as reasonable people.[348]

And yet, despite the difficulties in discerning a singular purpose from congressionally enacted statutes, there are good reasons to place substantial weight on the enacted purpose statements of individual statutes. First, it is even more difficult to find a path through the trees if one reads a statute as a series of detailed and disjointed commands. The enacted purpose statements are useful as guides, even if rough ones, in testing whether a proffered statutory interpretation or policy choice is placing the emphasis on the right syllable of congressional intent. In this way, enacted purpose statements are important textual tethers. They provide judges and regulators with an explicit benchmark for measuring the relative validity or desirability of competing interpretations and decisions. Second, there is no reason to think that purpose statements should be ignored simply because they are nontechnical in nature. Quite the opposite. The plainspoken forthrightness of many

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[343] GARRETT, *supra* note 140, at 2 (explaining that "[t]o students of interpretation, the case is known first for its emphasis on the plain meaning of the text of the relevant statute, although the Supreme Court's majority opinion also spent pages analyzing the legislative history").

[344] *See* 42 U.S.C. § 7412.

[345] 42 U.S.C. § 7475(a)(4); 40 C.F.R. §§ 51.166(b)(12), 52.21(b)(12).

[346] 42 U.S.C. § 7412(n)(1)(A); Michigan v. E.P.A., 576 U.S. 743, 748 (2015).

[347] *See* Stack*, Interpreting Regulations*, *supra* note 324, at 383 ("Henry Hart and Albert Sacks's *The Legal Process* remains the common reference point for purposive interpretation in general and for a purposive theory of statutory interpretation in particular.").

[348] *Id.* at 384.

purpose statements may be precisely the reason they should be taken seriously.[349] More than any other statutory provision, purpose statements are often a simple statement of values. Because these statements are not likely to have been overlooked by legislators, the statements can be especially insightful on questions of congressional intent.[350]

In his article *Enacted Legislative Findings and Purpose*, Jarrod Shobe similarly urges judges to bring enacted findings and purposes into the fold of statutory interpretation.[351] Though his focus is broader than environmental law, Shobe too observes that "[e]nacted findings and purposes are also less voluminous and more homogeneous than unenacted legislative history, so they are unlikely to have 'something for everybody' in the way unenacted legislative history sometimes does."[352] In other words, enacted findings and purposes offer more genuine insight into the law's intent. Moreover, Shobe attributes meaning to the fact that enacted findings and purpose are "prominently included at the beginning of the statutory text Congress votes on, so it is less susceptible to manipulation and is uniquely reliable and attributable to Congress as a whole."[353] Indeed, other scholars have explained that members of Congress engage with the legislative process at the level of generality that is characteristic of purpose statements; the detailed provisions, by contrast, are written by technical drafters and not necessarily the subject of focused attention by the members of Congress.[354]

Kevin Stack goes further and makes the case for an "enacted purposes canon" of statutory construction.[355] In particular, Stack starts with the Supreme Court's pronouncement in *King v. Burwell* that "[w]e cannot interpret federal statutes to negate their own stated purposes."[356] He then traces the lineage of jurisprudential tradition that has long given effect to statutory purpose as a legitimate tool of construction. In fact, Stack argues that "[i]n a sense, there already is an enacted purposes canon; the Court just has not expressly identified it as such."[357] Moreover,

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[349] Shobe, *supra* note 170, at 669 (explaining that enacted findings and purposes are drafted by Congressional staffers, not technical drafters, and therefore may be "most accessible" because of their plain language to members of Congress).

[350] *Id.* at 672–73 ("[I]t may be that enacted findings and purposes . . . best reflect members' understanding of why a bill was drafted and what it was meant to accomplish."); *id.* at 676 (offering enacted findings and purposes as a counterpoint to the common assertions that Congress cannot be ascribed a singular, collective intent). In his work on regulatory interpretation, Kevin Stack makes a similar argument for placing substantial weight on the text of the statement of basis and purpose. *See* Stack, *Interpreting Regulations, supra* note 324.

[351] Shobe, *supra* note 170, at 674–75.

[352] *Id.* at 676.

[353] *Id.*

[354] *See id.* at 704–05 (discussing Lisa Schultz Bressman & Abbe R. Gluck, *Statutory Interpretation from the Inside—An Empirical Study of Congressional Drafting, Delegation, and the Canons: Part II*, 66 STAN L. REV. 725 (2014)).

[355] Stack, *Enacted Purposes Canon, supra* note 170, at 283.

[356] *Id.* at 285 (quoting King v. Burwell, 576 U.S. 473, 493 (2015)).

[357] *Id.*

Stack would have judges implement the canon to narrow the range of permissible choices available to agencies under a statute—only those regulatory choices that are consistent with the detailed statutory language and further the purpose of the statute would be considered permissible.[358] This is precisely the technique of interpretation that is necessary for respecting the exoskeleton of environmental law.

Properly understood, the approach to statutory interpretation advanced here does not reside solely in the purposivist camp. The approach advanced here should have equal appeal to textualists.[359] In fact, Justice Antonin Scalia, a modern proponent of textualism, conceded the relevance of purpose statements in statutory construction and has relied on such statements to exclude statutory interpretations that would negate the purpose.[360] This makes sense, of course. As Stack poignantly explains, many of the common critiques levied against Hart and Sacks fall away when a statute contains a formal purpose statement.[361] More specifically, critics of the purposivist approach often focus on whether a driving purpose can be discerned when no formal statement is offered by Congress.[362]

Given that purpose statements in environmental statutes are codified in law alongside the more detailed statutory commands,[363] environmental statutes do not generally suffer from that problem and the underlying critiques of Hart and Sacks simply would not apply. In fact, the use of enacted purposes in statutory interpretation is simply an uncontroversial application of a well-regarded canon of interpretation—the "whole act" rule.[364] That rule recognizes that courts "must not interpret provisions of a statute in isolation," but rather in the context of the statute as a whole.[365]

Seen in that light, the real cause for concern may be the failure to properly consider the enacted purpose statement. Shobe puts a finer point on it: "Courts should engage in these types of inquiries when congressional findings and purposes are enacted rather than confining themselves to more narrowly focused arguments about specific meanings of isolated terms, based on dictionaries, canons, legislative history, and other unenacted sources, while ignoring important parts of the enacted

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[358] *Id.* at 317.

[359] *Id.* at 313–14; *see also* Shobe, *supra* note 170, at 675 ("Enacted findings and purposes should be useful tools of interpretation even for textualists because they are not subject to the formalist and pragmatic arguments textualists commonly raise against legislative history."); *id.* at 712 ("[E]nacted findings and purposes should be places where textualism and purposivism have common ground.").

[360] Stack, *Enacted Purposes Canon, supra* note 170, at 286, 303.

[361] *Id*. at 313–16; Stack, *Interpreting Regulations, supra* note 324, at 362–63.

[362] Stack, *Interpreting Regulations, supra* note 324, at 384; *id.* at 363 ("With regard to statutes, textualists have argued that purposive theories require a dubious attribution of a single set of purposes to a multimember body, undermine fair notice, and give courts poor guidance in determining the level of generality of legislative compromise.").

[363] *See supra* Part I.B.2.

[364] *See* Shobe, *supra* note 170, at 712.

[365] *Id.*

text."[366] Indeed, as Stack noted, "[b]y adhering to a statute's enacted purposes, courts reach interpretations of statutes that, in general, are more public-regarding."[367]

Still, it is true that purpose statements alone may not provide a definitive compass to decisional outcomes—and that is not the view urged here. But, just as a broad purpose statement cannot provide a definitive answer to a nuanced issue of statutory interpretation, neither can a narrow lens on statutory text provide a definitive answer to a complex problem of public health or resource conservation. The view urged here is one of judges as skilled diagnosticians of the law. Like fitting the pieces of the puzzle, judges assemble a coherent view of the law not just by examining the zoomed-in view of particular statutory provisions but also by placing that text and the dispute in the context of the statute's structure, history, and—importantly—purpose. The view urged here is to understand the purpose of environmental laws as a deliberate societal commitment to restraint.

C. Place a Thumb on the Scale for Precaution in the Face of Uncertainty

A slightly more radical, but still textually rooted, implication of environmental law's exoskeleton is the idea that courts ought to give direct effect to the precautionary nature of environmental law by placing a thumb on the scale of agency decisions that err on the side of caution. Such an approach is most useful when issues of scientific uncertainty lie at the heart of an agency's decision to regulate or not regulate. A precautionary approach would give agencies greater latitude to regulate in the face of scientific uncertainty if doing so were consistent with the commands of the statute. Conversely, courts following a precautionary approach would be more skeptical of claims by agencies or private parties that use scientific uncertainty as a justification for inaction.

Notably, this approach is asymmetric: Courts would afford agencies flexibility to regulate in the face of scientific uncertainty, but they would give less latitude to agencies who rely on that same uncertainty to justify regulatory inaction. That approach is asymmetric because the laws are asymmetric. The laws have an intentional ethical bend that favors self-restraint and precaution. By nature, precaution expresses a preference for regulation in the face of uncertainty. In contrast, there is no statutory preference for regulatory inaction. Indeed, regulatory inaction is detrimental to the aims of most environmental laws. And so, to give effect to that exoskeleton, courts must learn to approach regulatory inaction with a skeptical eye.

That courts put a thumb on the scale for regulating in the face of uncertainty should not be so hard to accept and is not necessarily new. It would actually be a throwback to the 1970s when judges like Skelly Wright and Harold Leventhal were weighing the appropriate role of courts in a new era of environmental statutes.[368] In

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[366] *Id.* at 675.

[367] Stack, *Enacted Purposes Canon, supra* note 170, at 310.

[368] Judge Skelly Wright wrote:

a case well-known for observing the precautionary nature of the Clean Air Act, *Ethyl Corp. v. EPA*, Judge Skelly Wright wrote for an *en banc* court and articulated an approach similar to the one suggested here: "Where a statute is precautionary in nature, the evidence difficult to come by, uncertain, or conflicting because it is on the frontiers of scientific knowledge, the regulations designed to protect the public health, and the decision that of an expert administrator, we will not demand rigorous step-by-step proof of cause and effect."[369]

In that case, the EPA used its power under the Clean Air Act to regulate lead from gasoline upon finding, as required by statute, that the addition of lead to gasoline "will endanger the public health and welfare."[370] Various lead additive manufacturers and gasoline refiners challenged the regulation on the grounds that the EPA had to show proof of actual harm rather than a substantial risk of harm in

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> These cases are only the beginning of what promises to become a flood of new litigation—litigation seeking judicial assistance in protecting our natural environment. Several recently enacted statutes attest to the commitment of the Government to control, at long last, the destructive engine of material "progress." But it remains to be seen whether the promise of this legislation will become a reality. Therein lies the judicial role . . . . Our duty, in short, is to see that important legislative purposes, heralded in the halls of Congress, are not lost or misdirected in the vast hallways of the federal bureaucracy.

Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n, 449 F.2d 1109, 1111 (D.C. Cir. 1971) (footnote omitted). Judge Leventhal too saw the role of courts as one of upholding the public interest values of the new statutes of that era. He wrote:

> Under the current arrangement the courts no longer have the major role they once discharged in the direction formulation of the pertinent legal rules . . . Primary responsibility has been vested in executive officials and independent regulatory agencies. But this is not to say that the courts do not have an important role. They have a role of review which has been of major significance. In exercising this role, they have shared the public sense of urgency reflected in the new laws, and working within the framework of existing legal doctrine, have exerted a pervasive influence over the legislation's implementation.

Harold Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U. PA. L. REV. 509, 510 (1974)*; see also* Matthew Warren, *Active Judging: Judicial Philosophy and the Development of the Hard Look Doctrine in the D.C. Circuit*, 90 GEO. L.J. 2599, 2611–12 (2002). Judge Leventhal believed that courts and agencies were intended to work together as "a kind of partnership in the public interest." *Id.* Although Congress gave the agency the responsibility to make policy, the courts were given an equally important role: "[T]he role of review to ensure that an agency decision stays within the intent of the law, and satisfies the requirement of reasoned decisionmaking." *Id.*

[369] 541 F.2d 1, 28 (D.C. Cir. 1976) (en banc); *see also* KYSAR, *supra* note 10, at 9 (using case as an example of how "the precautionary principle does find expression in U.S. environmental laws, agency interpretations, and judicial decisions adopted in the 1970s").

[370] *Ethyl Corp.*, 541 F.2d at 7.

order to meet the regulatory threshold.[371] In other words, industry was calling for scientific certainty as a precondition to regulation.

Rejecting that claim, the court emphasized the precautionary nature of the Clean Air Act and the necessity of acting before environmental harms materialize: "A statute allowing for regulation in the face of danger is, necessarily, a precautionary statute. Regulatory action may be taken before the threatened harm occurs; indeed, the very existence of such precautionary legislation would seem to demand that regulatory action precede, and, optimally, prevent, the perceived threat."[372] Just as important, Judge Wright understood that insisting upon certainty would undermine the intent of the legislation given that "[a]waiting certainty will often allow for only reactive, not preventive, regulation."[373]

This sentiment was hardly limited to a single case, court, or statute. Other courts and other cases in that era reflected a more widely shared judicial understanding that the precautionary nature of many environmental statutes necessarily supported the ability of regulators to adopt preventative regulation in the face of "conflicting and inconclusive evidence."[374] In one case, Judge Bazelon went so far as to suggest that interests concerning personal life, health and liberty have a "special claim to judicial protection."[375] Judge Wright echoed that view a few years later in *Ethyl Corp*., recognizing "the special judicial interest in favor of protection of the health and welfare of people, even in areas where certainty does not exist."[376]

While some might criticize this view as endorsing judicial activism—that is, encouraging judicial preference for certain values—nothing could be further from truth. Rather, giving effect to precaution in environmental law is simply the act of giving effect to congressional intent. Put differently, a court that is mindful of the precautionary nature and special values animating environmental law is hardly engaged in activism—it is just doing its job. In his book, *Regulating from Nowhere*, Douglas Kysar recognizes the precautionary principles animating environmental law and warns that these "normative dimensions" cannot be displaced by the objective

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[371] *Id*. at 12.

[372] *Id.* at 13.

[373] *Id.* at 25.

[374] *See generally* Reserve Mining Co. v. EPA, 514 F.2d 492 (8th Cir. 1975) (en banc) (giving effect to the precautionary principles in the Clean Water Act and upholding regulation based on inconclusive evidence); *see also Ethyl Corp*., 541 F.2d at 26 ("[I]f the statute accords the regulator flexibility to assess risks and make essentially legislative policy judgments, as we believe it does, preventive regulation based on conflicting and inconclusive evidence may be sustained. Recent cases have recognized this flexibility in similar situations."); Soc'y of Plastics Indus., Inc. v. OSHA, 509 F.2d 1301, 1308 (2d Cir. 1975) (upholding agency regulation though "the ultimate facts here in dispute are 'on the frontiers of scientific knowledge,' and, though the factual finger points, it does not conclude"); Amoco Oil Co. v. EPA, 501 F.2d 722, 740–41 (D.C. Cir. 1974) ("Where . . . the regulations turn on choices of policy, on an assessment of risks, or on predictions dealing with matters on the frontiers of scientific knowledge, we will demand adequate reasons and explanations, but not 'findings' of the sort familiar from the world of adjudication.").

[375] Env't Def. Fund, Inc. v. Ruckelshaus, 439 F.2d 584, 598 (D.C. Cir. 1971).

[376] *Ethyl Corp.*, 541 F.2d at 24.

frameworks of welfare economics or cost-benefit analysis.[377] Similarly, Part I argues that the text, legal infrastructure, and history of environmental law together illuminate a deliberate and legislatively backed normative preference for restraint. If these views are given weight, judicial activism surely does not lie in giving effect to the law's normative dimension, but rather, lays in failing to do so.[378]

Giving effect to the precautionary nature of environmental law should not be confused with writing agencies, or courts, a blank check. As the court in *Ethyl Corp.* recognized, the EPA is not free to adopt baseless or purposeless regulation.[379] Likewise, the court was not free to rubber stamp any regulatory decision purporting to reduce harm. Rather, the court engaged in a careful review of the statutory text and legislative history to support Congress's intent to endorse a precautionary approach.[380] Then, satisfied that the statute is of a sort that would support regulation in the absence of scientific certainty or actual harm, the court took a hard look at the factual support for the agency's decision.[381] That is not to say that the court played the role of scientist or risk analyst. Instead, the court afforded the agency flexibility to weigh the risks of harm based on the science that was available, and to ultimately decide to regulate.[382]

The approach taken by the D.C. Circuit in *Ethyl Corp.*—that is, an approach that gives effect to the precautionary nature of an environmental statute by allowing regulation in the face of scientific uncertainty—complements the institutional competency of courts and the stated function of arbitrary and capricious review. This approach saves courts from being the arbiters of science, which moves courts beyond their core competencies, by allowing greater flexibility to the agency so long as the regulation would advance the purposes and general precautionary nature of the relevant statute. The precautionary approach, in other words, is a kind of heuristic that allows a court to more simply ensure that the regulation serves the purpose of the statute without substituting its own judgment for that of the agency. Absent such a heuristic, courts risk undermining congressional intent by standing in the way of rational regulations based on science, even if that science is not conclusive.

Allowing agencies to regulate in the face of uncertainty is one thing. Indeed, prominent science and law scholars like Holly Doremus have long remarked that "it is a truism that environmental-policy choices must almost always be made in the

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[377] KYSAR, *supra* note 10, at 16.

[378] *See* Richard E. Levy & Robert L. Glicksman, *Judicial Activism and Restraint in the Supreme Court's Environmental Law Decisions*, 42 VAND. L. REV. 343, 344–48, 421 (1989).

[379] *See Ethyl Corp.*, 541 F.2d at 28 ("Of course, we are not suggesting that the Administrator has the power to act on hunches or wild guesses.").

[380] *See id.* at 17 ("[B]ased on the plain meaning of the statute, the juxtaposition of Section 211 with Sections 108 and 202, and the Reserve Mining precedent, we conclude that the 'will endanger' standard is precautionary in nature and does not require proof of actual harm before regulation is appropriate.").

[381] *See id.* at 26–27.

[382] *See id.* at 28.

face of significant uncertainties."[383] The approach endorsed by *Ethyl Corp.*, then, seems quite in line with the practical necessities of environmental regulation.

If we accept the ethical exoskeleton of environmental law, and if we understand that exoskeleton to state a preference for precaution, then we might go a bit farther. We might call on courts not only to allow regulation in the face of uncertainty but also to look skeptically on agencies that rely on scientific uncertainty to justify inaction. That is the second part of the claim being made here. Admittedly, the second part of the claim—that courts look skeptically on agency decisions not to regulate when those decisions rely on scientific uncertainty—is a more aggressive call. Nonetheless, it is necessary to ensure rational, non-arbitrary decision-making.

To see why, consider that scientific uncertainty is rarely a complete answer to the question of whether to regulate. Science describes, but it does not prescribe.[384] It does not have normative dimensions. And so, though science is an indispensable partner in environmental regulation, it is also an incomplete one. That means when agencies decline to regulate, pointing to the inconclusiveness of science may be *part* of the explanation, but it cannot be the *entire* explanation unless the statute itself demands certainty. Rather, when agencies choose *not* to regulate, they must ultimately root their decision in science as well as the normative dimensions of environmental law.

More pointedly, when agencies work against the normative dimensions of environmental laws by choosing *not* to regulate, they have a greater obligation to explain why that decision is rational; hiding behind the proverbial "cloak of science" is not enough.[385] Joseph Sax, a giant in the environmental field, observed decades ago that government inaction is not the end goal when it comes to environmental law: "[P]ositive government involvement is essential in dealing with externalities like pollution. There is no evident environmental principle analogous to the 'hands off' principle that underlies basic human rights."[386]

Similarly, when courts review environmental decisions as if it were simply a review of science, putting too fine a point on whether there is enough evidence to warrant regulation, they lose the idea that the science is only a partner in, and not a substitute for, regulatory decision-making. When courts defer too readily to an agency that holds up scientific uncertainty as a justification for inaction, the court risks allowing the agency to cloak its decision in a standard not intended by Congress—that is, certainty. Taking a hard look to avoid this kind of arbitrary decision-making and ensure that agencies adequately heed the law's ethical commands is quintessentially the role of the courts.

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[383] *See* Holly Doremus, *Scientific and Political Integrity in Environmental Policy*, 86 TEXAS L. REV. 1601, 1620 (2008).

[384] *See id*.

[385] *See* Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1629–31, 1719 (1995); *id.* at 1650 n.129 ("A variety of commentators have suggested that agencies may seek increased legitimacy or decreased political accountability by disguising their policy judgements as science.").

[386] Sax, *supra* note 56, at 94.

That courts take seriously this role (of ensuring scientific uncertainty isn't used as a technocratic ruse for otherwise arbitrary decisions) is even more important if one considers the ways in which debates about science can overshadow the policy goals of various environmental statutes. Wendy Wagner, in her article *The Science Charade in Toxic Risk Regulation*, critically examines the reasons why scientific uncertainty stymies the implementation of environmental chemicals regulation.[387] By engaging in what Wagner terms the "science charade," agencies overinflate the role that science plays in what is ultimately a policy decision.[388] They do so, in part, to minimize public participation and maximize deference by courts who are uncomfortable wading into scientific debates.[389]

Wagner tells a particularly poignant story of the EPA's decision not to regulate formaldehyde during the Regan Administration, deliberately using scientific uncertainty as a shield for regulation:

> One of the best examples of Reagan's premeditated charade is EPA's decision in 1982 not to regulate formaldehyde under the Toxic Substances Control Act (TSCA) because of the lack of conclusive data on the risk formaldehyde presented to human health. EPA presented its decision as based almost exclusively on science and insisted that risk assessment was a scientific and not a legal matter. EPA's supporting scientific explanations, however, deviated significantly from both the prevailing scientific evidence regarding health effects of formaldehyde and accepted EPA risk assessment assumptions—deviations which EPA uniformly failed to identify or explain. Close observers of the decision alleged that EPA was simply manipulating science after-the-fact in order to justify a predetermined political decision that would benefit an important industry.[390]

This is precisely the kind of agency decision that would benefit from judicial review of the type urged here—one where the science is clear enough and the agency's decision is suspect given the aims of the underlying statute. Those kinds of decisions would benefit from a hard look review that trained a skeptical eye on a

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[387] *See* Wagner, *supra* note 385.

[388] *See id.* at 1628 ("[S]cience-policy decisionmakers . . . are engaging in a science charade in which they carelessly or deliberately characterize policy choices as matters resolved by science in order to survive a variety of strong political, legal, and institutional forces.").

[389] *See id*. at 1656 ("Agencies are thus able to find refuge from APA-generated public debates by layering rulemakings with scientific terminology and citations."); *id.* at 1664–65 (noting "the tendency of many courts to defer to the agency as expert when the issue is framed as scientific in nature" and explaining that "if an agency can represent to the court that its technical explanations for a toxic standard lie on the 'frontiers of scientific inquiry,' a term that could easily encompass trans-scientific issues, the agency decision is subject only to the most cursory review.").

[390] *Id.* at 1646–48.

decision not to regulate and did not simply accept scientific uncertainty as a complete answer.

Unfortunately, Wagner concludes that courts tend to exacerbate the science charade by insisting on too much certainty and technocratic justification on the one hand and on the other hand deferring too readily to agencies who frame their decision in scientific terms.[391] In other words, judicial review that is not properly tuned risks perpetuating the charade, placing courts at the center of scientific debates, and losing sight of the precautionary nature of the laws themselves. To that end, because "the science charade impairs the essential progress and prioritization of standard-setting by miring it in unresolvable scientific complexities,"[392] ensuring that judicial review is properly tuned to create appropriate incentives is critical to the success of the laws.

Wagner is not the only scholar who has highlighted how the messy interstices of science and policy empower agencies and diminish the effectiveness of judicial review. Drawing on Wagner's work, Jonathan Adler has argued that a similar "science charade" undermines productive policy debates about species conservation.[393] In particular, he examines how the debate over the use of science in the listing of endangered species "tends to obscure the dividing line between science and policy and undermines the development of more effective and equitable conservation strategies."[394] He argues that reforms focused on generating "better" science or more robust judicial review of the science is not the answer given that the questions of species conservation are answered by science alone.[395]

Similarly, Holly Doremus has explained why robust regulatory decisions require both scientific and political integrity and how the latter depends on "being explicit about places where the actor believes the governing law leaves room for the agency to make policy choices, and openly acknowledging the choices made."[396] In other words, ensuring political integrity would also seem to turn on the minimization of the science charade.

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[391] *See id.* at 1661 ("A careful examination of the case law strongly suggests that the courts are exacerbating, rather than discouraging, the agencies' misidentification of toxic standard-setting as resolvable by science."); *see also id.* at 1664 (discussing the tendencies of courts to defer to decisions purporting to be on the frontiers of science). Wagner highlights the Supreme Court's *Benzene* decision, *Industrial Union Dep't v. American Petroleum Inst.*, 448 U.S. 607 (1980), as an example of courts requiring too much precision and therefore exacerbating the science charade. *See* Wagner, *supra* note 385, at 1662.

[392] Wagner, *supra* note 385, at 1673.

[393] Jonathan H. Adler, *The Science Charade in Species Conservation*, 24 SUP. CT. ECON. REV. 109, 111 (2016).

[394] *Id.* at 110.

[395] *Id.* ("Science can—indeed, must—inform such inquiries, but science cannot tell us what to do. Engaging in the 'science charade,' either by pretending that ESA implementation may be guided by scientific judgment alone or by claiming that reforms of how science is used is unlikely to improve species conservation.").

[396] *See* Doremus, *supra* note 383, at 1630.

Together, the insights of these various scholars point to an approach to judicial review like the one urged here—one that rebalances the appropriate weight that claims of scientific uncertainty are given in agency decisions and creates a more robust role for courts to ensure that scientific debates do not obscure the ultimate policy aims of the relevant statute. In particular, consider the impact that the approach urged here would have on the science charade or the political integrity of decision-making: If uncertainty is not the death knell to regulation—that is, if agencies are afforded flexibility in regulating in the face of uncertainty—agencies would have a greater incentive to openly discuss the limits of science, courts would play the more desirous and limited role of ensuring the ultimate policy decision is rationally supported by science and serves the goals of the statute, and the precautionary nature of environmental laws would be respected. By the same token, if scientific uncertainty is not an automatic shield to an agency's responsibility to act, the agency has greater incentive to openly discuss policy motivations behind its decision and courts have a greater ability to ensure that those policy decisions track congressional intent.

Of course, any appeal to the precautionary nature of environmental laws will be met with a degree of skepticism by those who see precaution as a tool for unchecked regulation. Ironically, in doing so, the debate is once again centered on questions unanswerable by science—thus the idea of precaution and the difficulty of identifying a logical endpoint becomes a rhetorical tool for throwing one's hands in the air and ignoring that Congress has at many times put a thumb on the scale for regulation in the face of uncertainty. Claims of overregulation, therefore, should not be met with the same judicial skepticism as claims of under regulation. Another way to think about it is that the precautionary nature of environmental law means that courts are more likely to follow the intent of Congress if they are vigilant about making sure regulators advance goals of environmental protection. If there is asymmetry in how courts approach their review of regulatory decisions, then it is appropriate for that asymmetry to skew towards precaution not against it.

CONCLUSION

When viewed in the aggregate and over a long period of time, one can start to appreciate environmental law as a sort of "exoskeleton" that society has created to protect itself from the collective action problems and the biophysical limits of nature. Understanding the intentionality of environmental law—not as a wanton affront to American frontier freedom, but as a deliberate and necessary act of providing for future prosperity through self-restraint—is critical to the success of its implementation. To see only part of the project or respect only some of the commands; to pick only the low hanging fruit and turn a blind eye to difficult problems; or to accept half-measures as full engagement—such failings will be the downfall of the project as a whole.

Seeing the whole of environmental law is not sufficient to ensure its success. The way that courts approach statutory interpretation and review of agency decisions must reflect that deeper understanding of environmental law. To that end, courts, in

their role as stewards of Congressional intent, should be placing interpretation in the context of a statute's enacted purpose statements, giving weight to the precautionary nature of environmental law when agency's make or avoid decisions in the face of scientific uncertainty, and avoiding the impulse to frame issues with an overly narrow view.