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The Gardener and the Sick Garden: How *Not* to Address the Planet's Environmental Issues

by Jan G. Laitos and Juliana E. Okulski

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I. Introduction

When we humans first began to notice that the planet's natural resources were not inexhaustible, and then later when we realized that Earth's environment could eventually become poisoned by human-generated waste, we created government policies to regulate and impose limits on our tendency to exploit the planet's natural goods. Virtually all of these institutional responses have presumed that humans are like metaphorical gardeners trying to enjoy a garden—in effect, exploiting Earth's many natural resources for our own selfish interests. What we gardeners realized was that the garden was being depleted and contaminated by our bad and greedy habits. Through legal institutions, we sought to control the destructive gardener (a truly *self*-destructive gardener), and to manage the garden.

Over a number of decades, various rules have been imposed on humans intending to limit our obsession with exploiting the garden of Earth. During this time, differing management techniques have been tried to ensure that the garden could continue to provide the resources and natural systems for humans to survive. But despite all these rules and laws and institutional commands, the garden has seemed to be getting sicker. Why have environmental policies not worked very well? Why have governmental responses neither deterred the exploitative gardener nor much helped the garden?

These important questions can be answered by examining the three central models that historically have served as the foundation for policies that define and direct our actions toward our natural environment—models that set out (1) how nature works; (2) how humans behave; and (3) how humans perceive their relationship to nature. Our environmental policies have failed because each of the three central models we have used is flawed. As a result, humans continue to pollute environmental goods and deplete the planet's resources. The self-destructive gardener has not been successfully regulated; eventually, the garden may not be able to provide for the gardener's needs.

If environmental policies are to succeed, they must be based on accurate models of nature, of humans, and of humans-in-nature. A model of how nature works should not be based on how we *want* nature to work. A model of how humans behave should not be formulated on how we *assume* humans behave. And a model of our relationship to nature must not be predicated on wrongheaded beliefs about what we think that relationship *should* be. Instead, these three models should reflect accurate, science-based reality.

When reality replaces wishful thinking, then two realizations follow. First, because current environmental policies (typically either regulatory mandates or economic market-based instruments) are based on flawed models, they have little chance of long-term success. Second, an alternative strategy proposed by many commentators—a strategy that confers on humans a legal right to an uncontaminated natural environment—is similarly doomed because it too would be based on the same flawed models.

A truly workable environmental strategy would start by being grounded in better, more realistic and empirically accurate models of how nature works, how humans behave, and humankind's relationship to nature. Such an environmental policy would realize that the gardener and the garden are not separate, but one. And this environmental policy would embrace two correlative legal norms: (1) we should recognize a positive *right*, held by both humans and their natural surroundings, to environmental conditions that may sustain human survivability[1]; and (2) we should

Authors' Note: Several of the ideas presented in this Dialogue will be considered, in a much expanded version, in Professor Laitos' forthcoming book: Why Environmental Policies Fail (Cambridge Univ. Press 2016).

1. As discussed below, Nature as such does not need to be protected or conferred a special right, because Nature, natural systems, and environmental goods will adapt to any and all human-caused exogenous changes to, or alterations of, purely ecocentric, non-anthropocentric natural conditions.

impose an affirmative *duty* on humans to promote and support natural systems.[2]

II. Formulating a More Realistic Picture of Nature and Humans

Our legal responses to what appear to be problems or harms or negative changes to the environment have typically been based on three models that have defined our perceptions of humans and nature. Each of these models is problematic, because each is neither accurate nor realistic. For environmental policies to be effective, they must reflect an understanding of nature and humans grounded in truth, not hope.

A. *Model #1: How Does Nature Really Work?*

It is increasingly apparent to biologists and ecological scientists that the concept of Nature is really shorthand for Earth's natural systems (for example, ecosystems, photosynthesis, and atmospheric climate), its living organisms of the biosphere (such as grasslands, protozoa, and humans), and its environmental goods (including the air, waters, and land). The planet's biophysical subsystems and processes are not static; to the contrary, they are best seen as complex adaptive systems (CAS).

A CAS consists of individual agents able to change, learn from experience, evolve over time, and pursue their own agendas. It is a highly dynamic system able to adapt and evolve with a changing environment. There is no separation between Nature and its surrounding environment and critical influential players (that is, humans). Nature is closely linked with all other related systems that act upon it or affect Nature's evolution. Nature does not merely adapt to humans. Rather, there is inevitable change by both humans and Nature when they interact: There is co-evolution. The central features of CAS are resilience, diversity, redundancy, complexity, connectivity, and nonlinear spatio-temporal interactions. A CAS like Nature pushes away from and rejects equilibrium.[3]

While Nature can adapt to human activities, many of its subsystems turn out to be sensitive when various threshold levels are crossed. For example, when humans disrupt Earth-system processes, such as climate, biodiversity, stratospheric ozone levels, global freshwater, atmospheric levels of carbon dioxide and other chemicals, and ocean acidification, then there may be environmental change that is unacceptable for human survival. When these thresholds are crossed, Earth's subsystems may shift into a new state, with potentially disastrous consequences for humans. In short, even though a CAS can adapt to human development, when it adapts to the point where planetary boundaries are exceeded, the resulting environmental change makes Earth no longer conducive to human survival.[4]

B. *Model #2: How Do Humans Really Behave?*

The reality of human behavior is best understood in light of social science and cognitive psychology, instead of hunch or guesswork. An army of modern neuroeconomists, psychologists, and behavioral economists has recently offered up empirical findings about how we make choices and arrive at decisions. These scientific observers of the human condition have concluded that we humans are not necessarily rational in our behavior.[5] We do not deliberately weigh the costs and benefits of alternative courses of action, but instead make choices based on other influences, such as altruism, fairness, teamwork, networking, and the choices of others.[6] Humans, not surprisingly, give undue weight to the short term, in light of a high decisional discount rate that discounts the future in terms of its utility. Humans also seem to believe that what matters in choices is what is salient to us, particularly when making choices where our usual rules-of-thumb seem familiar and well-suited to the choice.[7]

When behavioral economics guide environmental policy initiatives, it seems that historic command-and-control rules are not effective. If people are more responsive to desired rather than undesired information (which is what behavioral economists have discovered), then disclosures to people about how well they are doing—for example, how energy-efficient they are compared to their neighbors—may be a policy preferable to a flat mandate.[8] Instead of *compelling* certain environmentally friendly behaviors, social science data suggests that it is more effective to *persuade* people so that they preserve their freedom of choice. Instead of laws reflecting traditional "hard" paternalism, which imposes real costs on people, behavioral economists favor "soft" paternalism, which only imposes affective or psychic costs.[9]

2. As explored below, such a duty would not be the correlative of a negative right (that is, a duty not to intrude on the right), but rather a positive obligation to provide something.
3. Simon Levin et al., *Social-Ecological Systems as Complex Adaptive Systems: Modeling and Policy Implications*, 18 Env't & Dev. Econ. 111-32 (Dec. 2012); Robert M. May et al., *Complex Systems: Ecology for Bankers*, 457 Nature 893 (2008); Simon A. Levin, *Ecosystems and the Biosphere as Complex Adaptive Systems*, 1 Ecosystems 431-36 (1998).
4. Will Steffen et al., *Planetary Boundaries Guiding Human Development on a Changing Planet*, Science (Jan. 15, 2015); John Rockstrom et al., *A Safe Operating Space for Humanity*, 461 Nature 472 (Sept. 2009); Stockholm Resilience Ctr., *The Nine Planetary Boundaries*, http://www.stockholmresilience.org/21/research (2014) (last visited Mar. 10, 2015).
5. Daniel Kahneman, Thinking, Fast and Slow (2011).
6. Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 Science 453 (1981); Coren L. Apicella et al., *Social Networks and Cooperation in Hunter-Gatherers*, 481 Nature 497 (Jan. 2012); Elinor Ostrom, Governing the Commons: The Evolution of Institutions for Collective Action (1990).
7. Pedro Bardalo et al., *Science in Experimental Tests of the Endowment Effect*, 102 Am. Econ. Rev. 47 (2012).
8. *See, e.g.*, Jim Tankersley, *Will People Save Energy Just to Be Good Citizens? Actually, Yes*, Wash. Post, Oct. 27, 2014.
9. Cass R. Sunstein, Why Nudge? The Politics of Libertarian Paternalism (2014); Richard H. Thaler & Cass R. Sunstein, Nudge: Improving Decisions About Health, Wealth & Happiness (2008); Matthew Adler, Well-Being and Fair Distribution: Beyond Cost-Benefit Analysis 6-8 (2011).

C. *Model #3: What Is Our Real Relationship to Nature?*

Our overwhelmingly anthropocentric ethics insulate humans from our connections to, and dependence on, Nature. Modern lifestyles and technological advances mask many of the usual connections between humans and our surrounding natural systems, obscuring the normal environmental feedbacks.[10] For example, although resource consumption choices in one part of the world may have dramatic consequences for countries that supply the resources, the consumer usually never knows of these effects and is oblivious to the real environmental effects of the consumptive choice.

The reality, of course, is that humans are a part of, and entirely dependent upon, the natural systems that surround them. Humans also certainly affect environmental goods and natural systems, contextualizing those human actions. Natural resources, environmental goods, and natural systems are absolutely necessary to support human life. The availability of natural resources, and the continued functioning of ecosystems and Earth-based natural systems, ensures that the biosphere operates to meet the specific environmental conditions required for human life.[11] Indeed, human evolution itself—the emergence of *homo erectus* two million years ago—seems linked to, and was probably caused by, environmental variability then taking place in East Africa that affected local ecosystems.[12]

Humans and our natural surroundings exist in a mutualistic, interdependent relationship in which they co-evolve. Humans and the environment are not two entities, but instead are in fact a single system, a CAS, which responds to the continuously changing dynamics of human actions and environmental reactions. Modern scientists have correctly adopted the term social-ecological systems to refer to a planetary reality composed of coupled human and ecological systems, with no divide between them.[13]

III. Three Flawed Models of Humans and Nature That Cause Environmental Policies to Fail

If those who make environmental policy base their laws and government actions on flawed models of nature and humans, then these policies will likely fail. If environmental policies are consistent with the reality of how nature works and humans behave, then those policies will be more likely to succeed. Unfortunately, most environmental laws instead have been built upon inaccurate and unrealistic views of nature, humans, and humans in nature.

A. *Nature as Self-Regulating, and the Regulatory State*

Regulation is the most common policy tool used to control human decisions affecting the natural environment. A regulatory policy is mostly a negative strategy of simply trying to stop a human action that appears to be disturbing some mythical natural baseline.[14] This idea of a natural baseline usually reflects the view, discredited by the CAS theory, that Earth's system is a closely integrated, self-correcting system, where life regulates the planetary environment to suit itself and to keep it stable. This notion of life on our planet sees natural feedbacks and control loops as stabilizing conditions, which eventually bring about homeostasis.[15] But modern ecological science rejects this model of how life and environment interact on Earth. The better view is that the environment is far from stable. It is dynamic and changing, and Earth is well-suited to life only because organisms continuously adapt to constant change.[16]

When the prevailing model of Nature assumes that Earth's systems are self-regulating, however, then environmental policy will seek to restore Nature, particularly when humans interfere with this hypothetical natural condition. Policies responding to this flawed model of Nature tend to be negative and regulatory, in that they are designed either to halt or ban seemingly destructive human actions, or to mandate behavior that does not interfere with Nature. For example, our laws order us not to pollute air, water, or land; they mandate that we not interfere with open spaces, wilderness areas, and certain wildlife, and they command us not to remove too many trees, fish, or rangelands. These negative regulatory laws often remove human choice and presume that if humans leave Nature alone, then, because it is self-regulating, it will eventually recover on its own.[17]

B. *Humans as Rational Choice Actors, and Market-Based Rules*

Standard economic theory has for centuries relied on a model of human behavior based on rational choice theory. The theory, which underscores most of our current environmental policy that is not otherwise negative and regulatory, presumes that individuals act rationally when making choices. The assumption is that we act as if we are balancing costs against benefits to arrive at action that maximizes

10. Emilio F. Moran, People and Nature 69 (2006); John Cairns Jr., *Eco-Societal Restoration: Re-Examining Human Society's Relationship With Natural Systems*, *in* Goals and Conditions for a Sustainable World (2002).
11. Carl Folke et al., *Reconnecting to the Biosphere*, 40 Ambio 719 (2011); Mathis Wackernagal & William Rees, Our Ecological Footprint: Reducing Human Impact on Earth 4-5 (1996); P. Wesley Shultz, *Inclusion With Nature: The Psychology of Human Nature Relations* 61-66, *in* The Psychology of Sustainable Development (P. Schmuck et al. eds., 2002).
12. Clayton R. Magill et al., *Ecosystem Variability and Early Human Habitats in Eastern Africa*, 110 Proc. Nat'l Acad. Sci. 1167-74 (Jan. 22, 2013).
13. Carl Folke et al., *Adaptive Governance of Social-Ecological Systems*, 30 Ann. Rev. Env't & Resources 441, 443 (2005); Levin et al., *supra* note 3; Stephen Kellert, Birthright: People and Nature in the Modern World (2012).
14. A. Dan Tarlock, *The Future of Environmental "Rule of Law" Litigation*, 17 Pace Envtl. L. Rev. 237, 243 (2000).
15. James E. Lovelock, Gaia: A New Look at Life on Earth (1979); Kate Ravilious, *Perfect Harmony*, Guardian, Apr. 28, 2008.
16. Toby Tyrell, On Gaia: A Critical Investigation of the Relationship Between Life and Earth (2013); Levin et al., *supra* note 3.
17. Sunstein, *supra* note 9, at 19-20, 55-59.

personal advantage. This view of humans is sometimes termed the *homo economicus* model, where humans base choices on our own "utility functions." The view posits that humans ignore all social values if they don't provide utility and don't help *homo economicus* attain very specific goals with the least possible cost.[18]

As noted above, however, modern social psychologists and behavioral economists have undermined the economic model of humans as rational maximizers of their self-interest.[19] In reality, the rational actor is a myth. People's decisions are not determined by a careful weighing of costs and benefits, by pure selfishness, or by welfare maximization, but instead by emotions such as altruism, susceptibility to peer influences, and all sorts of cognitive biases.

This more modern understanding of how humans behave predicts that environmental policies based on the *homo economicus* model will fail. In particular, policies built around market-based instruments should no longer be presumed to be reliable or effective in influencing behavior. Such instruments, including taxes, incentives, subsidies, penalties, and even cap-and-trade systems, are all based upon the traditional rational choice model.[20] But a more accurate model of human environmental decisionmaking, using behavioral economics, would show that individuals are equally susceptible to other influences, such as a selfless desire to enhance collective welfare, or a willingness to incur certain costs because of the psychic gain experienced from knowing that Nature has thereby been benefitted.[21]

C. *Humans as Not Apart From Nature, But as a Part of Nature*

Virtually all governmental responses to environmental changes seem to be grounded in the assumption that Nature or the natural world is in trouble, because it is harmed by anthropocentric actions. Most environmental policies therefore reflect the notion that humans, and our policies, need to correct the problems that the natural environment is experiencing. We humans see our role as policymakers who can protect the environment, and cure various environmental ailments. Such traditional policy responses are akin to the gardener viewing the poorly producing garden, requiring the gardener to fix the problems of the sick garden.

This traditional perspective, which is embedded in most modern environmental policies, reflects two central themes about how humans have viewed our place in Nature. Each of these prevailing views is wrong. First, we tend to perceive ourselves as independent and separate from our natural environmental surroundings.[22] Like the gardener observing a dying garden, we humans (and our laws) consistently see ourselves outside of and apart from Nature. But humans are most assuredly not separate from or exogenous to nature.[23] Humans instead are integrated within it, so that there is in fact only one planetary system: a human/nature social-ecological system.[24]

Second, humans have historically viewed ourselves as being superior to Nature, because of a faith in human exceptionalism.[25] Our environmental policies have reflected a view that the rules governing the rest of the natural world do not apply to us, as we are exceptional creatures, and also an attitude that our superiority permits us to manage natural resources and the surrounding environment.[26] We see ourselves as the stewards of Nature, able to dominate it and control it for anthropocentric ends.[27]

Environmental policies will fail when based on these notions of human separation from Nature and human superiority to Nature.

IV. Have Environmental Policies Failed?

The planet's environment has been stable for the past 10,000 years, the Holocene era.[28] During this period of relative stability, environmental conditions have permitted the emergence and development of human civilizations. Since the Industrial Revolution, however, human actions, not natural conditions, have driven global environmental change. We are now entering a new era, the Anthropocene.[29] It is a time when human activities are so altering Earth's regulatory capacity that we may have started to exceed planetary boundaries and assorted thresholds for human survival.[30] Countless environmental policies and decades of law making designed to protect the environment have not been able to reverse, or even slow, this anthropocentric assault on natural systems and planetary boundaries.[31]

Human activities have begun to push Earth systems outside the stable environmental state of the Holocene in several critical ways. First, humans have interfered with biophysical subsystems, resulting in environmental losses

18. Jon Elster, Nuts and Bolts for the Social Sciences (1989); Gary Becker, The Economic Approach to Human Behavior (1976); Daniel Cohen, Homo Economicus: The (Host) Prophet of Modern Times (2014); Tony Lawson, *The Nature of Heterodox Economics*, 30 Cambridge J. Econ. 483 (2006).
19. *See* Kahneman, *supra* note 5; Tversky & Kahneman, *supra* note 6.
20. *See, e.g.*, William Nordhaus, The Climate Casino: Risk, Uncertainty, and Economics for a Warming World (2014).
21. European Comm'n, Science for Envtl. Pol'y, Future Brief: Green Behaviour (Oct. 2012).
22. Emilio F. Moran, People and Nature 7 (2006).
23. Cormac Cullinan, Wild Law 63 (2d ed. 2011); Kellert, *supra* note 13.
24. Levin et al., *supra* note 3.
25. Jonathan Baert Wiener, *Beyond the Balance of Nature*, 7 Duke Envtl. L. & Pol'y 3-4 (1996); *Evolution, Categories, and Consequences*, 22 Ecology L.Q. 325, 343 (1995).
26. William Leiss, *Modern Science, Enlightenment, and the Domination of Nature: No Exit?*, www.vta.edu/huma/agger/fastcapitalism (2014).
27. Jedediah Purdy, *American Nature: The Shape of Conflict Environmental Law*, 36 Harv. Envtl. L. Rev. 169, 189-97 (2012).
28. Jean-Robert Petit et al., *Climate and Atmospheric History of the Past 420,000 Years From the Vostok Ice Core*, 399 Nature 429 (1999).
29. Paul J. Crutzen, *Geology of Mankind*, 415 Nature 23 (2002).
30. Joel Achenbach, *Scientists: Human Activity Has Pushed Earth Beyond Four of Nine Planetary Boundaries*, Wash. Post, Jan. 15, 2015; Rockstrom, *supra* note 4; W. Steffen et al., Global Change and the Earth System: A Planet Under Pressure (2004).
31. Becky Oskin, *2014 Was Earth's Hottest Year on Record*, Live Sci., Jan. 16, 2015; Douglas J. McCauley et al., *Marine Defaunation: Animal Loss in the Global Ocean*, 347 Science 6219 (Jan. 2015); Marten Scheffer et al., *Catastrophic Shifts in Ecosystems*, 413 Nature 591 (2001).

that may adversely affect humans. Chief among these losses have been: (1) loss of biodiversity (for example, deforestation and exhaustion of fish stock)[32]; (2) loss of natural systems (such as ecosystems and wetlands)[33]; (3) loss of freshwater reserves[34]; and (4) mass extinctions leading to a loss of species.[35] Second, humans have changed essential biophysical processes. We have caused climate change[36] and unmatched sea-level rise,[37] brought about by anthropogenic chemical pollution of the atmosphere.[38]

Human actions driving these losses and changes will not likely abate without some radically different approach to environmental policy, because Earth's population continues to grow at a relentless pace.[39] And it is not just the fact of population growth that is so troubling; particularly alarming is how we many humans interrelate to each other. As Carter Dillard correctly points out in this issue: "Anthropogenic climate change represents humans exercising a direct, unconsented to, and harmful influence over one another—billions of little acts of tyranny—that none of us can escape."[40] In other words, this growing population of humans is not merely overexploiting a resource, such as the climate, and in doing so imposing negative externalities upon a larger group that has a stake in the resource. Rather, what we many humans are now experiencing has been termed a true tragedy of the commons, where our actions are detracting from our own ability to enjoy the resource.[41]

V. Should Environmental Policy Confer Upon Humans a Protected Right to a Particular Environment?

The disappointing record certainly suggests that environmental policies are not working when based on either traditional regulatory mandatory tools or market-based instruments. Some commentators have argued for an alternative response, where laws or constitutions create a legally recognized human *right* to a particular environment.[42] It appears, however, that such a human rights approach relies on the same flawed models that have guided past failed environmental policies. In other words, it will likely not help if we give the gardener a legally protected right to a healthy garden.

The first problem with a human rights-based response is that the right is conferred only on "humans." When humans are the sole beneficiaries of the right, then the right is presuming human exceptionalism and an anthropocentric superior position on this planet, compared to all other living organisms. The shibboleth of human exceptionalism was rebutted above. Humans share this planet with and are interrelated to all other components of the biosphere, and we should not be singled out as the exclusive right-holder.[43]

Another problem with a "human right" is that the right to be conferred is, in a Kantian sense, usually a negative right.[44] It is negative in that, if the right is a justifiable claim to be accorded something (for example, a particular environment), then there arises a correlative duty to not take actions, or to forgo actions, that interfere with the right. Such negative rights simply repeat the notion, embedded in traditional negative laws, that humans are harming the natural environment, which usually results in humans being ordered not to take actions that perpetuate this harm. But negative laws (and negative rights) do not necessarily reflect modern thinking about how humans behave. Modern behavioral economics suggest that humans prefer to be told what TO DO, while the creation of a negative right is in effect telling humans what NOT TO DO.[45]

A human right to a particular environment also assumes that humans can select the kind of natural surroundings to which we are entitled. This assumption is premised on a degree of human separation from nature, where humans may simply determine—like the gardener deciding what plants to grow in the garden—what kind of biosphere we deserve. Moreover, no matter how hard we try, humans can never obtain a particular natural environment. Nature is not a self-regulating, self-correcting system that, if left undisturbed by humans, may achieve a preset particular homeostasis. Instead, Nature is a highly dynamic CAS that is not separate from humans and is always changing.[46]

VI. How Better to Address Earth's Environmental Issues

If the goal of environmental policy is to encourage human behavior that does not interfere with the biosphere's ability

32. Roddy Scheer & Doug Moss, *Deforestation and Its Extreme Effects on Global Warming*, Sci. Am., Nov. 13, 2012; Douglas Main, *Feds Close Most of Northeast to Cod Fishing*, Newsweek, Nov. 13, 2014.
33. Staff Writer, *Plenty More Fish in the Sea?*, Economist 66, Dec. 21, 2013; John Flesher, Assoc. Press, *Great Lakes Only Region to Gain Wetlands*, Denver Post 10A, Jan. 6, 2014.
34. *The Earth's Freshwater Reserves Are Disappearing*, http://www.msn.com/en-us/news.technology (Nov. 11, 2014).
35. Carl Zimmer, *Ocean Life Faces Mass Extinction, Broad Study Says*, N.Y. Times A1, Jan. 16, 2015; Elizabeth Kolbert, The Sixth Extinction (2014); Bryan Walsh, *A World Without Bees*, Time, Aug. 19, 2013.
36. Karl Ritter, Assoc. Press, *U.N. Report Concludes Human Altering Climate*, Denver Post 10A, Nov. 2, 2014.
37. Oliver Milman, *Sea Level Rise Over Past Century Unmatched in 6000 Years, Says Study*, Guardian, Oct. 14, 2014.
38. Joby Warrick, *Delaware-Sized Gas Plume Over West Illustrates the Cost of Leaking Methane*, Wash. Post, Dec. 29, 2014.
39. Allen Weisman, Countdown (2013); Steven Emmett, Ten Billion (2013); *The World in 2050*, http://www.msn/en-us/news/technology (Jan. 5, 2015).
40. Carter Dillard, *Becoming Us*, 45 ELR 10398, 10401 (May 2015).
41. Shi-Ling Hsu, *What Is a Tragedy of the Commons? Overfishing and the Campaign Spending Problem*, 69 Albany L. Rev. 75 (2005).
42. Carter Dillard, *The Primary Right*, 29 Pace Envtl. L. Rev. 860 (2012); Richard Hiskes, The Human Right to a Green Future (2009); James Nickel, *The Human Right to a Safe Environment*, 18 Yale J. Int'l L. 281 (2003); A. Dan Tarlock, *A Wilderness Bill of Rights, by William O. Douglas*, 19 Stan. L. Rev. 895 (1967).
43. Jan Laitos, The Right of Nonuse (2012); Cormac Cullinan, *Do Humans Have Standing to Deny Tree Rights?*, 11 Barry L. Rev. 11 (2008).
44. Jan Narveson, A Question of Trust (2002); Gunnar Beck, *Immanuel Kant's Theory of Rights*, 19 Ratio Juris 371 (Dec. 2006); W. Hohfeld, Fundamental Legal Conceptions (1919).
45. Sunstein, *supra* note 9 at 19.
46. Levin, *supra* note 3.

to sustain human life, then any proposed policy initiative should, at a minimum, align with accurate and realistic models of humans and Nature. Such a policy would reflect: (1) how Nature, in fact, works; (2) how humans really behave and make decisions; and (3) how humans do relate to, and are connected with, their natural surroundings. A policy that is consistent with these models would confer a specialized right and impose a correlative duty[47]: (1) a positive right would be conferred on an integrated, holistic human/Nature beneficiary; and (2) an affirmative duty would be imposed on humans to fulfill the basic preconditions of human survival and sustainability on this planet.

A. *A Positive Right to Environmental Conditions Where Planetary Boundaries Are Not Exceeded*

Unlike a negative right, which is a claim on others to not interfere with the right, a positive right claims for the right-holder the assistance of others in providing the essential constituents of the right. A positive right provides something to the right-holder, while imposing on others the obligation to help fulfill the conditions to a successful outcome.[48] In the case of humans and Nature, our positive right would be consistent with the prevailing model of "how nature works," in that it would be a right to environmental conditions that permit natural systems to operate so that critical planetary boundaries are respected and not transgressed by human actions. While Earth can and will adapt to any and all anthropocentric activities, humanity needs a safe operating space with respect to Earth systems and associated biophysical thresholds.[49] Humans may survive only when human actions do not cause these planetary boundaries to be crossed.[50]

In order for this right to be consistent with the model of humans in nature set out above, it would have to be held not only by humans, but also by natural resources, natural systems, and environmental goods. Humans and nature exist in an interdependent relationship that is a single system—a social-ecological system (SES). It is this combined human-Nature system (the SES) that should be conferred a right to environmental conditions that restore planetary boundaries.

In his critique of my proposal that a positive right be granted to both humans and Nature within the SES, Dillard correctly points out that, "when unpacked, [this strategy] pushes in the direction of a fundamental human right to the nonhuman world."[51] Dillard properly interprets this SES right as, in effect, anthropomorphizing Nature. By making Nature a right-holder (or more accurately put a co-right-holder, along with humans), the SES right ascribes traits typically reserved for humans alone (the ability to be endowed with legal rights) to a "nonhuman world," thereby elevating Nature's position within a human-centric constructed system of rules.[52] And Dillard is correct that there is a very important "normative premise" that is packed within the SES right, which is that humans and Nature ought not be considered or treated separately, but instead as a unified whole.

Humans would be the only sentient beings that would be aware of this right, and, again, the right would be to a safe operating space for humanity with respect to Earth systems and biophysical subsystems. Nevertheless, humans' asserted exceptionalism and superiority to Nature do not entitle only humans to this right. Rather, both humans and their natural surroundings have a right to a continuation of environmental conditions where Nature may operate as a CAS, and humans may survive to participate as part of the CAS so long as their activities do not cross planetary thresholds.[53] The right may be asserted both by humans and Nature (that is, humans on behalf of Nature). The gardener and the garden both have a right to co-evolve.

Dillard questions why this right is to environmental conditions that only must sustain human survivability, but not to the survivability of Nature. He asks: "Why is the right not to a safe operating space for humans and nonhumans?"[54] The simple answer to this quite understandable question is that human actions that affect natural systems (for example, climate) and environmental goods (such as air and water) are problematic not because Nature is being harmed, but because humans are being, or will be, harmed. Humans are entirely dependent upon Nature and natural systems, not vice versa. Humans exist within larger natural systems that have limits to the anthropocentric activity they can accommodate. When these limits are exceeded, there is irreversible degradation of the life-supporting ecological processes upon which humans depend.[55] But as a CAS, the natural systems and ecological processes that comprise Nature will ultimately adapt and survive; it is we humans who will not be able to adapt if planetary boundaries are breached.[56] Hence, the right is devoted to ensuring the conditions necessary only for human survival.

Is human survival a value that can ground a legal right? Dillard questions whether the survival of one species, *homo sapiens*, is a goal worthy of a right.[57] For those like Dillard who doubt whether a right can be based on human survival, it is best to recall that this new right would be a positive right that claims for the right-holder the aid of others in ensuring that the conditions of the right are met. Since the right is held by humans *and* Nature in an SES,

47. This right and duty would be correlative because the existence of one relationship (the right) implies the existence of the other (the duty).
48. Stanford Ency. Phil., *Rights* 2.1.8 (July 2, 2011), http://plato.stanford.edu/entries/rights; Eugene Volokh, *Positive Rights, the Constitution, and Conservatives and Moderate Libertarians*, The Volokh Conspiracy, May 7, 2013; Beck, *supra* note 44.
49. Steffen, *supra* note 4.
50. Achenbach, *supra* note 30.
51. *See* Dillard *supra* note 40, at 10404.
52. Laitos, *supra* note 43.
53. Sandra Diaz et al., *Biodiversity Regulation of Ecosystem Services* 297-329, *in* Ecosystems and Human Well-Being: Current State and Trends (H. Hassan et al. eds., 2005).
54. *See* Dillard *supra* note 40, at 10404.
55. Folke et al., *Reconnecting*, *supra* note 11.
56. Folke et al., *Adaptive Governance*, *supra* note 13.
57. *See* Dillard, *supra* note 40, at 10404.

humans can seek the assistance of other humans to restore planetary boundaries, while Nature (or rather humans acting on behalf of Nature) can do the same. Although the purpose of the right is anthropocentric, the beneficiary of the right is an SES that is both ecocentric and anthropocentric. And, as discussed below, humans have more than a right to restore a safe operating space for survival; we have a duty to others (and to Nature) to ensure survival.

B. *An Affirmative Duty to Support Natural Systems to Ensure Our Survival*

Positive rights impose affirmative duties.[58] If a social-ecological system, made up of humans and their natural surroundings, has a positive right to be provided environmental conditions where planetary boundaries are not crossed, then the social (human) component of that system has an affirmative duty to provide the SES with those environmental conditions. In other words, respecting the positive right to environmental conditions that remain within planetary boundaries requires more than merely not acting or not interfering; the positive right imposes on humans an obligation to act, to ensure that those Earth system conditions are restored.

This affirmative duty is different from the traditional negative duty to not interfere with Nature, which follows from the historically negative right granted us by most environmental laws that create the right to a justifiable claim on others to *not* do something. Such negative duties are reflected in regulations that mandate "Don't Pollute," or market instruments that proclaim "Don't Exceed the Cap." These traditional policies are designed to halt, or prohibit, human activities that produce negative externalities. An affirmative duty, by contrast, requires us to create positive externalities. Such a duty would be manifested in laws aimed at influencing human behavior to lead individuals to make choices restoring planetary boundaries—for example, laws that urge us to take mass transit or buy fuel-efficient cars, plant trees, recycle, or otherwise engage in green behavior.

An affirmative obligation, instead of a negative duty to not act in particular ways, is consistent with the better and more modern view of how humans behave. Behavioral economics, not standard neoclassical economic theory, offers perhaps a more empirically accurate approach to law and policy questions about humans in the natural environment. Such policies would reflect how humans really behave, and how humans really make choices. People's decisions are determined in large part by emotions, peer influences, altruism, networking and group desires, and other cognitive biases. The resulting environmental policies aligned with cognitive psychological and behavioral economics would not just rely on traditional hard paternalism, such as flat bans or mandates or even market-based instruments like taxes, which presume that humans make decisions primarily based on individual welfare maximization. Instead, environmental policies should reflect soft paternalism, emphasizing the need for affirmative actions that create positive externalities that benefit the family of humans in Nature.[59]

Such a policy, which imposes on humans a positive duty *to* Nature, is not only consistent with how humans really behave, it also reflects the reality that humans are not separate from Nature, but are a part of Nature. The gardener tending to a sick garden has an affirmative obligation both to the garden and to the gardener.

VII. Conclusion

To be effective, environmental policies must conform to realistic models of how humans interact with Nature, and how both humans and natural systems behave. When policies reflect more accurate models, then the resulting environmental policies would not be like those that we see in place now that order humans to not interfere with a static, self-regulating natural world; rather, they would be policies that would seek to persuade humans to take affirmative actions that encourage Nature (and humans in Nature) to restore planetary boundaries within a changing, nonlinear complex adaptive system. We have a much better chance of environmental success when we replace traditional regulatory bans and market-based instruments with policies that give rights to social-ecological systems, and impose on humans affirmative duties to create positive environmental externalities.

58. Richard M. Hare, The Language of Morals (1952).

59. Tversky & Kahneman, *supra* note 6; Sunstein, *supra* note 9; European Comm'n, *supra* note 21 at 3-4.