ENVIRONMENTALISM WITHOUT ROMANCE

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In 1986, James Buchanan won the Nobel Prize in economics for changing the way we think about politics. Buchanan's key insight was that economists should use the same tools and methods to analyze political behavior as they do to understand economic behavior. In other words, he viewed political actors as fundamentally the same as individuals engaging in market activity. Along with his colleague Gordon Tullock, Buchanan pioneered a new subfield of economic analysis known as public choice theory, which, in Buchanan's words, could be summed up simply in just three words: "politics without romance."[1]

Public choice theory, Buchanan argued, "models the realities rather than the romance of political institutions." Individuals are guided by the same motivations in the political process as they are in market settings, and there is no reason to think otherwise. Politicians, bureaucrats, and voters, like people engaging in everyday market exchange, are motivated more by self-interest than by the public interest.

This was a simple insight, but it had important implications for economic and political analysis. There had long been a certain degree of romance in politics, even among scholars. As late as the 1960s, most economists tended to implicitly model political actors as selfless public servants seeking to promote the public good. Politicians promoted the public interest, rather than their own interests. Bureaucrats

sought to advance their agencies' missions, not their own budgets or authority. And voters sought to improve the public good, not to extract political favors for their own personal gain. All the while, the basic rational choice model used to study individuals engaging in markets was widely accepted, but it was strangely missing from most analyses of political or regulatory action.

By the time Buchanan was awarded the Nobel Prize, this idealized view of politics, either implicit or explicit in most traditional economic models, was no longer seen as a valid approach to economic analysis. "The romance is gone," Buchanan said in 1979, "perhaps never to be regained." Today, public choice theory remains an active research program within economics, emphasizing the realities rather than the romance of politics.

Of course, politics is not the only area where we are subject to romantic tendencies. Environmental issues arguably elicit even greater romantic sentiments, particularly as they relate to views about the natural world and our place within it. Notions of a harmony with nature, Edenic visions of pristine nature, and metaphors of "Mother Nature" are prominent in modern discussions of environmental issues. Related ideas of equilibrium or the balance of nature undisturbed by humans have also dominated the science of ecology for much of its history. And many environmental policies are based on the idea of restoring ecosystems to a historic baseline or preserving a perceived balance to nature.

But the romance of environmentalism is slowly fading. Today, there is growing skepticism about these idealized undertones to environmentalism, and in turn, to environmental policy. A new generation of ecologists is challenging the idea of an inherent balance in nature based on the lack of empirical support. Moreover, scientists are concluding that human action cannot readily be separated from the natural world. Research in paleoecology and other fields is revealing that landscapes once thought to be uninfluenced by humans were in fact dramatically affected by indigenous peoples. A new generation of conservationists is rejecting the idea of pristine nature as a worthy or practical conservation goal and adopting a more nuanced vision of the environment that includes human action. Scientists have even proposed the concept of the Anthropocene—the "age of man"—as a new geologic epoch to reflect the magnitude of human influences on the natural world.[2]

These realities imply a very different lens for viewing environmental problems, one that focuses on the realities rather than the romance of the environment. Once we accept that nature is dynamic and profoundly shaped by and connected to human action, we are compelled to see environmental problems in a new light. In this view, environmental problems cannot be thought of as simply the consequence of human

violations on the balance of nature. Ecologists are rejecting the notion of a natural harmony in ecosystems. Nor can environmental problems be solved by simply separating the natural environment from human influences. The notion of the Anthropocene suggests that doing so is impractical or even impossible. Instead, in the age of the Anthropocene, environmental problems become questions of how to resolve competing human demands on an ever-changing natural world.

Most environmental issues are not resolved by science alone. Science does not tell us which ecological states are "right" or which environmental policies are best. And as we are discovering more and more, many ecological concepts are themselves normative; they offer little guidance for resolving conflicts over competing human values and preferences. Thus, most environmental problems are fundamentally questions of human values—of what landscapes we prefer, what elements of the natural world we want to preserve, and what aspects of nature we want, or do not want, around.

This essay makes the case for "environmentalism without romance." It describes why traditional environmental goals of nature in balance or nature undisturbed by human action are mistaken or unrealistic in the age of the Anthropocene. It then attempts to reorient the discussion of environmental issues as one of comparative institutional analysis.

THE BALANCE OF NATURE

The romance of nature has deep historical roots. In particular, the idea of an equilibrium or balance of nature undisturbed by human action has long permeated environmental thought. George Perkins Marsh, one of America's first environmentalists, expressed the prevailing ecological view of the 19th century: "Nature, left undisturbed, so fashions her territory as to give it almost unchanging permanence of form, outline, and proportion, except when shattered by geological convulsions."[3] Even in such rare events as geological convulsions, nature "sets herself at once to repair the superficial damage, and to restore, as nearly as practicable, the former aspect of her dominion." Any changes that do occur are so slow that for all practical purposes nature "may be regarded as constant and immutable." Were it not for man's influence, Marsh writes, nature "would have been constant in type, distribution, and proportion, and the physical geography of the earth would have remained undisturbed for indefinite periods."

The emergence of the science of ecology in the early 20th century rejected this expression of a pure, stable nature undisturbed by humans. Clearly, nature did not always remain the same. It often changed even without human influence. Beavers, for example, altered their landscapes. Temperatures fluctuated, and droughts affected

entire regions. Fires and floods at times dramatically changed the composition of species that could survive in certain areas. The vision of a completely static and balanced nature undisturbed by humans espoused by Marsh was certainly false.

In place of Marsh's vision of unchanging nature, the nascent field of ecology adopted the idea of ecological succession. Led by Danish plant geographer Eugenius Warming, scientists in the early 20th century began to consider how plant communities transitioned from one community to the next, ultimately arriving at a "climax" state. In this view, nature was not necessarily unchanging. It could be affected by drought, fires, and other natural forces, but it would progress through various stages of succession until it reached its final climax formation.[4]

Although Warming's idea of ecological succession implied at least some degree of change, it was ultimately consistent with the notion of the balance of nature. The climax equilibrium was the ultimate equilibrium, perfectly balanced and self-perpetuating unless disturbed.

As the science of ecology progressed, various ecologists expanded upon Warming's ideas of ecological succession. Most notable was Frederic Clements of the University of Nebraska, whose influence on the field of ecology in the early twentieth century is difficult to overstate. According to Oxford ecologist A.G. Tansley, Clements was "by far the greatest individual creator of the modern science of vegetation."[5] Like Warming, Clements thought that ecosystems developed through a predictable succession of stages until they reached a climax state that persists indefinitely unless disturbed. Every given climate had a climax stage or equilibrium. This process of succession could be plotted by scientists for each climatic region, and once the climax stage was attained, it would remain in balance, barring any external disturbance or major climatic shift.

The other influential facet of Clements work was his organismic view of plant formation. He considered the evolution of climax plant formations as a kind of "complex organism" of its own. This "superorganism," he wrote, was "of a higher order than an individual geranium, robin or chimpanzee."[6] To Clements, a plant community was best understood as a collective organism rather than a group of individual species. Entire communities evolved together through stages of succession into a mature adult form determined by conditions of a given climate.

The idea of Clementsian succession had a far-reaching impact on conservation and environmental values in the 20th century. The idea of an equilibrium climax forest left little room for humans other than as a disrupter of nature's final balance.[7] It implied that human action upset a predetermined balance that nature tended toward and a final state that would persist otherwise. "The notion of a superior climax state

gave a scientific validation to the conservationist's case against the machine and the farmer," writes environmental historian Donald Worster. The climax state served as "the yardstick by which man's intrusions into nature could be measured."

Clements' ideas of a climax state and "superorganisms" were quickly challenged by Henry Gleason of the University of Michigan. In 1926, Gleason argued in favor of a more individualistic view of nature.[8] Worster explains that in Gleason's view, plant formations "are mere accidental groupings, each the result of unique circumstances and too loosely related to be likened to an organized being." Each species responds individually to its environmental conditions, and the composition of species on a landscape changes continuously across time and space. Clements' characterization of plant communities as collective superorganisms was thus a useless abstraction that had little to do with the actual workings of ecosystems described in Gleason's "individualistic" conception of nature.

Despite Gleason's individualistic view, a different perspective held sway in the development of modern ecology: Eugene Odum's systems ecology. Considered a pioneer of modern ecosystem ecology, Odum used different language than Clements but "did not depart from Clements' notion that the law of organic nature was to bring order and harmony out of the chaotic materials of existence," writes Worster.[9] Succession, Odum wrote in 1969, is "an orderly process of community development that is reasonably directional and, therefore, predictable" and "culminates in a stabilized ecosystem."[10] In the 1960s and 1970s, systems ecology focused on the energy and nutrient flows through ecosystems, borrowing terms such as "producers" and "consumers" from economics to model inputs and outputs. The systems approach assumed a balancing out between various producers and consumers within ecosystems, adopting a similar equilibrium framework that was simultaneously emerging in economics. Still, Odum's science of ecology largely ignored human actions as relevant considerations other than as disrupters of nature's balance.

In the latter part of the 20th century, however, an internal critique of modern ecology began to emerge. Ecological research increasingly found that the equilibrium models theorized by early 20th-century ecologists did not adequately explain the dynamic interactions that occur within ecosystems. Over the last several decades, some ecologists began to explicitly challenge the notion of a balance of nature that underlies most traditional ecological theories. "Another generation of ecologists," Worster explains, "began to question all the older ideas, theories, and metaphors, even to assert that nature is inherently unsettled."

One question in particular was whether the outcome of ecological succession was a stable equilibrium. A study by William Drury and Ian Nisbet, published in 1973,

revived Gleason's individualistic conception of nature. The authors studied New England's temperate forests and concluded that the process of ecological succession did not lead anywhere in particular and never reached a point of equilibrium. Instead, they observed a "shifting mosaic." Increasingly, ecologists started to reject the assumptions of steady-state equilibriums and began to focus on "disturbances," both natural and man-made, as part of an ever-changing mosaic of environmental conditions.

Ecologist Daniel Botkin makes the most forceful critique of equilibrium ecology. In his influential book, *Discordant Harmonies: A New Ecology for the 21st Century*, Botkin documents how the conventional view of a balance of nature apart from human action is unsupported by evidence. He argues that "nature undisturbed is not constant in form, structure, or proportion, but changes at every scale of time and space."[11] According to Botkin, "the true idea of a harmony of nature… is by its very essence discordant, created from the simultaneous movements of many tones, the combination of many processes flowing at the same time along various scales, leading not to a simple melody but to a symphony at some times harsh and at some times pleasing."[12] This sharply contrasts the Clementsian faith in a predictable endpoint of succession, or what Botkin characterizes as the belief "that nature's melody leads to one final chord that sounds forever."[13]

Consider the wilderness of the Boundary Waters region, for example, located on the Canadian border with Minnesota. Using pollen records deposited in nearby lakes, scientists discovered that since the end of the last ice age, the forest passed from tundra, to spruce, to pine, to birch and alder, and then back to spruce and pine, changing composition every few thousand years. These changes occurred even though the area was largely spared from the impact of humans for much of that time. Likewise, the traditional logistic growth curves and predator-prey models have never been observed to fluctuate as classical equilibrium models would predict. The only instance in which such stability has been observed is in a laboratory using single-celled microbes under controlled conditions.

Botkin argues that nature undisturbed by man is not a "Kodachrome still-life," but rather "a moving picture show," continually changing "at every scale of time and space." Even in relatively wild places such as Yosemite and Yellowstone, ecosystems are constantly in flux. Tree-ring studies suggest that Yellowstone's forest ecosystem lacks a single steady state.[14] Wildlife populations, as well, have historically lacked stability.[15] Whether these dynamic forces are simply the result of ever-changing ecosystem processes or are driven primarily by human influence is often not clear. As scientists are discovering, the natural world cannot easily be separated from human action. The dynamic processes we see in nature are closely linked to ever-changing

human actions, which make up another important piece of the shifting mosaic of human-nature interactions.

THE ANTHROPOCENE

In addition to recognizing that there is no balance of nature, ecologists are increasingly learning that humans have dramatically shaped ecosystems that we once considered pristine or relatively untouched. Indeed, virtually all of the world's landscapes have been shaped in some way by human action. Recent evidence suggests that the American wilderness that Columbus, Lewis and Clark, and other early explorers witnessed had already been dramatically shaped by humans—both by native societies and, later, by the spread of European diseases.[16] In the American West, as Charles Mann explains, it is likely that "a substantial portion of the giant grassland celebrated by cowboys was established and maintained by the people who arrived there first." Ethnologist Dale Lott puts it this way: "When Lewis and Clark headed west from [St. Louis], they were exploring not a wilderness but a vast pasture managed by and for Native Americans."[17]

While there is little debate that humans exert a large influence on the environment, there is debate as to how far back the Anthropocene extends.[18] Today, some archaeologists believe that humans may be responsible for the extinction of large mammals across several continents during the late Pleistocene more than 10,000 years ago.[19] Anthropogenic forces may also have affected the global climate for thousands of years. Carbon dioxide emissions increased significantly around 8,000 years ago as humans began clearing and burning large swaths of forests for agriculture, and methane emissions increased 5,000 years ago as humans began rice farming. William Ruddiman, a paleoclimatologist from the University of Virginia, estimates that these early anthropogenic effects may have been large enough to prevent another ice age from occurring and, in effect, ensured the continued survival of humanity.[20]

Emma Marris succinctly describes the reach of human influence on ecosystems in her influential 2011 book, *Rambunctious Garden*: "Every ecosystem, from the deepest heart of the largest national park to the weeds growing behind the local big-box store, has been touched by humans."[21] Marris argues that conservationists should reject the idea of pristine wilderness and adopt a "more nuanced notion of a global, half-wild rambunctious garden, tended by us."[22] Likewise, in 2012, a group of scientists led by Peter Kareiva, chief scientist for the Nature Conservancy, criticized conservationists for viewing nature apart from people. The scientists urged conservationists to embrace "a new vision of a planet in which nature—forests, wetlands, diverse species, and other ancient ecosystems—exists amid a wide variety of modern, human landscapes."[23]

The Anthropocene idea is challenging entire sub-disciplines in ecology. In a 2012 essay, Kareiva and Michelle Marvier revisit Michael Soulé's foundational 1985 article on conservation biology.[24] Referring to the emerging Anthropocene idea, the authors claim that "we live in a world dominated by humans, and therefore, the scientific underpinnings of conservation must include a consideration of the role of humans." They challenge the very foundation of conservation biology as "concerned solely with the welfare of nonhuman nature" and instead propose a new framework of conservation science as "a discipline that requires the application of both natural and social sciences to the dynamics of coupled human-natural systems."

"In the traditional view of conservation," Kareiva and Marvier write, "people play one of two roles: The vast majority of people are a threat to biodiversity, and a relatively small number—mostly Western biologists—act as biodiversity's protectors and, one hopes, saviors." This is problematic because "conservation is fundamentally an expression of human values." People's actions and values shape and reshape the natural world. Kareiva and Marvier's conception of conservation science seeks "a more integrative approach in which the centrality of humans is recognized in the conservation agenda."

The recognition that "ecological dynamics cannot be separated from human dynamics," as Kareiva and Marvier claim, harkens back to a critique of climax communities made by British ecologist A.G. Tansley. In the 1930s, Tansley put forth the idea of an "anthropogenic" climax: "We cannot confine ourselves to the so-called 'natural' entities and ignore the processes and expressions of vegetation now so abundantly provided to us by the activities of man."[25] Today, the idea of "novel ecosystems" is gaining wider acceptance in ecology. Such ecosystems are the product of human influence. They often result in new combinations of species—both native and nonnative—that form anything but pristine, climax-stage ecosystems.

Novel ecosystems now dominate much of the world's surface, and although earlier generations of ecologists largely ignored them, they are now a focus of much research.[26] Erle Ellis, an ecologist at the University of Maryland in Baltimore, has put forth the idea of "anthromes" or "human biomes" to better understand these anthropogenic landscapes at local and global scales. In contrast to the conventional view among ecologists—a world comprised of natural biomes with occasional human disturbances—anthromes "tell a completely different story, one of 'human systems, with natural ecosystems embedded within them.'"[27]

VALUES, POLICY, AND THE ROLE OF SCIENCE

Although ecologists are discovering that the natural world is characterized by perpetual change and dramatic human influence, environmental policies remain based on assumptions of equilibrium and pristine nature. Historic baselines form the foundation for most of today's environmental statutes and regulations, which are often based on the goal of restoring the environment to an earlier set of desired conditions.[28] The Endangered Species Act, National Environmental Policy Act, and the Wilderness Act, as well as many of the statutes governing federal land management agencies such as the U.S. Forest Service, National Park Service, and Bureau of Land Management, are broadly based on the idea that an arbitrary baseline condition is the proper state to which the environment should be restored.

Equilibrium views are entrenched in the way ecologists think about environmental policy. As Daniel Botkin writes: "If you ask an ecologist if nature never changes, he will almost always say no. But if you ask that same ecologist to design a policy, it is almost always a balance of nature policy." Botkin goes on to say: "Whatever the scientist's knowledge of the dynamic, changing properties of nature, the formal representations of these remove such considerations in most cases… whether or not environmental scientists know about geological time and evolutionary biology, their policies ignore them. It is strange, ironic and contradictory."

If there is no true balance of nature to which we must restore environmental conditions, and if there is no pristine nature untouched by human action, then on what basis should we determine environmental policies? Surely there is a role for science. But to what degree can science determine which course of action is best? And what is the role of human values and preferences in charting the course? These questions are still hotly debated, but there is also a growing recognition that science alone is a lousy guide to environmental policymaking.

Even among scientists, there seems to be an increasing acknowledgment that many key ecological concepts have normative foundations. Take the notion of ecosystem health. As ecologist Robert Lackey describes, there is no universal definition of ecosystem health, yet many environmental policy issues are based on the idea of restoring or improving the health of ecosystems.[29] Ecosystem health, Lackey says, is a "value-based ecological concept" based on subjective assumptions that "masquerade as science." The assumption often embedded within the ecosystem health concept is that undisturbed ecosystems are healthiest. But as Lackey explains, this assumption is normative. Ecosystems have no preferences; people do.

For Lackey, even "naturalness" or historic baselines are value-based: "There is no scientific basis for a specific ecological state to be considered better (more healthy) and thus the benchmark." The process of setting a baseline involves making value judgments about which baseline is best. "Ecosystem health is normative because someone must decide what ecosystem condition or function is good," writes Lackey. "Ecosystems display no preferences about their states; thus benchmarks must come from the individuals doing the evaluation."

Entire ecological sub-disciplines "have strong normative and political green flavor," writes Lackey. They often "embrace normative science postulates as the core of their trade, maintaining that biological diversity is inherently good, extinction of populations and species is inherently bad, ecological complexity is inherently good, evolution is good, and biological diversity has intrinsic value." But in reality, Lackey writes, "most scientific information is of a fine scale and narrowly focused and thus only indirectly relevant to many ecological policy questions." Thus, it is political institutions that must "balance competing values and preferences, a process in which the role of scientific information is limited." On the subject of resolving conflicts over human value and preferences, "science offers no moral or ethical guidance."

What's more, some scientists are questioning whether universal ecological laws exist. In a 2004 *BioScience* article, a group of eleven ecologists noted that "there are few well-documented general ecological principles that can be applied to pressing environmental issues," urging ecologists "to reconsider some of the ways that we view our science."[30] In a recent article, Mark Sagoff questions whether there are general causal forces in ecology.[31] Examining the case of predator-prey interactions, Sagoff demonstrates how external factors vastly overwhelm internal ecosystem dynamics, making general causal forces in ecology undetectable or nonexistent, and practically useless for policymaking. And as yet another example, studies of wolf reintroduction to Yellowstone National Park are raising questions about the predictive power of ecology.[32] The anticipated effects of wolf reintroduction have not played out as expected, and some scientists are now questioning the ecological importance of top predators and the ability of conservationists to justify their protection based on science alone.

Nonetheless, even though top predators like wolves may not exert the type and magnitude of influence on ecosystems that scientists once thought—that is, they may not be the "last missing link" to restore an ecosystem into balance—most conservationists contend that their protection and restoration is worthwhile. "[E]ven if some predators do little but sit at the top of their food pyramids, creaming off a few herbivores, would we really want to live in a world without them?" asked a 2014 *Nature* editorial in

response to the new evidence of wolves' effects, or lack thereof, in Yellowstone.[33] "Answering that question really is easy." The editorial implies that even though there may not be a pure scientific rationale for restoring wolves, there are other reasons to want to keep them around—reasons that are ultimately based on human values and preferences.

CONCLUSION

Once we accept that nature is profoundly shaped by and connected to human action, we begin to consider environmental problems through a different lens. In this view, environmental problems cannot be thought of as simply the consequence of human violations of the balance of nature. Moreover, environmental problems cannot be solved by simply separating natural systems from human influence. As the notion of the Anthropocene suggests, human actions have affected virtually all of the earth's landscapes in one way or another.

Instead, environmental problems become questions of how to resolve competing human demands on an ever-changing natural world. Farmers in the American West want to use stream water for their crops, while anglers and rafters want to leave water in streams for fish habitat and recreation. Maasai herders in Africa want to use landscapes to graze cattle as they have for centuries, while environmentalists and safari guides want to use them for wildlife habitat. Thought of in this way, the central environmental policy question becomes one of comparative institutional analysis. Which institutions best allow humans to resolve their diverse and ever-changing demands on an equally dynamic environment?

Simply put, protecting the environment is not simply a matter of preventing human violations on nature's supposed balance. It involves making trade-offs, in a way that recognizes nature is as ever-changing as the demands humans place on it. How those trade-offs are made in a world of diverse and conflicting human values ought to be the central environmental question in the age of the Anthropocene.

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