

Environmental Degradation

Patrick Manning, *A History of Humanity: The Evolution of the Human System* (Cambridge: Cambridge University Press, 2020), 229–233.

Prologue

Human modification of the natural environment expanded rapidly from 1800 ([Daniel Headrick](#)). Environmental degradation expanded even more rapidly from 1945 ([J. R. McNeill and Peter Engelke](#)) and it threatens a truly disastrous future ([David Wallace-Wells](#)). The threat for the future is all the more serious because it continues to be widely ignored. Corporations and economists ([Thomas Piketty](#)) continue to claim that economic growth has great benefits, ignoring the destruction of nature. This essay outlines the conflict of environmental and economic thinking.

Essay

Environmental historians J. R. McNeill and Peter Engelke emphasize the “Great Acceleration” since 1945, presenting it as two tales of drastic change.¹ First they review the Acceleration itself—the past three generations of growth in population, extraction, production, and waste, greatly exceeding all previous periods of growth. For topic after topic, they show the changes that have taken place in energy use, population size, biological diversity, and climate, in urban and economic life, and in the political contests of the Cold War. Their second story is the end of the Acceleration, to come within about fifty more years—that is, the end of population growth, a sharp decline in consumption of fossil fuels, and perhaps other contractions in the human order. This second story links the end of the Acceleration to continuation of the Anthropocene. That is, the expanded human footprint of the Anthropocene is here to stay. As they argue, the processes set in motion by human agency will continue, whether humans are still here or not.

Of the many dimensions of change in the natural world during the Acceleration, here are four that stand out. Expanded extraction of the lithosphere, which began most obviously with coal mining in the eighteenth century, became fully manifest in the late twentieth century.² Earth-moving techniques developed so that strip mining flattens mountains and destroys regional ecologies in order to reveal coal, copper, or aluminum ores. Dams interrupt most of the great rivers and many smaller rivers, usually with negative results for downstream regions. Concrete, assembled from a mixture of minerals, is poured or set in bricks into buildings and streets that are impenetrable to water, so that rainstorms, growing as temperatures rise, create urban floods. Second, stories of extinction, circulated since the loss of dodos and passenger pigeons, accelerate in all directions. The International Union for Conservation of Nature (IUCN) has conducted systematic analysis especially on mammalian and bird species, showing the extinction of 875 species between 1500 and 2012, with human agency appearing to be increasingly responsible for the extinction. Wild animals now account for a much smaller proportion of living

¹ J. R. McNeill and Peter Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (Cambridge, MA: The Belknap Press of Harvard University Press, 2014).

² Gregory Cushman has emphasized the general implications of the current focus on extraction of the lithosphere. Cushman, Gregory T. Cushman, *Guano and the opening of the Pacific world: a global ecological history* (New York: Cambridge University Press, 2013).

animals than before. Recent attention focuses on the extinction of micro-organisms, notably the bacteria that inhabit the gut of animals and participate in digestion. A third point is the expansion in knowledge of the natural world along with sequestration of that knowledge. James Lovelock's perspective on Gaia changed, as he wrote in 2006 on her "revenge."³ Lovelock began to think of the life course of Gaia—she had existed for something over two billion years but had no more than another billion years of possible existence, because the steady heating of the sun would eventually overcome her processes. In more immediate terms, the melting of polar ice may shift the direction of ocean currents, especially by cutting off the northward Atlantic current that keeps northwestern Europe relatively warm. Yet when James Hansen, a physicist at the U.S. National Aeronautics and Space Administration, expressed alarm in his 2003 report, "Can We Defuse the Global Warming Time Bomb?", he was given specific instructions from U.S. government officials that he was not to speak of climate change.⁴ Further, the commodification of the environment proceeds as water prices rise and of medical value undergo patenting—both of these factors reflect consumer desires as well as corporate profit.

The crisis in socioeconomic inequality tends to get less public attention than the environmental crisis, but when the two are put together, it becomes clear that humanity does indeed face serious difficulties. Thomas Piketty created much interest with his demonstration of the recent rapid growth in inequality, especially in wealthy countries.⁵ Yet while ideological outlooks have shifted from the racial hierarchy of the nineteenth century to an argument that all humans are of inherent value, global society is far from implementing that vision. If all humans are of equal value, why should we leave so much human potential as wasted because of impoverishment? While economists have begun collecting data on inequality, studies of global inequality continue to be conducted at the national level. Aside from economic inequality, we lack data on inequalities in health, social and political standing, that are parallel to our data on environment. Scholars have collected many data on social conditions, and far greater quantities of data await in archives, but there has been little effort to collect, document, integrate, and analyze these data. The contrast is remarkable: while the analysis of global climate has advanced speedily since its 1958 beginning, the analysis of human society is only beginning now. Climatologists have theorized and collected data that show patterns of climate change even millions of years ago. The Intergovernmental Panel on Climate Change, created by the United Nations in 1988, gave its first report in 1990 and continues to update its reports. But for human society, despite the efforts of numerous groups of scholars, we have no broadly supported campaign to collect information on the changes in human society at global and local levels over time, especially patterns of inequality.⁶

How are we to face our global situation? Three overlapping arguments make the case that little can be done: human nature—humans are biologically unchangeable; inertia—human society changes only slowly; and denial—people choose to reject the unpleasant. James Hansen wrote, for instance, of "scientific reticence," the analytical

³ He noted concerns over the "time constant" or the time that it took Gaia to reach equilibrium after changes in its conditions, and the "loop gain" or the specific magnitude of feedback, and whether it had positive or negative effects on Gaia's adjustments. Lovelock, *The Revenge of Gaia*; see also Toby Tyrrell, *On Gaia: A Critical Investigation of the Relationship between Life and Earth* (Princeton: Princeton University Press, 2013), 208–213.

⁴ Hansen, James, *Storms of My Grandchildren: The Truth about the Coming Climate Catastrophe and Our Last Chance to Save Humanity* (London: Bloomsbury, 2009)

⁵ Thomas Piketty, trans. Arthur Goldhammer *Capital in the twenty-first century* (Cambridge, MA: The Belknap Press at Harvard University Press, 2014); Branko Milanovic, *Global inequality: a new approach for the age of globalization* (Cambridge, MA: The Belknap Press at Harvard University Press, 2016);

⁶ Patrick Manning, "Inequality: Historical and Disciplinary Approaches," *American Historical Review* 122 (2017): 1–22. The CHIA project, described in this report, has been able to identify problems in building a global dataset but has not achieved substantial funding. In this regard it is a successor to the work of Jay Forrester. Forrester, *World Dynamics*. See also Patrick Manning, *Big Data in History* (Houndmills, UK: Palgrave Macmillan, 2013).

reluctance to speak forcefully in addressing environmental crisis.⁷ Recent responses to disease, however, show the potential variance in human behavior. Consider the populations that have been facing HIV and Ebola. Denial, reinforcing illness and death, dominated South African HIV for a decade. But in West Africa, where combating Ebola meant giving up the treasured ritual of washing the body of a deceased person before burial, people learned in a hurry and survived.⁸

In a new standard for evaluating climate change, the IPCC publishes comparisons of worldwide temperature “anomalies” or variations each year, giving comparisons to the stable temperatures of the late nineteenth century. Temperatures rose during the twentieth century with a total rise of 1° Celsius before 2020. The IPCC and other groups now estimate that the temperature may rise by a total of 1.5° Celsius as soon as the mid 2030s; a subsequent rise of temperature by 2° is likely to raise sea level by 50 centimeters. Should we then seek to create similar calculations to monitor the impending social disasters? The next great social disasters are likely to be caused *both* by climatic disaster and by disastrous social policy, so that estimating their magnitude would be complex indeed.

In an approach that looks to the future in two ways, David Wallace-Wells has picked up where historians leave off.⁹ First, he provides details on twelve types of frightening changes resulting from rising global temperature: the changes that have already taken place after a temperature increase of 1° Celsius and also the changes that will result once temperature has risen by 2° Celsius—the tipping point for climatic disaster as identified by the IPCC. Second, Wallace-Wells looks for ways to project how humans may respond to continuing environmental change. He begins this task by investigating popular culture: in a world of pervasive popular culture, how are the past and future represented in stories and in entertainment? He finds that stories—in novels, films, and games—center on individual heroes or sometimes on a tight group that can celebrate after victory, so that most humans are left out of the tale in end-of-the-world stories. As Wallace-Wells observes, “collective action, dramatically, is a snore.” Do we leave it to a few experts to solve the problems? Nature has been portrayed as chaotic but, “as climate change expands, it ceases to be a story and becomes a setting.” Who would heroes be? What would they do? In gaming, the game relies on a villain—but who bears moral responsibility for climate change? The shares are disputed: the wealthy, of course, are at fault, but consumers and producers at every level are complicit in environmental degradation. How should we balance their roles? Again, Wallace-Wells notes, “Complicity does not make for good drama.” It seems that popular culture, while valuable because it links so many people, provides us with little guidance in facing our crises. Should humans engage the long-postponed debate on the limits of growth? For while that debate has barely started, in some ways it is already resolved. The McNeill-Engelke team and Wallace-Wells confirm that the Great Acceleration will not continue for long: there can be growth of some sorts for a few decades, but demographic and other sorts of human-focused growth are likely to come to an end.

⁷ James E. Hansen, “Scientific Reticence and Sea level Rise,” *Environmental Research Letters* 2 (May 2007).

⁸ The administration of South African President Thabo Mbeki, 1999 – 2008, denied that HIV virus causes the symptoms of AIDS, with costly results; the widespread recurrence of measles because of refusal to vaccinate is another case of denial. On the more encouraging case of Ebola in Nigeria, see Katherine Harmon Courage, “How Did Nigeria Quash Its Ebola Outbreak So Quickly?” *Scientific American*, 18 October 2014.

⁹ David Wallace-Wells, *The Uninhabitable Earth: Life After Warming* (New York: Tim Duggan Books, 2019).