

The Anthropocene, Climate Change, and the End of Modernity

As the concentration of greenhouse gases has increased in the atmosphere, the world has warmed, biodiversity has decreased, and delicate natural processes have been disrupted. Scientists are now deliberating whether a variety of profound growth related problems have pushed the world into a new geological epoch – the Anthropocene. The shift from the Holocene, a unique climatically stable era during which complex civilizations developed, signals increasingly harsh climatic conditions that may threaten societal stability.

Humanity has long impacted the environment. Since the rise of industrial capitalism, the rates of carbon emissions and natural resource usage have increased. The late twentieth century ushered in an era of neoliberalism and economic globalization, during which growth at any cost policies were established and emission rates began to increase exponentially. Today, as the Anthropocene era progresses, humanity continues to reach new levels of control over the environment, though nature increasingly threatens the existence of its manipulator.

Over the past two centuries, humanity has possibly thrown the world into the “sixth great extinction,” doubled the concentration of carbon dioxide in the atmosphere, disrupted the phosphorus cycle upon which food supplies depend, and stressed or exhausted the supplies of countless other natural resources.¹ These problems disproportionately affect the world’s poorest, hurting minorities, women, and native populations the most. As the consumption rates of the affluent Global North negatively impact those in disparate parts of the world who have contributed the least to global warming, more reflexive and empathetic connections must form to address past wrongs and create a shared future.

To confront these problems, the growth imperative, a central tenant of neoliberal economic theory, must be questioned. A transition must be made to a low-growth society, moving away from

¹ Rockstrom et al., “A Safe Operating Space for Humanity,” *Nature* 461 (2009): 472.

the carbon based economic system that has been the standard since the Industrial Revolution. Such changes entail a shift away from the ideals of modernity, possibly signaling the end of this phenomenon that defines Western society. These early decades of the Anthropocene need not be a harbinger of societal collapse, given that global communities can empathetically and reflexively move to a more sustainable world system.

Modernity and Globalization

Beginning in the sixteenth century, Europe underwent social changes that solidified the continent's position as the world's dominant region. Through the following centuries, the rise of rationalism, improvements in technology, secularization of society, and increases in population, urbanization, and industrialism all contributed to the beginning of the First Industrial Revolution. During this time, Western Europe advanced in its ability to control nature, a dominance condoned by anthropocentric Christian principles. A still extant view of progress was introduced during the Age of Enlightenment – that humans should endeavor to continually improve capital while reinvesting profits, working toward development and growth. This goal did not take into account environmental concerns, apart from worries over localized pollution.²

The long progress of modernity has resulted in the compression of space and time, that is, as modernity and globalization have advanced, the world has become more interconnected and homogeneous.³ Nations have become more economically and politically interdependent, and improvements in transportation and communications have enabled the more efficient movement of people, ideas, goods, and currency. These trends have redefined the roles of nation states and their boundaries, particularly as economic and ecological progressions increasingly occur without regard to borders. In particular, globalization has allowed “environmental impacts to become increasingly

² Peter Christoff and Robyn Eckersley, *Globalization and the Environment* (Lanham: Rowman and Littlefield Publishers, 2013), 40-50.

³ David Harvey, *The Condition of Postmodernity* (Cambridge: Blackwell Publishers, 1990), 240-41.

extended, or ‘stretched,’ over space and time.”⁴ Greenhouse gas emissions permeate the atmosphere instantly, and the effects of each power plant and vehicle are now global. No modern phenomena, including economic crises and migration, have as many uncontrollable and universal effects as greenhouse gas emissions.

While modernization and globalization have pulled individuals and institutions closer together, the individual has increasingly become disconnected and disembedded. Sociologist Anthony Giddens writes on the phenomenon of disembedding, through which social relations that were formerly grounded in local contexts are now restructured over larger tracts of space and time.⁵ As modernity has progressed, relations have become less localized and more globalized. While this means that individuals in one locale are more connected with those on the other side of the world, this change has given rise to a sense of disconnectedness. Giddens states:

The local and the global . . . have become inextricably intertwined. Feelings of close attachment to or identification with places still persist. But these are themselves disembedded: they do not express locally based practices and involvements but are shot through with much more distant influences.⁶

There are advantages to this shift – cultures have become more unified, standards of living have risen, and the diffusion of knowledge has permeated more societies. However, negative externalities, particularly ecological, have occurred due to these changes.

The most intense period of modernization has occurred over the past few decades. Since that time, space-time compression has disrupted political and economic practices, class structures, and cultures.⁷ Economic globalization, in particular, has played a crucial role in these social shifts, while also serving as the primary driver of climate change. Economic globalization refers to the growth of

⁴ Christoff and Eckersley, *Globalization and the Environment*, 7.

⁵ Anthony Giddens, *The Consequences of Modernity* (Stanford: Stanford University Press, 1990), 21.

⁶ *Ibid.*, 108-109.

⁷ Harvey, *The Condition of Postmodernity*, 284.

global markets, as regional and local economies become increasingly interdependent and integrated into the global system. Since the 1980s, economic globalization has become distinctly neoliberal, as emphasis is placed on privatization, deregulation, free trade, and decreases in government influence. Originally put in place during the Reagan and Thatcher administrations, such trends have pulled the world into a laissez-faire mode of economic functioning, leaving only a handful of countries outside of the system.

Since neoliberal globalization began, the rate of ecological degradation and stress on the environment has increased.⁸ Globalization, while creating economic interconnectedness, has given rise to a sense of disconnection and disembeddedness in regard to ecological concerns and consequences. This has created a lack of empathy and reflexivity regarding actions that are ecologically damaging, as relations have been reordered “in ways that . . . separate space and time into realms that are detached from immediate, face-to-face, embodied experience, producing more abstract [relationships].”⁹ Until the second half of the last century, the ability of the individual in a developed nation to affect those in other parts of the world was limited. Today, the culture of the Global North, grounded in consumerism and economic growth, asserts significant negative influences on the Global South.

Climate Change, Environmental Limits, and Economic Factors

The rates of natural resource usage and greenhouse gas emissions markedly increased around the time of the First Industrial Revolution.¹⁰ The rate of coal production rose in England between the sixteenth and nineteenth centuries as the substance was used to power new industrial plants and heat homes. In the mid-nineteenth century, the United States began oil production, using the substance for various manufacturing processes and to power new forms of transportation. Localized pollution

⁸ Christoff and Eckersley, *Globalization and the Environment*, 40-41; Will Steffen et al., “The Anthropocene: From Global Change to Planetary Stewardship,” *Ambio* 40 (2011): 742-745.

⁹ Christoff and Eckersley, *Globalization and the Environment*, 40.

¹⁰ Clive Hamilton, *Earth Masters*, (New Haven: Yale University Press, 2013), 202.

became ubiquitous in urban areas and around factories, though the effects of industrial processes on the global environment were unknown.¹¹

It was not until the second half of the twentieth century that the implications of greenhouse gas emissions were understood well enough to comprehend the potential environmental effects.¹²

While greenhouse gas emission rates increased through the nineteenth and twentieth centuries, it was not until the post World War Two era that emission rates began to increase exponentially. Data indicate that, analyzing total emissions from 1751 to the present, half of global emissions have occurred since the mid-1970s.¹³

Given current levels of consumption and throughput, humans are approaching and passing certain markers that gauge human impact on the environment. In particular, the boundaries for the rate of biodiversity loss, climate change, and the manipulation of the nitrogen and phosphorus cycles have already been crossed. Biodiversity loss is now occurring at a rate that may signal what some scientists are calling the “sixth great extinction,” global temperatures are encouraging harsher weather patterns in the most socially vulnerable areas of the globe, and modern agriculture has irreversibly influenced the nitrogen and phosphorus cycles, using dwindling finite supplies of the later mineral to sustain industrial farming. Other markers will soon be crossed, including ocean acidification, ozone depletion, freshwater use, and arable land use.¹⁴

Public discussion on environmental limits has existed since Thomas Malthus wrote *An Essay on the Principle of Population*. During the mid-twentieth century, publications such as Rachel Carson’s *Silent Spring* and the Club of Rome’s *Limits to Growth* began to question the theory of unbridled growth. However, the notion of limitless natural resources remains a dominant operating principle, reinforced by strong neoliberal tendencies that are evident in academics, government

¹¹ Christoff and Eckersley, *Globalization and the Environment*, 77-82.

¹² *Ibid.*, 89-90.

¹³ Christoff and Eckersley, *Globalization and the Environment*, 86; Steffen et al., “*The Anthropocene*,” 742-745.

¹⁴ Rockstrom et al., “A Safe Operating Space for Humanity,” 472-74”; Will Steffen et al., “Planetary Boundaries: Guiding Human Development on a Changing Planet,” *Science* 347 (2015): 1259855-6.

policies, and national attitudes. Even though awareness of ecological concerns and their interaction with the economy has increased, consumption patterns continue to grow. Additionally, the populations of developing countries have risen significantly over the past few decades, and the per capita consumption rate in many developing areas has also grown. This is concerning, given the positive relationship between environmental impact and aggregate levels of population, affluence, and technology.¹⁵

A central feature of current neoliberal philosophy is the growth imperative. This concept refers to capitalism's inherent need for continual growth and expansion. Static or so-called negative growth rates indicate failure. Criticism of the growth imperative is not new. Karl Marx critiqued the contradictions of capitalist accumulation and Malthus warned of mass famine. Though these theorists were unable to foresee the economic factors that helped to avoid societal collapse, their concerns over economic growth remain valid. Capitalism inherently depends on the expansion of markets and the growth of economies. During the twentieth century, society grew accustomed to historically high growth rates. Often in the range of three to four percent, these growth rates helped to bring about the rise of the middle class, relatively high levels of socioeconomic equality, and increased standards of living in the Global North.¹⁶ While social benefits have come from economic growth, so too has irreversible environmental damage.

The growth rate of the global economy has outstripped the carrying capacity of the environment. While critics may disparage this view as a Malthusian illusion, it is a mathematical fact. Policies and public attitudes fail to acknowledge the true economic and ecological situation that the world faces. Though the fact is often overlooked, the economy is actually an artificial construct that

¹⁵ Christoff and Eckersley, *Globalization and the Environment*, 34-40; Steffen et al., "The Anthropocene," 740-46; Rosa et al., "The Human (Anthropogenic) Driving Forces of Global Climate Change," in *Climate Change and Society*, ed. Riley Dunlap and Robert Brulle (New York: Oxford University Press, 2007), 36-7.

¹⁶ Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge: Harvard University Press, 2014), 271-74.

exists within the finite biosphere.¹⁷ Every economic action is, in some way, linked to and dependent upon the environment. Not only has the quantity of natural resources decreased significantly since the beginning of the industrial era, the effects of consumption and throughput on the planet have become increasingly severe, as negative externalities harm the planet and its population.

The Anthropocene and the ‘End of Modernity’

Debate remains over what year to designate as the beginning of the Anthropocene epoch. Some experts propose 8,000 BCE, when humans first exerted measurable environmental impacts, while others advocate setting it at the middle of the twentieth century, when the first nuclear detonations released radioactive isotopes into the atmosphere. Many argue that the Industrial Revolution is the point when humans began to pollute at truly significant levels.¹⁸ While these dates may serve as convenient markers for the beginning of the Anthropocene epoch, climate scientists Paul Crutzen and Will Steffen note, “The period of the Anthropocene since 1950 stands out as the one in which human activities rapidly changed from merely *influencing* the global environment *in some ways to dominating it in many ways.*”¹⁹ Such anthropogenic changes not only affect the atmosphere but also involve oceans, polar ice caps, and even the lithosphere – the rock that makes up the planet.²⁰

Human domination of the environment has occurred through unequal economic and ecological exchanges. The people least responsible for the changing climate must cope with the worst effects, and they have few resources to manage the burden forced upon them.²¹ Greenhouse gas emissions, the majority of which historically originate in the United States, are causing increasingly volatile weather in areas closer to the equator. Changing weather patterns are evident in the United

¹⁷ Herman Daly, “Economics in a Full World,” *Scientific American* 293 (2005): 100-02.

¹⁸ Paul Crutzen and Will Steffen, “How Long Have We Been in the Anthropocene Era?” *Climate Change*, 61 (2003): 251-53; Hamilton, *Earth Masters*, 202; Adam Vaughan, “Human Impact Has Pushed Earth into the Anthropocene, Scientists Say,” *The Guardian* (London), Jan. 7, 2016.

¹⁹ Crutzen and Steffen, “How Long Have We Been in the Anthropocene Era?,” 235.

²⁰ Hamilton, *Earth Masters*, 198.

²¹ Susan Harlan et al., “Climate Justice and Inequality,” in *Climate Change and Society*, ed. Riley Dunlap and Robert Brulle (New York: Oxford University Press, 2007), 134.

States and other developed nations, though the Global North is largely equipped to adapt to current threats. The Global South, which has historically contributed little to greenhouse gas concentrations, is increasingly facing cyclones, rising sea levels, and droughts.²²

Due to the effects of globalization, the affluent American consumer is intimately linked to Maasai tribespeople, Pakistani villagers, and others who are most vulnerable to the changing climate, though this connection is not readily apparent due to a lack of embedded connection. As personal consumption, particularly in the Global North, causes global effects due to increasing interconnectedness, the disconnectedness and disembeddedness of modernity limits the ability for reflexivity and empathy to form. Without these important capacities of thought and emotion, it is unlikely that consumption patterns will change and vulnerable areas will receive the assistance needed to mitigate and adapt to climate effects.²³

Globally, the discussion over the response to climate change is rife with tension. The Global North has in large part refused to act on climate change, justifying this lack of response by holding that any emission reductions will be negated by rising emission rates from developing nations. The Global South insists on continuing carbon-based development, while calling for the Global North to invest in efforts to mitigate and ameliorate the effects of climate change. Almost all countries want to continue the status quo, eschewing true social or political change in favor of parsing out blame. Many countries feel that acting on climate change will only result in economic disadvantage unless every nation simultaneously reduces emissions.²⁴

This selfish justification rests, in part, on the basis of cost-benefit analysis. This rationally calculative method of examining the environment should, it seems, provide clear-cut guidelines.

²² C.B. Field et al., "Summary for Policymakers," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, (New York: Cambridge University Press, 2014), 15-16.

²³ Christoff and Eckersley, *Globalization and the Environment*, 12-13, 40-41, 161-63.

²⁴ *Ibid.*, 99-120.

However, this philosophy does not properly privilege the health of humans and the biosphere.²⁵

Using utilitarian guidelines, the toxic pollution of an industrial plant in rural China may be justified as long as the happiness of American consumers receiving its products exceeds the externalities forced upon the population around such a plant. Many in the Global North hold that investing in more efficient technology will help to address these concerns. However, as technology becomes “greener” and more efficient, cost-benefit analysis may encourage increased consumption, generally leading to a net gain in emissions and economic throughput, particularly as the global population increases and becomes more affluent.²⁶

This approach is distinctly anthropocentric. It privileges human desires and views natural contributions as free resources. Various proposed frameworks for dealing with climate change, including cap and trade systems, also operate within a cost-benefit framework. Experts have proposed other solutions grounded in rational economic thought, where appropriate prices would be set for natural resources. Under the scheme, the price of resources would reflect their “true” cost. The concept of this scheme is that, when faced with significantly higher costs for goods formerly artificially inexpensive, innovation would occur, leading to far higher levels of efficiency. Again, this scheme would likely result in increased consumption, leading to a net gain in throughput and emissions.²⁷

Scientists agree that little time remains to address climate concerns.²⁸ Solving current problems through economic mechanisms, ignoring their political and moral implications, will likely only result in furthering ecological problems, thus maintaining the socioeconomic status quo that is driving the planet toward disaster. Some increasingly desperate experts and policy makers are

²⁵ Hamilton, *Earth Masters*, 160; Jedediah Purdy, *After Nature: A Politics for the Anthropocene* (Cambridge: Harvard University Press, 2015), 233-39.

²⁶ Purdy, *After Nature*, 259; Steffen et al., “*The Anthropocene*,” 740-46.

²⁷ Purdy, *After Nature*, 260-64; Christoff and Eckersley, *Globalization and the Environment*, 99.

²⁸ Steffen et al., “*The Anthropocene*,” 746-57; C.B. Field et al., “Summary for Policy Makers,” 17-25; Kevin Anderson and Alice Bows, “A New Paradigm for Climate Change,” *Nature Climate Change* 2 (2012): 6-11; Kevin Anderson, “Duality in Climate Science,” *Nature Geoscience* 8 (2015): 899-900.

advocating the manipulation of the atmosphere using geoengineering. While this solution seems appealing, it too would only perpetuate current problems, necessitating unending increases in the level of control exerted over the environment. Because of nature's inherent complexity, it is clear that even the most promising geoengineering schemes would likely result in unintended effects on the natural world, possibly making the problem worse than it currently is.²⁹

Growth, long held as the panacea for economic problems, is causing more harm than good, as environmental costs outweigh societal benefits. Economist Herman Daly and others advocate a proactive shift to a low- or zero-growth economy.³⁰ Regardless of ecological facts, some economists postulate that the high growth rates of the twentieth century are unsustainable, holding that returning to a low growth society is inevitable.³¹ Adjusting to these conditions will require significant societal shifts, whether brought about purposefully as Daly proposes or, in the absence of international political intervention, through less controllable economic trends. In the past, low growth economies have suffered from high levels of inequality and low levels of social mobility. Without regulation, such trends could return, which is particularly alarming given the likely ecological disasters facing the globe.³² Poor individuals in all regions of the world may soon be in an economically worse position to cope with climate trends than they are today.

The emphasis on rationalism, liberty, and individualism, traits essential to the concept of modernity, all serve to worsen global environmental concerns. Progress toward a shared future for the planet cannot be made if these core beliefs continue. While such positions must be acknowledged to ensure the continuation of the democratic process, they can no longer be emphasized at their current level. Instead, society would benefit from focusing on empathy and reflexivity. Such a change, in conjunction with increased global regulation, could facilitate the shift to low-growth or static

²⁹ Anderson, "Duality in Climate Science," 899; Hamilton, *Earth Masters*, 107-137.

³⁰ Daly, "Economics in a Full World," 102-07.

³¹ Piketty, *Capital in the Twenty-First Century*, 93-95.

³² *Ibid.*, 166, 351-58.

economic conditions while ensuring positive societal outcomes. It appears that such changes will occur, either proactively and voluntarily through international cooperation or in response to global crisis, which will likely be both environmental and economic.

Alternatives to this future that manage to protect the human population could involve the rise of authoritarian regimes or at the very least a significant reduction in democratic rights. This type of change necessitates a move away from the ideals of modernity – abandoning rationally based economic growth in favor of a sustainable economy that fits within the confines of the biosphere while eschewing individualism and ethnocentrism in favor of empathetic cooperation. Even with such significant social changes, humanity's involvement in the environment will remain significant. Moving away from modernity will indicate a purposeful shift into the Anthropocene, as humanity accepts its new planetary role in charting a geological epoch. Currently, humanity is at a juncture, with little time remaining, to choose the course of the Anthropocene.

Bibliography

- Anderson, Kevin. "Duality in Climate Science." *Nature Geoscience* 8, no. 12 (2015): 898-900.
- Anderson, Kevin, and Alice Bows. "A New Paradigm for Climate Change." *Nature Clim. Change* 2, no. 9 (09//print 2012): 639-40.
- Christoff, Peter, and Robyn Eckersley. *Globalization and the Environment*. Rowman and Littlefield Publishers: Lanham, MD, 2013.
- Crutzen, Paul J, and Will Steffen. "How Long Have We Been in the Anthropocene Era?". *Climatic Change* 61, no. 3 (2003): 251-57.
- Daly, Herman E. "Economics in a Full World." *Scientific American* 293, no. 3 (2005): 100-07.
- Giddens, Anthony. *The Consequences of Modernity*. Stanford, CA: Stanford University Press, 1990.
- Hamilton, Clive. *Earth Masters*. New Haven, CT: Yale University Press, 2013.
- Harlan, Sharon, David Pellow, J Timmons Roberts, Shannon Elizabeth Bell, William Holt, and Joane Nagel. "Climate Justice and Inequality." In *Climate Change and Society*, edited by Riley Dunlap and Robert Brulle. New York, NY: Oxford University Press, 2015.
- Harvey, David. *The Condition of Postmodernity*. Cambridge, MA: Blackwell Publishers, 1990.
- IPCC. "Summary for Policymakers." In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, *et al.*, 1-32. Cambridge, United Kingdom, and New York, NY, USA: Cambridge University Press, 2014.
- Piketty, Thomas. *Capital in the Twenty-First Century*. Cambridge, MA: Harvard University Press, 2014.

- Purdy, Jedediah. *After Nature: A Politics for the Anthropocene*. Cambridge, MA: Harvard University Press, 2015.
- Rockstrom, Johan, Will Steffen, Kevin Noone, Asa Persson, F. Stuart Chapin, Eric F. Lambin, Timothy M. Lenton, *et al.* "A Safe Operating Space for Humanity." *Nature* 461, no. 7263 (09/24/print 2009): 472-75.
- Rosa, Eugene, Thomas Rudel, Richard York, Andrew Jorgenson, and Thomas Dietz. "The Human (Anthropogenic) Driving Forces of Global Climate Change." In *Climate Change and Society: Sociological Perspectives*, edited by Riley Dunlap and Robert Brulle. New York, NY: Oxford University Press, 2007.
- Steffen, Will, Åsa Persson, Lisa Deutsch, Jan Zalasiewicz, Mark Williams, Katherine Richardson, Carole Crumley, *et al.* "The Anthropocene: From Global Change to Planetary Stewardship." *Ambio* 40, no. 7 (2011): 739-61.
- Steffen, Will, Katherine Richardson, Johan Rockström, Sarah E Cornell, Ingo Fetzer, Elena M Bennett, Reinette Biggs, *et al.* "Planetary Boundaries: Guiding Human Development on a Changing Planet." *Science* 347, no. 6223 (2015): 1259855.
- Vaughan, Adam. "Human Impact Has Pushed Earth into the Anthropocene, Scientists Say." *The Guardian*, 2016.