

ECOMODERNISM AND CLIMATE JUSTICE

Mark Sagoff

In April, 2015, a group of scholars, scientists, activists, and citizens published “An Ecomodernist Manifesto” to offer a vision of environmentalism for the Anthropocene (available online at www.ecomodernism.org). The Manifesto addressed the question how environmentalism as a political and intellectual program could remain viable in a geological era in which human beings, whether they like it or not, are the principal drivers of ecological change.

While the term “Ecomodernism” was coined with a manifesto in 2015, it represented a collection of ideas which had emerged during the previous ten years particularly as a result of conferences, research papers, policy statements, congressional testimony, and the like developed at various think tanks, including the Breakthrough Institute, based in Oakland, California (see thebreakthrough.org). Ecomodernism is a work in progress. I speak only for myself, of course, as an Ecomodernist and not for Ecomodernism generally.

This talk is divided into three parts. First, I introduce Ecomodernism. I discuss the response of Ecomodernism to the traditional or mainstream view among environmentalists that the Anthropocene represents a period in which humanity has transgressed or exceeded limits or boundaries planetary resources place on economic growth. Ecomodernism argues that the debate in the 1960s and 1970s between Malthusians, who predicted the collapse of civilization owing to resource scarcity, and technological optimists, who argued that the limits to knowledge are the only limits to growth, has been decided generally in favor of the latter, since standards of living globally have greatly improved over the last half century, while the dire predictions of the Malthusians, though regularly repeated, have not materialized.

Second, I describe the reason Ecomodernists believe the dire predictions of the Malthusians have not materialized and are unlikely to do so. It is the contention of Ecomodernism that technological advances can “decouple” economic growth from the increased use of natural resources. “Relative decoupling” refers to the tendency of the economy to require fewer additional natural resources per unit of production, so that while demand for a given natural resource, such as cropland, may increase with economic growth, it does so at a slowing rate. “Absolute decoupling” refers to idea that economic production can grow without additional use of natural resources such as forests and cropland because technology will allow much greater production with no more of the resource – in fact, less -- than is currently put to economic use.

Third, I will outline what I believe is the Ecomodernist response to climate change, since this is the principal subject of your seminar.

- 1) Flogging the Malthusian Dead Horse
- 2) Decoupling the economy from natural resources
- 3) What about climate change?

Flogging the Malthusian Horse

For at least 60 years, environmentalists have predicted that the human economy is about to – or already has – outgrown its natural resource base; ecosystems and their services have declined; and thus the collapse of civilization is at hand (Ehrlich and Ehrlich 2013). For decades, prominent environmentalists have issued self-righteous Jeremiads against economic growth, although economic growth greatly benefitted them and people everywhere. Ecomodernists are dismayed at what they see as self-righteousness and an unwillingness to tolerate dissent in the environmental movement. Malthusians sometimes suppose the collapse of natural systems and with it civilization is inevitable, even essential. Indeed, they would not have it any other way.

The Malthusian element in environmentalism has produced what some analysts have called the “environmentalist’s paradox.” According to Raudsepp-Hearne and others (2010), for decades the environmentalist’s expectation has been that the degradation of ecological systems “will be followed by a decline in the provision of ecosystem services, leading to a decline in human well-being.” Yet, The Millennium Ecosystem Assessment, along with every other study, paradoxically has found that human well-being has increased remarkably over the last half-century, in spite of the reported decline or collapse of ecosystems.

This is a real paradox. On the one hand, ecologists and other scientists have for decades declared that ecosystems are in the state of collapse under the “footprint” of the human economy. On the other hand, every study of human welfare shows huge improvements in the same period. The United Nations Development Programme publishes annually a *Human Development Report* and a Human Development Index (HDI) which use statistics, for example, about life expectancy, education, and income, to measure human well-being. According to these measures, across the world, people have generally seen their life prospects vastly improve over the last several decades, at least where there is a semblance of the rule of law. The 2013 *Human Development Report* found that in more than 40 developing countries, which comprise most of the world's population, there were greater HDI gains than had seemed possible in 1990.

As human well-being has improved, ecological systems and the services they provide have deteriorated, according to many environmental scientists. In their view, "humanity’s global civilization ... is threatened with collapse by an array of environmental problems." These include "an accelerating extinction of animal and plant populations and species, which could lead to a loss of ecosystem services essential for human survival; land degradation and land-use change; a pole-to-pole spread of toxic compounds; ocean acidification and eutrophication (dead

zones); worsening of some aspects of the epidemiological environment (factors that make human populations susceptible to infectious diseases); [and] depletion of increasingly scarce resources" (Ehrlich and Ehrlich 2013). From this perspective, "Humanity is threatened with dramatic environmental changes, possibly to an extent that could eliminate modern life as we know it. We are facing ... a rapid depletion of natural capital." The collapse of civilization is at hand.

How can standards of living have become so much better for the majority of the world's people over many decades while ecosystems and the services they provide have become so much worse and natural capital has been depleted? This is the "environmentalist's paradox." The first way out of the paradox argues that if prophecies of doom have not proven true, this only suggest how much worse things will be and soon. We are in the calm before the storm. The second way out of the paradox argues that technological and social innovation have decoupled human well-being from the state of ecosystems and from the abundance of fixed natural resources.

On the first view, civilization is experiencing a global "overshoot" which has allowed the human economy for a limited period to exceed the carrying capacity of the Earth, but the day of reckoning is soon to come. Scholars now use the HANDY computer model to predict the likelihood of "overshoot/collapse." This model projects that in "scenarios most closely reflecting the reality of our world today . . . collapse is difficult to avoid" (Motesharrei et al 2014).

Ecomodernism grew in response to the concern that environmentalism had become bound to these stale Malthusian warnings and pronouncements – bound to the belief planetary limits that restrict the production of food and other goods necessitate poverty, misery, and starvation in the developing world. If all the world consumed as we do, we are told, we would need six, twelve, or eighteen additional planets. Unfortunately environmentalism after the 1970s had become an expression of inhumanity, or so Ecomodernists have argued. The message of

environmentalism seems to have been, "If billions of people must starve, *why not them?*" This has been a brutal mistake because by identifying the limits nature sets as the causes of famine and other misfortunes, environmentalists deflected attention from the true sources of impoverishment, which involve political oppression, the lack of access to trade and information, and in general man's inhumanity to man.

The belief that ecological Armageddon approaches and that we are deluded if we think otherwise cannot be refuted. Leon Festinger and co-authors (2013) explored years ago the ability of faith communities to cling to their certainties in the face of any amount of contrary evidence. Once one posits that humanity depends on nature's stocks and flows, and that these are in fixed supply, catastrophe is not just predicted but it is entailed by these assumptions. The collapse of civilization follows from the assumptions many ecological scientists accept or may be afraid to question; therefore impending catastrophe should be true, must be true, and to think otherwise, they argue, is to question their authority as scientists. It is in that sense that they would not have it any other way.

Decoupling

Ecomodernism can be understood in part as a reaction against the miserablism that characterized environmentalism in the 20th Century. Ecomodernism offers a second way to explain the environmentalist's paradox or the apparent correlation of gains in human well-being with losses to the natural environment. On this view, technology has decoupled the economy from its dependence on ecosystems. To put the same point differently, advances in knowledge and in know-how, or in the application of knowledge to knowledge, continue to cut the causal bonds that may long ago have tied well-being to ecological systems and to fixed natural resources.

The economic theory of Ecomodernism fits within the four corners of the neoclassical macroeconomics developed in the 1960s and 1970s by William Nordhaus, Robert Solow, and James Tobin, among other mainstream economists. Solow (1973) wrote that there have been and "there will be prolonged and substantial reductions in natural-resource requirements per unit of real output." He asked, "Why shouldn't the productivity of most natural resources rise more or less steadily through time, like the productivity of labor?"

Ecomodernists, following mainstream macroeconomists, suggest that ultimately there are only three resources: matter, energy, and ingenuity. Only the third of these is scarce. To the extent there are fixed bio-physical boundaries, they are so theoretical (how much solar radiation hits the earth? How much energy can a uranium or thorium fuel cycle produce?) that these boundaries have become functionally irrelevant.

More important is the primary productivity of the planet. Primary productivity -- the amount of biomass the earth produces -- is not fixed but is often the product of biotechnology. In industrial agriculture, for instance, ecosystem services play some role in maintaining productive soils, pollination in certain crops, pest control, and stable provision of clean water. The vast majority of the value of the output -- food -- is nonetheless accounted for by technology in the form of machines, synthetic fertilizers, conventionally bred or genetically modified crop varieties, pesticides, irrigation systems, and so forth. If anything, agricultural productivity has increased as a result of deliberate simplification and sometimes even the outright elimination of ecosystem influences. Increased food production in the past five decades — even in the past 10,000 years — has come about not as a result of increased provision of ecosystem services but as a result of the increased application of technology. The prospect of “peak cropland” – the idea that production can keep up with population without converting more land to agricultural use –

remains a fair possibility as “precision agriculture” may replace current large-scale methods of planting and harvesting crops (Blomqvist and Douglas 2016).

A video hosted and made available online by Resources for the Future, a Washington-based think tank, provides an entertaining as well as persuasive presentation of the degree to which standards of living have been and may be “decoupled” from resource use, so that the consumption of some resources has declined because demographic trends, including urbanization, and greater technological efficiencies have diminished per capita and even absolute demand on the natural environment, even as economies grow and standards of living improve (RFF 2014). For example, rather than seeing the bottom of the oil barrel, as environmentalists have projected for decades, petroleum has never been more plentiful, while demand for it may have peaked.

Ecomodernism and Climate Change

I hope I have not taken too much time to describe Ecomodernism. I know the seminar is concerned specifically with climate change. So I will conclude by describing my view – only my view – of how Ecomodernism addresses climate change.

The seminar summary asks, “*What role should physical and political feasibility constraints play in determining responses to climate change?*” I believe that Ecomodernism differs from mainstream environmentalism fundamentally in the way it responds to this question. For traditional environmentalists, concerns about justice rather than concerns about physical and political feasibility determine or should determine the societal response to climate change. For Ecomodernists, in contrast, physical and political feasibility are what matter most in the discussion of climate change. Only in that setting, rather than the setting of what is righteous, are options to be evaluated.

Let me touch on political constraints first. Roger Pielke, a professor of environmental studies at the University of Colorado Boulder, in his book *The Climate Fix* (2010) spelled out what I believe is the Ecomodernist position on this matter. He acknowledges what he calls “the iron law of climate policy.” According to this iron law, “economic growth and environmental progress go hand in hand.” Pielke reasons from the “deeply held global and ideological commitment to economic growth” that “when policies focused on economic growth confront policies focused on emissions reductions, it is economic growth that will win out every time.”

Your seminar looks at the relation between economic growth and climate justice. I believe that from the Ecomodernist perspective, this is a relation between the whole and a part. Either climate justice is part of economic growth or it is not a part of anything. This is because of the Iron Law – “when policies focused on economic growth confront policies focused on emissions reductions, it is economic growth that will win out every time.”

The physical constraints are more interesting. I believe it is the view of Ecomodernism that solar and wind are niche sources of energy of limited relevance. Ecomodernism also sees solar and wind as environment disasters, since they require an unprecedented industrial reengineering of the landscape: lining every horizon with forty-story wind turbines, paving deserts with concentrating solar mirrors, and so on. There are also issues with mining and fabricating materials, including rare earths, which go into solar panels.

In England, in December, January and February, the temperature usually varies between 3 and 6°C. The British Isles are notoriously overcast and rainy; there are few sunny days and no sunny nights. Wind farms would have to replace the entire storied English landscape to provide a meaningful energy source even when the wind is blowing fast enough – but not too fast – to turn turbines at the right speed. Where are the British supposed to get fuel so that they do not

freeze in the dark on cold calm winter nights? It is not the niceties of climate justice but the necessities of cold physical reality that dictate meaningful answers to this question.

For example, the seminar rooms and hotel rooms in Manchester have to be heated and illuminated. Where is the energy to come from? There is no solar at night or on cloudy days, which is most of the time. The winds are gentle. How then will there be heat and light? At present, the U.K. produces most of its electricity by burning gas and coal, although a significant amount, more than 20%, comes from nuclear. (Petroleum and natural gas provide heating and transportation when these are not electric.) Under pressure from environmentalists, UK's nuclear power stations will close gradually over the next decade or so, with all but one expected to stop running by 2025. Then virtually all of the energy the British use to heat and illuminate must come from coal and gas when the sun doesn't shine and the wind doesn't blow, which is much or most of the time.

Ecomodernists identify themselves as environmentalists although we are often viewed as pariahs in the environmental movement because we urge more reliance on nuclear energy, noting that improved nuclear technologies are finally becoming available as young people, after a hiatus of two generations, begin to see career opportunities as nuclear engineers. Because wind and solar are intermittent and there is no way to store energy at scale, one has to choose between nuclear and fossil fuel. One has to choose between nuclear and fossil fuel. Ecomodernists believe that climate justice calls for far more reliance on nuclear energy – at least insofar as physical and political feasibility constrains responses to climate change. Many Ecomodernists recognize, however, that if energy could be stored at scale, it could change everything. It is fair to say that the Hobson's choice between nuclear and fossil fuel results from the technological inability to store energy, at least so far. If that changes, everything changes. Let us hope.

References and Suggested Readings

- Blomqvist, L. 2015. "Nature Unbound: Decoupling for Conservation," September 09. Online at <http://thebreakthrough.org/index.php/issues/decoupling/nature-unbound>.
- Blomqvist, L. and David Douglas, 2016. Is Precision Agriculture the Way to Peak Cropland? The Unsung Hero of Agricultural Innovation? The Breakthrough Institute, December 07, 2016. Available online at <http://thebreakthrough.org/index.php/issues/the-future-of-food/is-precision-agriculture-the-way-to-peak-cropland>.
- Cronon, W., 1995, The Trouble with Wilderness or , Getting Back to the Wrong Nature," in W. Cronon, ed., *Uncommon Ground* (New York: Norton), pp. 69-90.
- Ehrlich, P.R. and Ehrlich, A.H. 2013, March. Can a collapse of global civilization be avoided?. In *Proc. R. Soc. B* (Vol. 280, No. 1754, p. 20122845).
- Festinger, Leon, Henry W. Riecken, and Stanley Schachter, 2013. *When prophecy fails*. Start Publishing LLC. [First published in 1956.]
- Kling, Arnold S., and Nick Schulz, 2009. *From poverty to prosperity: Intangible assets, hidden liabilities and the lasting triumph over scarcity*. Encounter Books.
- Marris, E. 2013. *Rambunctious garden: saving nature in a post-wild world*. Bloomsbury Publishing USA.
- Marris, E., 2009. Ecology Without Wilderness: Tending the Global Garden We Call 'Nature.' *The Atlantic Magazine*, Sept.
- Marsh, G. P. *Man and Nature; or Physical Geography as Modified by Human Action* (New York: Scribner, 1864), available at: [http://memory.loc.gov/cgi-bin/query/r?ammem/consrvbib:@FIELD\(NUMBER\(vg07\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/consrvbib:@FIELD(NUMBER(vg07)))
- Motesharrei, S., Rivas, J. and Kalnay, E., 2014. Human and nature dynamics (HANDY): Modeling inequality and use of resources in the collapse or sustainability of societies. *Ecological Economics*, 101, pp.90-102.
- Raudsepp-Hearne, C., Peterson, G.D., Tengö, M., Bennett, E.M., Holland, T., Benessaiah, K., MacDonald, G.K. and Pfeifer, L., 2010. Untangling the environmentalist's paradox: why is human well-being increasing as ecosystem services degrade?. *BioScience*, 60(8), pp.576-589.
- Resources for the Future (RFF), 2014. "Making Nature Useless? Global Resource Trends, Innovation, and Implications for Conservation," <http://www.rff.org/events/event/2014-11/making-nature-useless-global-resource-trends-innovation-and-implications>.

Sen, A. (1984). *Resources, values and development*. Cambridge, MA: Cambridge Harvard University Press.

Solow, R.M., 1973. Is the End of the World at Hand?. *Challenge*, 16(1), pp.39-50.

Wackernagel, M., Schulz, N.B., Deumling, D., Linares, A.C., Jenkins, M., Kapos, V., Monfreda, C., Loh, J., Myers, N., Norgaard, R. and Randers, J., 2002. Tracking the ecological overshoot of the human economy. *Proceedings of the national Academy of Sciences*, 99(14), pp. 9266-9271.