Anthropocene 1

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The International Union of Geological Sciences (IUGS) names the current epoch the Holocene ("entirely recent"), which began about 11,700 years ago, after the last major ice age (Stromberg 2013). Many students of the Earth's climate argue that, in view of human effects on the biosphere, this name is no longer adequate. They suggest that we may have entered a new geological epoch when humanity acts on the planet as a geophysical force: the Anthropocene. The first statement in this regard was made jointly by Paul J. Crutzen, a Nobel Prize–winning chemist from the Max Planck Institute, and Eugene F. Stoermer, a former biologist. In a note published by the International Geosphere-Biosphere Programme (IGBP) in 2000, they argued that the "impact of human activities on earth and atmosphere . . . at all, including global, scales" made it "more than appropriate to emphasize the central role of mankind in geology and ecology" (Crutzen and Stoermer 2000, 17). In an essay in *Nature*, Crutzen restated the argument that "anthropogenic emission of carbon dioxide" could make the global climate "depart significantly from natural behaviour for many millennia to come" and proposed *Anthropocene* to name "the present, in many ways human-dominated, geological epoch" (2002, 23).

However, Crutzen and Stoermer were not the first to make this kind of argument; the "idea of an epoch of the natural history of the Earth, driven by humankind" has a longer history (Steffen et al. 2011, 843–45). The Italian Catholic priest and geologist Antonio Stoppani (1824–1891) wrote of the *anthropozoic era*, a term the American environmentalist George Perkins Marsh borrowed in *Earth as Modified by Human Action* (1874). The term

noosphere (world of thought) became popular in Paris after the Great War, when the Russian geologist Vladimir I. Vernadsky, the French Jesuit and geologist Pierre Teilhard de Chardin, and the mathematician and philosopher Édouard Le Roy jointly coined it in 1924 to mark "the growing role played by mankind's brainpower and technological talents in shaping its own future and environment" (Crutzen and Stoermer 2000, 17; Steffen et al. 2011, 843–46). In *Global Warming* (1992), the journalist Andrew C. Revkin coined *Anthrocene* to describe a "geological age of our own making" (55).

Crutzen and his colleagues date the beginning of the Anthropocene to the "latter part of the eighteenth century," the period to which recent analyses of air trapped in polar ice date the increase in global concentrations of carbon dioxide and methane (Crutzen and Stoermer 2000, 17; Zalasiewicz, Crutzen, and Steffen 2012, 1036). They further identify a "Great Acceleration" after the Second World War, when human population, consumption, and greenhouse gas emissions all exploded (Steffen, Crutzen, and McNeill 2007). Other scholars date the onset of the Anthropocene far earlier, linking it to the invention of agriculture (Ruddiman 2003, 2005, 2013; Ellis 2011).

In 2008, the Stratigraphy Commission of the Geological Society of London created an Anthropocene Working Group, charged with submitting a report to the Subcommission on Quaternary Stratigraphy (a division of the International Commission on Stratigraphy answerable to the International Union of Geological Sciences). A decision is expected in 2016. The geological judgment regarding the Anthropocene will depend on the available stratal data and other kinds of evidence by which geologists read the past (Zalasiewicz et al. 2008; Zalasiewicz et al. 2011). Bryan Lovell, then President of the Geological Society of London, acknowledged that "if, by our own hand, we create our own extreme warming event," then "the time in which we now live would . . . sadly and justly, surely become known as the 'Anthropocene'" (2010, 196).

Although the Anthropocene has yet to attain the official status of a geological epoch, an increasing scientific recognition that anthropogenic emission of greenhouse gases causes planetary climate change has popularized the term among concerned scientists and large sections of the general readership. The notion that humans have become geological agents with the capacity to determine the future of the planet has inspired among scholars in the humanities and the interpretive social sciences numerous vibrant discussions regarding climate injustice, human agency, the (collapsing) distinction between natural and human histories, interspecies and intergenerational ethics, consumerist cultures, Anthropocene affects, the (post)human condition, and the difficulties of representing the Anthropocene in film, art, and performance (see Chakrabarty 2009, 2012; House of World Cultures 2013; T. Morton 2013; Braidotti 2013; Di Leo 2013). These debates will only become more vigorous as the climate CRISIS unfolds.

As a historian of recorded human history, I am interested in the Anthropocene's implications for how we tell the human story. We do not yet know whether the term will be formalized by geologists. Giving an official name to something that has implications for policy is always a political process, and I imagine that the deliberation will be subject to various pressures, formal and informal, scientific and nonscientific. But the anthropogenic

nature of the climate crisis poses interesting challenges to several metanarratives of human history.

First, take the ideas of freedom and justice that saturate most humanist narratives of history. It is deeply ironic that what enabled humans to curtail the use of massive slave or bonded labor in the construction of massive structures such as the pyramids or the Taj Mahal was the discovery of cheap ENERGY in the form of fossil fuels, since profligate use of those fuels is now understood to threaten human futures. Even if we assume that all will be well in the end and that humans will make a smooth transition to renewables, energy is likely to be dearer than at present. So if there is a close connection between consumption-expenditure of energy and the exercise of "freedoms," then our freedoms are going to be more expensive and therefore relatively more scarce. A just distribution of freedom as a scarce resource will demand significant reordering of social hierarchies: society and freedom will need to be reimagined.

Second, consider the arguments that blame the climate crisis on the capitalist mode of production and the unstoppable tendency of capitalism (loosely speaking, for "capitalism" is not the same as "the capitalist mode of production") to accumulate wealth. But if we accept this popular position, we stretch the analytics of "capital" to include information foreign to all received procedures of political-economic analysis. That the logic of capitalist production leads to further ACCUMULATION of capital—and thus to the pursuit of never-ending growth—is not in doubt. But climate change is not a problem that could have been recognized or named within the traditional procedures of political economy. To know what climate change is and to be able to measure it, you need—much more than the theories of the left—geological and paleoclimatological knowledge of this and other planets (for geophysicists study global warming on Earth as a subset of the more general phenomenon of planetary warming seen on other planets as well), the knowledge of climate modelers, instruments to measure trace gases and temperature, including those needed for the extraction of ice core samples, and so on. In other words, while some may see in the dynamics of capitalist production the causes of human-induced climate change, it still remains a problem that—unlike many other crises of capitalist accumulation, including some environmental issues—could not have been predicted from within the frameworks of political-economic analyses alone.

What does that mean? It means that political-economic knowledge about capital alone does not equip one to understand the relationship between the capitalist mode of production and global warming. One has to get beyond the historical life of capital—both backward and forward—to understand that the Earth has seen planetary warming long before there were human beings and that the logic of capitalist accumulation may have interfered with longer-term processes in the history of the earth system and the role of life in that history. In other words, the present crisis reveals the available analytics of capital to be necessary but insufficient. We have to think the history of capital (spanning a few hundred years) and much longer histories (of the earth system and life on it) at the same time.

And, finally, take the question of climate justice. There is surely a case for justice among nations and classes, as only some ten or twelve nations (India and CHINA included) and

about one-fifth of humanity account for most greenhouse gas emissions to date. One could legitimately argue that the crisis must be met in a way that addresses this uneven responsibility. Yet consider the problem we face. The calendar of justice among nations, groups, and individuals is an open one. One does not know when the world will be just. But the Intergovernmental Panel on Climate Change (IPCC) calendar for global action is short and finite. According to the fifth report of the IPCC, our budgeted emission of greenhouse gases should come to an end around 2040 in order to avoid "dangerous" warming beyond a 2°C increase. Now suppose that for an indefinite period into the FUTURE, nations do not find a way to come together and some parties hold out—with good reasons—on issues of justice. What would be the result? Given that climate change, while affecting all, will affect the poor of the world more than the rich, those feeling unjustly treated now will most likely find themselves in a world that is even less just, for climate change will have made their situation worse. This is not an argument for not fighting for justice but instead a suggestion that global unity on fighting climate change actually contributes to justice. Here the expression "the Anthropocene"—in its general sense of "the age of humans"—reflects an interesting problem of nomenclature.

Many are suspicious of the category "humanity" and resist notions of "human-induced" or "anthropogenic" climate change. The term *human*, they argue, hides the different responsibilities the rich and the poor bear for the current crisis. Yet climate change, whoever bears responsibility for it, is everybody's problem, for we all share the planet's climate. "Common but differentiated responsibility" is how the Kyoto Protocol puts it. The word *differentiated* acknowledges that we are not all equally responsible for climate change. The developed countries bear greater historical responsibility. But why is the responsibility also described as "common"? In what way could we all be responsible? Is there any name for this horizon of commonality? Is it *humanity*, that much-despised term, at some other level? Climate change thus raises the issue of a shared or common history, but we do not yet have a name for the subject of that history, a name that would not be mired in the ideological trappings of the term *humanity*.

See also: ACCUMULATION, GUILT, LIMITS, STATISTICS.