

## Review Article

# Climate Change and World History: Plotting the Way Forward

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Until recently world history has been written as if climate was of little importance in shaping specific outcomes. Indeed, even when historians know that climate cycles are important agents in shaping the choices available to human actors, their fear of being labeled “environmentally determinist” has encouraged them to disregard the role of climate. With growing consciousness of global warming, interest in the role of climate in human history is on the rise. I have selected three recent works that attempt to trace connections between the long term global cooling and warming cycles of Earth, and major phases of human development. Only at the global level, I will suggest, can we recognize how modern world has been shaped not only by human action, but also by large scale environmental transformations.

The first book under discussion is Geoffrey Parker’s *Global Crisis: Climate Change, and Catastrophe in the Seventeenth Cen-*

ture explores the impact of the Little Ice Age upon the seventeenth century crisis.<sup>1</sup> It provides much evidence on the importance of climate in shaping the transition of humanity from the late Archaic to the Anthropocene eras. It also allows us to raise a number of interesting questions about the early modern era in the context of world history. Parker's book is the fruit of more than 20 years of work. It was recently featured in a panel at the 2014 annual meetings of the American Historical Association, the results of which will be published in a forthcoming issue of the *Journal of World History*.

Mike Davis's 2001 *Late Victorian Holocausts* seeks to link the late nineteenth century consolidation of colonial empires and their economically disastrous policies with the devastating impact of a major cycle of global warming.<sup>2</sup> It is this coincidence, he argues, and not the alleged passivity of native peoples, that explains collapse of living standards across Afroeurasia and the tropical Americas in this period. Davis argues that the origins of the huge gap in living standards between the West and the Third World are to be sought in the conjuncture of "late Victorian holocausts" and high imperialism.

Finally, we will briefly examine John L. Brooke's 2014 *Climate Change and the Course of Global History*.<sup>3</sup> Based upon the new integrative global science and historians' best practices, Brooke's bold new synthesis shows how far we have gone. In so doing he also provides a glimpse of what a new, more scientifically grounded global history might look like. Over all the three books survey the three major pulsation of globalization (1450-1750, 1750-1914, and 1970-present) and major phases of climate change: the Little Ice Age, the late 19th century ENSO-derived famines and contemporary global warming.

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<sup>1</sup> Geoffrey Parker, *Global Crisis: Climate Change, and Catastrophe in the Seventeenth Century* (New Haven: Yale, 2012).

<sup>2</sup> Mike Davis, *Late Victorian Holocausts: El Niño Famines and the Making of the Third World* (London: Verso, 2001).

<sup>3</sup> John L. Brooke, *Climate Change and the Course of Global History: A Rough Journey* (New York: Cambridge University Press, 2014).

## THE LITTLE ICE AGE AND THE ORIGINS OF THE EARLY MODERN WORLD

If you are not a historian of early modern European history you may be excused for not knowing of the seventeenth century crisis. In the historiographical equivalent of trench warfare, in the 1960s and 1970s, a generation of historians of early modern European faced off in a battle royal over whether there had been a general crisis of the seventeenth century, and if so, what its importance might have been. Books, dissertations, and articles accumulated. Learned journals such as *Past & Present* and *Annales* entered the fray. A special issue of the *Journal of Asian Studies* was commissioned to inquire about the existence of a seventeenth century crisis in early modern South Asia, Southeast Asia and East Asia – to mixed results, alas. For several decades, the debate over the general crisis of the seventeenth century was a major historical growth industry. But then the music changed, and younger generations of historians found other topics to engage their interests.

There were at least two significant strands of research to emerge from the general crisis debate worth mentioning here. First, Marxist historians took the position that whatever its complex origins, the general crisis of the seventeenth century was first and foremost a sign of the impending collapse of feudalism and the emergence of capitalism in western Europe. Over time, different intellectual positions emerged, including those of Immanuel Wallerstein, Robert Brenner, and Barrington Moore, Jr. (among others).<sup>4</sup>

Geoffrey Parker's work initiated what was to become a second important theme to develop from the general crisis debate – the role of what he called (following Michael Roberts) the military revolution. Parker's *The Military Revolution: Military Inno-*

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<sup>4</sup> Immanuel Wallerstein, *The Modern World System*, 3 vols, (New York: Academic Press, 1976); C. H. Aspin and C. H. E. Phipin, eds., *The Brenner Debate Agrarian Class Struggle and Economic Development in Pre-Industrial Europe* (Cambridge: Cambridge University Press, 1976); Barrington Moore, Jr., *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World* (Boston: Beacon Press, 1966).

vation and the Rise of the West argued that the West had “the right stuff” and thus was able to establish colonial empires.<sup>5</sup>

Although historians today may find objectionable the essentialist idea of a supposed “western way of war” with which Parker wrapped his argument, he was already gesturing toward a broader world historical argument – the importance of the diffusion of the military revolution to the rest of the world (the June 2014 issue of *The Journal of World History* is a special issue devoted to exploring the idea of the military revolution as deeply embedded in fundamental world historical processes pre-dating and over-lapping with the spread of European empires).

In *Global Crisis: War, Climate Change, and Catastrophe* Parker deploys a wealth of research to document the environmental context of the general crisis of the seventeenth century. He argues that the seventeenth century was the high point of period of global cooling that stretched from the fourteenth to the eighteenth century. Parker uncovers the environmental factors behind the seventeenth century’s earthshaking events, from the English Civil Wars, to the collapse of the Polish-Lithuanian Commonwealth, to the Manchu conquest of China. Rivers that were usually navigable in winter froze solid, and the long winters were immortalized in the landscape paintings of the Dutch Golden Age. Seventeenth-century accounts of droughts, floods, insect infestations, famines, and epidemics trace the far-reaching effects of climate change. These disasters unfolded again and again across vast regions, contributing to an estimated loss of one-third of the world’s population. The Little Ice Age gave rise to the most significant and prolonged demographic crisis of modern times. (The “Great Dying” of the populations of the Americas and the long term drain of the slave trade on African societies were also devastating).

The first section of Parker’s book refutes the claim that the violence and instability of the seventeenth century were nothing new. Examining each revolutionary state, from China to Stuart England, Parker concludes that “the 1640s saw more rebellions and revolutions than any comparable period in world history.”

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<sup>5</sup> Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West* (Cambridge: Cambridge University Press, 1988).

Ever-sensitive to the charge of “painting bulls’ eyes around bullet holes,” Parker nowhere claims that the collapse or near collapse of an early modern state was the direct result of climate change. He provides something of a mixed verdict on the coping strategies of the eight societies he surveys, rating European ones more highly for reasons that seem at best debatable. In the end, while Parker’s book forcefully presses the importance of the long term global tuning on human history, it is unclear what lessons one is to draw. Lacking both an adequate scientific or world historical framework, it is at best a partial success. I will return to this subject in my conclusion.

#### LATE VICTORIAN HOLOCAUSTS AND THE ECOLOGICAL ORIGINS OF THE THIRD WORLD

The book by Mike Davis, *Late Victorian Holocausts* suggests there is an ecohistorical dimension to the emergence of the modern world. Davis draws our attention to three global subsistence crises of the late nineteenth century: 1876-1879, 1889-1891, and 1896-1902. As he views the statistics, a total of more than 30 to 50 million people perished worldwide in this period as a result of famine and disease. The impact was especially fearful upon India, China, and Brazil. In each case Davis finds that the drought and famines were intensified by prolonged El Niño events. But in each case as well, he argues, the crisis was greatly exacerbated by human action and inaction.

In this fashion he directs our attention to the political economy of famine. He quotes Karl Polanyi who wrote in 1944: “The actual source of the famines in the last fifty years was the free marketing of grain combined with local failure of incomes.”<sup>6</sup>

Davis helps us understand that when journalists said “millions die” they are referring to the consequences of a policy choice made thousands of miles away. The world climate system and the late Victorian world economy combined to drastically al-

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<sup>6</sup> Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 1944), 160. Quoted in Davis, *Late Victorian Holocausts*, 9.

ter the relations between “the West” and the “non-West.” Peasants fought back with the only weapons at hand – the Canudos rebellion in northeast Brazil and the Boxer rebellion in China (are among the examples) – but in the end they were unable to undo the mechanisms of famine.

Davis explains the differences between what the Chinese called “bad climate” and “bad system.” For millennia the Chinese state had stocked reserve supplies of grain in order to mitigate occasional periods of grain short-fall (under the Sung it was called the “ever-normal granery” system). In pre-colonial India, local authorities had their own system of preparation for periodic droughts and short-falls of grain. Because of these historically maintained preventive measures, El Nino-boosted famines did not have the frightful consequences they were to have at the end of the nineteenth century.

In fact, Davis argues that in both China and India prior to the 1870s, food security was not a major issue. That is to say, neither was a land of famine and deprivation. As late as 1800 there were no significant differences of income and wealth between India and China on the one hand, and the West on the other.

Chinese life expectancy (and thus nutrition) was at roughly English levels (and so above Continental ones) even in the late 1700s. (Chinese fertility was actually lower than Europe’s between 1550 and 1850, while its population grew faster; thus mortality must have been low). Moreover, my estimates of “non-essential” consumption comes out surprisingly high. Sugar consumption works out to be between 4.3 and 5.0 pounds per capita ca. 1750 – much higher in some regions – compared with barely 2 pounds per capita for Europe. China circa 1750 seems to have produced 6-8 lbs. Of cotton per capita; its richest area, the Yangzi delta (population roughly 31 million) probably produced between 12 and 15 lbs. per capita. The U. K. even in 1800 produced roughly 13 lbs of cotton, linen and wool cloth combined per resident, and Continental output was probably below China’s.<sup>7</sup>

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<sup>7</sup> Kenneth Pomeranz, “A High Standard of Living and Its Implications,” contribution to “E. H. R. Forum: Re-thinking 18th century China.” Quoted in Davis, *Late Victorian Holo-causts*, 293.

One of the revelations of Davis' book (though long known to specialists) is that the de-industrialization of Asia came about only gradually in the course of the nineteenth century as the Industrial revolution kicked in. The large gap we observe now was not axiomatic at the beginning of the century.

**Table 1.** Shares of World Manufacturing Output, 1750-1900

	(Percent)					
	1750	1800	1830	1860	1880	1900
<b>Europe</b>	23.1	28.0	34.1	53.6	62.0	63.0
<b>UK</b>	1.9	4.3	9.5	19.9	22.9	18.5
<b>Tropics</b>	76.8	71.2	63.3	39.2	23.3	13.4
<b>China</b>	32.8	33.3	29.8	19.7	12.5	6.2
<b>India</b>	24.5	19.7	17.6	8.6	2.8	1.7

Source: Derived from B. R. Tomlinson, "Economics: The Periphery," in Andrew Porter (ed.), *The Oxford History of the British Empire: The Nineteenth Century*, Oxford 1990, p. 69 (Table 3.8).

See Table 1 on "Shares of World Manufacturing Output, 1750-1900" in Davis, p. 294.

As the next table included in Davis makes clear, percentage shares of GDP, China, India and Europe were roughly at parity in 1700 (c. 23% each). Only in the 1890s did Europe gain a decided advantage over India and China.

**Table 2.** Shares of World GDP

	(Percent)			
	1700	1820	1890	1952
<b>China</b>	23.1	32.4	13.2	5.2
<b>India</b>	22.6	15.7	11.0	3.8
<b>Europe</b>	23.3	26.6	40.3	29.7

Source: Angus Maddison, *Chinese Economic Performance in the Long Run*, Paris 1998, p. 40.

What Davis does is to link up the de-industrialization of Asia with the late nineteenth century famines. In a complex argument we cannot reproduce here, he argues for the centrality of the Indian economy to the late Victorian world economy. India

was the hub of a triangular trade also involving Britain and China. The conversion of India and China, and soon thereafter the rest of the world to the Gold Standard further exacerbated an economic crisis already well under way. It was in this conjuncture that the El Nino famines struck. The result was a watershed in human history.

As a consequence of what we may call “Structural Re-Adjustment I” (vs. the SR II we are currently experiencing) a vast unbridgeable gap between the poor countries and the rich. It is the political economy of famine, and not supposed out-of-check population growth that made the Third World.

#### CLIMATE CHANGE AND THE COURSE OF GLOBAL HISTORY

John L. Brooke’s *Climate Change and the Course of Global History* incorporates the new earth system science (ESS) the better to explain the course of human history. The book will no doubt prove controversial, both to scientists who will think he’s made a hash of their specialty, and of historians fearing they will be viewed as historical determinists. This is of course the reason why this book should be read and vigorously debated. Historians of health and medicine no less than of the environment have potentially a lot at stake. So too do world historians, as I suggest in my conclusion.

First, what is Earth system science? ESS is an integrated approach to studying the history of the biosphere that seeks to integrate our understandings of the role of physical, chemical, biological and human interactions that determine the past, present, and future states of the Earth. By treating Earth as an integrated system, it seeks to provide a physical basis for understanding the world in which we live, and in which humankind seeks to achieve sustainability. However, the conception of the Earth as a self-regulating system seems increasingly shaky. We now know that from its origins the Earth has been profoundly affected by the steady filtration of inter-stellar dust, the occurrence (or not) of sun spots, and periodic collide strikes (just to mention the most important exogenous variables). While these interventions



have occurred with varying intensity over time, we have a much better understanding of their roles in the 3.5 billion years of the history of our planet.

Anthropocentric changes have affected Earth's environment increasingly in the last 10,000 years, especially since the origins of the industrial revolution. Their effects upon Earth's atmosphere, seas and land surfaces as a result of greenhouse gas emissions and rapidly declining biological diversity are now evident. They have affected the water cycles and biochemical cycles. Global changes cascade through the Earth System in complex ways, setting off abrupt changes and bridging critical thresholds. Human activities have increasingly been identified as problematic, exacerbating existing systems.

#### ON THE NECESSITY OF THE GLOBAL

World history as an object of research and teaching developed first in the United States, and subsequently in Europe and around the world in the decades that followed World War II. However, while global history thrives in the United States and other countries, under various names it lacks a methodological backbone, despite the form or the density of the weave. This is true of the famous four civilizations model of world history, but also applies to the new comparative international history, or other place holders for a post-national world history: "global," "oceans," and "transnational" among them.

What is needed is a methodological self-conscious integrative history that takes the history of humanity seriously, rather than other, lesser levels of analysis. What would be the contents of a world level history of humanity? If we sought to locate local, national and regional histories in a single global lens, how might we proceed?

Most historians have been trained to keep their eyes focused resolutely on the history of particular people, places, and things. The national history paradigm dictates this procedure. Anything more venturesome may well appear dangerously irresponsible to more seasoned hands. Yet the future that stares us

all in the face requires us to imagine our shared global context because we cannot deny the certainty that global warming will affect us all in our lifetimes. Indeed it is already doing so. In this context, national histories and cultural exceptionalisms are luxury we can no longer afford. For good or ill, we are all irrevocably and permanently mixed up in one another's lives. There is no road back to national histories and exceptionalisms.

In this context, young generation of scholars is vitally important. How they choose to frame the histories they write will influence a generation of students, researchers, and citizens. Many historians of health, medicine, and environment have already acquired elements of a global perspective on human history. Thus for example, some historians of science and medicine are particularly sensitized to the global context of disease pathogens, genetic inheritance, and environmental change. This has prepared young scholars to take the next step: toward an authentically global world history.

When we expand our field of vision from individual societies and civilizations to the world as a whole, we can see changes in fundamental ways. Only at the global level can we recognize how modern world has been shaped not only by human action, but also by large scale environmental transformations. I hope that young scholars will help world history take the next step to a more solidly built global perspective on the course of human history.