

Embracing the Nature of Complex Interactions: Climate Change and Human Survival

Anthony McMichael with Alistair Woodward and Cameron Muir: Climate Change and the Health of Nations: Famines, Fevers, and the Fate of Populations, New York: Oxford University Press

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When considering our failure as a global society to mitigate climate change, it would be a mistake to entirely focus the blame either upon the lack of goodwill of public and political forces to gather knowledge and understanding of natural processes, or upon oligarchies ruthlessly pursuing short-term economic interests and displays of power. The scientific community – including both the natural and social sciences – has taken far too much time to constructively engage with citizens and political parties to recruit them as allies to further their common agendas. Climate change mitigation is not the only issue affected by this failure. The negligent approach taken towards improving and increasing public understanding of the scientific explanations of natural and social processes is levying an enormous cost in areas as diverse as maintaining a public willingness to cooperate with vaccination programs (Goldenberg 2016), reducing antibiotic resistance (Littmann et al. 2017) and wildlife conservation (Donoso 2017). In order to organize collective action and design adequate policies it is crucial first to gain a basic understanding of the complexity involved in the interactions between humans and the natural and social environments. The cost of not doing so is a great injury to social justice, both within and among nations, as the fee for climate change is exacted from some groups at a much higher price than is paid by others, irrespective either of their responsibility for historical contributions to the problem or their ability to pay.

This is exactly where “Climate Change and the Health of Nations: Famines, Fevers, and the Fate of Populations”, written by the late Anthony McMichael and completed by Alistair Woodward and Cameron Muir, is of great value. The authors consistently acknowledge throughout the book that climate change, its history, causes and effects are a complex scientific and social matter. However, they do so not by asking the reader to blindly trust their fields of expertise, but by giving a concise overview of the major components that add up to the considerable risk factors for human survival, as far as can be gleaned from the historical records of previous human civilizations. Our ability to live in harmony is shown to be strongly dependent upon the stability of environmental conditions.

The book starts by providing a thorough introduction to how major natural phenomena and the Earth’s position relative to the sun affect climatic conditions. The explanations of how the climate on Earth has changed throughout history, with or without human intervention, are always accompanied by information on the timeframe through which such changes have occurred. This introduction provides one with a clear impression of the unnatural scope and speed of anthropogenic climate change, unprecedented in the history of complex organisms.

The authors continue with a short exposition of the perils posed for human health by changing environmental conditions. In the form of a second introduction we are provided with a brief overview of the immediate threats to human life. Examples of direct threats are given, including deaths caused by physical complications arising from extreme

heatwaves, such as we have witnessed in recent decades; the failure of crops due to changing climatic conditions; the effects of water scarcity; and indirect damage, such as the stress and depression suffered by climate refugees and the expansion of tropical disease prevalence caused by rising temperatures.

In the main body of the work we encounter a chronological account of how human survival has been affected by changing climatic conditions, in particular regarding variations in the availability of sufficient food and water and the impact of disease outbreaks triggered by migration and the changing environment. The authors have made a highly creditable effort to diversify their case studies across both space and time. We find descriptions of historical events ranging from the origins of agriculture in the eastern Mediterranean 10-14 millennia ago to the contemporary struggles of Australian farmers in New South Wales, and case studies as diverse as Mayan subterranean cave water procurement systems through to the possible role of the expansion of rats' habitats in the great Medieval plagues. The main message we learn from these studies is clear: climate fluctuations can yield disastrous consequences for human welfare and survival, so as a species we should make it a priority to live within safe greenhouse gas emission boundaries.

Another laudable, interesting, and for me enjoyable feature of this book is the interdisciplinary approach the authors use to present their findings. We are presented not only with insights from climate studies, but also from archaeology, history, agriculture, public health and palaeontology. The use of these different perspectives serves a dual function, both illustrating the complex interaction upon which human welfare depends and also clearly demonstrating the ongoing, necessarily imprecise nature of predictions on the future appearance of human civilization as temperatures rise.

Unfortunately, the book concentrates excessively upon societies which have collapsed or suffered major losses. As a reader interested in policy analysis I did feel a lack of information on what rendered more resilient those civilizations which have successfully endured major climatic stresses, or more generally, what strategies were used to resist major environmental changes. This omission can partly be excused by the evidence available. As the authors make clear, it is signs of conflict and vulnerability that tend to be recorded through distinguishable traits, such as mass graves, skulls with weapon injuries or bones bearing signs of growth deficiencies. Yet still, no explanation of this omission is provided.

Lastly, the book highlights an important fact. Climate change raises major problems in terms of justice, both within and among nations, as changes in environmental conditions generally affect some regions more than others, be it negatively or positively for human well-being. The damage inflicted by climate change ranges from depression and anxiety due to actual or even the mere fear of displacement, through heat-waves which lead to death and suffering, water scarcity, crop failure causing hunger and economic hardship, the loss of natural habitats and recreational areas, and to vulnerability to

extreme weather events such as we witness with ever-increasing frequency. The gathering together of a basic understanding of the various complex interactions that lead to the diverse forms that climate change is anticipated to manifest, together with an awareness of the human influence upon climate change, is essential in the designing of policies to address the social justice problems the new environmental conditions will cause. As far as science can tell us now, we are no longer in a position to ponder what to do if we suffer from climate change; we have arrived at the point where we need to design policies that are aligned to the demands of justice to solve the problems when, where and how they occur. As we already know the origin of this global problem, and are growing increasingly aware of the potential magnitude of the burdens to which it will give rise, as a global society we should no longer leave it to luck (or, more accurately, bad luck) to see who responds to the upcoming threats to human life, nor rely on the goodwill of groups and individuals to act to mitigate further climate change, but instead we should be arranging for such decisions to be determined according to principles of social justice.

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