

Book Review

Sarah L. Burch and Sara E. Harris

Understanding Climate Change: Science, Policy, and Practice
Toronto, Canada: University of Toronto Press, 2014

Reviewed by Howard A. Doughty

Scientists trade in probabilities, not proofs. The book is never finally closed. Perhaps the next time I toss a ball in the air, it will *not* fall back to Earth. Chances are it will, of course, and that's why they call it the "law" of gravity. Still, we can never be absolutely sure. Some previously unobserved peculiarity may disrupt a well-known pattern and what may have been considered settled science may have to take a new anomaly into account—sometimes with tremendous consequences. It's happened before, as students of Galileo and Einstein can attest.

We recognize that "paradigm shifts" have taken place. We acknowledge that almost infinitely unlikely, but still theoretically possible events, could one day upend our understanding of anything from astronomy to zoology. This necessary modesty is embraced by scientists, as it is rarely gripped by theologians, geometers or moralists. Indeed, at the external and internal peripheries of our understanding—cosmology and particle physics—astounding new discoveries have almost come to be expected, if not exactly routine. Each new answer seemingly poses further previously imponderable questions. Our uncertainty about the esoteric aspects of material existence, however, need not unduly distract us from having confidence in scientific observations that have been so often and so uniformly confirmed that it would be perverse not to grant them at least provisional assent.

Objects fall to Earth. The Earth travels around the Sun. Bacteria cause infections. Biological evolution is a fact of life. Death comes to us all. And climate change is happening, largely because of the activities of human beings and the cumulative effects of human invention, innovation, pollution and the degradation of the natural environment at least since the advent of the mainly nineteenth-century Industrial Revolution—if not the Neolithic Agricultural Revolution that began the establishment of sedentary farming and animal husbandry as prime human economic activities some 10,000 years ago.

"The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive." – Donald J. Trump, 2012

There are, of course, plenty of people who, because of partisan political ideology, greed for corporate economic gain, or ... worse, defiantly deny the obvious and make claims that the issue of global warming in particular and climate change is general is nothing but a (usually) Chinese and (often) "socialist" hoax (CBC, 2007; Foran, 2016). For those who are prepared to rely on evidence-based public policy, however, the controversy has essentially been put to rest. There is ample research available for experts in the field to construct satisfactory environmental protection policies, energy policies and multiple sets of industrial and commercial regulations to achieve whatever global climate

objectives may make it through the political process domestically and internationally. That remarkably little has been done apart from adding mainly vacuous hot air to an already overheated atmosphere is therefore not the fault of the scientific community, but of the political decision makers and the enormously powerful resource and related industries whose influence on governments runs from the very significant to almost totally dominant.

"Kyoto is essentially a socialist scheme to suck money out of wealth-producing nations," – Stephen J. Harper, 2002

Between well-trained, thoughtful scientists and obstinate climate-change deniers in high office and the “alt-right” media, there rest a sizable number of public servants and a substantially responsible citizenry. They remain concerned with the issue and unintimidated by corporate powers and their political allies. Yet too many lack the competence and the confidence to address environmental problems directly and in depth. They “know” as well as anyone that the environmental threat to the biosphere is as great, or greater than climate change activists contend. They are aware that plant and animal species are undergoing the greatest devastation since the Cretaceous–Tertiary extinction took out 75% of all species, including the dinosaurs about 66 million years ago. They are open to the polemics of ecologically minded public intellectuals, eco-protesters and those portions of the public media who have recognized the hazards of global warming and are effectively sounding a variety of alarms. They may install solar panels and purchase hybrid vehicles. They meticulously sort their garbage and allocate it to proper recycling containers. They do not litter.

They do not, however, have the academic or career experience to make their own way through the arguments in the popular press, let alone the highly technical research, surveys, reports and treatises that could provide sophisticated, detailed and practical advice on how to speak to pertinent issues from wetlands management to wildlife habitat and from urban planning to agricultural development. Even when they become actively involved in grass-roots activism, they stand little chance against high-priced legal and house-bred corporate researchers.

As a simple example, municipal planners and engineers in Toronto, Canada are trying to deal with record rainfalls that cannot be managed by existing stormwater sewers and soil erosion that is harming waterfront reclamation projects ... and Toronto is 76 m above sea level. The vulnerability of coastal municipalities from New York City to Ho Chi Minh City and from Mumbai to Copenhagen is vastly greater (Nicholls, 2011). They are ill-equipped to imagine, much less to inspire, and very much less to achieve the kind of comprehensive transformative change that is the *sine quo non* of reform-minded aspirant stewards of the natural environment.

It is for these people—the informed generalists, the public planners, the well-intentioned engineers of the built environment, the attentive citizens and the wide range of people who are not trained scientists, but who are engaged in a personal or professional capacity with the implications of issues from drought to flooding and from food supplies to waste management that *Understanding Climate Change* is best suited. Burch and Harris’ book is properly considered a “primer” in the very best sense of the term.

Organized in a way that presents the “basics” of the science of climate change and of the socio-political dimensions of climate policy, it succeeds in providing both the natural scientist with a socio-

political framework in which to contextualize competing perspectives on mediating the effects of climate change, and in giving the social policy maker the fundamentals of the natural sciences so that, by itself, it makes scientific approaches comprehensible and affords a guide to scientific literature.

Written in a way that conveys information efficiently and effectively, *Understanding Climate Change* will not be mistaken for a passionate exposition or a manifesto for dramatic action; and that, of course, is a virtue considering the audience it hopes to reach. There is no shortage of volumes that call Earth-lovers and others (often contemptuously dismissed as “tree-huggers” and “social justice warriors”) to action, but go no further than to present ominous warnings without much in the way of a deeper understanding of such matters as solar energy and Earth’s reflectivity and the specifics of anthropogenic interference with natural systems on the one hand and comparative mitigation strategies on the other. Its explanations of systems in general and of the atmosphere, the hydrosphere, the biosphere, the geosphere and the newly recognized anthroposphere in particular are concise and useful in themselves and helpful insofar as they provide keys to further studies according to the focused interests of the reader.

Burch and Harris also provide tools to help us understand at a deeper empirical and analytical level than can usually be found in the popular press what is meant by familiar phrases such as “the greenhouse effect” and “climate models”; they have, after all, been part of our lexicon for decades, but casual participants in climate change debates are seldom able to explain them accurately, coherently, or succinctly.

More and better data about climate change and growing scientific literacy are *insufficient* to motivate behavior change on a grand scale. These are absolutely crucial ingredients, but more is required. – Sarah L. Burch and Sara E. Harris

Although I am disinclined to make pretentious claims for any book, regardless of its merits or the topic it addresses, it is hard to resist the temptation to say that this is a “must-read” for anyone short of a Ph.D. in one of the related social or scientific fields—or, indeed, for anyone with a foot planted on either side of the disciplinary fence to the relative exclusion of the other.

So, I will simply say that anyone who does read this engaging and thorough summary and explanation of the elements of climate-change policy will acquire a sound foundation upon which to build further knowledge and to apply it wisely to still sadly contentious fields of thought and action. If our species is to survive and thrive in something approaching harmony with others that cannot now endure our global vandalism, then we must learn to be and to do better. And, if this grounding is not acquired here, then something very similar must be learned elsewhere, lest the fervour prompted by the widely available jeremiads be wasted and the knowledge obtained elsewhere be squandered.

The state and the fate of our planet are in serious jeopardy. *Understanding Climate Change* can tether the energy of moral outrage to the reality of the global, regional and local political economies. With it, we can embark on a common, redemptive struggle for whatever open options we have not already foreclosed upon ourselves. Burch and Harris close their treatment with a refreshingly optimistic message intended to convince each reader of the importance of the problems we face, the necessity for individual and collective action and the inescapable consequences that await us in the absence of an almost metaphysical rethinking of our place in nature. They are not demagogues nor is

their concluding oratorical flourish enough to engage the willfully ignorant or the chronically myopic. Fortunately, there is enough substance before the style that we should need no further convincing. The authors give us what we need to start to do the job, and we can only do the job ourselves.

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