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# The Anthropology of Climate Change

An integrated critical perspective

Hans A. Baer and Merrill Singer

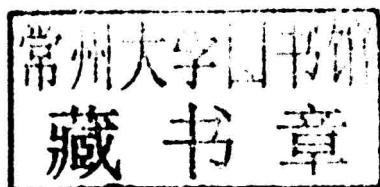
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 **Routledge**  
Taylor & Francis Group  
LONDON AND NEW YORK

**earthscan**  
from Routledge

First published 2014  
by Routledge  
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge  
711 Third Avenue, New York, NY 10017

*Routledge is an imprint of the Taylor & Francis Group, an informa business*

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*British Library Cataloguing in Publication Data*

A catalogue record for this book is available from the British Library

*Library of Congress Cataloging-in-Publication Data*

Baer, Hans A., 1944–

The anthropology of climate change : an integrated critical perspective /

Hans A. Baer and Merrill Singer. – 1st ed.

pages cm. – (Routledge advances in climate change research)

Includes bibliographical references and index.

1. Human beings–Effect of climate on. 2. Climatic changes. I. Title.

GF71.B34 2014

304.2'5–dc23

2013031880

ISBN: 978-0-415-73590-2 (hbk)

ISBN: 978-1-315-81870-2 (ebk)

Typeset in Times New Roman

by Wearsset Ltd, Boldon, Tyne and Wear

# The Anthropology of Climate Change

"This is anthropology at its critical best. Not only does this book provide a comprehensive overview of the anthropology of climate change but also provides a trenchant political framework by which to analyze and respond to 'climate turmoil' thereby providing the reader with a cogent discussion of what it will take to fully address this issue."

*Gregory V. Button, University of Tennessee, USA*

In addressing the urgent questions raised by climate change, this book provides a comprehensive overview of the anthropology of climate change guided by a critical political ecological framework. It argues that anthropologists must significantly expand their focus on climate change and their contributions to responding to climate change as a grave risk to humanity.

The book presents a human socioecological framework for conceptualizing climate change. It examines the emergence and slow maturation of the anthropology of climate change; reviews the historic foundations for this work in the archaeology of climate change; and presents three alternative contemporary theoretical perspectives in the anthropology of climate change. The book synthesizes anthropological work and perspectives on climate change in the form of case studies in various regions of the world revealing the nature of global climate change as constituting multiple and somewhat diverse changes in local settings. It explores the applied anthropology of climate change in terms of the ways anthropologists are contributing to climate policy, working with communities on climate change issues as well as within the climate movement both internationally and nationally.

Finally it provides an overview of what other social sciences are saying about climate change and explores ways that the anthropology of climate change can interface with sociology, political science, and human geography in order to create an integrated social science of climate change.

This book gives researchers and students in Environmental Anthropology, Climate Change, Human Geography, and Sociology a novel framework for understanding climate change that emphasizes human socioecological interactions.

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### **The Anthropology of Climate Change**

An integrated critical perspective

*Hans A. Baer and Merrill Singer*

# Acknowledgments

Our scholarly interest in climate change or global warming began in the hot summer of 2005 while we were working on the first edition of *Introducing Medical Anthropology* (AltaMira Press, 2007). In Chapter 7 of our textbook, on “Health and the Environment,” we included a section on “The Impact of Global Warming on Health.” Indirectly this small effort led to a book titled *Global Warming and the Political Ecology of Health* (Left Coast Press, 2009), our sixth book together. Upon arriving at the University of Melbourne in January 2006 on a continuing contract, Baer quickly touched base with fellow academics as well as students who share an interest in climate change. They include Jon Barnett, Peter Christoff, Liam Cooper, Peter Dwyer, Robyn Eckersley, Peter Ferguson, Jim Falk, Melanie Lowe, Anthony Marcus, Monica Minnegal, Thomas Reuter, and Alan Thorold. Baer joined forces with Verity Burgmann, a political scientist at the University of Melbourne, in the writing of *Climate Politics and the Climate Movement in Australia* (Melbourne University Press, 2012), a book that was launched by Adam Bandt, the first Greens Member of Parliament in the Australian federal House of Representatives at Victorian Trades Hall on September 6, 2012. He also collaborated with anthropologists interested in climate change at various other universities and institutions. These include Marcus Barber (Commonwealth Scientific and Industrial Research Organisation), Megan Jennaway (University of Queensland), and Kay Milton (University of Auckland). Baer also acknowledges a number of researchers and climate activists who have shaped his understanding of climate change and climate politics. They include Ian Angus, Fiona Armstrong, Sue Bolton, Chris Breen Simon Butler, Sally Rose Carbines, Ben Courtice, John Ebel, John Bellamy Foster, James Goodman, David Karoly, Dave Kerin, Jeremy Moss, Judy McVey, Andrew Milner, Jane Morton, Dick Nichols, A. Barrie Pittock, Bronwyn Plarre, Ariel Salleh, David Spratt, Philip Sutton, Ted Trainer, Cam Walker, and Erik Olin Wright. Baer records his appreciation to the University of Melbourne for granting him a six-month study leave in 2009 to conduct research on Australian climate politics and the climate movement.

Merrill Singer would like to acknowledge support from a University of Connecticut Provost’s General Education Course Development Grant that led to the development of the course Global Climate Change and Human Societies and

helped advance his understanding of climate change from an anthropological perspective. Singer would also like to acknowledge colleagues at the University of Connecticut with whom he has had many climate change discussions, including Michael Willig and Peter Gunther.

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# Introduction

This book provides the first comprehensive overview of the anthropology of climate change, an endeavor which has been in the making for the past two decades. It highlights why anthropologists must significantly expand their focus on climate change and their contributions to responding to climate change as a grave risk to humanity. It has become increasingly apparent that climate change constitutes a major threat to human well-being and even survival. The overwhelming majority of climate scientists have come to the conclusion that the warming of the planet and the associated climatic events that the planet has been experiencing are largely anthropogenic or the result of human activities, particularly since the Industrial Revolution. Climate change will have serious political-economic, sociocultural, and health impacts on human societies which have never faced an environmental problem on this scale and complexity in such a compressed time frame before. Numerous natural science disciplines from climatology to oceanography and from geophysics to biogeography have become involved in climate change research and its effects. Climate science maintains that a global average temperature increase of 2°C (3.6°F) constitutes a tipping point with respect to climate change. Some climate scientists place the tipping point lower, at around 1.5°C. Reportedly, 566 billion metric tons of CO<sub>2</sub> emissions have been added to the atmosphere since 1750 as a result of fossil fuel consumption and land cover change due to increased agricultural production and deforestation. Human societies have never faced an environmental problem on the scale of climate change before. While climate scientists have debated for a long time whether recent climate change is primarily a natural phenomenon rather than an anthropogenic one, the vast majority of them now agree that it has been largely created by the emission of various greenhouse gases, particularly carbon dioxide, nitrous oxide, and methane, which have increased from 280 parts per million (ppm) at the time of the Industrial Revolution to 400 ppm in 2013. The Industrial Revolution, an important milestone in the development of global capitalism, was highly dependent on fossil fuels, initially coal and later petroleum and natural gas. Particularly after World War II, global capitalism began to place even more emphasis on the consumption of a seemingly endless array of products, a process that has increasingly diffused from the developed countries to the developing countries. As Renee Hetherington and Robert Reid

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(2010: 269) astutely observe, “Our growing obsession with, and economic dependency on fossil fuels, combined with our penchant for consumerism, has resulted in humans becoming a climate-change mechanism.”

Beyond the natural sciences, over the course of the past decade or so, a gradual interest in climate change has emerged as well in anthropology, to the point, we believe, that an overview of the anthropology of climate change is now warranted. Needless to say, other social scientists, including sociologists, political scientists, human geographers, as well as psychologists and philosophers, have also been giving increasing attention to the impact of climate science on human societies. Together these social and behavior scientists have urged recognition of the human role in contemporary climate change, in terms of socio-economic factors in greenhouse gas production, experiences and human consequences of climate change impacts, and understandings and social responses to a warming planet. The broader lessons of the social science turn in climate change, a move that keeps humans in the discussion of atmospheric and planetary change, also have reached a point of useful assessment and consolidation.

In sum, the combined work of climate, social, and health scientists spanning multiple disciplines has demonstrated that Earth is steadily warming; human activities are the dominant driver of this process; the pace and effects of warming have been increasing; and climate-based changes in the world we inhabit threaten significant if not severe consequences for human well-being on the planet. Yet, despite increasing recognition of the seriousness of these developments on the part of the governments around the world, they, as a whole, have been slow to respond effectively, beyond lofty pronouncements, to this pending threat, as seen in the failure of a series of international climate conferences designed to generate such a response. At the same time, while manufacturing and agro-business producers of greenhouse gases have developed a public discourse of Green Capitalism in recent years, continued emphasis on unceasing growth inherent in this initiative contradicts assertions that the current world economic system can achieve sustainability. Further, complicating the potentially confusing messages about the seriousness of our climate situation, a corporate-supported global warming denial campaign has succeeded in lowering public concern about climate change in the face of ever mounting scientific evidence that anthropogenic climate change is a real and pressing fact.

How seriously should anthropologists take the claims of climate science in light of the fact that mainstream or conventional science has proven to be wrong at various times in the past on various assertions? Peter Doran and Maggie Kendall Zimmerman (2009) conducted a survey in which they found that 97.4 percent of the climatologists and 82 percent of the Earth scientists in their sample maintain that human-related activities are a significant factor in increasing global temperatures. They argue that the “debate on the authenticity of global warming and the role played by human activity is largely nonexistent among those who understand the nuances and scientific bases of long-term climate processes” (Doran and Zimmerman 2009: 23). This unprecedented level of

agreement among natural scientists, supported by a growing body of observations by social scientists on the existing impacts of climate change, suggests that climate change should be taken very seriously indeed, far more seriously than has thus far been the case within and beyond anthropology.

All of these events have produced a significant challenge for anthropological relevance and for Sidney Mintz's (1985: xxviii) vision of crafting an *anthropology of the present*. In what fashion have anthropologists responded to climate change as a powerful force shaping the lives of the people they study? Does climate change constitute another instance of anthropology "missing the revolution" or, unlike other emergencies, such as the AIDS pandemic (to which anthropologists were somewhat slow to react), has anthropology been nimble in realizing the significance of climate change to human communities around the world and acting accordingly? Moreover, what does anthropology have to teach us about climate change and how we might move towards a human course that does not lead to self-destruction? These are questions that will be addressed in this book.

Moreover, it is appropriate to ask: What can a distinctly anthropological approach offer to the understanding of and social response to climate change? Jessica Barnes and colleagues (2013) suggest several general answers that will be explored more fully on the pages to follow: (1) the discipline's long tradition of carrying out in-depth field research gives anthropologists the tools needed to develop insight into the cultural values and political relations that structure the creation and flow of climate-related knowledge; (2) a concern with diversity and with local populations positions anthropologists to witness many on-the-ground adverse consequences of climate change, as well as the wide range of human responses to it that are unfolding around the world; (3) anthropological work on development projects like dam- or road-building efforts provides a foundation for assessing the unforeseen consequences of mitigation efforts; and (4) anthropology's holistic view of society unveils the complex interactions across sectors that it will be necessary to understand in implementing successful public policies concerning climate change.

In addressing these issues and the urgent questions raised by climate change, this book has the following purposes. First, we aim to document and assess the developmental status of the anthropology of climate change. Second, we seek to promote the rapid further development of this field in light of the world-changing implications of climate change. Third, we hope to demonstrate the useful contributions of the critical socioecological framework that guides our assessment. Finally, based on our review, we propose an orientation to a course of action that we believe is needed to avoid calamity.

In order to document and consolidate awareness of initial efforts in climate change anthropology and thereby provide a foundation for the further development of the field, this book provides an overview of the following anthropological approaches to climate change or global warming: (1) precursors to the anthropology of climate change, starting with Margaret Mead's pioneering interest in the topic; (2) archaeological approaches to past and current evidence

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of climate changes and their effects on and responses of human communities; (3) cultural ecological approaches; (4) cultural interpretive or phenomenological approaches; (5) the critical anthropological approaches; and (6) applied anthropological approaches. Over the past several years, we have been developing a critical anthropology of climate change, one that is derived from our work in critical medical anthropology and the relationship between health and the environment. This effort expanded into an understanding of anthropogenic climate change as yet another glaring contradiction of the capitalist world system and the need to transcend it with an alternative world system based upon social equity and justice and environmental sustainability (Baer and Singer 2009).

This book is structured as follows.

Chapter 1 on “Climate turmoil: introducing a socioecological model of human action, environmental impact, and mounting vulnerability” provides a framework for understanding the impacts of anthropogenic climate change induced by various greenhouse gases, particularly carbon dioxide, methane, and nitrous oxide. This framework provides an approach for understanding the impact of climate change in interaction with other anthropogenic ecological crises on human societies, particularly settlement patterns, subsistence and food security, and health. In Chapter 2 on “The emergence and maturation of the anthropology of climate change,” we chronicle the work of various precursors of the anthropology of climate change, including Margaret Mead and archaeologist Brian Fagan. Despite the work of these scholars, anthropologists have been hesitant in their response to climate change although there appears now to be a slow maturation of the anthropology of climate change commencing with the publication of the American Anthropological Association’s Anthropology Newsletter Forum on climate change in December 2007 and the publication of the first two anthropological books on climate change, *Global Warming and the Political Ecology of Health* and *Anthropology and Climate Change*.

Chapter 3 on “The archaeology of climate change” explores the long-term role of climate change in human evolution as has been considered by human paleontologists, archaeologists, and other scholars. This chapter provides an overview of the role of primarily natural climate change (largely independent of human activity) in the biocultural evolution of humans in Africa and their subsequent dispersal to Eurasia, Australia, and the Americas. Climate change appears to have played a prominent role in the formation of various civilizations, the occupation or abandonment of regions over time, and the collapse of other civilizations. Rates of change, it is shown, have become ever more dramatic with the Industrial Revolution and with more recent patterns of globalism and deforestation.

In Chapter 4 on “Theoretical perspectives in the anthropology of climate change,” we provide an overview of three theoretical perspectives—cultural ecology, cultural phenomenology, and critical political ecology—that have emerged in the anthropology of climate change, which seek to grapple with various aspects of the human–climate change interface over the course of the past century or so.

In Chapter 5 on “Case studies in the anthropology of climate change,” we note that while there exist distinct theoretical perspectives employed by anthropologists seeking to comprehend climate change, in reality working on climate change may lead to a blending of these perspectives through eclectic approaches in a particular locale and how a local population perceives and respond to it. Bearing this in mind, this chapter presents several case studies that examine the research of various anthropologists who have worked on climate change issues in regions impacted by climate change or on specific topics related to climate change: The case studies that we present in this chapter are: (1) the Arctic and sub-Arctic region; (2) low-lying islands in the South Pacific; (3) Bangladesh; (4) high mountainous areas—the Andes, Himalayas, and the Alps; (5) dry places—sub-Saharan Africa and Australia; (6) the indigenous U.S. Southwest; and (7) the scientists of climate science and the anti-scientists of climate change.

In Chapter 6 on “Applications of anthropological research on climate change: implications for public policy and social action,” we note that proponents of the various anthropological perspectives tend to acknowledge that their research has an applied component, both for specific groups or societies that constitute the focus of their research and for the future of humanity in general. In this chapter, we review the applied work of anthropologists at four broad and quite distinct levels: (1) teaching about climate change in the anthropology curriculum; (2) climate policy; (3) working with local communities on climate change issues; and (4) working with and within the climate movement, both nationally and internationally. We maintain that anthropologists need to become involved as observers and engaged scholars in applied initiatives seeking to respond to climate change at the local, regional, national, and global levels. This requires that anthropologists be part of larger collective efforts to mitigate and, when necessary, adapt to climate change, whether it is on the part of international climate regimes, national and state or provincial governments, NGOs, or climate action and sustainability groups.

Chapter 7, “What other social scientists are saying about climate change” maintains that climate change, especially anthropogenic climate change, is a topic that is inherently multidisciplinary and interdisciplinary. In this chapter, we provide a broad overview of the contributions that sociologists, political scientists, and human geographers have made to the examination of climate change-related issues and how anthropologists can draw from this research in furthering their own work.

In Chapter 8, “Toward a critical integrated social science of climate change,” we conclude that anthropology focuses upon the holistic study of human societies from their very beginning and into the future and in all parts of the world, and that it has a unique contribution to make to the study of the impact of climate change on human societies and how human activities have contributed to climate change, particularly since the Industrial Revolution. At the same time, it is important that anthropologists studying climate change remain conversant with the work of physical scientists, particularly climate scientists, as well as other social scientists and even scholars in the humanities.

# 1 Climate turmoil

## Introducing a socioecological model of human action, environmental impact, and mounting vulnerability

Human societies began to make the transition from small foraging or hunting-and-gathering bands to larger horticultural village groupings about 10,000 years ago, and the transition to comparatively enormous stratified states about 6,000 years thereafter, starting initially in Mesopotamia and continuing somewhat later in Egypt, the Indus Valley, and China, and even a little later in the Americas and sub-Saharan Africa. These transitions have occurred in the context of what geologists call the Holocene, a geological era generally believed to be an interglacial period characterized by only minor shifts in climate, such as the Medieval Warm Period (AD 950–1250) and the Little Ice Age (AD 1300–1850). Climate change, although primarily driven at the time by natural forces rather than anthropogenic or human-created ones, appears to have played a role in shaping human societies over the centuries, including contributing to the collapse of some ancient civilizations, such as the Classic Maya in the ninth century AD (Kennett *et al.* 2005), and in the settlement or abandonment of various regions over time. In this sense, climate has always been a significant although often disputed factor influencing life on Earth, including the lifeways and behaviors of humans.

Indeed, perspectives on the nature of the human/climate nexus, at times called environmental determinism or climate determinism, have passed through three broad phases. In the first, dating to ancient times, polymath scholar/philosophers such as Ibn Khaldûn, credited by some as the father of the social sciences and historiography, explained the cross-cultural differences of which he was aware in terms of the determinant influence of the local physical environment, including habitat and climate (Gates 1967). By the second decade of the twentieth century, however, the power of environmental determinism as an intellectual current was in decline. In anthropology, a field that has long grappled with the notion that each habitat presses for the development of a distinctive mode of cultural life or adaptive social pattern, researchers were led away from determinist thinking by the detailed and particularist ethnographic focus on individual cases originated by Franz Boas and Bronislaw Malinowski. At the heart of this turn was the realization that two groups in reasonably similar environments might make differing and unique adaptations leading to differing cultural outcomes, or, conversely, that similar cultural traits might develop under differing climatic and environmental conditions. Consequently, as Dean (2000: 89) indicates, “[s]cientific

perspectives on the relationship of human societies to the natural environment have ranged from doctrinaire environmental determinism to the contention that environment has minimal impact on human societies.” Beginning in the 1950s, with the insightful work of Julian Steward (1955), a new ecological perspective emerged in anthropology that once again began to give serious consideration to the role of the environment as an important influence—although certainly not a narrow and overwhelming determinant one—on human ways of life. In this new approach to the human relationship to the rest of nature, environmental determinism is tempered by an expanded awareness of the extensive impact of human action on other domains of the world. More recently, within the shadow of Steward, in what has come to be called environmental anthropology, “the [applied] study of the human-environmental relationship [has been] driven largely by environmental concern” about climate change, natural disasters, loss of biological diversity and related issues of sustainability (Shoreman-Ouimet and Kopnina 2011: 1). This same concern, strongly propelled by the seeking of answers to fundamental questions about “who owns the Earth [and who] owns the global atmosphere being polluted by the heat-trapping gases” (Chomsky 2013) and what we are to do meaningfully in a time of consequential global warming, motivates this volume. In answering these questions from the perspective of anthropology, with its core embrace of the rights and dignity of all people on the planet and with its recognition of the significance of human/environment interaction, we arrive at similar conclusions to those of Foster *et al.* (2010: 107): that “nothing less than an ecological revolution—a fundamental reordering of relations of production and reproduction to generate a more sustainable society—is required to prevent a planetary disaster.”

Increasingly, anthropologists have turned their lenses to the issue of contemporary climate change, seeking to ground it both in an understanding of the human/climate interface through time and within the contexts of living communities encountering and responding both to marked changes in their local environments and to the science of climate change and denials of the validity of such science. As the size of this literature has grown at an increasing pace, there is value in consolidating this body of work, assessing its primary features and scope, noting gaps in efforts to date, suggesting a model for thinking about climate change anthropologically, and calling attention to a pathway of needed praxis and change in light of the exigent nature of our assessment.

It is evident to researchers of various disciplines that climate on Earth has never been static. Sixty-five million years ago, for example, when dinosaurs were a dominant life form, much of the planet was tropical, with palm trees growing in what we now call Antarctica and crocodiles living in Greenland. In the contemporary period, however, of far greater importance than the natural sources (e.g., volcanoes, solar variation) that were the primary engines of climate change in the past are those driven by human activities and technologies. For the past 10,000 years, Earth’s overall temperature has been “remarkably mild and stable—nicknamed a ‘sweet spot’ by climate scientist Robert Correll—not increasing or decreasing more than 0.5°C” (Aitken 2010: 129). Human impact,



however, has destabilized Earth's climate in ways never before believed to be possible. Driven by a global dependence on fossil fuels, the level of carbon dioxide in the atmosphere has now reached 400 parts per million, the highest level since the Pleistocene, and it continues to rise, as seen in the record increase of 1.4 percent to 31.6 gigatons of CO<sub>2</sub> emissions in 2012. As a result, we now face a planetary emergency that demands a sea change in our understandings and actions.

### **Conceptualizing anthropogenic climate change**

At first blush, talking about a distinct anthropological take on climate change, which entails a global set of physical processes, may appear out of character or at least illusive for a social science field like anthropology that made its name based on intensely focused small-scale studies of particular peoples living out varying cultural lives in local settings around the planet. In fact, in the latter part of the twentieth century and continuing since, anthropology has undergone dramatic change as the forces of neoliberal globalization and development have reconfigured human life everywhere. While often carried out, at least in part, in provincial settings, anthropological research today focuses on the consequential engagement of local worlds with global processes and structures. As Eriksen (2001: 2) stresses,

It has been common to regard its traditional focus on small-scale non-industrial societies as a distinguishing feature of anthropology.... However, because of changes in the world and in the discipline itself, this is no longer an accurate description.

Local worlds, we realize, are not made only on the ground, but are reflections of historic and ongoing connections and impacts that occur across levels and as a result of cross-cutting processes like power or dynamic global impacts such as climate change (Wolf 1982). Today, anthropological research is pitched at various scales and especially at points of intersection and flow between the local and the global or among levels in between. It is in this context that an anthropology of climate change has come into being stressing “the importance of inserting anthropological arguments into debates on climate change” (Hirsch *et al.* 2011: 267).

### **Our model**

This chapter introduces our human “climate/environment/society” or socioecological framework comprised of three linked concepts—“anthropogenic climate turmoil,” “ecocrisis or pluralea interactions,” and “environmental unpredictability” and the associated concepts of “perceived precarity” and “vulnerability”—that guides our discussion of the human/climate change interface in this volume, as illustrated in Figure 1.1.