

Chapter 2

CLIMATE AND WEATHER DISCOURSE IN ANTHROPOLOGY: FROM DETERMINISM TO UNCERTAIN FUTURES

NICOLE PETERSON AND KENNETH BROAD

INTRODUCTION

Global climate change has become an increasingly visible topic in public culture over the past few decades, and will likely dominate environmental, political, and social agendas for some time to come. Only in the last few years has a critical mass of anthropologists begun to focus on the social practices and cultural implications surrounding the production of climate change models and scenarios, the communication and interpretation of climate information, climate change causes and solutions, and the implications of its impacts for people worldwide.

The topic of climate has a long history in the social sciences. As far back as Hippocrates, scholars theorized about how climate shapes society, assessing how climate differences, extremes, and seasonal patterns affected human activity (Harris 1968, 41–42). Focus on these topics often led to ethically dubious and racist theories like climatic (or geographic) determinism, in which climate led to certain cultural or social behaviors.

A focus on climate constraints and human responses, or “adaptation,” is central to today’s multidisciplinary academic discourse, and three major simplifications of the past are being acknowledged: climate is only one of several drivers affecting human behavior, climate on most timescales is not static, and we are capable of influencing and changing global climate. Acknowledging these deviations from geographic determinism opens territory for anthropological exploration.

With a broad acceptance that, to differing degrees, climate organizes and shapes central aspects of our lives, we are now organizing our understanding of climate in epistemologically complex ways: from temporally and spatially explicit predictions of seasonal climate characteristics (e.g., rain, temperature, fires, freezes, pest outbreaks, etc.) to the anthropogenic influence of post-industrial greenhouse gases, with global projections reaching decades into the future. Subsequently, in contrast to the subject of “the weather” that was long considered in some Western cultures to be a politically and emotionally

neutral (if not boring and unsophisticated) topic for the “insufficiently prepared conversationalist” (Strauss and Orlove 2003, 29), climate as an issue is playing an increasing role in reinforcing and shifting ideological positions (Leiserowitz 2006).

The main ethical motivation and financial justification for this globalized research effort in climate is to allow better understanding and prediction of our climate in order to manage it in better ways for “societal benefit” (Pielke Jr. and Glantz 1995). Herein lies the social science community’s *raison d’être* to turn its focus to the issue of climate. Assuming that the anthropological community fully recognizes that climate is intrinsic to both nature and society,¹ this chapter highlights some of the directions that contemporary anthropological approaches have gone and can go in critically engaging with climate discourses. In the process of consciously (re)constructing some of the narratives surrounding climate in anthropology, this review aims to provide a context for current climate anthropology (Nelson and Finan 2000), both represented by the contents of this volume and other sources.

Anthropologists often use the term *narrative* to refer to stories and myths shared by field consultants but also to describe how academic research is itself a form of storytelling or mythmaking. Natural and social science research ideas and agendas, including those in anthropology, are directed in part by past studies and narratives about what we do and how we do it (Kuhn 1962). These narratives can suggest and preclude ideas and norms, and thus actions or perspectives. In recognizing and acknowledging the power of these imagined trajectories, we can more easily see alternatives that might aid us in our work of understanding how the world works.

Narrating anthropology’s past produces a series of themes and perspectives that appear, shift, and sometimes disappear. Anthropologists have sometimes taken stock of where the field as a whole has been and have shown how it has reflected the biases, interests, and directions of previous anthropological studies (i.e. Harris 1968; Marcus and Fischer 1986; Ortner 1993, 2006). Anthropological research on climate change similarly reflects the biases, interests, and directions of previous climate-related studies (i.e., weather and seasonal climate variability), as well as how social scientists have addressed general environment-human and environment-society interactions (as reviewed by Orlove 1980; Vayda and McCay 1975). While we touch upon some of the same trends and issues as these authors, our review focuses specifically on climate and weather.

We have organized this chapter to reflect a shift in theoretical and practical interests for anthropologists concerned with climate. We suggest that current discussions about climate and weather differ in two ways from earlier interests in local weather, seasonal variations, extreme events, and cosmologies. Attention is now focused on both the global nature of anthropogenic climate change and the production and distribution of forms of scientific knowledge. Accordingly, this current focus deals explicitly with group perceptions and behavior under conditions of uncertainty.

CLIMATE AS LOCAL CONTEXT AND DETERMINANT

It is common for sociocultural anthropologists to include in their case studies details about the climate of their study area, including average rainfall, seasonal variation, and weather anomalies such as droughts, hurricanes, or floods. Such descriptions often treated climate and weather as a static quality that framed the study. Anthropologists rarely integrated the physical characteristics of the location, including climate, into the explicit analysis of other cultural elements such as political organization, perceptions, or identity issues.

Early anthropologists were not just content with cataloguing the variety of human lives around the world; they were also interested in the drivers of societal and cultural variation, one of which was the environment (Orlove 1980). However, geographical (or environmental) determinism had dominated pre-Enlightenment intellectual thought, beginning with Hippocrates and Aristotle and lasting well into the twentieth century (Harris 1968; Moran 1982). In fact, writers drawing on the early Greek philosophers, most prominently Ibn Khaldun, Montesquieu, and Comte, considered climate an important factor for health, physical and personality characteristics, and sociopolitical organization (Boia 2005; Harrison 1996; Huntington 1912). Not surprisingly, the home location of the scholar was claimed to have the optimal climate for supporting “normal” civilization; as one moves from north and south, climate becomes harsher (i.e., less hospitable to European clothing, housing, and agricultural customs of the time), and (in modern parlance) “otherness” increases. This division of the world into north and south still conceptually symbolizes relations of power, domination, and control by some states/individuals over others, as analyzed in many of the social sciences.

Nineteenth-century anthropologists readily explained cultural or physiological differences based on climate variation: why did one group have darker skin, longer noses, low population density, co-sleeping, or matrilineal residence, while other groups didn't? Average temperatures, seasonal variation, and other climate-related variables were used as explanatory factors for both physical and cultural variation (Brookfield 1964; Whiting 1964). For instance, Wissler (1926) argued that the overlap of climatic and cultural zones in North American native communities was based in an ecological relationship between the two. Unfortunately, environmental determinism arguments were often used to justify racism and imperialism (Frenkel 1992). This, and the rise of Boasian cultural anthropology, led to its gradual disappearance from the discipline.

With the late-nineteenth-century introduction of Boas's historical possibilism (Boas 1896), mainstream anthropology rejected environment and climate as the sole determiners of societal and cultural tendencies and either posited other influencing factors (see Ember and Ember 2007 for a recent example), or juxtaposed deterministic orientations by illuminating the role

of culture in shaping human responses to climate (Krogman 1943; Laughlin 1974; McCullough 1973; Sahlins 1964). Contemporary analyses continue in this vein. For instance, Reyna's (1975) study of Barma in Chad suggests that cultural devices like bride wealth are used to adapt to rainfall cycles.

Anthropologists began to identify the importance of other explanatory factors in addition to or in place of climate—like political, economic, or social issues—that drove such cultural phenomena as migration (Siegel 1971). In tandem, researchers continued to consider how variation might be due to climate differences, or exist despite similarities, such as comparing production strategies in similar alpine environments around the world (Rhoades and Thompson 1975; Wolf 1972). Cultural ecologists, including Steward and White, focused on how societies adapted to their environment and available technologies. Other research critiqued and built on this work, providing the foundation for ecological or environmental anthropology (Moran 1982; Orlove 1980).

British anthropologists similarly rejected determinism but turned to an emphasis on structural-functionalism, focused almost entirely on the social structure of a society, and rejecting deterministic and cultural ecological explanations. Radcliffe-Brown and others focused on how human-environment relations are dependent upon, the result of, and the means of maintaining a certain social structure (Harris 1968).

Rayner (2003) argues that the “chauvinistic approach” of determinism ultimately resulted in an eighty-year backlash, in which anthropologists purposefully avoided climate as a research topic. The impetus to reengage with climate as a topic can arguably be retraced to the rise of political economy, and the anthropological interests in disaster research and cognition. Political economy, the analysis of the relations between the political, economic, and social spheres of a society, along with structural Marxism in the 1970s, would have a continuing influence on anthropological engagements with many topics, including environment and climate (Ortner 1993).² While in structural Marxism ecological relations remain secondary to social relations and ideologies, political economy has had a more lasting impact on environmental and climate anthropology, particularly through its interest in interactions and inequity within a world system. Political ecology, combining this interest with cultural ecology, focused on how relations between humans and their environments are mediated by wealth and power (Netting 1996).

Political economy also sparked debates about how inequalities in access to resources arise and are maintained, leading some to question development policies and practices around the world. For example, studies of so-called natural disasters began to explore the social relationships that increase the risks and dangers of certain populations (Oliver-Smith 1996). In addition, later anthropological studies of climate forecast use drew upon development critiques emphasizing the ways that wealth or power direct technologies,

like those associated with the Green Revolution (Agrawala and Broad 2002; Finan 2003; Roncoli, Ingram, and Kirshen 2001).

Disaster anthropology emerged in the 1960s, and worked to bring together previous anthropological accounts of floods, volcanoes, earthquakes, fires, and droughts with an explicit focus on disasters as a topic of research (Hoffman and Oliver-Smith 2002; Oliver-Smith 1996; Torry 1979). Anthropologists like Tony Oliver-Smith proposed that anthropology had a unique role to play in disaster research, based on the discipline's strengths in attending to all the areas of life that disasters touch (Oliver-Smith 2002; see also his contribution to this volume). Anthropology was also considered a "good fit" since disasters are the outcomes of the interaction between nature and society, a central focus of the discipline. Cultural ecologists urged anthropologists to approach disasters or hazards (defined as the "natural" part of disasters) from an ecological and social organizational perspective—focusing on the ability of individuals to adapt to changes in the environment (Vayda and McCay 1975). Anthropology's focus on the social elements of disasters increased interest in further defining the social experiences and situations of populations prone to be victims. Since the 1980s, researchers have focused on concepts of vulnerability, resilience, and adaptation as ways to understand the social bases of disasters (Oliver-Smith 1996). More recent work with vulnerability emphasizes unpacking the concept to see the underpinnings, including the problems of seeing nature separate from society (Oliver-Smith 2002). In addition, some anthropologists are assessing the propensity for technological tools used to monitor disasters to overshadow other interpretations of the event, as in the 1997–98 El Niño exacerbated fires in Indonesia (Harwell 2000).

In addition to this increased interest in disasters, the 1980s saw anthropologists sharpening their focus on ideas and symbolic systems, in part generated by emerging psychological and cognitive studies in other disciplines (D'Andrade 1995). Cognitive anthropology emerged at this time from a combination of earlier Boasian interests in ethnoscience and ideas and methods from linguistics (D'Andrade 1995). Ethnobiologists constructed folk taxonomies from the rich native knowledge of plant and animal species, which led to greater understanding about human cognitive talents (Berlin 1992). Studies of ethnoscience or ethnoecology asked how human ideas and knowledge about meteorology affected adaptation to climatic conditions (Brookfield 1964; Grivetti 1981; Waddell 1975). For example, Sillitoe (1993) examined the ethnometeorology of a group in Papua New Guinea, suggesting that their understanding of climate and weather affects their ritual life. Specifically, local people ask a white woman's spirit to act morally and so ensure a return to normal weather. More recent work also focuses on ethnometeorology, but with a particular interest in climate change (Huber and Pedersen 1997; Ingold and Kurtila 2000; Strauss and Orlove 2003; Vedwan 2006).

CURRENT ANTHROCLIMATOLOGY (OR CLIMATE ANTHROPOLOGY)

Several changes mark the transition between earlier work with climate and newer engagements. Anthropologists in the 1990s began to engage global movements of information, people, and objects in their work, most noticeably in research dealing with debates about the hegemony of Western scientific knowledge, recognition of El Niño's global reach, greater concerns about inequities and vulnerabilities, increased application of climate forecasts and other technologies, the effects of participation on understanding uncertainties, and the role of power and inequalities in the effects of and responses to climate change. While prior work with climate and weather emphasized the local nature of meteorological experience,³ recent projects represent a shift in how human-climate interactions are conceptualized, particularly in the context of understanding the global scale of these interactions.

First of all, interest in "folk" climate models inevitably created a contrast between traditional and scientific knowledge, leading many to ask how certain kinds of knowledge (i.e., Western scientific discourses) become privileged. An interest in culturally specific knowledge and ethnoscience led naturally to an interest in the intersection of traditional ecological knowledge (TEK) and Western "scientific" forecasts (Grivetti 1981). This line of research asked how locally generated knowledge has been used to predict weather or climatic events, and was a move towards recognizing a plurality of scientific knowledge about the world (Cruikshank 2001).

Similarly, studies of local knowledge focused on cultural and decision-making models, in which climate ideas and information are one influence on behavior (Durrenberger and Pálsson 1986; Paolisso 2002). In anthropological studies of agricultural decision-making, models of information and its application have become one way to understand how different individuals and groups frame their environment. On a more general, aggregated social scale (vs. cognitive mapping), this research has also included an explicit interest in American environmental values and cultural models, including how these relate to attitudes about climate change (Kempton 1997; Kempton, Boster, and Hartley 1996). Much of the recent focus, in step with broader trends of environmental activism and media coverage, has been a focus on environmental groups and energy use (Henning 2005; Kitchell, Hannan, and Kempton 2000). Halvorsen and her colleagues (2007), for example, emphasize the problem of relying on older cultural models, such as for ozone depletion, for understanding current climate problems, even among experts.

A second change influencing recent climate research and understanding its impacts is the recognition of the global influence of El Niño and La Niña on climate variability. The idea of a global climate has specific implications for how anthropologists have undertaken place-based research. In attempting to understand this mix of local and global events, climate anthropologists have drawn on globalization theories from anthropology and beyond, often bringing new theoretical insights into the debates that highlight the role

of identity, imagery, and the nation-state in mediating these informational assemblages (Broad and Orlove 2007; Sturken 2001). In considering the relationships between places and information, anthropologists have rethought relationships between media, governance, and society to critique assumptions about control and power. Strauss (2003) illustrates this in her fascinating analysis of the “synopticon” in which local information becomes part of a global weather discourse through outlets like the Weather Channel.

Thirdly, drawing from the work on vulnerability coming out of disaster research and earlier work on occupational multiplicity (Comitas 1973), anthropologists have started to focus on the central role of institutional flexibility for successful adaptation. For example, inasmuch as climate is a constraint on decision-making, it can also provide an opportunity for creative agency (Bennett 1982; Jennings 2002). These constraints might be evinced by market changes (Smit et al. 2000), social network extensions (Adger 2003), or other mechanisms. This interest in adaptive capacity is evident in a variety of research topics, from natural resource and livestock management (Galvin et al. 2001; Jennings 2002) to Arctic responses to climate change (Duerden 2004). At least one issue of the interdisciplinary journal *Climatic Change* has focused on the relationships among climate variability and vulnerability, incorporating risk, uncertainty, learning, and resource management into various case studies (de Loë and Kreuzwiser 2000; Eakin 2000; Reilly and Schimmelpfennig 2000). Other researchers also explicitly apply vulnerability concepts to climate change (Adger et al. 2001; Magistro and Roncoli 2001; Vásquez-León 2002). In drawing upon and extending research regarding vulnerability, these social scientists have incorporated local experiences with global events to focus on who is at risk, why they are at risk, and what might be done about it.

Importantly, the earlier work on ethnoecology has led to important studies of local knowledge of climate change and social adaptations to change, particularly in the Arctic. Researchers have started to think about perceived differences between TEK and scientific information, both in how TEK can add to scientific observations of climate change and how local knowledge can be valued and included in the coproduction of both mitigation and adaptation. Specifically, emphases on co-research or community-based research with indigenous groups point towards a constructive integration of different sources of knowledge, particularly when an emphasis on complementarities replaces struggles over authority (Berkes 2002). The Krupnik and Jolly volume (2002) includes many examples of such partnerships forged through innovative techniques, including daily diaries, youth-elder camps, and expert-to-expert interviews. Sometimes, however, the dichotomization of TEK and scientific knowledge reproduces a potentially artificial division of scientific and nonscientific information rather than recognizing the social construction of all knowledge, and the underlying similarities among various information sources.

The fourth major shift is reflected in anthropology's interest in the role of technology in vulnerability and adaptation, including GIS and climate forecasts (Breuer et al. in press; Finan and Nelson 2001; Harwell 2000; Ziervogel and Calder 2003). Seasonal climate forecast use has sparked an interest in anthropology at the intersection of environment, development, and agriculture. Consequently, anthropologists have forged collaborations with climate forecasters, agricultural development agencies, and others in an attempt to grasp the significance and utility of climate forecasts and El Niño events for people around the world. Recent ethnographies have reflected these interests, turning their gaze on the subculture of meteorology (Fine 2007), the forecast production and dissemination process (Agrawala, Broad, and Guston 2001; Finan 2003), and working to understand the relationships between forecasts and climate-based decisions (Taddei 2005). These studies have generated their own discourse, arguing that climate information—including its content, format, timing, dissemination approach, etc.—must be tailored to very local contexts and activities to be of use to the targeted populations. In addition, the targeted populations may have difficulty understanding or implementing technically complex forecasts (Lemos et al. 2002). All these issues must be considered in research on climate change as groups and individuals find themselves struggling with uncertainties about when and to what extent changes will occur, their participation in identifying and enacting adaptation and mitigation strategies, and the role of technology in this process. To some extent these discussions have already started, in the Arctic and elsewhere (Krupnik and Jolly 2002).

Similarly, anthropologists have also begun to study the underlying tension in forecast dissemination between scientific forecasts and local climate prediction practices (Ajibade and Shokemi 2003; Orlove et al. under review; Pennesi 2007; Taddei 2005). While most focus on the differences between TEK and scientific knowledge, some research shows important points of congruence (Orlove, Chiang, and Cane 2002). Furthermore, by comparing the various means of understanding weather and climate it is clear that social, political, and ideological positioning also influences the acceptance of information (Leiserowitz 2006; Taddei 2005).

The fifth change addresses how uncertainty is understood. Climate forecasts are characterized by a great deal of uncertainty, often expressed probabilistically, drawing on a history of work in disasters and risk in anthropology and elsewhere (Boholm 2003; Davis 1998; Hackenberg 1988; Hoffman and Oliver-Smith 2002). More recent research suggests that uncertainty can be difficult (Cash, Borck, and Patt 2006), but not impossible, to communicate (Phillips and Orlove 2004; Suarez and Patt 2004). Participatory processes can help communicate this information (Patt, Suarez, and Gwata 2005), but may not be sufficient on their own (Broad et al. forthcoming). At the same time, climate research on uncertainty connects to a history of research on risk, both in terms of its social construction (Douglas and Wildavsky 1983; Slovic, Fischhoff, and Lichtenstein 1986) and its perception (Leiserowitz 2006).

Lastly, anthropologists have also started to work on the human rights and social justice issues of climate change. For example, Crate (2008) considers the interactions of climate change, culture change, and human rights, and Adger (2003) investigates the role of social capital in adaptation. Political ecologists have been particularly interested in connecting risk to various social conditions and relationships, and have begun to think about vulnerability to climate in the same way (e.g., Vásquez-León, West, and Finan 2003; Ziervogel, Bharwani, and Downing 2006).

THE FUTURE OF CLIMATE IN ANTHROPOLOGY

Studying human behavior linked to climate change poses challenges that differ from earlier studies of weather or seasonal climate. Our mental models of the world's natural processes are shaped by experience, evolutionary processes, and our daily experiences. As events become spatially and temporally distant—either forward or backward in time—our ability to tease out relative objectivity vanishes. In this way, weather versus climate becomes an important distinction in understanding human responses to climate happenings. The statistical average of weather events is what we know intellectually to be climate. How recent storms or droughts, floods or famines, have affected us personally—physically or emotionally—and how they are framed by key intermediary groups such as the media, are more likely to account for our perception of the climate. Reconstructions of past climate from proxies such as corals, tree rings, and gases trapped in ancient ice reveal the dramatic changes in temperature and precipitation that our planet has undergone over the millennia; sometimes in just days (e.g., volcanic eruptions) or decades (“The Little Ice Age”), and on a global scale. On timescales that we can embrace full cycle are El Niño and La Niña; a recurring phenomenon collectively known as ENSO—the El Niño Southern Oscillation. “Strange weather” and seasonal disruptions in distant continents are linked to ENSO, and through a combination of an earth observatory system and computer models, we can predict these events months in advance, and with variable skill we can anticipate the ensuing impacts in large regions of North America, Asia, Africa, and South America. As the quest for order continues, climatologists are perpetually in search of statistical patterns in the climate data. They make (often highly disputed) claims of identifying phenomenon that recur on decadal or longer timescales, and add more acronyms to their unwieldy lexicon⁴. Beyond these patterns of natural variability, we humans have been fingered as the culprits in affecting the “natural” climate, resulting in global warming.

One approach to organizing the material and symbolic implications of climate is to conceptualize them in terms of their sociopolitical scales. For example, the debate surrounding the (non)signing of the Kyoto Protocol brings into relief charged linkages of climate with concerns of development,

equity, environmentalism, and globalization critics (see Litfin 1994). Most generally, the increasing inseparability of climate from discourse of universal values, when framed as an atmospheric common property dilemma, brings us to the “luxury” versus “survival” emissions debate, symbolized respectively by the “North” versus “South” labels (Jasanoff 1993). How these conflicts play out in performances on the global stage such as United Nations meetings, in national settings with acts such as *An Inconvenient Truth*, or through ethically framed social movements (e.g., *Christians against Climate Change*) has not been studied with the ethnographic methods that anthropology has directed toward other multisited themes. As international agencies adopt climate change into their proactive social agendas, questions of the sort posed by Ferguson (1990) regarding the imposition of others’ priorities on local actors should arise. As in past projects, anthropologists will play a critical checks and balances role, as both defenders and critics of such prioritization and approaches of implementation.

Continuing on the global scale, a subject that deserves increased focus is the real (e.g., Intergovernmental Panel on Climate Change) and imagined (liberal elite university academics) communities of climate scientists that shape the form of global political debates. On the information supply side, these distinct communities, including their methods, models, and worldviews—in the vein of Bruno Latour and other science and technology studies scholars—are worthy subjects of study in situ (e.g., Lahsen 2005). How the craft skills of climate analysis and prediction are transformed (or not) with increasing reliance on computational power should be of interest beyond climate, as other labor spaces become technocratically syncretized and automated and where the honorific of scientist is threatened by both machine and ideological positioning, depending on the audience. Echoing work done on weather-related disaster studies (e.g., Peacock, Morrow, and Gladwin 1997), attention is turning to issues of gender-based vulnerabilities to climate change (Masika 2002) and other issues of justice in climate change (Page 2006). Yet still untouched (to our knowledge) are many potential topics, including an evaluation of the gendered roles of climate science, the social process of developing climate models, and the ways these models become active objects in understanding climate change.

How these distinct groups are viewed and trusted by the public clearly affects willingness to act on information, but this is only one part of the cognition affecting behavior. Only recently have the cognitive aspects, including linguistic and visual analysis of multiple types of information, been approached (Marx et al. in press; Taddei 2005). Questions, some more or less context dependent, remain wide open: What are the roles of memory, framing of uncertainty, and cultural models of environmental resilience? How do these intangibles interact with the more traditionally studied socio-economic constraints influencing proactive and reactive adaptation?

We have mostly discussed, reflecting the anthropological focus, human adaptation to weather and climate impacts. Climate change discourse, however, necessitates equal consideration of mitigation issues—i.e., issues surrounding the prevention of the sources of greenhouse gases. Doing so will quickly draw anthropologists into the debate surrounding alternative energy and policy choices, and most profoundly, into revisiting our longstanding fascination with consumption. What choices will individuals, groups, or governments need to make with regard to consumption choices? At the heart of theories of consumption is the often-implicit role of natural resources, and the transformation of these into products. Yet in climate change, consumption (such as buying a car or using electricity) continues to deplete resources, beyond the initial production and through an entire life of an object (Appadurai 1986). Climate change thus brings about growing recognition of the real value of such goods, obscured by time scales, hidden costs, and even inequalities constructed through markets. To some extent, climate change is unavoidably about our global thirst for goods, and in making these links more visible, anthropologists have the potential to shift the discussion about both topics (Wilk 2002).

CONCLUSION

Climate or weather—to varying degrees—link all scales of human activity, objects, and ideas. The anthropological study of climate has evolved from early work drawing on climate to explain civilizations' cultural characters and racial diversity, or “anthropogeography” (Geertz 1963), to specific studies of local adaptations to weather and climate, motivated by diverse theoretical and applied projects. Anthropological attention is now moving back to the global scale in its still-nascent study of climate change, a twenty-first-century phenomenon addressed by multisited assemblages of activists and scientists (e.g., IPCC) getting widespread media coverage and having unprecedented global impacts.

Ethnographic research into the distinct subcultures that functionally link the climate information supply and demand linkages is in its infancy, and has been focused primarily on seasonal timescale (i.e., ENSO) predictions and adaptations. Organizational aspects of the local, regional, and supranational groups that handle information strongly influence the interpretation and representation of uncertain information (Fine 2007). Beyond the cultural influence on organizational interaction there exist broader issues of political economy linked to the privatization of weather and climate data collection, sharing, and forecasts (e.g., The Weather Channel, AccuWeather, etc.). How these reduce or exacerbate the societal inequity that is evident in climate impacts is yet another topic of analysis. Anthropologists may likely find themselves arguing against the importance of global warming as a major risk factor versus more immediate (and longstanding) drivers of vulnerability including property rights, education, and access to water and

health care. Climate change discourse has the potential to obfuscate unequal power relations, letting governments off the hook for poor environmental and social policies and practices.

Up to the present, anthropology has been for the most part reflexively concerned with ethnographies categorizing impacts and adaptations to weather and seasonal climate impacts. The uncertainty in our knowledge of how the very public science of climate change will be perceived and acted upon, and the intended and unintended consequences of action, is daunting. How much time before environmental and social impacts become unacceptable is a question that is unanswerable. How, as individual scholars and citizens, we chose to balance the study of this global phenomenon versus trying to more directly affect the political order, is a question only the readers of this chapter can answer.

NOTES

1. Note that historical ecologists among others have long been aware of the interconnectedness of nature/culture, but generally applied the ideas only to landscapes and animals.
2. Marx had a significant influence on anthropology prior to this, including cultural ecology (Orlove 1980), but Marxism in the 1970s dominated the field.
3. Studies of worldviews and cosmologies still present a local conception of interactions between humans and their environment, even if the environment is global in scope.
4. For example, the NAO (North Atlantic Oscillation), alleged to influence Europe's climate; the PDO (Pacific Decadal Oscillation) that drives storm patterns and influences coastal ecosystems in North America's Pacific Northwest; etc.

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