

琉球大学学術リポジトリ

The Story of Climate Change : Science, Narrative, and Social Action

メタデータ	言語: 出版者: 琉球大学アメリカ研究センター 公開日: 2008-07-28 キーワード (Ja): キーワード (En): Global Warming, Climate Change, Religion, Science, Narrative, Social Action 作成者: Slovic, Scotto メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/6782

The Story of Climate Change: Science, Narrative, and Social Action

Scott SLOVIC
University of Nevada, Reno

Abstract¹

Environmental scientists and activists consider global warming, or “climate change,” to be one of the most urgent issues in the world today, a phenomenon with potent implications for the future of life on this planet. Still, many politicians in the United States—and many average citizens—dismiss and ignore this phenomenon, developing public policies and engaging in lifestyles that defy the findings of climate science in order to support short-term economic goals. This paper, intended for an audience of laypeople, points out the importance of *language* in conveying the technical details and the significance of climate change and in inspiring social action.

Keywords: Global Warming, Climate Change, Religion, Science, Narrative, Social Action

The “Road to Environmental Apocalypse”

I’ve often felt I was “preaching to the choir,” but until today I’ve never had a chance to preach to an actual choir—so this is a treat for me. I should say it’s especially meaningful for me to address a religious gathering like this in light of the recent criticisms that have been directed toward the American religious community, particularly the apocalyptic sects that seem to have had such an influence in the November 2004 elections. Since it’s available on the web, some of you may have seen journalist Bill Moyers’s December 1st (2004) speech when he received the Harvard Medical School’s Global Environment Citizen Award, in which he expressed the frightening realization that “the delusional is no longer marginal,” that really kooky ideas have “come in from the fringe” and “now sit in the seat of power in the oval office and in Congress.” Moyers describes a book by the journalist Glenn Scherer called *The Road to Environmental Apocalypse* that explains how many of our fellow citizens feel about the world these days—an attitude summarized recently by *Grist* magazine (and quoted by Moyers) as follows: “Why care about the earth when the droughts, floods, famine and pestilence brought about by ecological collapse are signs of the apocalypse foretold in the Bible? Why care about global climate change when you and yours will be rescued in the rapture? And why care about converting from oil to solar when the same God who performed the miracle of the loaves and fishes can whip up a few billion barrels of light crude with a word?”

So this is the sort of perspective on the world that increasing numbers of people in our society share—I have to say, at the risk of seeming ungenerous, that I find it to be wacky, ignorant, lazy, and scary. And it is in this context that I do my own work as a literary scholar devoted to exploring how the refined use of language—through literature (like the beautiful poetry by Herman Hesse and D.H. Lawrence that is part of this morning’s service) and also journalism and science

writing and political discourse and the common language we use everyday—might enable us to understand better our relationship to the rest of the planet, our physical and psychological needs, and what we might do in order to correct some of the injustices and imbalances that are occurring throughout the world as a result of human actions.

Let me get right to the point. This Unitarian congregation has decided that it would be a good thing to devote the next two years to thinking about the issue of global warming and social action. What can we do at this point in history in order to live meaningful lives and help to correct vast and complicated problems such as global warming?

You might wonder, in particular, why someone like me would bother emphasizing the role of language—and specifically literature—in this kind of context. Well, to me, language is crucially important in exploring and even *shaping* our sense of personal values and in communicating these values. Language is also essential to the communication of the evolving scientific ideas that are so deeply necessary to our understanding of such phenomena as global warming. Without paying close attention to language, we can’t be entirely aware of how our own ways of thinking are being shaped—some might say “controlled”—by certain terminologies. Also, when the *scientific* community concentrates primarily on communicating its discoveries and theories to the public in purely statistical (or quantitative) ways and through inaccessible technical jargon, it becomes all too easy for government officials and the general public simply to blow off these ideas—and what we’re left with is the “road to environmental apocalypse.”

“Global Warming” or “Climate Change”

So, let’s talk first about the phrase “global warming.” This phrase itself, embedded as it is in our popular vocabulary, doesn’t quite describe the complexity of the actual phenomenon of global *climate*

change. According to the science, what's happening in the world is not simply a process of warming temperatures throughout the planet. Yes, temperatures are rising on the whole—but other weather patterns have also been noticed. Both warming and cooling are occurring, and sometimes from year to year an alternation of the two, with an overall trend toward warming. What scientists actually seem to be observing and predicating are very slow and subtle warming trends and also increased volatility of weather patterns in general—tremendous storms and devastating droughts. If you read works like Arthur Upgren and Jurgen Stock's *Weather: How It Works and Why It Matters*, published in 2000, you begin to realize that climate—essentially the study of the earth's atmosphere—is as variable as it is visible. We can walk out the door each day and see what the weather is, but it's much harder for us, without careful attention, to notice subtle climatic changes over time—and changes in the chemical composition of the planet's *atmosphere* can be discerned only through special scientific measurements. When members of the public walk around with a phrase like “global warming” in their heads while it's snowing several feet in a day here in Reno—or in Washington, DC—and then freezing fog settles in for a week, people start to think, “Those crazy scientists! Global warming is just a hoax, another example of the failed predictions of ecological nerds.” It seems to me that our tendency to latch onto certain popular phrases, phrases that can be controverted by powerful personal experiences (like shoveling tremendous snowdrifts in Reno in January 2005), makes it that much easier for people to downplay science and drive their gas-guzzling cars with clear consciences. For *rhetorical* reasons, I think it makes sense for us to talk about the worrisome implications of “climate change” rather than “global warming”—but, that said, I should admit that much of the scientific and popular literature still uses the term “global warming.”

There's actually some terrific environmental journalism, history, literature, and popular science writing that describes the process of climate change, the ecological impact of this phenomenon (including the expected impact on human comfort and survival), and the political complications of developing policies in a country like ours that does so much to contribute to the emission of so-called “greenhouse gases” and yet refuses to sign the Kyoto Protocol, which would help us to reduce our damaging behavior. I use a lot of this material in a class I occasionally teach at UNR called “The Literature of Population,” in which we study how different kinds of authors approach such topics as human overpopulation, extinction and biodiversity, and climate change—major contemporary environmental topics that seem implicitly to require abstract, quantitative, scientific discourse. What we investigate in that class is the possibility of addressing such topics in ways that will be intellectually and emotionally

meaningful to general readers. How, one might ask, is it possible to use *narrative* language for this purpose, to tell the *story* of something as abstract and complicated as climate change?

Let me run through a few quick examples of writing that attempts to tell the story of climate change. First, I highly recommend historian Gale Christianson's 1999 work called *Greenhouse: The 200-Year Story of Global Warming*. I should say that the reason Christianson uses the term “global warming” is that the longterm planetary trend *is* toward warming temperatures, but the history he presents, going back to the dawn of industrialization in Europe, shows that this large scale warming trend actually consists of occasional cooling occurrences (even mini-ice ages). What I find particularly useful about the book *Greenhouse* is how the author shows the extended history of climate change, making it clear that this is not simply a recent faddish concept among today's scientists and alarmist environmental ideologues. Along with Christianson's book, which takes a broad historical view of global climate change, I would recommend journalist Bill McKibben's 1989 work, *The End of Nature*. In addition to offering a well informed, yet engagingly presented, overview of atmospheric chemistry, McKibben excels at offering a moving philosophical context for this phenomenon. Instead of making a sky-is-falling-and-we're-all-going-to-die sort of argument (of the sort we see in Hollywood's recent *The Day After Tomorrow*), he writes eloquently in the final lines of the introduction to the tenth anniversary edition of the book that “the sadness that drove me to write this book in the first place has not really lifted. This home of ours, the blessed hunk of rock and sky and biology that we were born onto, becomes each day a less complex and more violent place; its rhythms of season and storm shifted and shattered. We didn't create this world, but we are busy decreasing it. Still the sun rises; still the moon waxes and wanes; but they look down on a planet that means something different than it used to. Something less than it used to. This buzzing, blooming, mysterious, cruel, lovely globe of mountain, sea, city, forest; of fish and wolf and bug and man; of carbon and hydrogen and nitrogen—it has become unbalanced in our short moment on it. It's mostly us now” (xxv). We could spend hours reflecting on the implications of this small passage, couldn't we?

One of the major issues in the literature of global climate change is the question of whom we, as readers, should trust. Do we simply assume that the people wearing literal or figurative labcoats deserve our passive trust? Should we believe the technocrats? Or should we say, as many people do, that since those scientists can't agree about the precise processes or implications of climate change, we don't have to do anything about it ourselves? (This seems to be the attitude of the Bush administration, inspired in no small

part by a devotion to growing the economy and supporting the oil industry.) There is ample writing about the technical phenomenon of climate change by scientists such as Stanford's Stephen Schneider, author of the 1996 work, *Laboratory Earth: The Planetary Gamble We Can't Afford to Lose*. In the public eye, however, Schneider's sometimes bland and sometimes inflammatory descriptions of climate change and its implications have been effectively blunted and countered by works such as Gregg Easterbrook's voluminous and apparently authoritative work from around the same era (about ten years ago), *A Moment on the Earth: The Coming Age of Environmental Optimism*. Easterbrook has chapters on global cooling and global warming and concludes, conveniently, that nature does as it pleases and humans cannot predict or control its behavior—so why panic? Paul and Anne Ehrlich, in the 1996 book *Betrayal of Science and Reason*, point out that Easterbrook's work "contains so many serious errors that it has spawned a virtual cottage industry among scientists trying to correct them" (40)—they refer to the work of Easterbrook and other naysaying writers as "brownlashers." And the Ehrlichs, in their own chapter devoted to "Fables about the Atmosphere and Climate," lend their voices to rebutting Easterbrook as well.

Journalist Ross Gelbspan, in a fascinating chapter called "The Battle for the Control of Reality" from his book *The Heat Is On: The Climate Crisis, the Coverup, the Prescription* (also published in 1996), points out that the preponderance of scientific evidence shows that climate change is a real phenomenon and one that warrants serious attention from government, industry, and the public, but, as he puts it, "the tiny group of dissenting scientists have been given prominent public visibility and congressional influence out of all proportion to their standing in the scientific community.... By keeping the discussion focused on whether there really is a problem, these dozen or so dissidents—contradicting the consensus view held by 2,500 of the world's top scientists—have until now prevented discussion about how to address the problem" (40). Obviously, science doesn't advance merely through a democratic process, with the majority necessarily outweighing the dissenting voices. And obviously, dissent and discussion are important in any academic and social arena. But Gelbspan expresses concern that the small group of scientists, many of whom are doing industry-funded research and seem to be "ideologically extreme individuals" (52), are able to deflect the vast amount of data collected by other members of the scientific community and the arguments mounted by environmentally attuned politicians.

A somewhat different approach to telling the story of climate change is offered in Susan Gaines's 2001 novel, *Carbon Dreams*. This book tells the fictional story of a young Latin American scientist, Cristina

Arenas, whose research in the field of paleoclimatology (the study of ancient climates through the gathering of core samples from the ocean floor) leads her unintentionally into the political fray regarding global warming and climate change. The novel is not simply an indirect way of espousing the politically controversial idea of global warming. It also explores the predicament of a scientist who merely wishes to understand the planet's natural history and tries to avoid extrapolating from her findings in statements about today's environmental issues. But *other* scientists get ahold of her findings and, she believes, misinterpret the data in support of their own political goals, so she is forced to become involved in the public discussion, despite her wishes. Gaines's novel explores the role of science in contemporary society and, in a sense, tells the story of climate change by showing how none of us, scientists and nonscientists alike, can simply sit back passively and ignore the political implications of our actions or inaction. Not acting is itself a political statement.

Some of you interested in reading fiction that's relevant to climate change might also want to go back and reread John Steinbeck's *The Grapes of Wrath* with the climate change issue in mind—it puts an entirely new spin on that novel about the 1930s Dust Bowl when you think of it as a book about how people struggle to survive in a landscape radically altered by drought (to give the novel additional context, you can read it together with environmental historian Donald Worster's fine book, *Dust Bowl: The Southern Plains in the 1930s*)—both of these books, Steinbeck's and Worster's, are recommended in the new article, "After Tomorrow: The Peril of Ignoring Global Warming," by Columbia University earth scientist Peter DeMenocal. For me, one of the most telling passages in DeMenocal's article is his discussion of how other cultures have been affected by previous "megadroughts." In particular, he refers to the Maya culture of Central America, writing: "The Maya had thrived for nearly two thousand years and their cultural achievements were comparable in many ways to those of any modern G-8 nation." Nonetheless, he continues, "This thriving civilization collapsed at the peak of its cultural and scientific development, between 750 and 950 A.D., and the decline coincided precisely with a 150-year drought that gripped the region" (20). Much of the scientific and political discussion about climate change in recent decades has focused on the question of whether or not human activities has caused changes in the earth's atmosphere, resulting in climatic shifts. DeMenocal points out that most scientists now adhere to the notion that humans have produced much of the warming that's occurred in the past century and that it's unlikely we, as a species, can do much at this point to reverse this process. But this does not lead him to advocate continued denial, continued avoidance of this issue among policy makers and the public. Instead, like

many of his scientific colleagues, he urges his readers to call for “serious discussion on immediate implementation of political solutions to reduce emissions and increase adaptive capacity” (23). What’s at issue here is not simply short-term economic prosperity in industrialized nations, but the long-term survival of our species on a planet that may, through drought or freezing, become devastatingly inhospitable.

Asking “Why” Questions, Paying Attention, and Making a Difference

I’d like to conclude with a last word about why people in the humanities do what we do—how this kind of work, in the context of an issue like climate change—is a form of intellectual activism. And also a practical word about what we might do in our community with regard to this issue. I often find myself thinking about Donald Worster’s comment from his 1993 book, *The Wealth of Nature: Environmental History and the Ecological Imagination*, where he said:

Why are we in a state of crisis with the global environment? Scientists of many disciplines have described that crisis with impressive precision.... They can pinpoint with amazing detail the sources of that carbon in the tailpipes and smokestacks of the industrialized, automobilized societies. But having done all that, the scientists still cannot tell us *why* we have those societies, or where they come from, or what the moral forces are that made them. They cannot explain why cattle ranchers are cutting down and burning the Brazilian rain forest, or why the Brazilian government has been ineffective in stopping them. They cannot explain why we humans will push tens of millions of species toward extinction over the next twenty years, or why that prospect of ecological holocaust still seems irrelevant to most of the world’s leaders.... All those “why” questions are rooted in culture, which is to say, in ethical beliefs....

We are facing a global crisis today, not because of how ecosystems function but rather because of how our ethical systems function. Getting through the crisis requires understanding our impact on nature as precisely as possible, but even more, it requires understanding those ethical systems and using that understanding to reform them. Historians, along with literary scholars, anthropologists, and philosophers, cannot do the reforming, of course, but they can help with the understanding. (26-27)

It seems to me that a better understanding of how our personal and cultural beliefs—our values—are formed will enable us to do a better job of considering why we live as we do and the ways in which our lifestyles match or contradict our deepest values. Obviously, in the context of climate change, our dependency upon fossil fuel for transportation and other energy needs seems to require further examination. Why is it that

most of us use our cars so much? What can we do to advocate for more governmental and corporate investment in research in the field of alternative energy? And what other lifestyle and infrastructural changes can we recommend if we’re concerned about the issue of climate change ... and the larger, related issue of the survival of our species on this planet? Upgren and Stock, the authors of the book called *Weather* that I mentioned earlier, suggest that “Heat is the main energy consumer in [American] domestic life” (189). In cities like Reno—and throughout the arid parts of the West—it seems strange that we don’t insist upon the adoption of passive solar architectural principles (and when possible the use of geothermal heating as well) in all new housing developments, the use of which could radically reduce the amount of energy needed for domestic purposes in our communities. The authors of *Weather* quote the Ehrlichs’ statement that “while on the one hand, we applaud the grassroots efforts on behalf of environmental protection (such as curbside recycling, ecotourism, and enthusiasm for things ‘organic’), we can’t help but fear that *these useful but utterly insufficient steps may also help to distract attention from the much more basic issues*. Society needs to recognize that to be sustainable, the economy must operate in harmony with rules set by Earth’s ecosystems—and needs to act accordingly” (188). The same people who are willing to recycle their cans, bottles, and newspapers will not give up their snowmobiles and SUVs, or their oil- or coal-heated homes.

I do believe it’s crucially important for us to use literature and the other arts to help us imagine the natural and cultural processes by which climate change occurs and to pay attention to the explanations of human behavior offered by historians, philosophers, and literary scholars, among others. At the same time, though, I resonate to environmental education specialist Mitchell Thomashow’s eloquent recommendations, presented in his 2002 book *Bringing the Biosphere Home: Learning to Perceive Global Environmental Change*, that we try to deepen our understanding of global processes by training ourselves to think imaginatively about local observations of nature. In a section of his book called “Tracking the Weather,” Thomashow encourages readers not only to watch the daily weather, but to use weather maps to follow cloud formations and other climate patterns as they move across the globe. In a few simple paragraphs, he lays out the “conceptual chain” that, together with first-hand observations, makes the notion of climate change more “tangible” (128). If this phenomenon becomes tangible, and if the public comes to appreciate the *implications* of this worrisome trend, it seems reasonable that our governments will develop better policies and our societies less short-sighted, destructive lifestyles. We need science, we need story (and the

study of story), and we need to perceive the world more thoughtfully whenever we walk out the door.

I feel as if I've barely scratched the surface of this really huge topic—I haven't, for instance, said much about the recent film, *The Day After Tomorrow*, which is so fascinating in how it represents the science of climate change and the public response to this phenomenon. But perhaps that's a story you can consider for yourselves.

Note

This essay was presented to the Unitarian Universalist Fellowship of Northern Nevada on 30 January 2005. The UUFNN is a diverse religious community inspired by world changes and challenges. A member of the congregation contacted me in December 2004 to inform me that every two years the UUFNN chooses a particular social action cause to work on and that global warming had just been selected, and she asked that I deliver a version of this essay as a sermon at one of their Sunday services.

References

- Christianson, G. (1999/2000). *Greenhouse: The 200-year story of global warming*. New York: Penguin.
- Emmerich, R. (Director). (2004). *The day after tomorrow* [Motion Picture]. United States: Fox Home Entertainment.
- DeMenocal, P. (2005, January/February). After tomorrow: The peril of ignoring global warming. *Orion*. 16-23.
- Easterbrook, G. (1995/1996). *A moment on the earth: The coming age of environmental optimism*. New York: Penguin.
- Ehrlich, P.R., and A.H. Ehrlich. (1996). *Betrayal of science and reason*. Washington, DC: Island Press.
- Gaines, S.M. (2001). *Carbon dreams*. Berkeley, CA: Creative Arts.
- Gelbspan, R. (1996/1997). *The heat is on: The climate crisis, the cover-up, the prescription*. Reading, MA: Perseus.
- McKibben, B. (1989/1999). *The end of nature*. New York: Anchor/Doubleday.
- Moyers, Bill. (2004, December 1). On receiving Harvard Med's Global Environment Citizen Award. Retrieved February 11, 2005. <http://www.truthout.org/docs_04/120504G.shtml>.
- Schneider, S.H. (1996). *Laboratory earth: The planetary gamble we can't afford to lose*. New York: HarperCollins.
- Steinbeck, J. (1939/2002). *The grapes of wrath*. New York: Penguin.
- Thomashow, M. (2002). *Bringing the biosphere home: Learning to perceive global environmental change*. Cambridge, MA: MIT Press.
- Uppgren, Arthur, and Jurgen Stock. (2000). *Weather: How it works and why it matters*. Cambridge, MA:

Perseus.

Worster, Donald. (1979). *Dust bowl: The southern plains in the 1930s*. New York: Oxford University Press.

---. (1993). *The wealth of nature: Environmental history and the ecological imagination*. New York: Oxford University Press.