

CHAPTER 3: THE GLOBAL WARMING DEBATE

Today, the concept of sustainability is practically inseparable from the dangers of global warming or “climate change.” The two ideas, however, have separate origins, and became entangled with one another at a particular time and place. We begin this chapter by tracing that history and then proceed to the debate on global warming itself.

As we explained in the introduction, this report takes no position on the existence of global warming or subsidiary issues, including its causes. The National Association of Scholars and the authors regard these as open questions best resolved by good scientific investigation, transparency, and debate. We recognize, however, that many advocates of the anthropogenic global warming hypothesis do not welcome such debate. They regard the matter as settled and view those who call for further debate as un-scientific or worse. The epithets “climate denier” and “denialist” are often deployed as invective against those who refuse to conform to the orthodoxy that AGW is as fully established as it needs to be for purposes of charting practical policy.

In the eyes of those who strike this polemical position, our insistence on continued debate will inevitably be misinterpreted as an attempt to subvert well-established scientific facts. We regret that intransigence and view it as an obstacle to legitimate science. But we do not intend to let this with-us-or-against-us approach taken by many AGW supporters force us to abandon our commitment to open-mindedness. The view that AGW exists has some plausible science to support it, as does the view that AGW is an illusion. In this chapter we present in condensed form both sides of the argument. Some of the claims or the evidence in favor of or against the theory are weak. We take note of those too. Our general point is the urgent need for greater scrutiny of the premises of the theory and the nature of the evidence for and against it. Claims advanced merely on the *assumption* that the theory of global warming is valid rest on highly insecure foundations.

Could there be a campus sustainability movement in the absence of belief in an urgent anthropogenic global warming crisis? In principle, yes. There was a strong environmental movement long before the AGW hypothesis was invented, and the other components of the CSM—anti-capitalism and progressive social justice theory—are connected to AGW only by tenuous threads. Nonetheless the sustainability movement has bet heavily on the validity of AGW, and if the hypothesis proves false—or unsustainable—the movement would lose most of its credibility.

The high-stakes gamble that supporters of CSM have made on AGW thus warrants our attention. It is the presiding intellectual context of the movement, and one of the reasons that it has turned so frequently to

mistreatment of scientists who dissent from AGW. After reviewing the argument for and against AGW, we conclude the chapter with a survey of what has happened to some of the dissenters.

History

A conventional birth date for global warming as a scientifically-based projection of climate trends is 1979, when the National Academy of Sciences' Ad Hoc Study Group on Carbon Dioxide and Climate issued a report, "Carbon Dioxide and Climate: A Scientific Assessment," better known as the *Charney Report*.¹⁹⁴ Before the *Charney Report*, the main climate threat in public discussion was global cooling, and for a while the partisans of the idea that the earth is cooling and the partisans of the idea that the earth is warming overlapped with divergent predictions. In the early 1980s, the predicted catastrophe of global warming contended with the predicted catastrophe of "nuclear winter." In the decades before the *Charney Report*, the idea that had most scientific currency was that Earth faced the rising danger of another great glaciation, a return to the Ice Age that ended about 10,000 years ago.

Newsweek ran a doomsday article in 1975, "The Cooling World," that cited a litany of scientists and concluded, "The central fact is that after three quarters of a century of extraordinarily mild conditions, the earth's climate seems to be cooling down."¹⁹⁵ That same year, *Science News* published "Climate Change: Chilling Possibilities" and quoted C.C. Wallen, the chief of the Special Environmental Applications Division at the World Meteorological Organization, who warned that the planet had been cooling since 1940 in such significant, consistent patterns that it was unlikely the pattern could reverse and revert to warmer temperatures.¹⁹⁶ Global cooling earned support from the director of climate research at the University of East Anglia,¹⁹⁷ the National Center for Atmospheric Research,¹⁹⁸ the CIA,¹⁹⁹ the National Oceanic and Atmospheric Administration,²⁰⁰ and the National Academy of Sciences.²⁰¹

The switch from "consensus" on global cooling to the idea that we are threatened instead by global warming began to gather momentum in the early 1980s. An October 1985 conference in Austria of the

194 National Academy of Sciences' Ad Hoc Study Group on Carbon Dioxide and Climate, *Carbon Dioxide and Climate: A Scientific Assessment*, 1979.

195 Peter Gwynne, "The Cooling World," *Newsweek*, April 28, 1975. http://denisdutton.com/newsweek_coolingworld.pdf

196 John H. Douglas, "Climate Change: Chilling Possibilities," *Science News*, Volume 107, March 1, 1975. <https://www.sciencenews.org/sites/default/files/8983>

197 AP, "There's a New Ice Age Coming!" *Windsor Star*, September 9, 1972. http://news.google.com/newspapers?id=lzL_AAAAIBAJ&sjid=PIEMAAAIBAJ&pg=4365,2786655&dq=climate+expert+new+ice+age+coming+hubert+lamb&hl=en

198 Walter Orr Roberts, "A New World Climate Norm? Climate Change and its Effect on World Food," Aspen Institute for Humanistic Studies, and National Center for Atmospheric Research. <http://www.iaea.org/Publications/Magazines/Bulletin/Bull165/16505796265.pdf>

199 "A Study of Climatological Research as it Pertains to Intelligence Problems," Office of Research and Development, Central Intelligence Agency, August 1974. <http://www.climatemonitor.it/wp-content/uploads/2009/12/1974.pdf>

200 Gwynne, "The Cooling World."

201 National Academy of Science, *Understanding Climate Change: A Program for Action*, 1975.

World Meteorological Organization and International Council of Scientific Unions had announced that “greenhouse gasses” in the first half of the 21st century would see “a rise of global mean temperature ... greater than any in man’s history.” And the conference took note of the increase “between 0.3° and 0.7°C” in global mean temperature in the previous one hundred years.²⁰² But global warming theory took off in earnest in 1988, the year after the Brundtland commission’s report, *Our Common Future*, had introduced the concept of “sustainability” as a key social and political objective.

The key date is June 23, 1988. That’s the day on which NASA scientist James Hansen testified to the Senate Energy and Natural Resources Committee that “The greenhouse effect has been detected and it is changing our climate now.”²⁰³

Hansen’s testimony was dramatic, and it captivated public attention. The drama was partly staged. Senator Timothy Wirth, who had organized the hearing, later boasted,

*Believe it or not, we called the Weather Bureau and found out what historically was the hottest day of the summer. Well, it was June 6 or June 9 or whatever it was, so we scheduled the hearing that day, and bingo: It was the hottest day on record in Washington, or close to it. It was stiflingly hot that summer. [At] the same time you had this drought all across the country, so the linkage between the Hansen hearing and the drought became very intense.*²⁰⁴

He also arranged for staffers to open the windows the night before to let in the warm summer air, and to shut off the air conditioning. Wirth described the effect:

*So Hansen’s giving this testimony, you’ve got these television cameras back there heating up the room, and the air conditioning in the room didn’t appear to work. So it was sort of a perfect collection of events that happened that day, with the wonderful Jim Hansen, who was wiping his brow at the witness table and giving this remarkable testimony.*²⁰⁵



NASA scientist James Hansen testified to Congress about the greenhouse effect.

202 See Rupert Darwall, *The Age of Global Warming: A History*, London: Quartet, 2013, pp. 98-107.

203 Andrew C. Revkin, “Years Later, Climatologist Renews His Call for Action,” *New York Times*, June 23, 2008. <http://www.nytimes.com/2008/06/23/science/earth/23climate.html?pagewanted=print>

204 “Frontline Hot Politics Interviews Timothy Wirth,” *PBS*, April 24, 2007. <http://www.pbs.org/wgbh/pages/frontline/hotpolitics/interviews/wirth.html>

205 *Ibid.*

Hansen, director of NASA's Goddard Institute for Space Studies, presented evidence that showed higher temperatures during the first five months of 1988 than during any other comparable period in the previous 130 years, since temperature records began. He said that NASA was 99 percent certain that the warming stemmed from artificial increases in atmospheric greenhouse gas levels, not from natural variation. "It is time to stop waffling so much and say that the evidence is pretty strong that the greenhouse effect is here," he told the *New York Times*.²⁰⁶

It was only a matter of four days after Hansen's declaration that the nation's leading industrial countries, the G-7, met in Toronto and also affirmed that "global climate change" was happening and required "priority attention."²⁰⁷ Prime Minister Margaret Thatcher and President Ronald Reagan professed to be convinced—although President Reagan declined to support new environmental regulations that he believed might harm the American economy.

Immediately after the G-7 Toronto conference, Canadian Prime Minister Brian Mulroney convened a follow-on Toronto conference organized by Gro Brundtland. This was the point of fusion between the concept of "sustainability" as laid forth in the Brundtland commission report and the concept of global warming or "climate change." Later in 1988, the newly formed Intergovernmental Panel on Climate Change (IPCC) met for the first time in Geneva. The IPCC's first chairman, Bert Bolin, embodied the new perspective that fighting climate change, pursuing "sustainable development," and treating sustainability as worldwide economic, social, and political reform were all part of a single unified project.

We are now more than a quarter-century past these events but we continue to live in what economist and historian Rupert Darwall has christened, "The Age of Global Warming." It is an age in which some very doubtful guesses about climate change are thoroughly mixed up with some very aggressive economic and political ambitions.

The scientific cases for and against anthropogenic global warming are complex and intricate. Hundreds of scientists have devoted their careers to understanding how local climates operate, how worldwide phenomena arise and occur, and what spurs temperature changes. Many matters are highly contended in the scientific literature. Below, we summarize the arguments and evidence commonly summoned on both sides of the debate.

206 Philip Shabecoff, "Global Warming Has Begun, Expert Tells Senate," *New York Times*, June 24, 1988. <http://www.nytimes.com/1988/06/24/us/global-warming-has-begun-expert-tells-senate.html>

207 "Environment," *Toronto Economic Summit Economic Declaration*, G-7 Summit, June 21, 1988. <http://www.g8.utoronto.ca/summit/1988toronto/communique/environment.html>

Global Warming: Yes

Sustainability derives its force primarily from two issues: global warming and economic inequality.

Global warming is seen as an imminent, non-reversible, potentially lethal threat to humans and animals. Even mild warming endangers the steadily rising quality of life that people across the globe have been enjoying. According to the Intergovernmental Panel on Climate Change, an increase of anything more than 2 degrees Celsius will prove catastrophic. To keep countries on target, the IPCC created a “carbon budget” of 1 trillion tons that humans may burn before triggering a net 2-degree rise. If fossil fuel use continues at its present rate, that budget will be expended within 30 years.²⁰⁸

The effects of climate change manifest themselves in various ways. Warmer temperatures cause heat stroke and heat exhaustion. Shrinking glaciers dump water into increasingly full oceans, swallowing up acres of shoreline and the communities that live along them.

Warmer air holds more water than cold air, upping the ante on hurricanes and typhoons. Sandy, the category 3 hurricane in October 2012 that hit New York and New Jersey, wrecked Manhattan’s Financial District and coastal areas of Queens and Brooklyn. Typhoon Haiyan in November 2013, with its 195 mile-per-hour winds, swept the Philippines even as UN climate change representatives convened in Warsaw. Haiyan left more than 6,000 Filipinos dead and another 4 million homeless or displaced. The Philippines’ climate negotiator, Yeb Sano, delivered an impassioned speech to the delegates at Warsaw: “What my country is going through as a result of this extreme event is madness... To anyone outside who continues to deny and ignore the realities of climate change, I dare them, I dare them to get off their ivory towers and away from the comfort of their arm chairs. I dare them to go to the islands of the Pacific.”²⁰⁹

The increasing water density of the air also makes for snowier winters. And by evaporating more water from the earth’s surface, the warming strains desert flora and fauna. The resulting forest fires in the American southwest eat up historic mountain preserves and people’s homes. Droughts in Africa lead to famines.

The problems intensify, though, when the accumulated effects of climate change trigger runaway global warming. Climate scientists warn that the earth is at the edge of three tipping points. The first involves melting snow and ice, which alter the earth’s albedo effect, or the ability of the earth’s surface to reflect sunlight. White snow bounces much of the sun’s light back to space, but green, blue, and brown absorb

208 “Understanding the IPCC Reports,” World Resources Institute. <http://www.wri.org/ipcc-infographics>

209 Yeb Sano, “It’s time to stop this madness’ – Philippines Plea at UN Climate Talks,” *Responding to Climate Change*, November 13, 2013. <http://www.rtcc.org/2013/11/11/its-time-to-stop-this-madness-philippines-plea-at-un-climate-talks/>

the sun's rays, leading to more warming, to more ice melting, and to more heat absorption.

The second is arctic methane gas fifty times more potent than CO₂, currently frozen into the Tundra. As the ice melts, the gas is released, triggering more warming and more atmospheric methane.

Ocean acidification, the third danger point, involves the health of the seas. As carbon dioxide sinks into the ocean and the water acidifies, plankton, the basis of the marine food chain, die and endanger all other aquatic life. These problems operate exponentially, and because the natural system features time lags, the full effects of today's decisions will not be felt for years to come.

Bill McKibben, one of the leaders of the environmental movement and founder of the advocacy group 350.org, broke down the data in his 2012 *Rolling Stone* article, "Global Warming's Terrifying New Math," which went viral and sparked a student campaign against the fossil fuel industry:

Meteorologists reported that this spring was the warmest ever recorded for our nation – in fact, it crushed the old record by so much that it represented the "largest temperature departure from average of any season on record." The same week, Saudi authorities reported that it had rained in Mecca despite a temperature of 109 degrees, the hottest downpour in the planet's history.

... So far, we've raised the average temperature of the planet just under 0.8 degrees Celsius, and that has caused far more damage than most scientists expected. (A third of summer sea ice in the Arctic is gone, the oceans are 30 percent more acidic, and since warm air holds more water vapor than cold, the atmosphere over the oceans is a shocking five percent wetter, loading the dice for devastating floods.) Given those impacts, in fact, many scientists have come to think that two degrees is far too lenient a target. "Any number much above one degree involves a gamble," writes Kerry Emanuel of MIT, a leading authority on hurricanes, "and the odds become less and less favorable as the temperature goes up." Thomas Lovejoy, once the World Bank's chief biodiversity adviser, puts it like this: "If we're seeing what we're seeing today at 0.8 degrees Celsius, two degrees is simply too much." NASA scientist James Hansen, the planet's most prominent climatologist, is even blunter: "The target that has been talked about in international negotiations for two degrees of warming is actually a prescription for long-term disaster." At the Copenhagen summit, a spokesman for small island nations warned that many would not survive a two-degree rise: "Some countries will flat-out disappear." When delegates from developing nations were warned that two degrees would represent a "suicide pact" for drought-stricken Africa, many of them started chanting, "One degree, one Africa." ... The official position of planet Earth at the moment is that we can't raise the temperature more than two degrees Celsius – it's become the bottomest of

*bottom lines. Two degrees.*²¹⁰

Since McKibben wrote his piece—which has become a touchpoint for many in the movement—scientists have concluded that 2014 has surpassed previous records as the hottest year. With the ten warmest recorded years all occurring since 1997, this latest data point indicates a growing trend.²¹¹ The *New York Times*, reporting on the rising temperature, put the news in historical context:

*February 1985 was the last time global surface temperatures fell below the 20th-century average for a given month, meaning that no one younger than 30 has ever lived through a below-average month. The last full year that was colder than the 20th-century average was 1976.*²¹²

The cause of such warming is largely attributed to greenhouse gas emissions. Pennsylvania State University climate scientist Michael Mann, quoted by the *Times*, noted that

*It is exceptionally unlikely that we would be witnessing a record year of warmth, during a record-warm decade, during a several decades-long period of warmth that appears to be unrivaled for more than a thousand years, were it not for the rising levels of planet-warming gases produced by the burning of fossil fuels.*²¹³

Global warming caused by increases in atmospheric carbon dioxide has happened before in the geologic history of Earth. Therefore it can happen again. Recently, for example, geologists concluded that a major increase in CO₂ was responsible for Paleocene-Eocene thermal maximum: “About 55.5 million years ago, a burst of carbon dioxide raised Earth’s temperature 5°C to 8°C, which had major impacts on numerous species of plants and wildlife.”²¹⁴

In addition to threatening human life and wellbeing in general, global warming also harms specific communities more than it harms others. Climate change is seen as exacerbating economic inequality by disproportionately visiting the injuries on the poorest, least-prepared.

Global warming caused primarily by Western industrialism and consumerism leads to flooding in Pacific

210 Bill McKibben, “Global Warming’s Terrifying New Math,” *Rolling Stone*, July 19, 2012. <http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719>

211 “NASA, NOAA Find 2014 Warmest Year in Modern Record,” National Aeronautics and Space Administration, January 16, 2015. http://www.nasa.gov/press/2015/january/nasa-determines-2014-warmest-year-in-modern-record/#.VMAP9LF_03

212 Justin Gillis, “2014 Breaks Heat Record, Challenging Global Warming Skeptics,” *New York Times*, January 16, 2015. http://www.nytimes.com/2015/01/17/science/earth/2014-was-hottest-year-on-record-surpassing-2010.html?_r=0

213 *ibid.*

214 Tim Wogan, “Greenhouse Emissions Similar to Today’s May Have Triggered Massive Temperature Rise in Earth’s Past,” *Science*, December 15, 2014. http://news.sciencemag.org/climate/2014/12/greenhouse-emissions-similar-today-s-may-have-triggered-massive-temperature-rise?utm_campaign=email-news-latest&utm_source=eloqua

islands already beset by weak economies. Droughts, famines, and heat waves hit Africa especially hard, adding insult to colonial injury. Poor neighborhoods (often Black and Hispanic) in the United States are more likely to be situated near landfills and trash collection centers, or plants and factories that spew toxins. Minorities are more likely to work dirty, dangerous jobs such as coal mining. And when natural disasters strike, they're least likely to receive aid and to recover quickly; when Sandy hit New York, Wall Street was drained, rebuilt, and fortified within a few weeks, while more than two years after the storm, Queens and Brooklyn residents are still resetting their lives.

Because those with lower socio-economic statuses have less mobility, they can't relocate to better areas. And because they have little capital and few political connections, they have a more difficult time altering government policy. In times like these, the people have no option left but to take to the streets, as they did in September worldwide at the People's Climate March. The Natural Resources Defense Council explains,

Championed primarily by African-Americans, Latinos, Asians and Pacific Islanders and Native Americans, the environmental justice movement addresses a statistical fact: people who live, work and play in America's most polluted environments are commonly people of color and the poor. Environmental justice advocates have shown that this is no accident. Communities of color, which are often poor, are routinely targeted to host facilities that have negative environmental impacts—say, a landfill, dirty industrial plant or truck depot. The statistics provide clear evidence of what the movement rightly calls “environmental racism.” Communities of color have been battling this injustice for decades.²¹⁵

The solution, then, is to implement environmental justice. The EPA defines the term as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”²¹⁶ An environmentally just world not only stops climate change and protects natural resources. It also ensures that those resources are distributed evenly among all people, that political systems do not privilege the well-educated and well-connected, and that entrenched social customs do not hold back certain identity groups. Ideally, natural resources are used in a sustainable way—that is, by using only what nature can replenish. But economic resources, too, are rationed and distributed equally, so that no one can hoard wealth or prevent the lowest rungs of society from climbing the economic ladder.

215 Renee Skelton and Vernice Miller, “The Environmental Justice Movement,” Natural Resources Defense Council, October 12, 2006. <http://www.nrdc.org/ej/history/hej.asp>

216 “Environmental Justice Program and Civil Rights,” Environmental Protection Agency, New England's Office of Civil Rights and Urban Affairs. <http://www.epa.gov/region1/ej/>

As a result of sustainable resources use and a sustainable economic system, social systems should also emerge in a manner that sustains human dignity and establishes the equality of human beings. To get to this better world, policies that uplift underprivileged groups such as women, racial minorities, the disabled, and those who identify as gay, lesbian, or bisexual require special consideration. Contraception, abortion, policies to close wage gaps, the legal recognition of gay marriage, affirmative action, and other social measures are thus linked with social sustainability. Social repression, it suggests, mimics environmental repression.

The International Society of Sustainability Professionals publishes a short guide, “Confused About Social Sustainability?” that spells out the basics of social sustainability initiatives in developed countries. Among its recommendations are curbing use of minerals and resources (such as many involved in cell phones and other electronics) that are associated with guerrilla conflicts in places like the Congo; holding businesses responsible for the outcomes associated with their products (i.e., rejecting the National Rifle Association’s slogan that it’s people, not guns, that kill); awarding jobs on the basis of social justice criteria to prioritize, for instance, the homeless; and offering free on-site day care to employees’ children.²¹⁷

Anthony Cortese, former president of Second Nature, spelled out what this ideal of sustainability might look like:

*Imagine a society in which all present and future humans are healthy and have their basic needs met. What if everyone had fair and equitable access to the Earth’s resources, a decent quality of life, and celebrated cultural diversity?*²¹⁸

Thus old-school conservation, technology-based solutions to global warming, and individual choices to consume less are insufficient to achieve sustainability. A sustainable world involves social and economic shifts as well.

Global Warming: No

Others are not so sure—that global warming is happening, that man is causing it, that the warming is significant enough to be dangerous, that social and economic woes are causatively linked to environmental ones, or that sustainability is the right agenda for higher education. Our critique in this book focuses on the last two. But in fair-mindedness, here is the case against dangerous anthropogenic global warming. There are many distinct cases against the existence of global warming, man’s role in causing it, and

217 Darcy Hitchcock and Marsha Willard, “Confused About Social Sustainability? What It Means for Organizations in Developed Countries,” International Society of Sustainability Professionals. https://www.sustainabilityprofessionals.org/sites/default/files/Confused%20about%20social%20sustainability_0.pdf

218 Anthony Cortese, “The Critical Role of Higher Education in Creating a Sustainable Future,” *Planning for Higher Education*, March-May 2003, pg. 15. http://www.aashe.org/resources/pdf/Cortese_PHE.pdf

the need to urgently stop it. In general, the skeptics hesitate to extrapolate long-term predictions from inherently volatile weather conditions. The earth's global mean temperature has defied the projections that the IPCC has set down in its periodic assessment reports, and in its most recent report, the IPCC was forced to quietly lower its predictions. In the release of its Fifth Assessment Report in 2013, the IPCC predicted a temperature increase of 0.3 to 4.8 degrees Celsius, down from 1.1 to 6.4 degrees Celsius in the Fourth Assessment Report (2007).

Still, surface temperatures have registered below even the lower bound of the IPCC's 2013 projection. Nor is it clear that recent temperatures have been skyrocketing or that 2014 was exceptionally hot. Many data sets indicate temperatures stabilizing and flattening since 1998. Three main research centers compile the global average surface temperature in real time: NOAA, the UK Met Office Hadley Centre, and NASA's Goddard Institute for Space Studies.²¹⁹ All three show 2014 temperatures very close to those in 2010, the warmest year on record. The differences are small enough that they are not statistically significant. NASA's dataset shows 2014 as 0.02 degrees Fahrenheit warmer than 2010—well within the margin of error of plus or minus 1 degree Fahrenheit.²²⁰

Other research groups measure the temperature of the lower atmosphere, rather than the earth's surface, in an attempt to get a more even record undisturbed by the urban heat island effect. Data from atmospheric readings indicate that the earth is several tenths of a degree cooler than 1998, the hottest year on record since these measurements began in 1979. In December 2014, both the Remote Sensing Systems and the University of Alabama-Huntsville datasets showed 2014 in line to rank among the top five warmest years, but not as the warmest one of all.²²¹

So where's the missing heat? Pro-global warming scientists have come up with a lengthy series of theories to explain the recent decline in temperatures, but none has been conclusive. The current theory physicists are flirting with is the idea that the Atlantic Ocean is holding the heat and preventing it from warming up the surface of the land.²²² Eventually the oceans will get too hot, though, and the rest of the globe will start warming again. Before that theory took hold, scientists thought it might be the Pacific harboring the

219 Two other groups also compile surface temperature data, but one, the Berkeley Earth group, does not update in real time and so does not have data to tell whether 2014 is hottest or not. And the other, developed by Kevin Cowtan and Robert Way from the University of York, uses a contested method to "fill in" missing data.

220 David Whitehouse, "2014 Global Temperature Stalls Another Year," Global Warming Policy Foundation, January 16, 2015. <http://www.thegwpf.com/2014-global-temperature-stalls-another-year/>

221 Paul C. "Chip" Knappenberger and Patrick J. Michaels, "Current Wisdom: Record Global Temperature—Conflicting Reports, Contrasting Implications," *Cato at Liberty*, December 10, 2014. <http://www.cato.org/blog/current-wisdom-record-global-temperature-conflicting-reports-contrasting-implications>

222 Jane J. Lee, "Has the Atlantic Ocean Stalled Global Warming?" *National Geographic*, August 21, 2014. <http://news.nationalgeographic.com/news/2014/08/140821-global-warming-hiatus-climate-change-ocean-science/>

heat, but that turned out to be false.²²³ Other theories blame China's increased use of coal²²⁴ and the recent rise in volcanoes,²²⁵ both of which emit sulfur dioxide into the atmosphere that bounces back the sun's rays; the success of the 1988 Montreal Protocol in banning chlorofluorocarbons, which deplete the ozone layer;²²⁶ and declines in atmospheric water vapor, which acts in tangent with greenhouse gases to trap heat.²²⁷

There are other problems. The data is sketchy, and there are historical gaps in the records. Often climatologists have to piece together records from thermometer readings and proxy measures, such as samples of ice cores and tree rings, or else simply guess, in order to produce historical temperature records. And the means of recording current temperatures are often unreliable. Anthony Watts, a veteran broadcast meteorologist, found during a 2009 examination of temperature stations across the country that 89 percent were poorly situated—often next to exhaust fans of air conditioning units or amidst dark asphalt parking lots—and failed the National Weather Service's siting requirements. The margin of error on their temperature readings, calculated by the U.S. government, was between 2 and 5 degrees Celsius. The average surface warming that the IPCC had calculated, in part on the basis of these stations, was 0.7 degrees Celsius over the prior 50 years—significantly less than the margin of error.²²⁸

The widely-circulated figure that 97 percent of all scientists believe global warming is dangerous and man-made also has been discredited. The survey that produced that statistic misclassified some global warming skeptics as proponents by wrongly labeling some of their research. It also counted those who believe that at least "some" global warming comes from human influence as supporters of the view that man-made global warming is dangerous.²²⁹ In fact, a number of scientists recognize mild global warming and attribute it to the increased human use of carbon-based fuels, but consider the current warming a net benefit rather than precursor to a greater harm.

223 Ben Jervey, "Where Global Warming Went: Into the Pacific," *National Geographic*, February 11, 2014. <http://news.nationalgeographic.com/news/2014/02/140211-global-warming-pause-trade-winds-pacific-science-climate/>

224 Richard Black, "Global Warming Lull Down to China's Coal Growth," *BBC*, July 5, 2011. <http://www.bbc.co.uk/news/science-environment-14002264>

225 "Volcanic Aerosols, not Pollutants, Tamped Down Recent Earth Warming, Says CU Study," *Be Boulder*, March 1, 2013. <http://www.colorado.edu/news/releases/2013/03/01/volcanic-aerosols-not-pollutants-tamped-down-recent-earth-warming-says-cu>

226 Francisco Estrada, Pierre Perron, Benjamín Martínez-López, "Statistically Derived Contributions of Diverse Human Influences to Twentieth-Century Temperature Changes," *Nature Geoscience*, 2013, Volume 6, pp. 1050–1055. <http://www.nature.com/ngeo/journal/v6/n12/full/ngeo1999.html>

227 Susan Solomon, Karen H. Rosenlof, Robert W. Portmann, John S. Daniel, Sean M. Davis, Todd J. Sanford, Gian-Kasper Plattner. "Contributions of Stratospheric Water Vapor to Decadal Changes in the Rate of Global Warming," *Science*, March 5, 2010: Vol. 327 no. 5970 pp. 1219-1223. <http://www.sciencemag.org/content/327/5970/1219.abstract>

228 Anthony Watts, "Is the U.S. Surface Temperature Record Reliable?" *The Heartland Institute*, 2009. <http://heartland.org/sites/default/files/SurfaceStations.pdf>

229 James Taylor, "Global Warming Alarmists Caught Doctoring '97-Percent Consensus' Claims," *Forbes*, May 30, 2013. <http://www.forbes.com/sites/jamestaylor/2013/05/30/global-warming-alarmists-caught-doctoring-97-percent-consensus-claims/>

While it is true that today's global surface temperature and lower atmospheric temperature are both slightly warmer than they were fifty years ago, the increase is mild and unlikely to continue much further. The Earth experiences climate cycles regularly. For instance, the Medieval Warm Period, from about 950 to 1300 AD, dramatically warmed the earth—so much so that there are records of thriving lush farms in Greenland.

In fact, moderate warming may actually benefit the earth. Warmer temperatures and increased concentrations of carbon stimulate lush plant growth, while mild weather (as opposed to historically frigid eras) benefits human wellbeing. Bjorn Lomborg, the Danish environmental economist and founder of the Copenhagen Consensus, recognizes the existence of global warming but discounts its harms. He calculates that globally warmer temperatures could actually save as many as 1.4 million lives per year.²³⁰ Princeton physicist and former director of energy research at the Department of Energy Will Happer testified to Congress in 2009, "I believe that the increase of CO₂ is not a cause for alarm and will be good for mankind, for among other reasons because of its beneficial effects on plant growth."²³¹ Happer wrote in the *Wall Street Journal* in March 2012,

CO₂ is not a pollutant. Life on earth flourished for hundreds of millions of years at much higher CO₂ levels than we see today. Increasing CO₂ levels will be a net benefit because cultivated plants grow better and are more resistant to drought at higher CO₂ levels, and because warming and other supposedly harmful effects of CO₂ have been greatly exaggerated. Nations with affordable energy from fossil fuels are more prosperous and healthy than those without.

*The direct warming due to doubling CO₂ levels in the atmosphere can be calculated to cause a warming of about one degree Celsius. The IPCC computer models predict a much larger warming, three degrees Celsius or even more, because they assume changes in water vapor or clouds that supposedly amplify the direct warming from CO₂. Many lines of observational evidence suggest that this "positive feedback" also has been greatly exaggerated.*²³²

It's also unclear how much warming is due to human influence. Richard S. Lindzen, an MIT professor of meteorology, commented in the *Wall Street Journal*,

The main statement publicized after the last IPCC Scientific Assessment two years ago was that

230 Bjorn Lomborg, "Global Warming Will Save Millions of Lives," *The Telegraph*, March 12, 2009. <http://www.telegraph.co.uk/comment/personal-view/4981028/Global-warming-will-save-millions-of-lives.html>

231 William Happer, "Climate Change: Statement of William Happer, Cyrus Fogg Brackett Professor of Physics, Princeton University, Before the U.S. Senate Environment and Public Works Committee, Senator Barbara Boxer, Chair," U.S. Senate Environment and Public Works Committee, February 25, 2009. http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=84462e2d-6bff-4983-a574-31f5ae8e8a42

232 William Happer, "Global Warming Models Are Wrong Again," *Wall Street Journal*, March 27, 2012. <http://online.wsj.com/articles/SB10001424052702304636404577291352882984274>

it was likely that most of the warming since 1957 (a point of anomalous cold) was due to man. This claim was based on the weak argument that the current models used by the IPCC couldn't reproduce the warming from about 1978 to 1998 without some forcing, and that the only forcing that they could think of was man. Even this argument assumes that these models adequately deal with natural internal variability—that is, such naturally occurring cycles as El Niño, the Pacific Decadal Oscillation, the Atlantic Multidecadal Oscillation, etc.

Yet articles from major modeling centers acknowledged that the failure of these models to anticipate the absence of warming for the past dozen years was due to the failure of these models to account for this natural internal variability. Thus even the basis for the weak IPCC argument for anthropogenic climate change was shown to be false.²³³

The historical records show many periods of warming and cooling, many of them so ancient that it is unlikely man even had the technological capacity at the time to be responsible for them. And there is evidence that global temperature swings are caused by sun spots, changes in the sun's electromagnetic activity because of variations in the intensity of solar wind, and the power of El Niño, which suppresses the cold upwelling off of South America. Indeed, 1998, one of the warmest years on record, saw one of the largest El Niños in recent history. Even if the earth may be warming, it's not certain that the warming will continue, or that it will become dangerous.

Climategate

One cause for skepticism of anthropogenic global warming is because of high-profile scandals in the field of climatology. One of the best-known, "Climategate," implicated some of the world's top climate scientists in a plan to keep out of the IPCC's publications any article skeptical of global warming, "even if we have to re-define what the peer-review literature is!"²³⁴ They also worked together to selectively cull data that told the right story and modify or leave out data that did not. One of the most famous graphs implicated in Climategate was the "hockey stick" developed by University of Virginia climatologist Michael Mann that showed centuries of flat temperatures followed by rapidly increasing temperatures in the 20th century.

On November 19, 2009, just prior to the UN Climate Conference in Copenhagen, and again on November 22, 2011, before the UN Climate Conference in Durban, South Africa, several thousand emails involving top climate scientists from the United States and United Kingdom were posted online (whether they

²³³ Richard S. Lindzen, "The Climate Science Isn't Settled" *Wall Street Journal*, November 30, 2009. <http://online.wsj.com/articles/SB10001424052748703939404574567423917025400>

²³⁴ James Delingpole, "Climategate 2.0," *Wall Street Journal*, November 28, 2011. <http://online.wsj.com/articles/SB10001424052970204452104577059830626002226>



were leaked or hacked is still unknown). The email threads involved Mann and UK-based researchers at the Climatic Research Unit at East Anglia University who wrote the core of the IPCC's reports. When their independent research showed conflicting temperature graphs, they struggled with how to present their data. In a 1999 email, Mann wrote to his colleagues,

*Keith's series...differs in large part in exactly the opposite direction that Phil's does from ours. This is the problem we all picked up on (everyone in the room at IPCC was in agreement that this was a problem and a potential distraction/detraction from the reasonably consensus viewpoint we'd like to show w/ the Jones et al and Mann et al series).*²³⁵

Keith Briffa, the climatologist at the Climatic Research Unit whose tree-ring data showed declining temperatures since 1960, wrote,

*I know there is pressure to present a nice tidy story as regards "apparent unprecedented warming in a thousand years or more in the proxy data" but in reality the situation is not quite so simple.*²³⁶

In the end they omitted some of the tree-ring proxy data showing temperature declines, and inflated other dissenting data. They also suppressed the Medieval Warm Period, the well-documented period of warm temperatures from about 900 to 1300 AD. Phil Jones, the director of the Climatic Research Unit, wrote to Mann and several others about his successful massaging of his data to reflect the "consensus" temperature charts:

*I've just completed Mike's [Mann] Nature trick of adding in the real temps to each series for the last 20 years (i.e. from 1981 onwards) and from 1961 for Keith's to hide the decline.*²³⁷

Michael Mann's "trick" was to substitute thermometer data for proxy data and vice versa as necessary to produce the hockey stick-shaped graph, without noting these substitutions.

The Climategate emails followed and confirmed earlier doubts about Mann's data. As early as 2003, Canadian economist Ross McKittrick and mining executive Stephen McIntyre began requesting original surface temperature data from Mann and his colleagues at the Climatic Research Unit and scrutinizing the numbers they found. The results of their examination, published in the journal *Environment and Energy*, found "collation errors, unjustifiable truncation or extrapolation of source data, obsolete data, geographical location errors, incorrect calculation of principal components and other quality control

235 Email from Michael Mann to Keith Briffa, Chris Folland, Phil Jones, September 22, 1999. <http://www.assassinationscience.com/climategate/1/FOIA/mail/0938018124.txt>

236 Email from Keith Briffa to undisclosed recipients, September 22, 1999. <http://www.assassinationscience.com/climategate/1/FOIA/mail/0938018124.txt>

237 Email from Phil Jones to Ray Bradley, Michael Mann, Malcolm Hughes, November 16, 1999. <http://Iraq.net/emails.html>

defects.”²³⁸ Reversing Mann’s errors and updating his data, they found that the temperature of the 15th century (at the end of the Medieval Warm Period) was warmer than any period in the 20th century.

McIntyre and McKittrick found that Mann’s computing model that synthesized different data series gave more weight to the handful of series that showed hockey stick shapes and depressed the weight of those that did not. The weighting of Mann’s model was so strong that when McIntyre and McKittrick experimented with feeding random data into his model, they found the result was still the flat hockey stick handle followed by a sharply rising paddle.²³⁹

In response, Mann argued that McIntyre and McKittrick had used a faulty version of his data and had failed to replicate his computer modeling system. Mann supplied McIntyre and McKittrick with a corrected version of his climate data, which they found to be nearly identical to the first set. He declined to release his full computer model.

In response to the Climategate scandal, the Climatic Research Unit announced that it no longer had the original data.²⁴⁰ The University of East Anglia appointed two investigations. One, a Scientific Appraisal Panel of six university academics and chaired by Lord Ronald Oxburgh, investigated for three weeks and then released a five-page report. It cleared the Climatic Research Unit of any charges of “deliberate scientific malpractice” but acknowledged the Unit was “slightly disorganised” and that it would benefit from “close collaboration with professional statisticians.”²⁴¹ A second UEA report, The Independent Climate Change E-mails Review of five panelists under Sir Muir Russell, released a longer, 160-page report that found a “consistent pattern of failing to display the proper degree of openness” but no reason to doubt the scientists’ “rigor and honesty” or to “undermine the conclusions of the IPCC assessments.”

The House of Commons reviewed the incident as well. After five weeks it announced,

In the context of the sharing of data and methodologies, we consider that Professor Jones’ actions were in line with common practice in the climate science community...We are content that the phrases such as ‘trick’ or ‘hiding the decline’ were colloquial terms used in private e-mails and the balance of evidence that we have seen does not suggest that Professor Jones was trying to subvert

238 Stephen McIntyre and Ross McKittrick, “Corrections to the Mann et. al. (1998) Proxy Data Base and Northern Hemisphere Average Temperature Series,” *Environment and Energy*, Vol. 14, No. 6, 2003, pg. 751. <http://www.uoguelph.ca/~rmckitri/research/MM03.pdf>

239 Ross McKittrick, “What Is the ‘Hockey Stick’ Debate About?” Presentation at the APEC Study Group, Australia, April 4, 2005. <http://www.uoguelph.ca/~rmckitri/research/APEC-hockey.pdf>

240 “Steve Goreham, *The Mad, Mad, Mad World of Climatism*, New Lenox Books, 2012, pg. 162.

241 “Report of the International Panel Set up by the University of East Anglia to Examine the Research of the Climatic Research Unit,” April 12, 2010. <http://www.uea.ac.uk/mac/comm/media/press/CRUstatements/SAP>

*the peer review process.*²⁴²

Mann is now embroiled in a lawsuit with his critics Mark Steyn, *National Review*, and the Competitive Enterprise Institute—though he is not the defendant but the accuser, charging them with libel. Mann is also suing in Canada skeptical scientist Tim Ball for alleged libel.

Gorism

The case for manmade global warming can be put forward, as we have indicated, as a set of interrelated scientific hypotheses. But it also can be put forward as a sensational narrative that has little to do with science. The sensational narrative deserves attention too, because it plays a large role in sustaining the sustainability movement.

When movie makers in the 1950s conjured the peril of an invasion of ants the size of houses (*Them!* 1954) or mind-controlling aliens (*Invaders from Mars*, 1953) it was easy for audiences to indulge a make-believe tale of disaster. But the line between scary fantasy and actual peril isn't always so clear. Al Gore's 2006 movie, *An Inconvenient Truth*, has been understood by many Americans as a documentary on the peril of the world-wide catastrophe of global warming. But the peril depicted in *An Inconvenient Truth* may be no more real than the danger posed by extra-large ants or mean Martians. Gore's documentary incorporated Hollywood special effects, including footage from the cli-fi movie *The Day After Tomorrow*. The haunting images of glaciers falling into the sea in Gore's film were actually computer-generated imagery from the movie, passed off as the real thing.²⁴³

"Cli-fi"—climate fiction—is indeed a new genre in books as well as movies. A mass audience has emerged that is eager to be entertained by stories of how humans, having used up the world's resources or having inadvertently unleashed catastrophic climate change, must cope with the consequences. Hollywood has contributed *Waterworld* (1995), *Elysium* (2013), *Wall-E* (2008), *Snowpiercer* (2014), and *Into the Storm* (2014). Some movies follow Gore's example by blurring the line between documentary and fiction. *The Age of Stupid* is set in 2055 but incorporates what is presented as "archival footage" (some of it real) from the present. The voiceover in the trailer explains the title:

Will people in the future call our time 'The Age of Stupid?' Or will humanity find a solution to the world's most urgent problem? You decide.

The movie was released in 2009 during United Nations Climate Week with the aim of influencing the

242 "The Disclosure of Climate Data from the Climatic Research Unit at the University of East Anglia," House of Commons Science and Technology Committee, pg. 163. Mar. 24, 2010. <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/387/387i.pdf>

243 Noel Sheppard, "Gore Used Fictional Video to Illustrate 'Inconvenient Truth,'" *Newsbuster*, April 22, 2008. <http://newsbusters.org/blogs/noel-sheppard/2008/04/22/abc-s-20-20-gore-used-fictional-film-clip-inconvenient-truth>

negotiations at the Copenhagen Summit.²⁴⁴

Cli-fi, of course, extends to books as well. One review of recent works in the genre mentioned *Far North* (2009) by Marcel Theroux (*Washington Post*: “first great cautionary fable of climate change”); *I’m With the Bears* (2011) by Mark Martin; *Back to the Garden* (2012) by Clara Hume; *The Healer* (2013) by Antti Tuomainen; *Odds Against Tomorrow* (2013) by Nathaniel Rich; *Solar* (2010) by Ian McEwan; and *Wild Ones* (2013) by Jon Mooallem.²⁴⁵ Jason Mark, in his *New York Times* essay on cli-fi, also mentions Margaret Atwood’s *MaddAddam* trilogy (2003, 2009, 2013) and Jennifer Egan’s Pulitzer Prize-winning *A Visit from the Goon Squad* (2010).²⁴⁶

The importance of these cinematic and literary depictions of climate disaster lies in their feeding the mythology rather than the science of global warming. An artistic rendering doesn’t invite a dispute over the facts. It presents the imagined world as given, and often with sufficient verisimilitude as to pull the viewer or reader along with the vision regardless of the facts.

In the broader cultural debate over global warming, fiction is a powerful ally of those who argue in favor of the hypothesis. On the side of the skeptics, it is possible to view one major movie, *Interstellar* (2014), as rejecting the global warming hypothesis. *Interstellar*, like these other movies, is about global catastrophe, but the catastrophe on offer is blight, not warming.

The global warming hypothesis advocates have as allies artists working in many other media as well. There are playwrights committed to the cause.²⁴⁷ And painters, sculptors, performance artists, photographers, architects, and musicians who lend their talents. Al Gore’s contribution was to lend this nascent movement a clear theme, and that theme has been endlessly elaborated. Andy Revkin’s folk-style song, “Liberated Carbon” (2013) –“Liberate some carbon, baby, it’s the American way!”—might be the movement’s anthem.²⁴⁸

The idea that the world is imperiled by environmental catastrophe has been part of the fabric of popular culture at least since the 1950s, but the catastrophe is a perpetually receding horizon. A few months after

244 Scott Thill, “The Age of Stupid Gets Smart on Enviropocalypse,” *Wired*, September 18, 2009. <http://www.wired.com/2009/09/review-the-age-of-stupid-gets-smart-on-enviropocalypse>

245 Rebecca Tuhus-Dubrow, “Cli-Fi: Birth of a Genre,” *Dissent*, Summer 2013. <http://www.dissentmagazine.org/article/cli-fi-birth-of-a-genre>

246 Jason Mark, “Climate Fiction Fantasy: What ‘Interstellar’ and ‘Snowpiercer’ Got Wrong,” *New York Times*, December 9, 2014. http://www.nytimes.com/2014/12/10/opinion/what-interstellar-and-snowpiercer-got-wrong.html?_r=0

247 Chantal Bilodeau, “Creating a List of Climate Change Plays,” *Artists and Climate Change*, November 1, 2014. <http://artistsandclimatechange.com/2014/11/01/creating-a-list-of-climate-change-plays/>

248 Andrew Revkin, “Liberated Carbon,” YouTube, September 24, 2013. https://www.youtube.com/watch?v=pzZ_M4rnD48

the first Earth Day in 1970, the Canadian musician Neil Young released his album *After the Gold Rush*, in which the title song evoked an eco-apocalypse. Young warned:

Look at Mother Nature on the run

In the nineteen seventies.

Mother Nature, however, declined to run out, and as Young performed the song in repertoire, he changed the line to “the nineteen eighties,” then “the twentieth century,” and then “the twenty-first century.”

The New Orthodoxy

In an academic environment that derides moral absolutes, preaches tolerance, and prides itself on objectivity, sustainability has managed to become the pervading campus dogma. Global warming, especially, enjoys a privileged position as a rare scientific theory above debate.



Scientists at the People's Climate March in New York City

Is the climate really changing? In the direction of global warming? Because of human activity? And if the answers to all these questions are “yes,” are the interventions proposed by sustainability advocates plausible responses? These are key questions, but the sustainability movement does not welcome them. Instead it sets forth a set of doctrinaire answers and responds to virtually all challenges with declarations of “scientific” authority: that “consensus” has been achieved among all reputable observers and there is nothing left to be debated.

Consider the proclamations by some of AGW's most outspoken supporters.

Al Gore, interviewed on the CBS *Early Show* on May 31, 2006, told the public:

*The debate among scientists is over. There is no more debate. We face a planetary emergency. There is no more scientific debate among serious people who've looked at the science... Well, I guess in some quarters, there's still a debate over whether the moon landing was staged in a movie lot in Arizona, or whether the earth is flat instead of round.*²⁴⁹

249 Rachel Waters, “Global Warming Movie Makes the Media Hot for Al Gore All Over Again,” *Business and Media Institute*, Aug. 16, 2006, http://www.mrc.org/bmi/reports/2006/Summer_Rerun.html

At a June 2014 commencement at the University of California-Irvine, President Obama compared skeptics of anthropogenic global warming to those who might have told President Kennedy that the moon “was made of cheese.” He told a sea of new graduates that “The climate change deniers suggest there’s still a debate over the science. There is not.”²⁵⁰

Secretary of State John Kerry echoed President Obama’s theme in a 2014 speech on climate change:

*First and foremost, we should not allow a tiny minority of shoddy scientists and science and extreme ideologues to compete with scientific fact. ...I have to tell you, this is really not a normal kind of difference of opinion between people. Sometimes you can have a reasonable argument and a reasonable disagreement over an opinion you may have. This is not opinion. This is about facts. This is about science. The science is unequivocal. And those who refuse to believe it are simply burying their heads in the sand.*²⁵¹

It’s not just politicians who speak so confidently. “The science is settled,” then-chairman of the IPCC Robert Watson told an interlocutor during the 1997 Kyoto Protocol Treaty negotiations. “We’re not going to reopen it here.”²⁵²

Watson was succeeded in 2002 by Rajendra Pachauri, who commented in a 2008 interview with the *Chicago Tribune*,

*There is, even today, a Flat Earth Society that meets every year to say the Earth is flat. The science about climate change is very clear. There really is not room for doubt at this point.*²⁵³

EPA chief Lisa Jackson testified in 2010 to Congress, “The science behind climate change is settled, and human activity is responsible for global warming.”²⁵⁴

NASA has publicized the statistic that “Ninety-seven percent of climate scientists agree that climate-warming trends over the past century are very likely due to human activities” and keeps a running list of

250 Barack Obama, “Remarks by the President at University of California-Irvine Commencement Ceremony,” The White House, Office of the Press Secretary, June 14, 2014. <http://www.whitehouse.gov/the-press-office/2014/06/13/remarks-president-university-california-irvine-commencement-ceremony>

251 John Kerry, “Remarks on Climate Change,” Jakarta, Indonesia, U.S. Department of State, February 16, 2014. <http://www.state.gov/secretary/remarks/2014/02/221704.htm>

252 Henry Lamb, “Kyoto Report,” *Eco-Logic*, Nov/Dec, 1997. <http://sovereigntyonline.org/p/clim/kyotorpt.htm>

253 Michael Hawthorne, “Blunt Answers About the Risks of Global Warming,” *Chicago Tribune*, Aug. 3, 2008. http://articles.chicagotribune.com/2008-08-03/news/0808020393_1_global-warming-climate-change-rajendra-pachauri

254 Robin Bravender, “EPA Chief Goes Toe-To-Toe with Senate GOP Over Climate Science,” *New York Times*, Feb. 23, 2010, <http://www.nytimes.com/gwire/2010/02/23/23greenwire-epa-chief-goes-toe-to-toe-with-senate-gop-over-72892.html>

scientific bodies that agree.²⁵⁵ The American Physical Society declares,

*The evidence is incontrovertible: Global warming is occurring. If no mitigating actions are taken, significant disruptions in the Earth's physical and ecological systems, social systems, security and human health are likely to occur. We must reduce emissions of greenhouse gases beginning now.*²⁵⁶

The American Association for the Advancement of Science has likewise proclaimed,

*The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society.*²⁵⁷

But to other scientists, the evidence is anything but clear. A number of prominent scientists have expressed doubt that global warming is dangerous and man-made.

For instance, Richard Lindzen, emeritus Sloan Professor of Atmospheric Sciences at MIT, has strongly challenged much of the evidence cited to support anthropogenic global warming, arguing that the climate naturally varies, that the earth is recently emerging from a little ice age that lasted from the 15th to 19th centuries, that the artificial introduction of additional CO₂ into the atmosphere is minor relative to the water vapor and clouds that dominate the atmosphere, and that the temperature data used to demonstrate dangerous warming are thin and easily nudged upwards. In a *Wall Street Journal* op-ed, "The Climate Science Isn't Settled," Lindzen writes,

*The notion that complex climate "catastrophes" are simply a matter of the response of a single number, GATA (globally averaged temperature anomaly), to a single forcing, CO₂ (or solar forcing for that matter), represents a gigantic step backward in the science of climate. Many disasters associated with warming are simply normal occurrences whose existence is falsely claimed to be evidence of warming. And all these examples involve phenomena that are dependent on the confluence of many factors.*²⁵⁸

William Happer, Princeton's Cyrus Fogg Brackett Professor of Physics and the former Director of Energy Research at the Department of Energy, holds that the climate, though mildly warming in recent years, poses no danger to human life. As he testified to the U.S. Senate in 2009, he has devoted his career "to understanding the interactions of visible and infrared radiation with gases—one of the main physical phenomena behind the greenhouse effect" and he sees no cause for alarm over the global temperature

255 "Consensus: 97% of Climate Scientists Agree," Global Climate Change: Vital Signs of the Planet, NASA. <http://climate.nasa.gov/scientific-consensus/>

256 *Ibid.*

257 *Ibid.*

258 Richard Lindzen, "The Climate Science Isn't Settled," *Wall Street Journal*, November 30, 2009. <http://online.wsj.com/articles/SB10001424052748703939404574567423917025400>

or the atmospheric carbon dioxide levels. Happer testified that

Without greenhouse warming, the earth would be much too cold to sustain its current abundance of life. However, at least 90% of greenhouse warming is due to water vapor and clouds. Carbon dioxide is a bit player. There is little argument in the scientific community that a direct effect of doubling the CO₂ concentration will be a small increase of the earth's temperature—on the order of one degree. Additional increments of CO₂ will cause relatively less direct warming because we already have so much CO₂ in the atmosphere that it has blocked most of the infrared radiation that it can. It is like putting an additional ski hat on your head when you already have a nice warm one below it, but you are only wearing a windbreaker. To really get warmer, you need to add a warmer jacket. The IPCC thinks that this extra jacket is water vapor and clouds.

Since most of the greenhouse effect for the earth is due to water vapor and clouds, added CO₂ must substantially increase water's contribution to lead to the frightening scenarios that are bandied about. The buzz word here is that there is "positive feedback." With each passing year, experimental observations further undermine the claim of a large positive feedback from water. In fact, observations suggest that the feedback is close to zero and may even be negative. That is, water vapor and clouds may actually diminish the already small global warming expected from CO₂, not amplify it.²⁵⁹

Roy Spencer, the principal research scientist at the University of Alabama in Huntsville and US Science Team Leader for the Advanced Microwave Scanning Radiometer on NASA's Aqua satellite, testified to the Senate Environment and Public Works Committee that

My overall view of the influence of humans on climate is that we probably are having some influence, but it is impossible to know with any level of certainty how much influence. The difficulty in determining the human influence on climate arises from several sources: (1) weather and climate vary naturally, and by amounts that are not currently being exceeded; (2) global warming theory is just that – based upon theory; and (3) there is no unique fingerprint of human caused global warming.²⁶⁰

Other distinguished scientists who are skeptical of dangerous anthropogenic global warming include Judith Curry, Professor of Earth and Atmospheric Sciences at the Georgia Institute of Technology; Freeman Dyson, Emeritus Professor of Physics at Princeton University's Institute for Advanced Study; S. Fred Singer,

259 William Happer, "Climate Change," Testimony before the U.S. Senate Environment and Public Works Committee, Senator Barbara Boxer, Chair, February 25, 2009. http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=84462e2d-6bff-4983-a574-31f5ae8e8a42

260 Roy Spencer, "Statement to the Environment and Public Works Committee of the United States Senate," July 18, 2013. http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=16e80c55-9ebf-42e4-852e-1f6e960b0902

Emeritus Professor of Environmental Sciences at the University of Virginia; Anthony Lupo, Professor of Atmospheric Science at the University of Missouri; and Ivar Giaever, Professor of Physicists at Rensselaer Polytechnic Institute and a 1973 Nobel laureate.

Another notable name is Bjorn Lomborg, the Danish intellectual famous for his strong data-driven research and his think tank, the Copenhagen Consensus Center. *The Guardian* named him one of the “50 people who could save the planet,”²⁶¹ and other publications, such as *Time*, *Esquire*, *Foreign Policy*, and *Foreign Policy & Prospect Magazine* have named him to their top-100 and top-75 lists of influential thinkers. Two of Lomborg’s best-known books, *The Skeptical Environmentalist* (Cambridge University Press, 2001) and *Cool It* (Vintage Press, 2010), accept scientific data demonstrating warming temperatures but contend that the data do not support many claims about dangerous global warming, overpopulation, declining energy resources, deforestation, species loss, and other supposed consequences of global warming.

The oft-quoted “97 percent consensus” statistic has also been challenged as an Internet myth extrapolated from several incomplete surveys. Roy Spencer, along with Joseph Bast, president of the Heartland Institute, have scrutinized the number and found its sources wanting.²⁶² The main source, Spencer and Bast found, is from Maggie Kendall Zimmerman, a student at the University of Illinois, and Peter Doran, her master’s thesis advisor, who published an article in *Eos Transactions American Geophysical Union*.²⁶³ The article summarized the results of 79 responses by scientists to a two-question online survey. The questions asked whether mean global temperatures had generally risen since 1800, and whether human activity was a “significant contributing factor” in changing temperatures—questions that even scientists skeptical of dangerous anthropogenic global warming (who instead question the scale and the danger of the temperature change) would answer yes.

Another source for the “scientific consensus” is an essay by Harvard science historian Naomi Oreskes, who categorized the abstracts from 928 scientific articles published between 1993 and 2003. She calculated that 75 percent supported the “consensus view” that most of the warming over the last 50 years is caused by humans; that 25 percent took no position on anthropogenic climate change; and that “Remarkably, none of the papers disagreed with the consensus position.”²⁶⁴ In fact, Spencer and

261 “50 People Who Could Save the Planet,” *The Guardian*, January 5, 2008. <http://www.theguardian.com/environment/2008/jan/05/activists.ethicalliving>

262 Joseph Bast and Roy Spencer, “The Myth of the Climate Change ‘97%,’” *Wall Street Journal*, May 26, 2014. <http://online.wsj.com/articles/SB10001424052702303480304579578462813553136>

263 Maggie Kendall Zimmerman and Peter Doran, “Examining the Scientific Consensus on Climate Change,” *Eos Transactions American Geophysical Union*, Volume 90 No. 3, January 20, 2009, pp. 22-23. <http://onlinelibrary.wiley.com/doi/10.1029/eost2009EO03/pdf>

264 Naomi Oreskes, “The Scientific Consensus on Climate Change,” *Science*, Vol. 306 no. 5702 December 3, 2004, pg. 1686. <http://www.sciencemag.org/content/306/5702/1686.full>

Bast found that Oreskes omitted numerous articles by scientists who consider themselves outside this “consensus.”

William R.L. Anderegg, while a student at Stanford, examined 1,372 climate researchers whose work was listed on Google Scholar and found that of the 200 researchers “most actively publishing” work on the topic, “97-98%...support the tenets of ACC (anthropogenic climate change) outlined by the Intergovernmental Panel on Climate Change.” Anderegg also concluded that “the relative climate expertise and scientific prominence of the researchers unconvinced of ACC are substantially below that of the convinced researchers.”²⁶⁵ Anderegg’s selection of the 200 “most active” of nearly 1,400 scholars left out most of the survey pool, and by concentrating on “anthropogenic climate change,” he ignored the question of climate change’s scale and danger—which is the more fiercely debated question concerning global warming.

The Perils of Dissent

Those who dare to question the “consensus” pay a high price for their intellectual openness. Scientists who persist in raising questions have been vilified. A special term of abuse, “denier,” and its stronger alternative “denialist,”²⁶⁶ modeled on the term “Holocaust denier,” are frequently applied to such skeptics, along with a fair amount personal vitriol and ad hominem attack. In September 2014, when Steven Koonin, director of the Center for Urban Science and Progress at New York University and former undersecretary for science at the Department of Energy under President Obama, published an essay, “Climate Science Is Not Settled,”²⁶⁷ *Time* editor Jeffrey Kluger responded with a scathing article denouncing “The Climate Deniers’ Newest Argument.”²⁶⁸ In August 2013, environmentalist group 350 Action petitioned the World Meteorological Organization to name hurricanes after politicians who were “climate deniers.”²⁶⁹

After the 400,000-strong People’s Climate March in New York City, Robert F. Kennedy, Jr. called for climate skeptics to be jailed for their opinions.²⁷⁰ James Hansen, the NASA scientist whose 1988 testimony to

265 William R. L. Anderegg, James W. Prall, Jacob Harold, and Stephen H. Schneider, “Expert Credibility in Climate Change,” *Proceedings of the National Academies of Sciences*, April 9, 2010. <http://www.pnas.org/content/107/27/12107.full>

266 Ben Zimmer explains in the *Wall Street Journal* that “To call someone a ‘climate-change denialist’—or, more succinctly, a ‘climate denialist’—is a stronger accusation than simply calling that person a ‘denier.’ To be a denialist is to be caught in a reality-defying web of dogmatic ‘denialism.’ ‘Denialism,’ as Michael Specter of the *New Yorker* explained in his 2009 book with that title, is ‘denial writ large—when an entire segment of society, often struggling with the trauma of change, turns away from reality in favor of a more comfortable lie.’” Ben Zimmer, “Denialist: A Hot Epithet in Climate Rift,” *Wall Street Journal*, September 27, 2014. <http://online.wsj.com/articles/denialist-remains-a-popular-epithet-in-climate-battle-1411756770?mod=ST1>

267 Steven Koonin, “Climate Science Is Not Settled,” *Wall Street Journal*, September 19, 2014. <http://online.wsj.com/articles/climate-science-is-not-settled-1411143565>

268 Jeffrey Kluger, “The Climate Deniers’ Newest Argument,” *Time*, September 29, 2014. <http://time.com/3445231/climate-denier-settled-science/>

269 “350 Action Petitions the W.M.O. to Name Hurricanes After Actual Politicians who Deny Climate Change,” 350 Action, August 26, 2013. <http://350action.org/media/>

270 Marc Morano, “Update: Video: Robert F. Kennedy Jr. Wants to Jail His Political Opponents – Accuses Koch Brothers of ‘Treason’

the U.S. Senate catapulted the idea of global warming to public attention, holds that CEOs of fossil fuel companies “should be tried for high crimes against humanity and nature.”²⁷¹ Lawrence Torcello, an assistant professor of philosophy at the Rochester Institute of Technology, argued similarly in a blog post at *The Conversation*:

*The charge of criminal and moral negligence ought to extend to all activities of the climate deniers who receive funding as part of a sustained campaign to undermine the public's understanding of scientific consensus.*²⁷²

Major news organizations, including the BBC, have succumbed to the pressure to tell one-sided stories on climate change. In July 2014, after Nigel Lawson, Lord of Blaby, appeared on the “World at One” show to make the case that climate change had little to do with recent increases in flooding, activists complained to the BBC for permitting a dissenting voice. In response, the head of the BBC Complaints Unit, Fraser Steel, announced that “minority opinions and sceptical views should not be treated on an equal footing with the scientific consensus,” and because Lawson’s view “are not supported by the evidence from computer modelling and scientific research,” the audience should have been warned of his aberrant status. Lawson has not been on the BBC since.²⁷³ At a panel discussion at Columbia Journalism School in March 2015, *New York Times* environmental reporter Justin Gillis advised students that to present “deniers” as credible scientists would be to “perpetuate a lie” and violate journalism ethics. Covering both sides of the climate change story would mislead the public into believing that there was an actual debate on climate change, though of course “the facts are settled.”

Activists have gone so far as to force the resignations of individuals as journal editors and members of commissions when they have broken ranks on the so-called “consensus.” Others resign voluntarily when a skeptical viewpoint does get through the gatekeepers. When Roy Spencer and David D. Braswell published an article in the journal *Remote Sensing* suggesting that the computer models used to forecast climate change underestimated the atmosphere’s ability to release energy into space, the journal’s editor in chief, Wolfgang Wagner, resigned in protest.²⁷⁴ Wagner faulted the peer review process for assigning three scientist reviewers who leaned towards skepticism of global warming, and criticized the paper

– “They ought to be serving time for it,” *Climate Depot*, September 21, 2014. <http://www.climatedepot.com/2014/09/21/robert-f-kennedy-jr-wants-to-jail-his-political-opponents-accuses-koch-brothers-of-treason-they-ought-to-be-serving-time-for-it/>

271 James Hansen, “Twenty Years Later: Tipping Points Near on Global Warming,” *Huffington Post*, July 1, 2008. http://www.huffingtonpost.com/dr-james-hansen/twenty-years-later-tippin_b_108766.html

272 Lawrence Torcello, “Is Misinformation About the Climate Criminally Negligent?” *The Conversation*, March 13 2014. https://theconversation.com/is-misinformation-about-the-climate-criminally-negligent-23111#comment_333276

273 Raymond Snoddy, “BBC in Deep Water over Climate Change Censorship Row,” *Newsline*, July 9, 2014. <http://mediatel.co.uk/newsline/2014/07/09/bbc-in-deep-water-over-climate-change-censorship-row/>

274 “Editor of *Remote Sensing* Resigns over Controversial Climate Paper; Co-author Stands by It,” *Retraction Watch*, September 2, 2011. <http://retractionwatch.com/2011/09/02/editor-of-remote-sensing-resigns-over-controversial-climate-paper-co-author-stands-by-it/>

because “it essentially ignored the scientific arguments of its opponents”—though the entire paper focused on answering and discussing the arguments on the opposite side.²⁷⁵ Spencer speculated on his blog that

*It is obvious to many people what is going on behind the scenes. The next IPCC report (AR5) is now in preparation, and there is a bust-gut effort going on to make sure that either (1) no scientific papers get published which could get in the way of the IPCC's politically-motivated goals, or (2) any critical papers that DO get published are discredited with any and all means available.*²⁷⁶

Other scientists who depart from “consensus” have faced serious career setbacks, ad-hominem attacks, and scorn from their professional colleagues.

More Skeptics

Lennart Bengtsson is a senior research fellow at the Environmental Systems Science Centre at the UK University of Reading and the former director of the Max Planck Institute in Germany. A meteorologist, his scientific credentials are pristine. In 2005 he and several colleagues won the René Descartes Prize for Collaborative Research for their work on the Climate and Environmental Change in the Arctic project. In 2006 he received the 51st International Meteorological Organization Prize from the World Meteorological Organization.

Bengtsson is one of the foremost experts in climate science. Since 1990 he has expressed concerns about exaggeration and politicization in climate science, questioning the IPCC’s predictions (which “should be taken with a grain of salt”) and noting that the temperature over the Northern Hemisphere had been cooling for forty years.²⁷⁷ In March 2014, he and several co-authors submitted a paper to *Environmental Research Letters*, one of the most prestigious journals, casting doubt on the IPCC’s projected temperature rise of 2.0 to 4.5 degrees Celsius if the greenhouse gas emissions levels hold steady. Bengtsson and his colleagues suggested that the climate might not be as sensitive to carbon as the IPCC implied. Though Bengtsson is among the primary experts on these phenomena, the article was rejected. One reviewer privately commented that he rejected the paper was because it would hurt the climate change consensus: “Actually it is harmful as it opens the door for oversimplified claims of ‘errors’ and worse from the climate sceptics media side.”²⁷⁸

275 Anthony Watts, “BREAKING: Editor-in-chief of Remote Sensing Resigns Over Spencer & Braswell Paper,” *Watts Up With That*, September 2, 2011. <http://wattsupwiththat.com/2011/09/02/breaking-editor-in-chief-of-remote-sensing-resigns-over-spencer-braswell-paper/>

276 Roy Spencer, “More Thoughts on the War Being Waged Against Us,” *Dr. Roy Spencer*, September 5, 2011. <http://www.droyspencer.com/2011/09/more-thoughts-on-the-war-being-waged-against-us/>

277 Simon Rozendaal, “A Cool Blanket of Clouds,” *Elsevier*, October 27, 1990. Reprinted and translated by Marcel Crok, “Bengtsson in 1990: ‘One Cannot Oversell the Greenhouse Effect,’” *De Staat van het Klimaat*, May 13, 2014. <http://www.staatvanhetklimaat.nl/2014/05/13/bengtsson-in-1990-one-cannot-oversell-the-greenhouse-effect/>

278 Ben Webster, “Scientists in Cover-up of ‘Damaging’ Climate View,” *London Times*, May 16, 2014. <http://www.thetimes.co.uk/tto/science/article4091344.ece>

Soon after, Bengtsson announced that he was joining the advisory council of the Global Warming Policy Foundation, an organization skeptical of anthropogenic global warming. Almost immediately he was forced to resign due to immense pressure from colleagues. In his resignation letter, Bengtsson wrote to the Global Warming Policy Foundation that he had received "such an enormous group pressure in recent days from all over the world that has become virtually unbearable to me," to the point of endangering his health and safety. He worried that

*I see no limit and end to what will happen. It is a situation that reminds me about the time of McCarthy. I would never have expected anything similar in such an original peaceful community as meteorology. Apparently it has been transformed in recent years.*²⁷⁹

There are others as well. David Legates, a professor of climatology at the University of Delaware, and the Delaware State Climatologist from 2005 to 2011, dared to raise concerns about the data supporting stringent environmental regulations and got hit with an intrusive Freedom of Information Act (FOIA) request from Greenpeace. In December 2009, Greenpeace asked for all of his "e-mail correspondence and financial and conflict of interest disclosures...in the possession of or generated by the Office of the Delaware State Climatologist" from January 1, 2000, concerning "global climate change." Despite Delaware state law limiting FOIA requests to documents supported by public funding (which Legates did not receive as state climatologist) the vice president of the University of Delaware confiscated documents related to all of Legates's teaching, research, and service materials from 2000 to 2009, including work unrelated to the State Climate Office, whether conducted on Legates' own time or on university time, through his personal e-mail or his university e-mail, on his personal computer or a university computer, both in hard files and on computer disks. Ultimately the university decided to forego handing the documents over to Greenpeace, but only after several years of deliberation. Meanwhile, Legates was forced out of his positions as state climatologist, co-Director of the Delaware Environmental Observing System, and faculty advisor to the Student Chapter of the American Meteorological Society, and removed from all committee assignments within his department.

A few weeks after Greenpeace initially filed its FOIA request, however, the Competitive Enterprise Institute (a think tank skeptical of global warming alarmism) filed an identical request for information on the work of three University of Delaware professors who had contributed to the IPCC. This time the university vice president declined to collect any material from these professors. Legates, testifying before the U.S. Senate Committee on the Environment and Public Works, summed up his experience:

Scientists who deviate from the anthropogenic global warming playbook are likely to be harassed, have grants and proposals rejected without review, be treated more harshly than their peers, and

279 Judith Curry, "Lennart Bengtsson Resigns from the GWPF," *Climate Etc.*, May 14, 2014. <http://judithcurry.com/2014/05/14/lennart-bengtsson-resigns-from-the-gwpf/>

be removed from positions of power and influence. I would have hoped that in the past decade, the discussion has become more civil. Indeed, a civil discussion can be had with some scientists that believe in the extreme scenarios of anthropogenic global warming. But too many in places of prominence and with loud voices have made this a war zone. Scientists like Bengtsson and myself have tenure or its equivalent and are somewhat insulated from the extreme attacks. But young scientists quickly learn to 'do what is expected of them' or at least remain quiet, lest they lose their career before it begins.²⁸⁰

This asymmetrical treatment of global warming skeptics and adherents is highlighted once more in the case of Michael Mann, who faced a FOIA request in 2013 from the American Tradition Institute and Virginia Delegate Robert Marshall related to his hockey stick graph. Ultimately the Virginia Supreme Court ruled that much of Mann's work need not be turned over. Before the decision was announced, the American Association of University Professors vigorously defended Mann's academic freedom, publishing statements on his behalf and filing an amicus brief in Mann's Supreme Court case. The brief held that

ATI's sweeping request, if allowed, would have a severe chilling effect on scientists and other scholars and researchers at public institutions of higher learning throughout the Commonwealth (and perhaps beyond). Put simply, Dr. Mann is a scientist and an academic, not a policymaker. And his unpublished research and internal communications with scientists are not part of any policy making function. If ATI is interested in how Dr. Mann's scholarship affects public policy, it should direct FOIA requests to the policymakers.²⁸¹

When Legates had approached Joan DeFattore, president of the AAUP Chapter at the University of Delaware, about intervening in his case, however, DeFattore responded that FOIA matters "would not fall within the scope of the AAUP."²⁸²

James Enstrom, a University of California-Los Angeles epidemiologist, was dismissed from the UCLA School of Public Health, where he had taught for 34 years, after he popularized his research that suggests that the regulations of the California Air Resources Board were stricter than necessary. Enstrom had also alerted the public that the head of the board, Hier Tran, had bought a mail-order doctoral diploma showing a Ph.D. from the University of California-Davis, and that one of the board members, John Froines (one of his colleagues at UCLA) had served on the panel for 26 years, when the term limit is actually

280 David Legates, "Statement to the Environment and Public Works Committee of the United States Senate," June 3, 2014, pg. 24. http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=aa8f25be-f093-47b1-bb26-1eb4c4a23de2

281 Brief for the American Association of University Professors, pg 19, The American Tradition Institute and the Honorable Delegate Robert Marshall v. Rectors and Visitors of the University of Virginia and Michael E. Mann, 2013. [http://www.aaup.org/sites/default/files/files/AAUP-amicus-brief-UVa%20-%20Va%20S%20Ct%20-%20FINAL\(1\).pdf](http://www.aaup.org/sites/default/files/files/AAUP-amicus-brief-UVa%20-%20Va%20S%20Ct%20-%20FINAL(1).pdf)

282 Legates, Statement, pg. 20.

three years. Tran had claimed that there were 2,000 premature deaths in California each year as a result of fine particulate pollution coming from diesel. Enstrom's research shows zero.²⁸³ For his contribution to public knowledge about the risks of pollution and efforts to promote transparency within the Air Resources Board, Enstrom was rewarded with a humiliating termination of his career at UCLA.

These incidents of bias, censorship, and intellectual persecution come despite shaky scientific grounding for many of the theories of anthropogenic global warming behind which sustainability adherents hide. Besides the misconduct behind Michael Mann's "hockey stick" graph (which continues to be cited favorably), there is growing evidence that the EPA has broken legal peer review guidelines, soliciting reviews from employees of the very agencies that generated the reports under review, repeatedly (illegally) using the same reviewers who gave favorable reviews, and failing to publish scientific studies and regulations for public comment.²⁸⁴ Both the Institute for Trade Standards and Sustainable Development and the Energy & Environment Legal Institute have found growing evidence to suspect the integrity and validity of the science behind the EPA's regulation of greenhouse gas emissions.²⁸⁵

We are *not* opposed to airing the theory of anthropogenic global warming, studying climate change, or improving the computer simulations on which much of contemporary climate science is based. But we do insist on an honest debate—a debate that climate change proponents often shy away from. And we insist on giving students the opportunity to consider and weigh the evidence, rather than swallowing ideological sound bites whole.

Such intolerance is especially hazardous for higher education, which depends more than any other institution on the give-and-take of open debate, transparency of evidence, civil exchange, and readiness to follow the best evidence to the most compelling conclusions. A form of education that is compromised by a rejection of these principles in favor of a doctrine backed by "consensus" is a form of education unsuited to a free society.

The Precautionary Principle

Advocates of the theory of manmade global warming have a fallback argument that they deploy when forced to deal with scientifically well-informed skeptics. The fallback is to admit that the evidence for large

283 Kelly Zhou, "UCLA Researcher James Enstrom not Reappointed to Position," *Daily Bruin*, August 30, 2010.

284 "New ITSSD FOIA Request Superseding Withdrawn FOIA Request No. EPA-HQ-2014-004938," Letter from Lawrence A. Kogan to Mr. Larry F. Gottesman, National FOIA Officer, and Ms. Dana Hyland, U.S. Environmental Protection Agency, June 30, 2014. <http://nebula.wsimg.com/e155ee64b03ea37237297cdbab7a2854?AccessKeyId=39A2DC689E4CA87C906D&disposition=0&loworigin=1>

285 Chris Horner, "Improper Collusion Between Environmental Pressure Groups and the Environmental Protection Agency as Revealed by Freedom of Information Act Requests," Energy and Environment Legal Institute, September 2014. <http://eelegal.org/wp-content/uploads/2014/09/EE-Legal-FOIA-Collusion-Report-9-15-2014.pdf>

impending changes in the earth's temperature may be weak or inconclusive but to observe that there is nonetheless a chance that the theory is right. If there is a reasonable probability that a catastrophe will befall the planet, doesn't it make sense to act now to avert or at least mitigate the damage?

The term for this argument is "the precautionary principle." We examine it more closely later in this report. Here it will suffice to say that the precautionary principle is not an argument in favor of the global warming hypothesis, but a meta-argument that urges governments to take action *regardless* of the strength of the evidence for the theory.

The precautionary principle could depend on an assessment that the odds in favor of the theory being true are relatively high. If there is a 75 percent chance of a catastrophe, most people would say precaution is necessary. If the chance is one-in-a-million, most people would say the precaution is unwarranted. What are the odds that the manmade global warming hypothesis is true? The question is imponderable, since there are disputes about the basic facts.

In that sense, the precautionary principle seems more like a rhetorical maneuver than a clarifying idea.

The precautionary principle has been elaborated in other ways as well. Even if the chance of catastrophe is very low—say 1 out of a thousand—say some advocates of this idea, if the catastrophe is sufficiently dire, doesn't it make sense to act now to forestall it?

The advocates of "acting now" in the face of great uncertainty also sometimes introduce another argument beyond the precautionary principle: the idea that the cost of preventative measures will be more than off-set by the technological and social advances that striving for a carbon-free economy will induce. This idea lacks a succinct name, but it might be called "the pyramid principle," after the idea introduced by Humphrey Evans in 1979 that ancient Egypt's determination to build grandiose tombs for its pharaohs inadvertently spurred the rapid development of new technology and social organization. In the case of efforts to combat global warming, we can look forward to major advances in solar, wind, and other forms of technology, and perhaps more just and equitable conditions for all humanity.

The precautionary principle and the pyramid principle are, in some sense, unanswerable since they rely on pure speculation. But to the extent they amount to an actual economic rationale for global warming remediation, they have provoked at least one extended critique. Jim Manzi, an MIT-educated mathematician and founder and chairman of Applied Predictive Technologies, garnered public attention in a *National Review* cover article that argued that conservatives should accept the theory of global

warming, but that "its impact over the next century could plausibly range from negligible to severe."²⁸⁶ Manzi followed this article with several others in which he played out the idea of accepting at face value the IPCC's recommendations for remediating climate change. According to the IPCC's calculations at the time, the cost of climate change (if not prevented) would equal between "1 to 5 percent of global gross domestic product (GDP) sometime in the twenty-second century." Manzi notes that this seemingly small cost would in fact be "a huge amount of money," but that a much larger cost would come from efforts to forestall such climate change. This cost would come not only in direct expenses but also in the foregone wealth and benefits that would compound along the way. Manzi wrote at *The New Atlantis*, "Albert Einstein supposedly said that 'The most powerful force in the universe is compound interest'—and this mathematical reality is central to the wise evaluation of plans to address the risk of climate change."²⁸⁷

The precautionary principle, in other words may lead to a foolish lack of caution.

286 Jim Manzi, "Taking the Heat: A Conservative Strategy on Global Warming," *National Review*, June 25, 2007.

287 Jim Manzi, "Conservative, Climate Change, and the Carbon Tax," *The New Atlantis*, No. 21. Summer 2008, Pp. 15-25.