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## **FOREWORD**

### **THOMAS E. LOVE JOY**

Ever a graduate student, I habitually turn to the back of a scholarly article or book to read the footnote or see what the citation actually is. Scholars do this not from some boring pedantic thoroughness, but rather out of true intellectual curiosity. As usual, I did that when reviewing the *Skeptical Environmentalist* for *Scientific American*. I remember my frustration at inadequate citations, so much so that I characterized them in the review as a “mirage in the desert.” I reviewed only the forest and biodiversity aspects of the book as that was my particular expertise and assignment, and three others from different fields reviewed other aspects of the book. Little did I know that the entire volume was similarly flimsy.

I do recall at the time that fellow conservation biologists attending a Lomborg talk would correct his science, only to find the same assertions made in subsequent talks as if the corrections had never occurred. That left me disinclined to engage with Lomborg. Science and public understanding do not advance on the basis of assertions as opposed to conversations and discussion.

I do remember being puzzled at the time that Cambridge University Press had published the book, for surely a scholarly press would have picked up the problem in manuscript review. Later I came to understand that the review had been on the social science side of the Press even though the volume was in the Environmental Science list. So clearly there was a flaw in the reviewing process since it was an interdisciplinary subject. I still find it surprising the reviewer didn't question some of the assertions even if not an expert on environment from a scientific perspective.

Bjørn Lomborg was trained as an economist. Economics, of course, while contributing to environmental solutions in the case of some market based solutions like the sulfur markets in the United States, has some inherent difficulties in dealing with long term and big scale problems: witness the debate over discount rates between Sir Nicholas Stern and economists such as William Nordhaus. (The *Stern Report* excluded the use of discount rates

because of the enormity and complicated time scales of climate change and its impacts.) The difference with the Lomborg approach is that Nordhaus is very rigorous: while using discount rates, he is impeccable about the understanding and use of physical and biological science.

In this work, Howard Friel does what nobody has done before, namely to systematically examine Lomborg's work citation by citation. This is no small task, so it is not surprising that this has not been undertaken until now.

Friel's work reveals the mirage to be pervasive, indeed, as big as the desert. This does not mean of, course, that everything that Lomborg writes is wrong or invalid but that it is a house of cards to a highly disturbing degree. Friel has used real scholarship to reveal the flimsy nature of the scholarly foundation of Lomborg's work.

What is unfortunate is that this took so long to come to light. A huge amount of time and energy has gone into addressing Lomborg's assertions, and the advance of policy about urgent environmental problems has been retarded.

The irony is that had Lomborg's scholarship been sound and some of the concerns of environmental scientists been demonstrated to have been incorrect, nobody would have been happier than scientists like myself. If there were not a grave and rapidly mushrooming biodiversity crisis, I could indulge in the intellectual joys of studying the marvels of life on Earth (my original motivation) without having to be concerned about biodiversity loss and ways to restrain it.

But environmental problems have indeed grown exponentially, with retreat of the Arctic ice, sea level rise now projected to rise a meter by century's end (and still probably underestimated), and the tipping point for dieback of the eastern half of the Amazon creeping closer. The rapidly changing global environment is beginning to seem like an Edgar Allan Poe short story.

In the meantime, the United States, once so much the global leader on environmental problems, is only now beginning to come to grips with environment and climate change. All along, like terriers nipping at heels, naysayers without the least qualifications delay and water down the process,

and make the ultimate impact even greater for lack of strong and immediate action.

So let us hope a lesson has been learned, in particular that hope is false when based on poor scholarship. Even in this electronic age, where some students think any citation prior to the twenty-first century is irrelevant, and where it is so easy to troll for information in a cyber-world in which quality control is very uneven, it is still critical— with Kindle or whatever—to check the citation in the back of the book.

## AUTHOR'S NOTE

The seemingly endemic problems in the writings of Bjørn Lomborg as they relate to global warming posed the additional challenge of coherently presenting those problems to the reader of this volume. It therefore seemed useful to identify the two main strains of arguments in his work as they pertain here. Thus, “Lomborg’s Theorem” refers to his claim that anthropogenic (man-made) global warming is “no catastrophe.” And “Lomborg’s Corollary” represents his contention that since global warming is no catastrophe, there is little need to incur the costs of reducing greenhouse-gas emissions to the extent urged by concerned experts to avoid the worst impacts of global warming.

The focus of this volume is on Lomborg’s Theorem as presented in his books *The Skeptical Environmentalist: Measuring the Real State of the World* (2001) and *Cool It: The Skeptical Environmentalist’s Guide to Global Warming* (2007). The aim is to show that Lomborg’s Theorem is grounded in highly questionable data and analysis, and that there is little if any factual or analytic basis for the theorem.

## **PART 1**

### **Lomborg's Modus Operandi**

#### **One**

#### **2001: A THEOREM'S ODYSSEY**

On September 10, 2001, Cambridge University Press published *The Skeptical Environmentalist: Measuring the Real State of the World*, by Bjørn Lomborg, a Danish statistician who argued that the “real” condition of the world’s environment is better than what the major environmental organizations have routinely reported. Lomborg argued that the environmental groups—such as Greenpeace and the Worldwatch Institute—were too pessimistic and thus overstated humankind’s harmful impact on the Earth’s land, air, water, and animals.

At the outset, Lomborg maintained that there was little evidence to substantiate a gloomy picture of the Earth’s environment. He rejected this view as the product of an exaggerated “Litany” of bad news generated by environmentalists:

We are all familiar with the Litany: the environment is in poor shape here on Earth. Our resources are running out. The population is ever growing, leaving less and less to eat. The air and the water are becoming ever more polluted. The planet’s species are becoming extinct in vast numbers — we kill off more than 40,000 each year. The forests are disappearing, fish stocks are collapsing and the coral reefs are dying.

We are defiling our Earth, the fertile topsoil is disappearing, we are paving over nature, destroying the wilderness, decimating the biosphere, and will end up killing ourselves in the process. The world’s ecosystem is breaking

down. We are fast approaching the absolute limit of viability, and the limits of growth are becoming apparent.

We know the Litany and have heard it so often that yet another repetition is, well, almost reassuring. There is just one problem: it does not seem to be backed up by the available evidence.<sup>1</sup>

Pursuant to these remarks—in 350 pages of text and nearly three thousand endnotes — Lomborg purportedly set out to expose the exaggerations of the environmentalists and uncover the underappreciated good news about the world’s environment. Upon doing so, and writing heroically in the first person throughout his introductory remarks, Lomborg declared: “I will need to challenge our usual conception of the collapse of ecosystems, because this conception is simply not in keeping with reality.”<sup>2</sup>

About global warming, Lomborg wrote that it is “almost certainly taking place,” though its projected impact is “rather unrealistically pessimistic” and “will not pose a devastating problem for our future.” About environmentalists’ calls for a significant reduction of man-made greenhouse emissions, Lomborg argued that “the typical cure of early and radical fossil fuel cutbacks is way worse than the original affliction.”<sup>3</sup>

From these and many similar statements, we can identify “Lomborg’s Theorem,” circa 2001, which asserts that the Earth and its environment are not threatened in any fundamental sense by human activity and, for the purposes of this volume, that man-made global warming is not the catastrophe that the environmental organizations claim. Lomborg’s book, with its illusion of serious scholarship, given the number of endnotes, was influential in the United States throughout the presidential tenure of George W. Bush, who held power during a critically important window of opportunity to reduce greenhouse emissions to prevent the worst impacts of global warming. Probably more than any single published source, Lomborg’s *The Skeptical Environmentalist* marked global warming as a threat that was “exaggerated” by environmentalists, and helped justify the inaction on greenhouse emissions

by the Bush administration and the Republican-led Congress in the United States. Lomborg's influence was such that in 2004 *Time* named him one of the world's one hundred most influential people.<sup>4</sup>

By November 2007, Lomborg had updated his original analysis in *The Skeptical Environmentalist* with a book focused exclusively on climate change titled, *Cool It: The Skeptical Environmentalist's Guide to Global Warming*. He began this book as follows:

Global warming has been portrayed recently as the greatest crisis in the history of civilization. As of this writing, stories on it occupy the front pages of *Time* and *Newsweek* and are featured prominently in countless media around the world. In the face of this level of unmitigated despair, it is perhaps surprising — and will by many be seen as inappropriate — to write a book that is basically optimistic about humanity's prospects.

That humanity has caused a substantial rise in atmospheric carbon dioxide levels over the past centuries, thereby contributing to global warming, is beyond debate. What is debatable, however, is whether hysteria and head-long spending on extravagant CO<sub>2</sub>-cutting programs at an unprecedented price is the only possible response. Such a course is especially debatable in a world where billions of people live in poverty, where millions die of curable diseases, and where these lives could be saved, societies strengthened, and environments improved at a fraction of the cost.<sup>5</sup>

As in *The Skeptical Environmentalist*, in *Cool It* Lomborg doesn't doubt the phenomenon of human-induced warming. Rather, he argues that a warming of the Earth threatens "no catastrophe" for humanity or the Earth's environment; consequently, Lomborg sees no need to focus on significant reductions of greenhouse emissions as a matter of national or global policy.<sup>6</sup> The 2007 publication of *Cool It* thus updated and focused Lomborg's argument that the threat of climate change is exaggerated, and further reinforced the Bush administration's dissent from the scientific consensus on



the need for major reductions in greenhouse emissions.

Lomborg's concession on one count — that global warming was happening and that it was predominately human-induced — conferred a superficial appearance of moderation between “the Litany” of the liberal environmentalists and the right-wing denials that CO<sub>2</sub> emissions were changing the Earth's climate. Lomborg emphasized this idea of a sober middle course by highlighting his conversion from left-wing environmental orthodoxy, noting in *The Skeptical Environmentalist* that “I'm an old left-wing Greenpeace member and had for a long time been concerned about environmental questions.”<sup>7</sup> The concession and the conversion were inspired credentials from which to forge the “skeptical environmentalist” brand — used in the title of both books — and to invent a genre of anti-environmentalism for the ostensible benefit of the environment and humankind.

As one reads on, one might wonder how Lomborg's work managed to evade serious scrutiny by the major publishing houses—Cambridge University Press (2001) and Knopf (2007) — that issued his two major books, given Lomborg's problematic scholarship (as this volume will detail), and the importance of the global environmental issues that he addressed. Though *The Skeptical Environmentalist* declares at the outset that it “is critical of the way in which many environmental organizations make selective and misleading use of the scientific evidence,”<sup>8</sup> thus emphasizing its scientific implications, as Stephen Schneider noted, it “was published by the social science side of the house” at Cambridge University Press. Schneider, a prominent climate scientist, wrote that it was thus “not surprising that the [inhouse] reviewers failed to spot Lomborg's unbalanced presentation of the natural science, given the complexity of the many intertwining fields.”<sup>9</sup>

As *The Skeptical Environmentalist* progressed from its physical creation at Cambridge University Press to book reviews in major newspapers and journals, it somehow survived that level of scrutiny as well. Nicholas Wade, a veteran science editor and writer for the *New York Times*, seemed favorably

disposed to Lomborg's environmental optimism. In one of the earliest incantations of the news media's repetitious descriptions of Lomborg's alleged environmental epiphany, Wade described him as "a vegetarian, backpack-toting academic who was a member of Greenpeace for four years," and acclaimed the "substantial work of analysis with almost 3,000 footnotes."<sup>10</sup>

In its review, the *Washington Post* depicted the skeptical environmentalist (the person) as "a self-described left-winger and former Greenpeace member" who "feels at one with the basic sentiments that underlie the Green movement." Lomborg is a "vegetarian with ethical objections to eating flesh" who wrote "a massive, meticulously presented argument that extends over 500 pages, supported by nearly 3,000 footnotes and 182 tables and diagrams," and who "found on close analysis that the factual foundation on which the environmental doomsayers stood was deeply flawed." This review in the *Post* found that *The Skeptical Environmentalist* (the book) demonstrates "emphatically" that "the population bomb is fizzling, and, far from killing us, pesticides and chemicals are improving longevity and the quality of life."<sup>11</sup>

Like the *Times* and the *Post*, the *Wall Street Journal's* review observed that Lomborg's *The Skeptical Environmentalist* is "a superbly documented and readable book by a former member of Greenpeace" and "a self-described 'man of the Left.'" "Using uncontroversial data," the *Journal* continued, "Mr. Lomborg shows that the environment is improving, and the state of humanity too." And "as for global warming, Mr. Lomborg shows that it is unlikely to be catastrophic," and "even if temperatures increase substantially, Mr. Lomborg argues, a draconian cut in fossil-fuel use is not the answer."<sup>12</sup>

Whereas Lomborg was favorably reviewed in the three most important newspapers in the United States, he was challenged more rigorously by the scientific and environmentalist communities that were the critical subjects of his book. Shortly after *The Skeptical Environmentalist* was published, at least

three scientific forums were organized to respond to Lomborg's analysis. One such forum was posted in December 2001 on Grist, a Web site of "environmental news and commentary,"<sup>13</sup> where several commentators were invited to submit responses to Lomborg. These included: Lester Brown, founder and president of the Earth Policy Institute and founder and former president of the Worldwatch Institute; the Harvard biologist Edward O. Wilson; Norman Myers, a prominent and prolific scientist on biodiversity and species extinction; and Stanford University scientist Stephen Schneider, who is lead author and coauthor of a number of chapters in the major assessment reports on global warming by the UN's Intergovernmental Panel on Climate Change (IPCC).<sup>14</sup>

As founder and former president of the Worldwatch Institute, Brown was the senior author of the institute's annual *State of the World* reports, which detailed environmental problems worldwide. The subtitle of Lomborg's book—*The Skeptical Environmentalist: Measuring the Real State of the World*—intentionally co-opts the name of these reports. Brown began his response to Lomborg: "Some years ago, well before many outside Denmark knew of Bjørn Lomborg's name, a group of his fellow faculty members at the University of Aarhus took the unusual step of developing a website specifically to warn the scientific community and others about flaws in his work. Appalled by Lomborg's scientific pretensions and unfounded conclusions, these faculty members, including a former head of the Danish Academy of Sciences, actively disassociated themselves from him.... Lomborg's fellow faculty members are concerned that his work does not satisfy basic academic standards."<sup>15</sup>

Continuing, Brown observed that Lomborg's thesis "is that the environmental movement has overstated the magnitude of environmental threats." Brown then noted that "a serious test of this hypothesis would require a systematic review of the research output of the leading environmental groups, tabulating both the instances where they have overstated and where they have understated threats to the environment." Upon noting other prerequisites that, in Brown's mind, Lomborg did not meet—including "determining which

threats identified by environmental groups turned out to be real and which did not,” and “tabulating those issues that environmentalists either missed entirely or identified only belatedly” — Brown argued that “only with such an approach could one decide whether environmentalists as a group have overstated or understated the threats to our planet.” Brown concluded: “In failing to take such an approach, Lomborg’s book becomes nothing more than a diatribe.”<sup>16</sup>

Wilson responded a bit more pointedly: “My greatest regret about the Lomborg scam is the extraordinary amount of scientific talent that has to be expended to combat it in the media.” Wilson described Lomborg’s book as “characterized by willful ignorance, selective quotations, disregard for communication with genuine experts, and destructive campaigning to attract the attention of the media rather than scientists.” Referring specifically to Lomborg’s claim that environmentalists have exaggerated rates of species extinction, Wilson wrote that “Lomborg’s estimate of extinction rates is at odds with the vast majority of respected scholarship on extinction,” and, “at current levels of habitat destruction, extinction rates are destined to rise, and — I believe every researcher would agree — dramatically so.”<sup>17</sup>

Myers, who debated Lomborg’s mentor, Julian Simon, in 1992 at Columbia University, also responded to Lomborg over the issue of species extinction.<sup>18</sup> Like Brown and Wilson, Myers found serious problems with Lomborg’s methods: “Bjørn Lomborg opens his chapter on biodiversity by citing my 1979 estimate of 40,000 species lost per year. He gets a lot of mileage out of that estimate throughout the chapter, although he does not cite any of my subsequent writings except for a single mention of a 1983 paper and a 1999 paper, neither of which deals much with extinction rates. Why doesn’t he refer to the 80-plus papers I have published on biodiversity and mass extinction during the 20-year interim? In this respect, as well as others, Lomborg seems to be exceptionally selective.”<sup>19</sup>

According to Myers: “Lomborg is equally sloppy in his analyses of the utilitarian benefits of species and their genetic resources;” “Lomborg seems disinclined to undertake even a fraction of the homework that could give him a

preliminary understanding of the science in question [biodiversity and species extinction];” and “Lomborg ignores or is ignorant of much of the work on extinction rates.”<sup>20</sup>

Echoing his colleagues’ complaints about Lomborg’s methodology, Schneider focused on Lomborg’s analysis of global warming in *The Skeptical Environmentalist*: “Bjørn Lomborg’s chapter on global climate change is a clever polemic; it seems like a sober and well-researched presentation of balanced information, whereas in fact it makes use of selective inattention to inconvenient literature and overemphasis of work that supports his lopsided views. The Intergovernmental Panel on Climate Change reports and other honest assessments don’t have the luxury of using such tactics, given the hundreds of external reviewers and dozens of review editors.”<sup>21</sup>

In a section of his response to Lomborg titled, “On the Media,” Schneider continued: “The real travesty is that the mainstream media have quoted *The Skeptical Environmentalist* as if it contained something new—some original analysis the rest of the community had missed, or some more balanced assessment. The sooner Lomborg’s own unbalanced and incomplete ‘analysis’ is exposed, the better we will all be.” Schneider further objected to “scores upon scores of strawmen, misquotes, unbalanced statements, and selective inattention to the full literature,” in addition to Lomborg’s “flimsy Greenpeace connection.”<sup>22</sup>

Another such forum was initiated shortly after the publication of *The Skeptical Environmentalist* by the Union of Concerned Scientists (UCS), which is based in Cambridge, Massachusetts. The forum’s participants, leading scientists in their fields, were Peter Gleick (an expert on freshwater resources), Jerry Mahlman (an atmospheric scientist and climate modeler), Edward O. Wilson, Thomas Lovejoy (at the time the World Bank’s chief biodiversity adviser), Norman Myers, Jeffrey Harvey (a physicist at the University of Chicago), and Stuart Pimm (a professor of biodiversity and conservation biology at Duke University).

UCS introduced the forum with a background statement summarizing Lomborg's claims that "population growth is not a problem, that there is plenty of freshwater around, that deforestation rates and species extinctions are grossly exaggerated, that the pollution battle has been won, and that global warming is too expensive to fix." The introductory comments by UCS also noted that "the heavily promoted book [*The Skeptical Environmentalist*], published by Cambridge University Press, has received significant attention from the media and praise from commentators writing in the *Economist*, *New York Times*, and *Washington Post*." UCS then asked: "Does this book merit such positive attention? Does Lomborg provide new insights? Are his claims supported by the data?"<sup>23</sup>

UCS answered that the separately contributed reviews to its forum "unequivocally demonstrate that on closer inspection, Lomborg's book is seriously flawed and fails to meet basic standards of credible scientific analysis," and that "Lomborg consistently misuses, misrepresents or misinterprets data to greatly underestimate rates of species extinction, ignore evidence that billions of people lack access to clean water and sanitation, and minimize the extent and impacts of global warming due to the burning of fossil fuels and other human-caused emissions of heat-trapping gases."<sup>24</sup>

A third authoritative response to the publication of *The Skeptical Environmentalist* was published in January 2002 in *Scientific American*. As in the previous two forums, the commentators were distinguished scientists: Stephen Schneider, John P. Holdren (a chaired professor of environmental policy and science at Harvard University), John Bongaarts (former chair of the Panel on Population Projections at the National Research Council of the National Academy of Sciences), and Thomas Lovejoy (Biodiversity Chair at the Heinz Center).<sup>25</sup>

Schneider began his response by summarizing four major arguments from Lomborg's *The Skeptical Environmentalist*: climate science is uncertain; greenhouse emissions and average global temperatures will increase at or

below the IPCC's lowest estimates; the benefits of a major global effort to mitigate the effects of global warming by reducing greenhouse emissions would not be worth the cost to the global economy; and the Kyoto Protocol to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) is too expensive to implement and would only slightly reduce greenhouse emissions and global temperatures by the end of the twenty-first century.

Responding to the first point — the science of global warming is too uncertain to make long-term projections about the Earth's climate— Schneider noted that, to support this assertion, Lomborg depends on a “controversial” climate theory by Massachusetts Institute of Technology meteorologist Richard Lindzen, which, if accepted by the IPCC, would reduce the climate sensitivity range to human-induced greenhouse emissions by a factor of three. Schneider noted that Lomborg “fails either to understand [Lindzen's] mechanism or to tell us that it is based on only a few years of data in a small part of one ocean.” Schneider, who, like Lindzen, is an expert on clouds and their effects on the Earth's climate, observed that Lomborg also cited “a controversial hypothesis from Danish cloud physicists” to provide “an alternative to carbon dioxide for explaining recent climate change.” After briefly noting the technical aspects of the Danish hypothesis, Schneider commented that “the IPCC discounts this theory” because its power to explain global warming is not “sufficient to match that of much more parsimonious theories, such as anthropogenic [man-made] forcing.”<sup>26</sup>

Regarding Lomborg's claim that greenhouse emissions and average global temperatures over the course of this century will be as low or lower than the lowest IPCC estimate,<sup>27</sup> Schneider wrote that “Lomborg asserts that over the next several decades new, improved solar machines and other renewable technologies will crowd fossil fuels off the market,” and “this will be done so efficiently” that “the IPCC scenarios vastly overestimate” increases in atmospheric carbon dioxide over the same period. Schneider observed, however, that Lomborg cited only one study to support this scenario while ignoring that the economists he generally relies upon “strongly believe high

emissions are quite likely.” Schneider also argued that “Lomborg’s most egregious distortions and poorest analyses are his citations of cost-benefit calculations” with respect to the relative costs and benefits of reducing greenhouse emissions. He responded to Lomborg’s claim that the Kyoto Protocol is too expensive to implement, and would only negligibly reduce greenhouse emissions by year 2100, by noting that Lomborg confuses Kyoto’s “decade-long protocol” for reducing greenhouse emissions for “a 100-year regime.” Schneider noted that “Kyoto is a starting point” and “yet Lomborg, with his creation of a straw-man 100-year projection, would squash even this first step.”<sup>28</sup>

As a participant in the *Scientific American* forum on *The Skeptical Environmentalist*, John P. Holdren, who currently is chief science adviser to President Barack Obama, wrote that Lomborg’s chapter on energy “is devoted almost entirely to attacking the belief that the world is running out of energy, a belief Lomborg appears to regard as part of the ‘environmental litany’ but that few if any environmentalists actually hold.” Holdren continued: “What environmentalists mainly say on this topic is not that we are running out of energy but that we are running out of environment — that is, running out of the capacity of air, water, soil and biota to absorb, without intolerable consequences for human well-being, the effects of energy extraction, transport, transformation and use.”<sup>29</sup>

Responding to Lomborg’s notion that human population growth is not a significant environmental problem, John Bongaarts wrote that Lomborg is “simply wrong” to argue that “the number of people is not the problem.” Commenting, like his colleagues, on Lomborg’s methodology, Bongaarts wrote:

Past population growth has led to high population densities in many countries. Lomborg dismisses concerns about this issue based on a simplistic and misleading calculation of density as the ratio of people to all land. Clearly, a more useful and accurate indicator of density would be based on the land that remains after excluding areas unsuited for human habitation or agriculture,



such as deserts and inaccessible mountains. For example, according to his simple calculation, the population density of Egypt equals a manageable 68 persons per square kilometer, but if the unirrigated Egyptian deserts are excluded, density is an extraordinary 2,000 per square kilometer.... Measured properly, population densities have reached extremely high levels, particularly in large countries in Asia and the Middle East.

Lomborg argues that poverty, not population, is the main cause of hunger and malnutrition. Bongaarts responded: “Lomborg correctly notes that poverty is the main cause of hunger and malnutrition, but he neglects the contribution of population growth to poverty.” Bongaarts continued: “Lomborg approvingly notes the huge ongoing migration from villages to cities in the developing world. This has been considered a welcome development, because urban dwellers generally have higher standards of living than villagers. Because the flow of migrants is now so large, however, it tends to overwhelm the absorptive capacity of cities, and many migrants end up living in appalling conditions in slums. The traditional urban advantage is eroding in the poorest countries, and the health conditions in slums are often as adverse as in rural areas.”<sup>30</sup>

Bongaarts concluded: “Population is not the main cause of the world’s social, economic and environmental problems, but it contributes substantially to many of them. If population had grown less rapidly in the past, we would be better off now. And if future growth can be slowed, future generations will be better off.”<sup>31</sup>

Another authoritative contributor to the *Scientific American* forum on Lomborg’s book was Thomas Lovejoy. Like his colleagues, Lovejoy noted Lomborg’s problematic assumptions, arguments, and conclusions. For example, Lovejoy, a leading conservation biologist, remarked that it was “disconcerting” to find that “Lomborg begins the chapter on biodiversity with a section questioning whether biodiversity is important.” While Lomborg argues that environmentalists overstate the degree to which species are

becoming extinct, Lovejoy noted: “When [Lomborg] finally gets to extinction, he totally confounds the process by which a species is judged to be extinct with the estimates and projections of extinction rates.” More specifically, Lovejoy wrote: “Estimates of present extinction rates range from 100 to 1,000 times normal, with most estimates at 1,000. The percent of bird (12), mammal (18), fish (5) and flowering plant (8) species threatened with extinction is consistent with that estimate. And the rates are certain to rise—and to do so exponentially—as natural habitats continue to dwindle.”<sup>32</sup>

Lovejoy noted other concerns with Lomborg’s assertions about species extinction. For example, in a section in *The Skeptical Environmentalist* titled, “Models and Reality,” Lomborg questioned, in his words, the “appealingly intuitive” scientific model that ties the stability and diversity of species to habitat size. “Its logic is,” Lomborg wrote, “that the more space there is, the more species can exist.” Seeking to undermine this established assumption, Lomborg wrote that the eastern forests of the United States “were reduced over two centuries to fragments totaling just 1–2 percent of their original area, but nonetheless this resulted in the extinction of only one forest bird.” Lomborg argued that this and other examples highlight “a serious problem with [E. O.] Wilson’s rule of thumb” that links loss of species to reduced habitat areas. To Lomborg’s claim that only one species of bird suffered extinction when the eastern U.S. forests were reduced to 1–2 percent of their original area, Lovejoy responded that “only the old-growth forests shrank that much; total forest cover never fell below roughly 50 percent—allowing much biodiversity to survive as forest returned to an even greater area.” Thus, Lomborg’s scenario “does not contradict what species-area considerations predict but instead confirms them.”<sup>33</sup>

Lovejoy also wrote: “[Lomborg’s] consideration of acid rain in a separate chapter is equally poorly researched and presented. Indeed, the research is so shallow that almost no citation from the peer-reviewed literature appears. Lomborg asserts that big-city pollution has nothing to do with acid rain, when it is fact that nitrogen compounds (NO<sub>x</sub>) from traffic are a major source.” Referring also to what he described as a pattern of “denial” in *The Skeptical*

*Environmentalist* about global environmental realities, Lovejoy wrote:

The pattern is evident in the selective quoting. In trying to show that it is impossible to establish the extinction rate, he states: “Colinvaux admits in *Scientific American* that the rate is ‘incalculable,’” when Paul A. Colinvaux’s text, published in May 1989, is: “As human beings lay waste to massive tracts of vegetation, an incalculable and unprecedented number of species are rapidly becoming extinct.” Why not show that Colinvaux thought the number [of extinctions] is large? Biased language, such as “admits” in this instance, permeates the book.

Along similar lines, Lovejoy also wrote: “In addition to errors of bias, [Lomborg’s] text is rife with careless mistakes. Time and again I sought to track references from the text to the footnotes to the bibliography to find but a mirage in the desert.”<sup>34</sup>

In summary, and upon considering the Grist, Union of Concerned Scientists, and the *Scientific American* forums, it is difficult to recall a book by a major academic publisher that has engendered as much criticism from such a solid line of distinguished scientists. It is also worth pointing out an obvious fact—that every book contains mistakes. But when such mistakes occur “time and again” while reflecting a consistent didactic orientation, such “mistakes” may require another label as to what they are.

Lovejoy also criticized Lomborg’s analysis of the state of the world’s forests. Lomborg wrote that “there are no grounds for making such claims” about disappearing forests worldwide.<sup>35</sup> To support this point, Lomborg wrote at length about how environmentalists, in his view, had exaggerated the damage of the 1997–98 forest fires in Indonesia:

Finally, we heard a great deal about the forest fires in Indonesia in 1997,

which for months laid a thick layer of smog over all of Southeast Asia from Thailand to the Philippines. The fires constituted a genuine health problem and with a total cost of almost 2 percent of GDP had appreciable economic impact. However, they were also exploited as a means to focus attention on deforestation. The WWF [the Worldwide Fund for Nature] proclaimed 1997 as “the year the world caught fire” and their president, Claude Martin, stated unequivocally that “this is not just an emergency, it is a planetary disaster.” Summing up, WWF maintained that, “in 1997, fire burned more forests than at any other time in history.”

This is not the case, however. In their report, WWF estimated that the fires in Indonesia involved 2 million hectares, despite the fact that this is *higher* than any other estimate cited in the report. Although the 2 million hectares are mentioned constantly, it is only well into the text that it becomes apparent that the figure comprises both forest and “non-forest” areas. The official Indonesian estimate was about 165,000 to 219,000 hectares. Later, satellite-aided counting has indicated that upwards of 1.3 million hectares of forests and timber areas may have burnt. The independent fire expert Johann Goldammer said that “there is no indication at all that 1997 was an extraordinary fire year for Indonesia or the world at large.”<sup>36</sup>

Lovejoy responded: “Lomborg’s discussion of the great fire in Indonesia in 1997 is still another instance of misleading readers with selective information. Yes, the WWF first estimated the amount of forest burned at two million hectares, and Indonesia countered with official estimates of 165,000 to 219,000 hectares. But Lomborg fails to mention that the latter [Indonesia’s estimates] were not in the least credible and that in 1999 the Indonesian government and donor agencies, including the World Bank, signed off on a report that the real number was 4.6 million hectares.”<sup>37</sup>

In addition, while Lomborg argued that the WWF was wrong to observe that fire burned more forests in 1997 than in any other year, Lomborg neglected to mention that the WWF report to which he referred cited several

other major forest fires that year, as indicated in the first sentence of the WWF report: “In 1997, vast forest fires in Indonesia, Papua New Guinea, Brazil, Colombia and Africa focused attention onto what is rapidly becoming a global crisis.”<sup>38</sup> While mentioning only the fires in Indonesia, Lomborg accused WWF president Claude Martin of “exploiting” those fires by calling them “a planetary disaster,” when in fact Martin issued that characterization immediately following references, in his words, “to other fires — in Africa, Asia, the Americas, Europe and the Pacific — where the tragic events are being duplicated in many other forest ecosystems.”<sup>39</sup> Lomborg also claimed that “the independent fire expert Johann Goldammer said that ‘there is no indication at all that 1997 was an extraordinary fire year for Indonesia or the world at large,’ yet Goldammer’s conclusion to this effect, according to Lomborg’s endnote, was provided as a “personal communication.”<sup>40</sup>

Contributing to the Grist forum on Lomborg, Emily Matthews, a senior associate at the World Resources Institute, also commented on Lomborg’s analysis on forests: “In *The Skeptical Environmentalist*, Bjorn Lomborg writes that ‘basically, the world’s forests are not under threat.’ A charitable reader could attribute this flawed conclusion to errors of omission and ignorance; perhaps the author simply doesn’t know the sources well enough to interpret them properly. Less charitably, one might reasonably conclude that Lomborg intentionally selects his data and citations to distort or even reverse the truth. His interpretations of data on global forest cover and Indonesian forest fires aptly illustrate both failings.”<sup>41</sup>

Though many readers might find the analysis above from several highly qualified commentators to be disturbing, I found them, ironically, reassuring, since I had independently encountered similar problems in Lomborg’s 2007 book *Cool It*, and thus sought to learn whether others had previously expressed similar concerns to my own at the time.

My path to Lomborg did not begin with *The Skeptical Environmentalist* or the forums on Lomborg sponsored by Grist, the Union of Concerned

Scientists, and *Scientific American*. It began as a book that I was planning to write about how the *New York Times* and *Wall Street Journal* had covered global warming over the past two decades. I had written (with Richard Falk) two other books about the *Times*'s coverage of major foreign policy issues,<sup>42</sup> and had planned a third volume on global warming. Those plans began to change after reading Lomborg's 2007 book, *Cool It*, which roughly coincided in fall 2007 with the release of the IPCC's synthesis report issued in November 2007,<sup>43</sup> the Nobel Prize lectures by Al Gore and IPCC chair Rajendra K. Pachauri in Oslo, Norway, in December 2007,<sup>44</sup> and news reports in January 2008 of the death of Bert Bolin, who was influential in the establishment of the IPCC and who served as its chair from 1988 to 1997.<sup>45</sup> And relative to other books that I had read at the time (including *Field Notes from a Catastrophe*, by Elizabeth Kolbert;<sup>46</sup> *Red Sky at Morning*, by Gus Speth;<sup>47</sup> and *The Discovery of Global Warming*, by Spencer Weart<sup>48</sup> — each one superb and distinctively important), Lomborg's *Cool It*, even on a prima facie basis, in addition to being intellectually unconvincing, was aesthetically unsettling, given his woolly locutions (as in so and so “tells us” or tells a “story,” thereby inferring but not proving an environmentalist's exaggeration) and the swampy document referencing (as I point out below).

In reporting Bolin's death, the *New York Times* noted that he had traveled to Washington in 1959 to alert the National Academy of Sciences about human-induced global warming.<sup>49</sup> It was gratifying to read that the eighty-two-year-old Bolin had lived to see the IPCC awarded the Nobel Prize, noting that he “was thrilled,” though it seemed a bitter irony that he would die less than a month later with apparently less influence in the White House and Congress — nearly fifty years after his trip to Washington — than Bjørn Lomborg, whose analysis of the threat of global warming had prevailed in recent years among the highest government officials in the United States.

As a preliminary matter, it should take only a few pages to compare Lomborg's major claims in *Cool It* — that the “consequences of global warming are often wildly exaggerated,” and that “large and very expensive CO<sub>2</sub> cuts made now will have only a rather small and insignificant impact far into

the future”<sup>50</sup> — to the prevailing scientific consensus on these issues throughout the past few decades. But briefly challenging Lomborg’s claims will not fully explain the Lomborg phenomenon, which combines a near total absence of methodological integrity with outsized political influence. Thus, to weaken forthwith (a) Lomborg’s Theorem (that global warming is “no catastrophe”), and (b) Lomborg’s Corollary (that we therefore should not prioritize the reduction of greenhouse emissions), is to pull the ribbon that will begin the unraveling of Lomborg’s alleged scholarship. To this end, a good beginning would be to situate Lomborg’s assessment of the threat of global warming, and his advice on what to do about it, in the context of expert scientific opinion going back nearly forty years.

In 1971 a panel of climate experts from fourteen nations convened in Stockholm, Sweden. Spencer Weart, a science historian at Harvard University, noted, “It was the first major conference to focus entirely on a ‘Study of Man’s Impact on Climate.’”<sup>51</sup> About the conference, Weart wrote: “Exhaustive discussions brought no consensus on what was likely to happen, but all agreed that serious changes were possible. The widely read report concluded with a ringing call for attention to the dangers of humanity’s emissions of particle pollutants and greenhouse gases. The climate could shift dangerously ‘in the next hundred years,’ the scientists declared, ‘as a result of man’s activities.’”<sup>51</sup>

In 1979 the U.S. National Academy of Sciences issued a report on climate change that had been requested by President Jimmy Carter. Chaired by Jule Charney, a meteorologist at the Massachusetts Institute of Technology, the Ad Hoc Study Group on Carbon Dioxide and Climate, which consisted of several top scientists,<sup>52</sup> concluded: “We now have incontrovertible evidence that the atmosphere is indeed changing and that we ourselves contribute to that change. Atmospheric concentrations of carbon dioxide are steadily increasing, and these changes are linked with man’s use of fossil fuels and exploitation of the land.... If carbon dioxide continues to increase, the study group finds no reason to doubt that climate changes will result and no reason to believe that

these changes will be negligible.... A wait-and-see policy may mean waiting until it is too late.”<sup>53</sup>

Upon issuing the report, the academy noted that the members of Charney’s committee “were chosen for their special competencies and with regard for appropriate balance.” It also commented: “This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.”<sup>54</sup> Thus, the Charney committee’s conclusion that there is “no reason to believe” that climate changes will be negligible enjoyed substantial scientific support.

Also in 1979, the U.S. Senate Committee on Governmental Affairs held a hearing on “Carbon Dioxide Accumulation in the Atmosphere, Synthetic Fuels and Energy Policy,” during which Harvard scientist Roger Revelle stated: “Should we take the CO<sub>2</sub> effect of the various energy strategies into direct account in our decision-making processes? I would answer unequivocally, yes: the question is, how?” At the same hearings, Stephen Schneider, speaking of observed and projected increases in atmospheric CO<sub>2</sub> and the potential impact on the Greenland and West Antarctic ice sheets, testified: “And the concern has come about that should the CO<sub>2</sub> increase cause an increase in global temperature of a [Celsius] degree or two, that might lead to a larger increase in the polar regions, perhaps 5 degrees. And that 5 degrees brings the margins of this West Antarctic ice sheet to the melting point. And the concern is: if these ice sheets broke up then some of the landed ice — ice that is on the [Antarctic] continent — might slip rather quickly into the sea. Perhaps, some have said, this could take only decades. Others say: No. It would take centuries. There is considerable controversy. This issue is, if you will, the ultimate consequence of the CO<sub>2</sub> question. And it remains shrouded in debate.”<sup>55</sup>

Two years later, in 1981, the *New York Times*’s Walter Sullivan wrote about a climate study by NASA’s Goddard Institute for Space Studies that was led by James E. Hansen and published in *Science*:



A team of Federal scientists says it has detected an overall warming in the earth's atmosphere extending back to the year 1880. They regard this as evidence of the validity of the "greenhouse" effect, in which the increasing amounts of carbon dioxide cause steady temperature increases.

The seven atmospheric scientists predict a global warming of "almost unprecedented magnitude" in the next century. It might even be sufficient to melt and dislodge the ice cover of West Antarctica, they say, eventually leading to a worldwide rise of 15 to 20 feet in the sea level. In that case, they say, it would "flood 25 percent of Louisiana and Florida, 10 percent of New Jersey and many other lowlands throughout the world" within a century or less.<sup>56</sup>

In June 1988, Hansen testified to a U.S. Senate committee that he was "99 percent certain" that the climate warming of about 1 degree Fahrenheit over the past one hundred years "was not a natural variation but was caused by a buildup of carbon dioxide and other artificial gases in the atmosphere." Speaking before the committee, chaired by Timothy Wirth, a Democrat from Colorado, Hansen said, "It is time to stop waffling" and acknowledge "that the greenhouse effect is here."<sup>57</sup>

Thus, throughout the 1970s and 1980s, substantial scientific apprehension about the impact of human-induced greenhouse emissions on the Earth's climate had been reported. In response to this concern, in 1988 the United Nations Environment Program and the World Meteorological Organization founded the Intergovernmental Panel on Climate Change "to assess the scientific information that is related to the various components of the climate change issue, such as emissions of major greenhouse gases," and "to enable the environmental and socio-economical consequences of climate change to be evaluated."<sup>58</sup> The IPCC is composed of about 2,500 scientists and other specialists from around the world — all of whom work pro bono — who have expertise in a broad range of climate-related disciplines.

Two years after it was established, the IPCC issued its first assessment

report. Though the 1990 report was the most tentative scientifically of the four assessment reports that the IPCC has published to date (see chapter 4), it nevertheless was “certain” that human-induced greenhouse emissions were enhancing the natural greenhouse effect: “We are certain of the following.... Emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases: carbon dioxide, methane, chlorofluorocarbons (CFCs) and nitrous oxide. These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth’s surface.”<sup>59</sup>

The 1990 IPCC report also projected increases in global temperatures due to a human-induced increase in atmospheric greenhouse gases. Under the IPCC’s “Business as Usual” scenario — that is, with little to no reductions in such gases, roughly what Lomborg prescribes—average temperatures would increase 3–6°C (5.4–10.8°F) by year 2100.<sup>60</sup> Likewise, and contrary to what Lomborg argues in *Cool It*—that large CO<sub>2</sub> cuts “made now will have only a rather small and insignificant impact far into the future”<sup>61</sup> — the IPCC reported in 1990 that progressively increasing levels of controls on greenhouse emissions would lead to correspondingly lower increases in global temperatures. Thus, for the IPCC, if not for Lomborg — according to projections that remained fairly steady over the course of its four assessment reports, from 1990 to 2007 — not reducing or reducing greenhouse emissions and by how much could have a big impact on how much the Earth will warm throughout this century.<sup>62</sup>

A year after the IPCC’s 1990 assessment report, the U.S. National Academy of Sciences (NAS) issued an important booklet on global warming titled, *Policy Implications of Greenhouse Warming*. The NAS issued projections of global temperatures relative to increases in greenhouse emissions and, in doing so, issued a warning: “At their present level of development, GCMs [general circulation models] project that an increase in greenhouse gas concentrations equivalent to a doubling of the preindustrial level of atmospheric CO<sub>2</sub> would produce global average temperature increases between 1.9 and 5.2°C (3.4 and 94°F). The larger of these temperature

increases would mean a climate warmer than any in human history. The consequences of this amount of warming are unknown and could include extremely unpleasant surprises.”<sup>63</sup>

Roughly consistent with what the IPCC and NAS had reported by 1991, the 2007 IPCC assessment report projected that global average temperatures would increase by a likely range of 1.1 -6.4°C (2 -11.5°F) by year 2100.<sup>64</sup> Thus, over the twenty-year period in which the IPCC studied the relationship between man-made greenhouse emissions and a warming Earth, the range of projected temperature increases remained relatively constant, as did the correlation between lower emissions and lower temperatures, and higher emissions and higher temperatures. This indicates that Lomborg’s argument—that global warming isn’t a big problem and that we needn’t bother much with reductions in greenhouse emissions — from the beginning was formulated outside a scientific consensus that projected unprecedented warming with potentially catastrophic consequences if greenhouse emissions were not significantly reduced.

One might have thought that this consensus would have compelled Lomborg to meet a high burden of evidence to support his case that global warming was no catastrophe and that governments needn’t prioritize reductions in greenhouse emissions. On the contrary, given the antienvironmentalism of the new American president at the time, the Republican-led right-wing Congress, and the U.S. news media’s self-imposed obligation to “balance” political and scientific realities with alternative possibilities— however factually challenged—Lomborg’s “skeptical environmentalism” was well positioned to exploit the political and cultural interests that welcomed his book in the United States in fall 2001. Whatever explains Lomborg’s motivations and the success of *The Skeptical Environmentalist*, it functions for our purposes as a necessary introduction to his 2007 book, *Cool It: The Skeptical Environmentalist’s Guide to Global Warming*.