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GORE WARS

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THE SKEPTICAL ENVIRONMENTALIST: MEASURING THE REAL STATE OF THE WORLD. By *Bjørn Lomborg*. Cambridge: Cambridge University Press. 2001. Pp. xxiv, 515. Cloth, \$69.95; paper, \$27.95.

Unless you've been frozen in carbonite or are hopelessly gullible, it must have occurred to you at some point during the last three decades that environmental activists are exaggerating just a bit when they claim that, unless we dramatically change our way of life, we'll soon see the end of civilization as we know it. I'm not sure when these doomsday predictions got started — probably they go back to Malthus and beyond — but I first became aware of environmental Jeremiadism in college in the early 1970s, when tout-le-monde were reading a little book called *The Limits to Growth*.¹ Authored by a group of scientists going by the pretentious name “The Club of Rome,” the book was designed as a shrill wake-up call to a complacent humanity headed for environmental disaster.² Filled with charts, tables and diagrams, and supported by computer-generated predictions (a new-fangled tool at the time), *The Limits of Growth* made some very concrete and highly alarming predictions: “there will . . . be a desperate [arable] land shortage before the year 2000”;³ we would run short of gold by 1979, of silver and mercury by 1983, of petroleum by 1990, of zinc by 1988, of tin by 1985 and of natural gas by 1992.⁴ The book's forceful message was that we were headed for a world-wide calamity, and must fundamentally — and immediately — change the way we live. Nor was this merely a question of physical survival; at stake was humanity's very soul: “The crux of the matter is not only whether the human species

* Our readers are far too savvy to need explaining who Judge Kozinski is. He gratefully acknowledges the valuable help of his law clerk, Igor “Skywalker” Timofeyev. — Ed.

1. DONELLA H. MEADOWS ET AL., *THE LIMITS TO GROWTH* (1972).

2. The Club's main undertaking — and the subject of the book — was a so-called “Project on the Predicament of Mankind.” *Id.* at x. Its aim was as humble as its title: “[T]o examine the complex of problems troubling men of all nations: poverty in the midst of plenty; degradation of the environment; loss of faith in institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; rejection of traditional values; and inflation and other monetary and economic disruptions.” *Id.*

3. *Id.* at 60.

4. *Id.* at 64-67 tbl.4; *see also id.* at 71.

will survive, but even more whether it can survive without falling into a state of worthless existence.”⁵

“Wow! Heavy!,” as we used to say in those days. The book definitely made you feel guilty about taking a trip in your gas-guzzling, air-polluting, resource-wasting Millennium Falcon to go hiking in the Great Outdoors. It was almost enough to make you walk the twelve parsecs to the Forest of Endor and back.

With the benefit of hindsight, we know that *The Limits to Growth* was a bunch of hoey; virtually nothing the Club of Rome predicted with such alarm has come to pass. Of course, its members did not then come out with a big press release: “Oh what fools we were! We apologize for worrying the world unnecessarily.”⁶ Instead, doomsday predictions proven wrong by the passage of time are quietly forgotten, denying the public the important lesson that one ought to be wary of predictive models because they often reflect, not reality, but the pre-conceptions of the model’s creators.

Since *The Limits to Growth*, there have been many doomsday predictions, the one about global warming being only the latest. We have been warned in the most urgent terms against global cooling (yes, cooling);⁷ massive loss of species;⁸ acid rain;⁹ destruction of forests;¹⁰ overpopulation;¹¹ depletion of petroleum and other natural re-

5. *Id.* at 200.

6. In fact, when the authors published a revised and updated version of the book twenty years later, not only did they fail to acknowledge they had been wrong, but they claimed that the world had already overshot many of its limits to physical growth, and a drastic scaling back was even more urgent than in 1972: “Human use of many essential resources and generations of many kinds of pollutants have already surpassed rates that are physically sustainable. Without significant reductions in material and energy flows, there will be in the coming decades an uncontrolled decline in per capita food output, energy use, and industrial production.” DONELLA H. MEADOWS ET AL., *BEYOND THE LIMITS*, at xv (1992). Are we living in the same galactic sector, or what?

7. PAUL R. EHRLICH & ANNE H. EHRLICH, *THE END OF AFFLUENCE: A BLUEPRINT FOR YOUR FUTURE* 28-30 (1974), *cited at* p. 30. You can bet good money that anything Paul Ehrlich predicts will never happen. *See infra* text accompanying note 40.

8. Lester Brown, Worldwatch Institute, *The Future of Growth*, in *STATE OF THE WORLD 4* (Linda Stark ed., 1998), *cited at* p. 13.

9. LONG-TERM EXPERIMENTS WITH ACID RAIN IN NORWEGIAN FOREST ECOSYSTEMS 298 (Gunnar Abrahamson et al. eds., 1994), *cited at* p. 37.

10. JANET M. ABRAMOVITZ, WORLDWATCH INSTITUTE, *Sustaining the World's Forests*, in *STATE OF THE WORLD 1998*, *supra* note 8, at 21, *cited at* p. 13; Press Release, World Wildlife Fund for Nature, Two-Thirds of The World's Forests Lost Forever (1997), at http://www.panda.org/forests4life/news/081097_lostfor.cfm, *cited at* p. 16.

11. PAUL R. EHRLICH, *THE POPULATION BOMB* (1968), *cited at* p. 48; *see also* Paul R. Ehrlich, *Looking Back from 2000 A.D.*, *PROGRESSIVE*, Apr. 1970, at 23, *cited at* p. 30.

sources;¹² running out of space to store garbage;¹³ cancer and other maladies caused by pesticides and toxic wastes;¹⁴ depletion of food resources and drinking water;¹⁵ and a variety of other hazards too numerous to mention. While some of these may well be issues we should worry about in building a better world for ourselves and future generations, they have turned out to be manageable — rather than cataclysmic — problems. Some turned out to be nothing but hype.¹⁶ Others had some substance, but were nowhere near as threatening as the alarmists claimed.¹⁷ The press dutifully reported each of these supposed crises, largely without skepticism. In turn, prominent politicians called for measures preventing environmental disaster as center-planks of their platforms. No less a figure than Al Gore declared, in his acceptance speech for the Vice Presidential nomination, that “[t]he task of saving the Earth’s environment must and will become the central organizing principle of the post Cold-War world.”¹⁸ The result of

12. Jim Motavalli, *Running on EMPTY*, 11 E MAG. 34 (2000), cited at p. 118; see also p. 118 n.848.

13. SENATOR AL GORE, *EARTH IN THE BALANCE: ECOLOGY AND THE HUMAN SPIRIT* 145 (1992) (“[T]he floodtide of garbage [is] spilling out of our cities and factories”; we are “running out of ways to dispose of our waste in a manner that keeps it out of either sight or mind.”), cited at p. 206.

14. David Pimentel et al., *Ecology of Increasing Disease: Population Growth and Environmental Degradation*, 48 BIOSCIENCE 817, 818 (1998), cited at p. 23; see also *Environmental Pollution and Degradation Causes 40 percent of Deaths Worldwide*, CORNELL NEWS, Oct. 12, 1998, available at <http://www.news.cornell.edu/releases/Sept98/ecodisease.hrs.html>, cited at p. 23 n.173.

15. EHRlich & EHRlich, *THE END OF AFFLUENCE*, *supra* note 7, at 28, 30, cited at p. 30.

16. An example of an issue that has absolutely no foundation is the fear that swept the country a decade and a half ago that we were running out of space to dump garbage and would soon be trapped in a global equivalent of the Death Star’s trash compactor. This fear originated in a series of press reports in 1987 about a barge named the *Mobro 4000*, which wandered thousands of miles trying to unload its cargo of Long Islanders’ trash. Believing this to be a signal that the nation was running out of the landfill space, many concluded that recycling was the only solution. As was soon discovered, the fear was totally unfounded and was, in fact, based on a misunderstanding and poor reporting — driven by the usual environmental zealots. The national obsession with proper garbage disposal and the environmental myths surrounding the recycling program are well described in John Tierney, *Recycling Is Garbage*, N.Y. TIMES MAG., June 30, 1996, at 24.

17. Acid rain falls into this category. While it damaged lakes, it had no effect on forests, contrary to the claims of many environmentalists that acid rain would turn our planet into desert-like Tootoone. See pp. 37, 179-81.

18. Senator Al Gore, Remarks on Vice-presidential Nomination at the Democratic National Convention (July 16, 1992), quoted in *America Is Ready To Be Inspired and Lifted Again*, WASH. POST, July 17, 1992, at A28. Nor was this an excitement-induced isolated utterance on Vice President Gore’s part; it was, rather, a considered element of his political vision. See GORE, *supra* note 13, at 269 (“[W]e must make the rescue of the environment the central organizing principle for civilization.”).

May 2002]

Gore Wars

1745

this Jedi mind trick was frequent, costly and disruptive changes in our laws that are difficult or impossible to undo.¹⁹

By the time it becomes clear that the problem doesn't really exist — or is not nearly as serious as portrayed in the alarmist reports — public attention has shifted away from the issue and few people bother to revise their views, if they hear about the recantation at all. Even for those who have grown skeptical over time — or are just skeptical by nature — it's quite difficult to assess whether a particular environmental scare story is really anything to worry about. After all, they all come swaddled in dire pronouncements from the usual suspects and carry the imprimatur of some scientific-sounding group ready to vouch that this crisis will cause as much damage to Earth as the Death Star did to the planet Alderaan. I have often wondered whether anyone would write a book thoroughly analyzing the great environmental scares of the recent past and explaining how much was legitimate and how much was hype.

That book is here, now. It's written by a young Danish (who would have guessed?) professor of statistics, Bjørn Lomborg,²⁰ and it pro-

19. As a result of the *Mobro* misunderstanding, states and communities across the country have adopted recycling laws that serve no legitimate purpose at all. To the contrary, they impose costs on consumers, not to mention the sheer inconvenience and unpleasantness in having to muck around with garbage. If any of it were at all justified, one might hold one's nose and put up with it, but the measures turn out to have absolutely no justification; we are quite simply the slaves of a bad idea that no one in public life dares to recognize as a silly waste of time and money. See Tierney, *supra* note 16.

A far more dangerous idea is the Corporate Average Fuel Economy ("CAFE") standards, setting ever-tightening requirements for fleet fuel economy for automobile manufacturers. One way to save fuel is by making cars lighter and smaller, which renders their passengers more prone to injuries in accidents. A recent study by the National Research Council has concluded that "the downweighting and downsizing that occurred in the late 1970s and early 1980s, some of which was due to CAFE standards, probably resulted in an additional 1,300 to 2,600 traffic fatalities in 1993." COMMITTEE ON THE EFFECTIVENESS AND IMPACT OF CORPORATE AVERAGE FUEL ECONOMY, EFFECTIVENESS AND IMPACT OF CORPORATE AVERAGE FUEL ECONOMY (CAFE) STANDARDS 3 (2002). Fortunately, SUVs, light trucks and minivans are subject to a more lenient standard (although there are efforts to change that), which explains in great part why consumers have been abandoning automobiles in droves in favor of these larger vehicles. See Paul E. Godek, *The Regulation of Fuel Economy and the Demand for "Light Trucks,"* 40 J. LAW & ECON. 495, 506 (1997) ("[C]onsumers have responded to [the CAFE standard] by switching from large cars to light trucks, a less-regulated class of vehicles. The switch to light trucks has mitigated — but not eliminated — the adverse safety consequences of CAFE."). A recent poll conducted by the Competitive Enterprise Institute found that the second most important reason in consumers' decision to buy an SUV was their greater safety and reliability. *CAFE and Safety* (Feb. 25, 2002), at <http://www.cei.org/pdf/2405.pdf>. Ironically, some of CAFE's proponents now use the popularity of the SUVs as an argument for higher fuel economy standards, claiming that smaller SUVs would lead to "fewer fatal mismatches in which subcompacts are demolished by invulnerable road monsters." Sam Kazman, *A Crashing Future: The Stupid Tragedy of CAFE*, NAT'L REV. ONLINE, Sept. 17, 2001, at <http://cei.org/utills/printer.cfm?AID=2156>.

20. Associate Professor of Statistics in the Department of Political Science, University of Aarhus, Denmark. In February 2002, the Danish government appointed Lomborg to run the newly-established Institute for Environmental Assessment, charged with ensuring that Danish state agencies consider cost-effectiveness when adopting strategies to reduce pollu-

vides a devastating critique of the environmental scare-mongering of the last three decades. The book, however, offers more than criticism; it presents a balanced, thoughtful approach to environmental problems, taking into account a world of limited resources and competing needs and wants. *The Skeptical Environmentalist* is an indispensable resource to anyone seriously interested in the environment, and in helping to formulate rational responses to the challenges presented by industrialized society.

I. THE PHANTOM MENACE

Lomborg starts by challenging what he calls “the Litany” — the now-familiar list of hazards that environmental groups present as plaguing mankind: overpopulation, depletion of natural resources, disappearing forests, chemical pollution, etc. He points out that much of the Litany is based not on fact, but on partial — or downright false — data, on anecdotal evidence so atypical as to give no credible basis for generalization, and on various other rhetorical tricks that present a wholly distorted picture of the world.

For example, the Worldwatch Institute claims (without citing any supporting authority) that “the world’s forest estate has declined significantly in both area and quality in recent decades,”²¹ but this claim is refuted by United Nations statistics that show an increase in worldwide forest-cover during the last half of the 20th century.²² Similarly, the Worldwatch Institute refers to “[r]ecord rates of population growth,”²³ ignoring the fact that the record for population growth (2.17 percent per year) was set in 1964, and population growth rates have declined steadily ever since to somewhat over one percent at present.²⁴

Here’s another example: The popular pseudo-scientific book, *Our Stolen Future*,²⁵ claims a link between synthetic hormones and a one percent per year rise in the rate of breast cancer in the United States since 1940.²⁶ If true, this would be alarming indeed, because it would

tion. As expected, this appointment has Denmark’s environmental doomsdayers howling like Wookiees. *Howls from the Greens*, *ECONOMIST*, Mar. 2, 2002, at 51.

21. P. 13 (quoting WORLDWATCH INSTITUTE, *VITAL SIGNS* 1998, at 22 (Lester Brown et al. eds., 1998)).

22. See p. 13; see also p. 111 fig.60 (listing data collected by the Food and Agricultural Organization of the United Nations for the years 1949-95).

23. LESTER BROWN ET AL., WORLDWATCH INSTITUTE, *Preface* to *STATE OF THE WORLD* 2000, at xvii, quoted at p. 13.

24. See pp. 13-14 (citing U.S. Bureau of the Census, *International Data Base*, at <http://www.census.gov/ipc/www/idbnew.html>); see also p. 47 fig.13 (displaying the data).

25. THEO COLBORN ET AL., *OUR STOLEN FUTURE: ARE WE THREATENING OUR FERTILITY, INTELLIGENCE, AND SURVIVAL? — A SCIENTIFIC DETECTIVE STORY* (1996).

26. *Id.* at 122, cited at p. 18.

have meant a 75 percent increase in the breast cancer rate from 1940 to 1996, when the book was published. In reality, however, the breast cancer rate between 1940 and 1996 had dropped by nine percent.²⁷

In addition to using information that is entirely incorrect, many environmental reports manipulate statistics and other data to create a false sense of crisis. As an example, Lomborg discusses noted water expert Peter Gleick's book, *Water in Crisis*,²⁸ published by Oxford University Press (pp. 20-21). Looking at the period from 1980 to 1990, Gleick recognizes that access to drinking water has been steadily increasing, despite a growing population; while there were 750 million more people in the developing world at the end of that period, 1.3 billion more had access to drinking water, increasing the percentage of people with access from 44 to 69 percent. Much the same is shown to be true for sanitation. Yet in predicting what was then the future — the period from 1990 to 2000 — Gleick reverses the trend and prophesies that a sharply growing percentage of people will lack access to clean water and sanitation.

What could have brought about this turning point, Lomborg asks? When he checked the figures underlying Gleick's prediction, Lomborg found that Gleick had simply added the predicted population increase of 882 million²⁹ to the existing population, while predicting that the supply of clean water and sanitation would remain at 1990 levels (p. 21). In other words, Gleick assumed that the two-decades-long trend of increasing clean water and sanitation would come to an abrupt halt in 1990. *Water in Crisis* offers no explanation for this counter-factual assumption and, of course, its prediction turned out to have been wrong, precisely in the way one might have guessed by simply following the pre-1990 trends. An April 2000 UN study showed that, despite the increase in population in developing countries, the percentage of those who had access to clean drinking water had risen to eighty percent; a similar increase was shown regarding sanitation.³⁰

Lomborg presents many other eye-opening examples where environmentalists have cooked the numbers to create the illusion of crisis where none exists. In a 1998 article in the peer-reviewed journal *Bio-*

27. P. 18 (citing American Cancer Society, *Cancer Facts and Figures — 1999* (1999), at <http://wonder.cdc.gov/>; Office of Analysis and Epidemiology, Centers for Disease Control and Prevention, *Compressed Mortality File*).

28. WATER IN CRISIS: A GUIDE TO THE WORLD'S FRESH WATER RESOURCES (Peter H. Gleick ed., 1993).

29. The actual figure turned out to be much lower, namely 764 million, p. 21 n.156, because population increases continued their trend of tapering off during the 1990s.

30. P. 21 (citing COMMISSION ON SUSTAINABLE DEVELOPMENT, ECONOMIC AND SOCIAL COUNCIL, 8TH SESSION, PROGRESS MADE IN PROVIDING SAFE WATER SUPPLY AND SANITATION FOR ALL DURING THE 1990S: REPORT OF THE SECRETARY-GENERAL (2000), available at <http://www.un.org/esa/sustdev/csd8/wss4rep.pdf>).

Science,³¹ well-known environmentalist David Pimentel of Cornell University tries to make a case for the proposition that increased population densities cause an increase in infectious disease (pp. 22-23). To make this point, Pimentel uses the biggest infectious disease killer, tuberculosis ("TB"), and argues that TB infection in the United States increased by eighteen percent between 1985 and 1991.³² An increase of almost one fifth over six years is alarming indeed, except for a few problems Lomborg discovered when he analyzed Pimentel's numbers. To begin with, Pimentel compares absolute numbers (22,201 cases in 1985 and 26,283 cases in 1991) rather than percentage of infections as a proportion of the population, which itself rose some six percent during that period (p. 23). Worse, while the comparison is technically true, Pimentel has hand-picked the two years in that period that show an increase; had he picked just about any other two years, the true trend, which is a steady *decline* in the rate of TB infections, would have been revealed.³³ As Lomborg points out, in 1996, two years before Pimentel's article, the number of TB infections was below the 1985 level, and in 1999 it fell to just over 17,000 cases.

Lomborg gives example after example of alarmist claims based on false or manipulated data — far too many to discuss in this Review. This might give rise to the legitimate question whether Lomborg's criticism of mainstream environmentalists is really a disagreement about the applicable statistics. Perhaps Lomborg is simply using different data to support his conclusions, and what we have here is the kind of healthy difference of opinion we often see among scientists in an evolving field, or between R2-D2 and C-3PO.

Not so. As Lomborg is quick to point out, he is not an environmental scientist, and certainly has no expertise in such diverse areas as infectious disease, air pollution and global warming. Lomborg therefore is careful not to impeach one set of data because it is contradicted by others. Instead, Lomborg does what a statistician is trained to do: He carefully examines claims made by environmentalists in their own publications and determines whether these claims are supported by their own data. As Lomborg puts it,

[T]he statistical material I present is usually identical to that used by the WWF [World Wide Fund for Nature], Greenpeace and the Worldwatch Institute. People often ask where the figures used by 'the others' are, but there *are* no other figures. The figures used in this book are the official figures everybody uses. (p. 31)

31. Pimentel et al., *supra* note 14.

32. *Id.* at 823, *cited at* p. 23.

33. Lomborg presents a graph showing a sharply downward sloping curve for TB infections, with the period from 1985 to 1991 displaying a mild and temporary reversal. P. 23 fig.6. By examining the chart, it becomes quite obvious why Pimentel selected precisely those two years to illustrate his point.

May 2002]

Gore Wars

1749

“In reality,” states Lomborg, the only issue generally is “who could look up a number correctly” (p. 31).

Much of Lomborg’s long book is precisely about looking up numbers correctly — and fairly. His painstaking and thoroughly documented analysis — there are almost 3000 endnotes — consists largely of examining the sources used by environmental groups to support various alarming messages that are intended to precipitate legal and social changes affecting the way we live our lives. By deconstructing this data, Lomborg paints a very different picture of the state of the world than that portrayed by environmental activists. While recognizing that in many ways the world could — and will — become a better place than it is today, Lomborg reaches very different conclusions from the environmentalists about the kind, degree, pace and method of change that we should pursue. If Lomborg is right — and a careful reading of his book suggests that he is — this does not mean that we should be smugly satisfied with the current state of the world. It suggests, rather, that we must be very careful about the type of changes we bring about, lest we undermine the very values that we seek to promote.

II. ATTACK OF THE CLONES?

The great bulk of Lomborg’s book, nearly two hundred tightly-written and densely-footnoted pages, is devoted to examining the true state of the world in those areas that have been the subject of alarmist prediction by environmental activists. He paints a picture of a world where human welfare is dramatically improving in just about every way one might measure it. While, as Lomborg readily admits, there are many ways in which things can continue to improve, all measurable *trends* point in a positive direction.

Thus, “we now have far more food per person than we used to, even though the population has doubled since 1961” (p. 61). While the population is continuing to increase, it is doing so at a continually slower rate and is expected to peak during the middle of the next century. We have more — and cleaner — water per person than we ever did before (ch. 13); our population is healthier and better educated; infant mortality is sharply reduced; and life expectancy has increased dramatically (ch. 4). Indeed, the main reason for the continued increase in world population is, in the words of a UN consultant, “not that people suddenly started breeding like rabbits; it’s just that they stopped dying like flies” (p. 46). We have more leisure time and greater access to consumer products (ch. 6); we breathe cleaner air (p. 210); we suffer less from natural disasters (p. 85). Animal species are *not* dying out at an alarming rate, as has often been asserted as fact by environmentalists (ch. 23); our forests are *not* disappearing, in fact they’re making a comeback strong enough to satisfy any Ewok

(ch. 10). As discussed earlier, we are nowhere near running out of waste space (p. 206).

Nor are we running out of energy or other natural resources. While we use more energy every year, proven reserves of oil, gas, coal and uranium are constantly increasing (ch. 11). Technology for extracting energy from renewable sources, such as solar power and wind, is improving and will become cost-effective within a few decades — long before we run into a serious shortage of non-renewable energy sources. Proven reserves of other resources, such as iron, copper, aluminum and zinc have also been increasing; their prices have steadily declined (ch. 12). Acid rain was never the “ecological Hiroshima”³⁴ that environmentalists proclaimed it to be, and has been largely eliminated as an environmental problem (ch. 16). The relationship between pesticides and disease, notably cancer, is vanishingly small, and elimination of pesticides would be quite costly and, in fact, dramatically increase cancer deaths.³⁵

If Lomborg’s description of the world differs markedly from the one most of us have come to accept, it is likely because our perceptions are shaped by media reports that uncritically adopt and amplify the predictions of doom peddled by professional environmentalists. Examining with a statistician’s eye the very same sources used by the environmentalists, Lomborg comes to very different conclusions. Does his analysis make sense? Is it adequately documented? In a word, yes. While space does not permit a close examination of all the issues addressed in *The Skeptical Environmentalist*, below is a fair sampling.

A. *The Prosperity Gap*

A key component of The Litany is the notion that, while things may, indeed, be getting better in developed countries, the opposite is true in the developing world. In fact, it is often suggested that the prosperity of developed countries comes at the expense of undeveloped ones. But is it true? It would seem to be, if one accepts the conclusions of the UN Development Program (“UNDP”), whose report claims that “the global chasm between the rich and the poor widens day by day.”³⁶

Lomborg examines the data on which this alarming conclusion is based. The UNDP report measures the ratio between the Gross Domestic Product (“GDP”) of the richest twenty percent of all nations and that of the poorest twenty percent. In the 1960s, this ratio was

34. P. 178 (quoting ERIK CLAUDI, GREENPEACE, BIND 1: REGNBUENS KRIGERE [GREENPEACE: THE RAINBOW WARRIORS] 249 (1988)).

35. P. 247; see also *infra* notes 78-82 and accompanying text.

36. P. 73 (quoting UN Development Program, *Human Development Report 1996* (1996), available at <http://www.undp.org/hdro/english/96.htm>).

around 30:1, meaning that the average individual in the richest nations earned thirty times as much as the average individual in the poorest ones. By 1991, the ratio had risen to 61:1, by 1994 it was 78:1 (p. 73). This seems to provide irrefutable support for the notion of a growing inequality.

Wrong, says Lomborg. The problem with the UNDP statistics is that they rely on international exchange rates for comparisons; in other words, they ask how much someone from Ethiopia could buy if his yearly income were converted to U.S. dollars, and he were required to spend it in the United States, England or Germany. As economists have long recognized, this is entirely the wrong question, because as nations get richer, their domestic price levels disproportionately reflect the wage increases for services (which are much lower in developing nations) (p. 73). A comparison of GDPs between nations therefore does not give a true picture of the relevant measure of wealth: How much can a person in a developing country buy within his own country? In fact, the UN itself has created a measure called Purchasing Power Parity (“PPP”) to answer this question; PPP is now accepted by economists and international agencies as the preferred method of comparing wealth among countries with dramatically different price levels (p. 74).

Using PPP turns out to make a big difference. While an Ethiopian’s yearly income in terms of GDP is only \$100, his PPP is \$450. Under PPP comparisons, “the relative gap between the richest and poorest 20 percent or richest and poorest 30 percent has not doubled . . . but rather [has] been slightly decreasing” (p. 74). Lomborg shows this convincingly in a chart on page 74 of his book.³⁷

Whether one prefers GDP or PPP comparisons is a judgment call. It is notable, however, that the UNDP itself largely relies on PPP indicators in evaluating per capita incomes of individualized countries.³⁸ But in announcing its bombastic — and widely quoted³⁹ — conclusion about growing inequalities, it switches to GDP comparisons with no explanation. It is hard to imagine a legitimate reason for this switch and one suspects that the authors of the UNDP report simply found the GDP data more consistent with the alarmist message they wished to convey.

An even cruder device is used by organizations such as Worldwatch Institute and UNICEF, which argue that inequality between rich and poor has grown in absolute dollar terms (pp. 74-75). As Lomborg points out, “this is a mathematical necessity” (p. 75). For ex-

37. See p. 74 fig.34.

38. P. 74 (citing UN Development Program, *Analytical Tools for Human Development* (2000), available at <http://www.undp.org/hdro/anatools.htm>).

39. See pp. 73, 367 n.504 (citing examples).

ample, if the rich earn \$10,000 a year and the poor only \$1000, and their income doubles over the course of a period, they will wind up with \$20,000 and \$2000 respectively. In relative terms, nothing has changed, but in absolute dollar terms, the gap between the rich and the poor has doubled from \$9000 to \$18,000. Under this method of comparison, the absolute dollar gap would increase even if, over the same period, the income of the rich doubled while that of the poor increased ten-fold. At the end of the period, the rich would still earn \$20,000 while the poor would earn \$10,000 — having increased their relative income from one-tenth to one-half of that of the rich, clearly narrowing the gap. Yet, using the Worldwatch Institute and UNICEF's basis of comparison, the gap between rich and poor would have grown from \$9000 to \$10,000 a year.

B. *Dwindling Natural Resources*

Lomborg begins his discussion of natural resources by recounting the famous 1980 challenge by economist Julian Simon to environmentalists: He offered to bet \$1000 that any given raw material would drop in price over any period exceeding one year. Simon gave anyone accepting his bet the right to pick the material and the period of time. Stanford environmentalists Paul Ehrlich, John Harte and John Holdren, accepted the challenge, staking their claim on a basket made up of chromium, copper, nickel, tin and tungsten, and a time-frame of ten years (p. 137). In accepting the challenge, Ehrlich and his enviro-pals displayed not only ignorance but arrogance, crooning that “the lure of easy money can be irresistible.”⁴⁰

As everyone knows, Ehrlich and Co. got egg on their faces and had to write Simon a fat check. Not only had the entire basket of materials dropped in its inflation-adjusted price, the price of each item in the basket had dropped as well — from a five percent decrease in the price of chromium to a seventy-four percent fall in the price of tin. As Lomborg points out, the environmentalists didn't lose because they unluckily picked the wrong basket; there was no basket of goods they could have picked to win; from petroleum to wool, and from food-stuffs to phosphorus — they had all become cheaper (p. 137).

Price, of course, reflects supply and demand. The price of materials dropped during the Simon-Ehrlich bet because prices for materials always drop (barring short-term fluctuations). While the reasons for this inexorable trend are complex, they are ultimately based on the interplay of three forces: (1) Technology constantly increases the proven

40. P. 137 (quoting Paul Ehrlich et al. in JULIAN SIMON, *THE ULTIMATE RESOURCE 2*, at 35 (1996)). Sadly, Simon met an untimely death in 1998. Much of Simon's spirit lives on in Lomborg's book, no doubt because Lomborg converted from mainstream environmentalism when he tried, unsuccessfully, to refute many of Simon's claims. See p. xix.

reserves of depletable resources, such as oil and minerals, and the productivity of finite resources, such as arable land. (2) As the costs of some resources rise, we are able to substitute other resources which are cheaper. (3) We become more efficient over time at using resources, so that the demand for resources falls relative to the demand for ultimate consumer products. Lomborg gives numerous examples of each of these forces at work (pp. 146-48); the issue no longer seems open to reasonable debate.

C. *Global Warming*

Lomborg devotes a long chapter to the global warming controversy and, not surprisingly, reaches some unorthodox conclusions. Lomborg correctly identifies global warming as the “environmental trump card” because, if we accept the environmentalists’ argument that we are heading towards an environmental disaster because of greenhouse gases, then we must change our industrial ways, even if all the other alarmist arguments fail (p. 258). Indeed, environmentalists have been remarkably successful in getting world governments to take steps to deal with this supposed menace to our way of life.

Contrary to the commonly-held perception that current climate changes are a departure from global temperatures that have held more or less constant for a very long time, Lomborg shows that throughout human history global temperatures have continuously fluctuated between Hoth and Tatooine. For the five centuries or so preceding the twentieth, global temperatures were much colder; the period is, in fact, known as the Little Ice Age (pp. 261-62). The centuries prior to that were substantially warmer, and allowed the colonization of such distant cold places as Greenland and Newfoundland by the Vikings; this period is known as the “Medieval Warm Period” (p. 262). Moreover, notes Lomborg, “data seem to indicate that there has been regular recurrence of episodes like the Little Ice Age and Medieval Warm Period in a roughly 1500-year climatic cycle over the past 140,000 years.”⁴¹ In determining whether we are suffering from human-activity-induced global warming, and to what degree, it is important to keep in mind that changes in the global temperature levels are the norm, and steady temperatures over a sustained period are the rare exception.

41. P. 262; *see also* p. 411 n.2144. There is a wealth of data in addition to those cited in Lomborg. Illustrative is that collected by the North Greenland Ice-core Project, which has been studying the inner layers of Greenland’s ice for nearly a decade. The study reveals that temperatures have fluctuated throughout human history and the average temperature today is not very different from what it was ten millennia before the invention of the internal combustion engine. *See* Elizabeth Kolbert, *Ice Memory: Does a Glacier Hold the Secret of How Civilization Began — and How It May End?*, *NEW YORKER*, Jan. 7, 2002, at 30. Ironically for the proponents of global warming, the data suggests that we could be heading towards another ice age. *See id.*; *see also infra* note 44.

While Lomborg seems to accept that some warming is the result of greenhouse gases, primarily CO₂ (p. 266), he does present data that tend to cast doubt on this conclusion. First, Lomborg points out that the steep rise in temperatures (here “steep” means about half a degree Celsius over the course of three decades) has occurred not once but twice during the twentieth century. The latter period, from 1975 to the present, matches pretty closely to the increase in CO₂ emissions (p. 263 & fig.135). However, a very similar rise, over a similar time period, occurred from 1910 to 1945, at a time when there was very little increase in CO₂ concentration.⁴² (There was a small drop in the interregnum period from 1945 to 1975.) It seems quite remarkable — and wholly unexplained — that the more recent rise should be caused by CO₂ emissions if the earlier one was not. It seems more plausible to infer that both increases were the result of some cause unrelated to CO₂ emissions. Whether one agrees with this conclusion or not, it certainly seems highly relevant to judging the validity of the claim that we must drastically reduce CO₂ emissions or suffer dire consequences. Yet this highly relevant fact is never mentioned when global warming is pronounced to be a result of greenhouse gases.

Another important fact reported by Lomborg, but largely ignored in the discussion of global warming, is that the warming trend is only reflected by measurements taken on land. By contrast, temperature measurements taken by satellite and weather balloons show no increase at all (pp. 269-70). This is quite odd because, if there were a general warming trend, we would expect it to be felt throughout the atmosphere, not merely at ground zero. Global warming advocates have offered no explanation for this disparity; they simply ignore the inconsistency and persist in using the land-temperature figures alone. Some scientists, such as Fred Singer of the Institute for Space, Science and Technology, have suggested that the disparity can be explained by the fact that land-based measurement stations tend to be relatively close to urban areas, some of which have expanded dramatically during the past century. Urban areas are hotter than the surrounding countryside and as urban areas expand, their heat reaches more weather stations. Singer argues that satellite and balloon data give a more accurate overall reading, because they can measure temperatures over oceans, deserts and jungles — vast areas unaffected by urbanization.⁴³ Whether one accepts this theory or not, it is surely inexcusable to ignore inconsistent data and treat global warming as an established fact.⁴⁴

42. P. 263 fig.135; *see also* p. 261.

43. S. FRED SINGER, *HOT TALK, COLD SCIENCE: GLOBAL WARMING'S UNFINISHED DEBATE* (1998).

44. For example, it has been well known for over three decades that there is no net warming in Antarctica, seriously undermining the environmentalists' claim of a world-wide

Assuming that global warming is, indeed, taking place, and that it is caused by concentrations of greenhouse gases in the atmosphere, Lomborg examines closely the various models generated by the Intergovernmental Panel on Climate Change ("IPCC") to predict the degree of warming likely to take place during the twenty-first century, and its consequences. While the analysis is far too complex to be discussed in great detail here, suffice it to say that Lomborg casts serious doubt on the accuracy of the various assumptions undergirding the IPCC models. Specifically, Lomborg points out that the IPCC models rely on highly debatable assumptions about the effect of solid particles (pp. 267-69), water vapor (pp. 269-70) and clouds (pp. 271-73) in the atmosphere, and that these uncertainties are so great that "the noise from the models is bigger than the signal we are supposed to formulate policy from" (p. 272). In fact, one of the groups that created these models has subsequently described the IPCC scenarios as "an attempt at 'computer-aided storytelling.'" ⁴⁵ Lomborg also points to other research suggesting that Earth's weather patterns may well be affected by non-human factors such as sunspots and cosmic rays (pp. 276-77).

Lomborg also takes a close look at the costs and benefits associated with global warming. He points out that global warming will result in both winners and losers, and that advocates of controlling greenhouse emissions underestimate the benefits while overstating the harms. Thus, a small increase in temperatures, in the range predicted by most IPCC models, would benefit agriculture in developed countries, not only by lengthening the growing season and producing more rainfall (pp. 288-89), but also because CO₂ in the atmosphere acts as a fertilizer, enhancing plant growth (p. 288). Lomborg makes the com-

warming trend. This finding was first suggested by a scientist from New Zealand, John Sansom, in his 1989 article, *Antarctic Surface Temperature Time Series*, 2 J. OF CLIMATE 1164 (1989), confirmed by several subsequent studies, eventually accepted even by the environmentalists-friendly United Nations Intergovernmental Panel on Climate Change, but nevertheless persistently ignored by purveyors of global warming hype. See Greening Earth Society, *Virtual Climate Alert*, Jan. 15, 2002, at <http://www.co2andclimate.org/Article/2002/vca3.htm>.

More recent studies have found that the average temperature in Antarctica has actually been dropping for the last thirty-five years, see Peter T. Doran et al., *Antarctic Climate Cooling and Terrestrial Ecosystem Response*, NATURE, Jan. 31, 2002, at 517, and that the ice core in West Antarctica is thickening, see Richard B. Alley, *On Thickening Ice?*, SCIENCE, Jan. 18, 2002, at 451; Ian Joughin & Slawek Tulaczyk, *Positive Mass Balance of the Ross Ice Streams, West Antarctica*, SCIENCE, Jan. 18, 2002, at 476. Having allowed themselves to be duped by environmentalists, the media treated the results of these studies as startling news, which they clearly were not. See, e.g., Guy Gugliotta, *In Antarctica, No Warming Trend*, WASH. POST, Jan. 14, 2002, at A2; Andrew C. Revkin, *A Chilling Effect on the Great Global Melt*, N.Y. TIMES, Jan. 18, 2002, at A17. A good overview of the recent temperature study is available at U.S. Dep't of State, Int'l Info. Programs, *Antarctica Shows Little Sign of Global Warming*, Jan. 14, 2002, at <http://usinfo.state.gov/topical/global/climate/02011401.htm>.

45. P. 280 (quoting Bert de Vries et al., *Greenhouse Gas Emissions in an Equity-, Environment- and Service-Oriented World: An IMAGE-Based Scenario for the 21st Century*, 63 TECHNOLOGICAL FORECASTING AND SOC. CHANGE 137, 138 (2000)).

mon-sense observation that in calculating the cost of global warming, it is necessary to subtract the value of the offsetting benefits, which could be considerable.

Lomborg spends many pages deconstructing the various predictions of doom from global warming, showing that they are either unrealistically high (such as the cost from flooding), or simply not borne out by the data (such as increases in the incidence of extreme weather events, such as hurricanes) (pp. 289-300). As elsewhere in the book, Lomborg's criticism of the conventional wisdom is specific and well-documented, and one can only wonder why these considerations are seldom mentioned, much less thoughtfully discussed, in the rush to adopt measures reducing greenhouse gas emissions.

Perhaps Lomborg's most useful contribution to the global warming debate is an analysis of the costs associated with implementation of the Kyoto Protocol and more stringent measures for controlling greenhouse gases. Depending on whether Kyoto is implemented without the participation of the developing world (as is now proposed) or with such participation, and depending on whether global trading of emission rights is permitted, the implementation costs would run anywhere from \$75 to \$346 billion a year, costing a total of \$6.7 to \$31 trillion by the end of the century (p. 303). And what will this buy us? Very little indeed, because a full implementation of Kyoto would only *delay* the expected temperature increase by six years. In other words, Kyoto will carry a heart-stopping price tag, yet we will still have to bear the full cost of the global warming we would otherwise expect in 2100 just six years later in 2106 (p. 304).

Is this a wise use of our resources? To help us decide, Lomborg points out that the cost of Kyoto to the United States alone would be higher than the cost of providing the entire world with clean drinking water and sanitation (p. 318). To permanently level off or even reduce greenhouse gas emissions, we would require something on the order of fifty Kyoto Protocols⁴⁶ — with a staggering cost in the hundreds of trillions of dollars. Of course, as Lomborg discusses, this monetary estimate is only a proxy for the true cost of Kyoto — the end of industrial society, which will, in turn, require other trade-offs, like worsening disease, hunger and child mortality (p. 322).

46. Many environmentalists, such as Stephen Schneider, a professor of biology at Stanford and a member of the IPCC, openly admit that Kyoto is just "a starting point." Stephen Schneider, *Global Warming: Neglecting the Complexities*, SCI. AM., Jan. 2002, at 62, 65. Schneider then criticizes Lomborg for wishing to "squash even this first step" by emphasizing the consequences of an extended Kyoto regime, *id.*, yet Schneider himself never discusses the long-term costs of the ultimate regime that the environmentalists would adopt.

D. *Genetically Modified Foods*

As a postscript to his book, Lomborg offers a brief discussion of the controversy surrounding genetically modified foods (pp. 342-48). As Lomborg points out, this debate “tend[s] to be a replay of the Litanies vs. evidence” (p. 342), with the environmentalist scare-mongering threatening to kill off a promising new technology that could help eliminate world hunger.

A characteristic episode in this controversy is the “toxic potatoes” scare that erupted in England about four years ago. In 1998, Dr. Arpad Pusztai appeared on TV to declare that his research showed genetically modified potatoes stunted the growth of rats and suppressed their immune systems (p. 343). Based on Dr. Pusztai’s TV appearance, many British politicians urged an immediate moratorium on genetically modified foods. Environmental organizations eagerly jumped on the bandwagon, proclaiming that we all have “become involuntary guinea pigs in a vast genetic experiment.”⁴⁷

Pusztai turned out to be a crank. Apparently, he had modified his potato line using a gene named lectin (derived from a common snowdrop), which is widely known to be toxic (p. 344). Pusztai’s rats were thus harmed “due to [his] choice of a toxic gene, not the GM [genetically modified] technology.”⁴⁸ Pusztai was suspended from his research institute after an investigation into his experiments concluded that “the existing data do not support any suggestion that [the genetically modified potatoes] ha[ve] an effect on growth, organ development or the immune function.”⁴⁹ Two later studies — one by the British Royal Society and another by a group of twenty independent scientists who set out to exonerate Pusztai — found that Pusztai’s data did not provide any reliable evidence about the effects of genetically modified potatoes (p. 343).

As Lomborg acknowledges, there are still many uncertainties about genetically modified foods. Nevertheless, the use of genetic technology in agriculture offers great promises of significantly decreasing food prices while increasing nutritional value, thereby alleviating food shortage and malnutrition, especially in the third world (p. 342). Moreover, genetically modified foods can help reduce the use of chemical fertilizers, pesticides and herbicides — a goal that many environmentalists claim to favor (p. 343).

47. P. 344 (quoting Ronnie Cummins, Organic Consumers Association, *Hazards of Genetically Engineered Foods and Crops: Why We Need a Global Moratorium 2* (2001), at <http://www.purefood.org/ge/gefacts.pdf>).

48. *Id.*

49. P. 343 (quoting Rowett Research Institute, *Audit Report of Rowett Research on Lectins* (1998)).

Of course, there are risks, as with any technology.⁵⁰ The risks, however, are not necessarily any greater than those presented by traditional crop breeding. As Lomborg points out, these varieties can turn equally toxic or allergenic (p. 347). In fact, bioengineered foods may present smaller health risks, if only because the process by which such foods are created is more easily monitored than traditional breeding, and any risks in this process are therefore easier to identify.⁵¹

We may legitimately disagree about the relative risks of traditionally bred and bioengineered foods, and debate how we ought to regulate genetic agricultural production. But such debate surely must be conducted on an informed basis, including a candid recognition of the many trade-offs between the potential risks and benefits of genetically modified foods.⁵² It is unproductive — if not downright irresponsible — to raise alarms against any use of genetic technology in agriculture as creating killer “clones” or “Frankenfoods.”⁵³

III. THE EMPIRE STRIKES BACK

Not surprisingly, environmentalists hate Lomborg and his book, and have launched a furious counter-attack to discredit him.⁵⁴ Articles hostile to Lomborg’s position have been published in *Scientific*

50. One risk is that spliced genes, which are resistant to some antibiotics, may get transferred to human pathogens and make them impervious to useful antibiotics. P. 347. Similarly, there is anxiety that genetically modified crops may spread their pesticide resistance to weeds, leading to a problem of “superweeds.” *Id.* These risks are somewhat speculative, however. For instance, the risk that genetically modified foods could cause selective antibiotic resistance is very small compared to normal pathways of antibiotic resistance. Similarly, the risk of a pesticide-resistant superweed may prove to be a needless worry. Recent studies have shown that genetically modified crops, when left untended in a natural environment, tend to perform worse than ordinary crops. *Id.* Many ostensible risks may, in fact, prove to be quite the reverse: While genetically modified foods potentially risk incorporating new allergens, they also hold the promise of removing many of the most common allergens, thus significantly alleviating the discomfort of many people. P. 327.

51. See, e.g., Gregory Conko, *Labeling and Risk: The Case of Bioengineered Foods*, in *ECOLOGY, LIBERTY & PROPERTY: A FREE MARKET ENVIRONMENTAL READER* 227 (Jonathan H. Adler ed., 2000); Gregory Conko & C.S. Prakash, *The Attack on Agricultural Biotechnology*, in *ECO-MYTHS* (Ronald Bailey ed., 2002) (forthcoming). For instance, whereas Pusztai’s scare about the toxic potatoes turned out to be absolutely groundless, a new line of conventionally produced potatoes, developed at the cost of millions of dollars, had to be withdrawn from the market because it proved to be acutely toxic to humans when grown under particular soil conditions. P. 347 (citing Bruce N. Ames & Lois Swirsky Gold, *Another Perspective . . . Nature’s Way*, 76 *CONSUMERS RES. MAG.*, Aug. 1993, at 22.

52. For an excellent example of such an approach, see Karen A. Goldman, *Labeling of Genetically Modified Foods: Legal and Scientific Issues*, 12 *GEO. INT’L ENVTL. L. REV.* 717 (2000), which looks at what labeling regime should govern genetically modified foods.

53. Lomborg gives an example of the Greenpeace MTV commercial, whose only message was an ominous-looking word “frankenfood.” P. 431 n.2799. The commercial can be viewed at <http://www.tappedintogreenpeace.org/ram/react-apple.ram>.

54. The environmentalists’ fury may be fueled, in part, by the fact that Lomborg used to be a committed environmentalist and a card-carrying Greenpeace member. See p. xix.

May 2002]

Gore Wars

1759

*American*⁵⁵ and the online magazine *Grist*,⁵⁶ among other places.⁵⁷ Lomborg, for his part, seems to be enjoying the notoriety⁵⁸ and defends himself with gusto, largely on his personal web page.⁵⁹

It is beyond the scope of this Review to analyze the fine points of the debate between Lomborg and his critics. Suffice to say that these critics suffer from the very flaws Lomborg exposes in his book. Much of their response consists of belittling Lomborg for invading their field, and of proffering their own expertise as the ultimate authority for many of their claims.

Two examples will suffice. Revered Harvard naturalist E.O. Wilson starts off his response to Lomborg as follows: “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.”⁶⁰ From that dispassionate beginning, Wilson proceeds to attack Lomborg’s claim that the extinction rate for species over the next fifty years will be

55. *Misleading Math About the Earth: Science Defends Itself Against The Skeptical Environmentalist*, SCI. AM., Jan. 2002, at 61 (reviewing *The Skeptical Environmentalist*).

56. *Something is Rotten in the State of Denmark: A Skeptical Look at The Skeptical Environmentalist*, GRIST MAG., Dec. 11, 2001, at <http://www.gristmagazine.com/grist/books/lomborg121201.asp> (reviewing *The Skeptical Environmentalist*).

57. Paul Ehrlich, the Jar Jar Binks of the environmentalist movement, has authored a particularly infantile review: “If Lomborg had done some arithmetic, he could have . . . spared us a book as thick as a brick and almost as intelligent.” See Paul Ehrlich, *The Brownlash Rides Again*, HMS BEAGLE, Nov. 9, 2001, at <http://www.ps.au.dk/vip/lomborg/files/Erhlich%20review.htm> (reviewing *The Skeptical Environmentalist*). Ehrlich is particularly ticked at Lomborg for relying on Julian Simon, who had embarrassed Ehrlich as a result of their 1980 bet. See *supra* Section II.B.

58. Most reviews in the mainstream press have been positive. See, e.g., *Doomsday Postponed*, ECONOMIST, Sept. 8, 2001, at 89 (reviewing *The Skeptical Environmentalist*); Dennis Dutton, *Greener than You Think*, WASH. POST, Oct. 21, 2001, at BW01 (same); Nicholas Wade, *Scientist at Work: From an Unlikely Quarter, Eco-Optimism*, N.Y. TIMES, Aug. 7, 2001, at F1 (same). Lomborg was also recently named Denmark’s Environmental Czar. See *supra* note 20.

59. A curious controversy has arisen concerning Lomborg’s defense against the *Scientific American* article. While giving his critics eleven pages of text to attack *The Skeptical Environmentalist*, *Scientific American* allowed Lomborg only 800 words to reply within the pages of the magazine. Bjørn Lomborg, *The Skeptical Environmentalist Replies*, SCI. AM., May 2002, at 14. Lomborg also posted a more extensive response to his critics on his web page, www.lomborg.com, using the *Scientific American* text and interspersing his responses to various points made by its authors. *Scientific American*, however, objected to the use of its text on copyright grounds, and Lomborg was forced to remove most of the text of the *Scientific American* articles from his web page — substituting instead only the beginning and the ending sentences of the paragraphs to which he was responding. See *Lomborg’s Reply to Scientific American January 2002 Critique*, at <http://www.ps.au.dk/vip/lomborg/files/SABLnoInf2.pdf> [hereinafter *Lomborg’s Reply*]. While *Scientific American* is surely justified in preventing piracy of its copyrighted material, it seems unnecessarily churlish — and hardly consistent with the spirit of scientific debate — to deny Lomborg authorization to reproduce the text of articles discussing his work so readers will be able to understand his response.

60. E.O. Wilson, *Vanishing Point: On Bjørn Lomborg and Extinction*, GRIST MAG., at <http://www.gristmagazine.com/grist/books/wilson121201.asp> (reviewing *The Skeptical Environmentalist*).

0.7%, or 0.014% per year. According to Wilson, the rate is much closer to 0.1% per year.

In support of his figure, Wilson cites a single study by Stuart Pimm of Columbia University, which shows that “anywhere from one to several bird species go extinct annually out of 10,000 known species — hence, say 0.01-0.03 percent of living bird species are extinguished per year.”⁶¹ This seems to support Lomborg’s figure, not Wilson’s. Wilson finesses this point by arguing that birds are atypical because extraordinary efforts are being made to keep them from becoming extinct; if not for these efforts, Wilson argues, the rate would be much higher.⁶² As to other species, Wilson contends that the rate must be much higher — somewhere around his figure of 0.1% per year. In support for this, and for his various other assertions contradicting Lomborg, Wilson cites his own estimates, and nothing else. In essence, Wilson is saying: I am the Obi-Wan Kenobi of the naturalist science and when I tell you that the actual extinction rate is 0.1% per species per year, you should believe me.

Wilson may be right. Perhaps we *should* believe his estimates because he is in the business, so to speak. But we are surely entitled to know that they are only estimates — perhaps merely guesses — and not the result of scientific studies. Outsider though he may be, Lomborg at least relies on available scientific data. Wilson’s disagreement, based on his personal expertise alone, is certainly a fact worth knowing, but hardly a conclusive refutation of Lomborg’s point. At the very least, what comes out of the Lomborg-Wilson debate is the fact that the extinction rate is definitely *not* 40,000 species a year — the figure invented out of whole cloth by Norman Myers in 1979, and still frequently cited by environmentalists when they want to present a scary picture.⁶³

The second example is from another Harvard environmentalist, John Holdren, whose *Scientific American* piece is subtitled “Asking the Wrong Question.”⁶⁴ Holdren argues that Lomborg is asking the wrong question because environmental scientists have long ago conceded Lomborg’s point that we are not running out of energy or resources. One might think that Holdren would be embarrassed to make

61. *Id.*

62. Wilson omits to mention that scientists regularly rediscover some of the supposedly “lost” bird species. For instance, two Brazilian ornithologists recently found the golden-crowned manakin — a bird last seen in 1957 and long given up as extinct — while conducting an environmental survey in the Amazonian rainforest. Alex Kirby, *Brazil’s “Extinct” Bird Still Alive*, BBC News, May 30, 2002, at http://news.bbc.co.uk/hi/english/sci/tech/newsid_2014000/2014863.stm. For one of the scientists who spotted the manakin, this was his third rediscovery of a tropical bird that scientists had declared was wiped out by rampaging civilization. *Id.*

63. See *infra* note 76.

64. John P. Holdren, *Energy: Asking the Wrong Question*, SCI. AM., Jan. 2002, at 65.

this argument, being one of the gulls (along with Ehrlich and Harte) who accepted Julian Simon's \$1,000 bet about the prices of commodities.⁶⁵ Surely, when Holdren made that bet in the hope of "easy money," he must have had a different belief, as did his fellow loser, Paul Ehrlich, when he published his flawed book *Earth* in 1987.⁶⁶

In any event, agreeing with Lomborg hardly seems consistent with criticizing him, so Holdren argues that environmentalists' real claim is 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."⁶⁷ Of course, Lomborg's book deals with each of these subjects, and one would expect Holdren to point out where Lomborg misreads the data or engages in faulty analysis. Holdren does nothing of the sort. While claiming that Lomborg commits loads of "misreadings or misunderstandings of statistical data," as well as "elementary blunders of quantitative manipulation and presentation that no self-respecting statistician ought to commit,"⁶⁸ Holdren comes up with just three examples. The first involves Lomborg's claim that our coal reserves are equal to some 1500 years of consumption (p. 127). Holdren argues about the consumption rate Lomborg is using to come up with the 1500-year figure. While Lomborg seems to have the better of the argument, who cares? Holdren has already conceded that scarcity of resources is not a problem, so it's hard to see the point of quibbling whether we have 1500 years of coal left or only 500.

The remaining two errors highlighted by Holdren are of even less consequence. One is the result of a mistranslation from Danish (the English language version of the book used "catalyzing" rather than "electrolyzing")⁶⁹ and the other is a relatively minor mistake that Lomborg readily admits, and that has no conceivable effect on Lomborg's analysis.⁷⁰

65. See *supra* note 40 and accompanying text.

66. See ANNE H. EHRLICH & PAUL R. EHRLICH, *EARTH* (1987).

67. Holdren, *supra* note 64, at 65.

68. *Id.* at 66.

69. Where is C-3PO when you need him?

70. Holdren takes issue with Lomborg's statement that nuclear energy "constitutes 6 percent of global energy production and 20 percent in the countries that have nuclear power." Holdren, *supra* note 64, at 67 (quoting pp. 128-29). Although the first figure is right, the second is incorrect, since nuclear energy provides slightly less than ten percent of the primary energy supply in the countries that use it. Lomborg readily admitted that the twenty percent figure is erroneous, and that he should have written instead "20 percent of the electricity generation from nuclear power." See *Lomborg's Reply*, *supra* note 59, at 18, at www.lomborg.com. The error is trivial, for the erroneous figure was given as general information and not used in any argument. Moreover, Lomborg has duly posted a correction (thanking Holdren for locating the error) on his website. See *Errors and Corrections*, at <http://www.ps.au.dk/vip/lomborg/errors.htm>.

Neither Holdren nor any of Lomborg's other critics come close to casting serious doubt on Lomborg's data or his conclusions. Many of Lomborg's critics suggest different inferences from the data, but the point is that those are just inferences, not facts hewn in stone — as they are often presented to the public. Despite the vitriol and condescension that permeates much of the criticism, the critics are forced to come to grips with Lomborg's arguments and try to refute them. E.O. Wilson may lament the necessity of doing so, but surely such debate is important before we undertake the massive commitment of resources environmentalists claim are necessary to fight global warming or to meet other environmental challenges. As Lomborg points out, it's the essence of democracy.⁷¹

IV. RETURN OF THE LUDDI

One can draw some important conclusions from Lomborg's book and the controversy surrounding it. Perhaps the most important of these is that, contrary to what professional environmentalists tell us, there is no irreconcilable tension between economic development and a greener environment (p. 33). Quite the contrary, developed societies have a much cleaner, much healthier environment than undeveloped ones; the environment today (especially in developed countries) is in far better shape, by any measure one might select, than a hundred, or even fifty years ago: Cleaner air, cleaner water, improved sanitation, less disease, fewer calamities, more education and leisure time — the list is endless.

The situation is far worse in poorer countries still struggling to feed their people; they cannot afford to worry about clean air and similar relative luxuries. Only societies that have put behind them the struggle for survival have the incentives and resources to clean up the environment. The air of London is cleaner today than any time since the middle of the sixteenth century, and forests cut down in Europe and North America are making a comeback. Developing societies make precisely the same trade-off that developed societies made during their development process, and there is every indication that, as wealth increases, population growth slows down, and technology helps solve environmental problems, they will emulate the developed world in cleaning up their environment.

At the very least, the evidence of environmental improvements in developed countries ought to make us wary about claims, persistently pressed by environmentalists and their fellow travelers, that exporting

71. See, e.g., pp. 322-23; see also *Lomborg's Reply*, *supra* note 59, at 3-15 (responding to Schneider, *supra* note 46, at 62). For a recent, convincing defense of Lomborg's book that reaches many of the same conclusions as I do, see Ronald Bailey, *Green with Ideology*, REASON, May 2002, at 38.

economic and technological development to undeveloped countries — the bugaboo of globalization — will lead to despoliation of the environment, inequality, and oppression. As Lomborg demonstrates in his book, based on facts and figures that no one seriously disputes, it is poverty that lies at the root of our most serious problems — not ephemeral fears about melting icecaps, killer hurricanes, loss of forests, death of vast numbers of species, or any of the other catastrophes that make up the environmentalist Litany. As poverty recedes — and it surely has over the course of human history, despite increases in population — the problems we fear have tended to be ameliorated or disappear, not get worse. Technological and economic development are the only permanent solutions.

Why then do we hear so much bad news about the environment? Why do polls consistently show that people believe that the conditions are getting worse and not better? (p. 331). Not to put too fine a point on it, it is because environmental activists often lie, in big ways and small, in order to create the false impression that we are going from one environmental crisis to another and will soon become the victims of an environmental cataclysm. Lomborg demonstrates the ways in which professional environmentalists play fast and loose with the truth. Environmentalists manipulate data, so as to create a false picture about the state of the world,⁷² and then fail to correct these false impressions by not acknowledging that earlier predictions of doom were nothing more than Bantha fodder. Thus, John Holdren, in his *Scientific American* article, cheerfully admits that we are not running out of natural resources and doubts that few, if any, environmentalists now believe that we are.⁷³ Nevertheless, Holdren and his colleagues, who are responsible for creating the widely held misbelief that we *are* running out of resources, have hardly bothered announcing that their earlier fears, expressed in such widely read publications as *The Limits to Growth* and *The End of Affluence*, were bad guesses. When environmentalists discover that a particular theory is wrong, they quietly drop it and move on to a new theory, leaving the impression that the new threat is yet another reason to worry. On reading Lomborg's book and his careful and detailed analysis of the data (or lack thereof) supporting virtually every aspect of the environmentalist Litany, one must wonder whether these folks are seriously interested in improving the environment, or are pursuing a very different agenda.

Lomborg points to passages in former Vice President Al Gore's book, *Earth in the Balance*, for clues as to what that agenda might be. There, Gore tells us that what is at stake is not merely the environment, but our way of life. While predicting "a steady stream of pro-

72. See *supra* Section II.A.

73. Holdren, *supra* note 64, at 65.

gressively more serious ecological catastrophes,” as Lomborg explains, Gore believes that the problem runs much deeper:

“[T]he pursuit of happiness and comfort is paramount,” and we have ended up concentrating on “the consumption of an endless stream of shiny new products.” We have constructed “a false world of plastic flowers and AstroTurf, air conditioning and fluorescent lights, windows that don’t open and background music that never stops . . . sleepy hearts jump-started with caffeine, alcohol, drugs and illusions.” We have forgotten our “direct experience with real life.” Our civilization has achieved not only the destruction of the world but of ourselves. This is, indeed, “a dysfunctional civilization.”

And consequently, Gore sees this civilization as the new antagonist, just as Nazi Germany and communist totalitarianism were for the previous generation. It is not merely in the service of analogy that I have referred so often to the struggles against Nazi and communist totalitarianism, because I believe that the emerging effort to save the environment is a continuation of these struggles.” And this is the reason why “we must make the rescue of the environment the central organizing principle for civilization.”⁷⁴

This is pretty heady stuff, only remotely connected to concerns about the environment, but it dovetails with the dithering in *The Limits to Growth* about “whether the human species . . . can survive without falling into a state of worthless existence.”⁷⁵ In Lomborg’s view, this is “simply an expression of our Calvinistic sense of guilt” (p. 330). If you operate from the premise that what’s broken is not the environment, but ourselves — that technology and prosperity have made our society dysfunctional, and diverted us from “direct experience with real life” and into a Jabba the Hutt-style lethargy — then it really doesn’t matter whether we are facing a true environmental calamity. If it turns out to have been a false alarm — as these scares usually are — it will nevertheless have served its purpose of weaning us off our phony and plastic existence.

Similarly, many environmental activists feel that the issues they deal with are far too complex for ordinary mortals to understand, and that this justifies creating a false sense of alarm because that is the only way to get a complacent and scientifically unsophisticated world to address dangers that *they* (the environmentalists) feel to be real, but just can’t get anyone excited about. This gives rise to confessions such as the following from Stephen Schneider, one of the architects of the IPCC Global Warming models:

On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, and nothing but — which

74. Pp. 327-28 (quoting GORE, *supra* note 13, at 222, 232, 269, 273, 275) (alteration in original).

75. MEADOWS ET AL., *supra* note 1, at 200.

means that we must include all the doubts, the caveats, the ifs, ands, and buts. On the other hand, we are not just scientists but human beings as well. And like most people we'd like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climatic change. To do that we need to get some broadbased support, to capture the public's imagination. That, of course, entails getting loads of media coverage. *So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have.*⁷⁶

But, as Lomborg points out, it is immoral to characterize as dysfunctional a civilization where vast numbers of people live longer, better, healthier, more secure lives than even the wealthy few did just a few centuries earlier. It is also highly undemocratic — and unforgivably condescending — to rely on scare tactics and hysteria, instead of providing reliable, sober information so we can make informed and rational choices about our existence. Senator Palpatine would be proud.

Nor is this merely a question of abstract morality; human lives are often at stake. One of the greatest claimed victories of the environmental movement was the banning of the pesticide DDT from the United States and other developed countries.⁷⁷ This occurred as a result of Rachel Carson's over-hyped 1962 book *Silent Spring*.⁷⁸ Although DDT has never been shown to be harmful to humans, its widespread use may harm the egg shells of certain birds of prey.⁷⁹ For countries wealthy enough to afford less effective and more expensive alternatives, saving the birds, arguably, justifies the ban. But DDT has no peer, in terms of effectiveness or cost, in fighting malaria, one of the world's deadliest diseases. Once on its way to being eradicated, malaria has made a strong comeback, largely because of the DDT ban. It now strikes 300 million people a year, and results in a million fatali-

76. Stephen Schneider, Interview in DISCOVER, Oct. 1989, at 45, (emphasis added), quoted at www.lomborg.com; see also *Defending Science*, ECONOMIST, Feb. 2, 2002, at 15. A similar statement can be found in the *Scientific American* article by Thomas Lovejoy, a biodiversity adviser to the president of the World Bank and a former director of the World Wildlife Fund, where he readily concedes that the early (and never repudiated) estimate that 40,000 species lost every year had no foundation in fact, but that nonetheless it was a good idea to "say that the number was large." Thomas Lovejoy, *Biodiversity: Dismissing Scientific Process*, SCI. AM., Jan. 2002, at 69-70. The ruthlessness of such advocacy is worthy of Boba Fett.

77. For a brief but thorough history of DDT, see Kenneth Mellanby, *With Safeguards, DDT Should Still Be Used*, WALL ST. J., Sept. 12, 1989, at 26.

78. RACHEL CARSON, *SILENT SPRING* (1962). When, recently, the journalism faculty of the New York University announced a list of the top 100 works of American journalism in the twentieth century, Carson's book was at the No. 2 slot. See Marvin Olasky, *I've Got a Little List*, WALL ST. J., Mar. 12, 1999, at W13.

79. See Adam Liberman, Am. Council on Sci. & Health, *Facts Versus Fears: A Review of the 20 Greatest U.S. Health Scares of Recent Times 10-12* (Apr. 1997) (unpublished manuscript) (on file with author).

ties, almost exclusively in developing countries.⁸⁰ Small children and pregnant women are particularly susceptible to the disease; children who survive it often wind up mentally and developmentally impaired.⁸¹

Despite incontrovertible evidence that DDT saves lives, environmental activists like the World Wildlife Fund pushed hard for a worldwide ban by means of a multilateral treaty signed in May 2001.⁸² Over the environmentalists' objections, the treaty allows nations to opt out of the DDT ban for purposes of fighting malaria, yet one must surely question the priorities of individuals and organizations that would ban a substance with a proven track record of saving millions of human lives.

As Lomborg points out repeatedly, making choices based on bad information can be quite costly. For example, environmental groups such as the Natural Resources Defense Council have fanned hysteria about the risk of cancer from pesticides and called for their wholesale elimination (p. 245). Their strategy shows some success — large segments of the American public, sometimes a majority (p. 245), believe pesticides to be so dangerous that their risks outweigh their benefits. Studies have shown, however, that the risk of cancer death from pesticides is at most twenty per year throughout the United States; by comparison, about 300 Americans die each year drowning in their bathtubs (p. 245). At the same time, eliminating all pesticides and, in effect, turning our entire agricultural system into organic farming, would cost something on the order of \$23 to 74 billion a year (p. 246). In other words, avoiding this particular risk would cost between \$1 billion and \$3 billion dollars a life (pp. 246-47).

One might reasonably argue that this is worth the cost; life, after all, is precious and perhaps a billion or three to save one is not too much. But, as Lomborg points out, it is not that simple. Much of the cost would be paid by the public in the form of increased food costs. An increase of even ten percent in the cost of food would have a significant impact on the budget of many families, and the added expense would be felt particularly in the cost of fresh fruit and vegetables (p. 247). Yet, consumption of fresh fruits and vegetables is one of the best ways of preventing cancer. A decrease of fresh fruit and vegetable consumption of even ten percent would likely result in as many as 26,000 additional cancer deaths (pp. 247, 408 n.1996). Thus, even if one assumes that spending \$23 billion a year is worth twenty statistical lives, surely the answer would be much different if one adds into the balance that this would cause thousands, perhaps tens of thousands, of

80. See Roger Thurow, *Choice of Evils: As a Tropical Scourge Makes a Comeback, So, Too, Does DDT*, WALL ST. J., July 26, 2001, at A1.

81. *Id.*

82. *Id.*

May 2002]

Gore Wars

1767

other cancer deaths. Whether or not one accepts Lomborg's analysis of the pesticide problem — and no one has come forward to challenge it — this is precisely the kind of debate we should be having as we consider whether to eliminate or reduce various environmental risks, be they pesticides, global warming, or residential radon gas.⁸³

The simple reality is that, while the world is getting better, we will never eliminate all risks or fulfill all human needs. We must make choices about how to allocate scarce resources and, in doing so, we must act on the basis of reliable information, not hysteria. Near the end of his book, Lomborg includes a table listing the costs of eliminating various environmental risks, and they vary tremendously. Thus, screening black newborns for sickle cell anemia would cost only \$240 per life year while banning asbestos in brake pads would cost \$29,000 per life year; strengthening buildings in earthquake-prone areas would cost \$18 million per life year; and controlling arsenic emissions at glass-manufacturing plants would cost \$51 million per life year.⁸⁴ In deciding which of these risks are worth eliminating or reducing, and which we can reasonably bear, we must consider that spending resources to eliminate certain risks will, of necessity, prevent us from addressing others. We may dispute the relative costs and debate the value of eliminating certain risks, but surely those decisions should be made with the sober realization that if we fail to make these choices rationally, the decision will nevertheless be made by random means, resulting in a net decrease in human welfare.

And that is the ultimate value of Lomborg's book: It makes clear that we can and must be masters of our own destiny, and that those who would bully us into making bad choices based on unsubstantiated predictions of doom ought to be called to account. If they are able to muster data and arguments that rationally support their views, then they deserve to be heard. But if they persist in telling us we're too dumb, too greedy or too dysfunctional, to make our own rational choices, then they deserve no place at the discussion table. The day of the environmental Darth Vader may finally be at an end, giving us all a new hope.

83. Just by way of comparison, eliminating cancer deaths from radon would cost only about \$1 million a life. P. 247.

84. See p. 340 tbl.9.