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“IT WAS THE BEST OF TIMES, IT WAS THE WORST OF TIMES . . . :”

SCIENCE, RHETORIC AND DISTRIBUTION IN A RISKY WORLD

Marc R. Poirier[†]

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way – in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.¹

INTRODUCTION

Bjørn Lomborg's best-seller *The Skeptical Environmentalist*² serves up the sunny half of the classic Dickens description of the times in *A Tale of Two Cities*. “We have everything before us,” Lomborg in effect says.³ If we simply persevere in the economic development of the Third World, Lomborg says, poverty will give way to wealth everywhere, and environmental problems will eventually solve themselves; but environmentalists have instead disseminated a

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¹ CHARLES DICKENS, *A TALE OF TWO CITIES* 1 (Barnes & Noble 1993) (1894). I thought at the time of drafting this essay that the linking of Dickens' polarized description of the times with our modern polarized environmental discourse was original, but have since discovered the same connection was made in K.S. SHRADER-FRECHETTE, *RISK AND RATIONALITY: PHILOSOPHICAL FOUNDATIONS FOR POPULIST REFORMS* 27 (1991).

² BJØRN LOMBORG, *THE SKEPTICAL ENVIRONMENTALIST: MEASURING THE REAL STATE OF THE WORLD* (Cambridge University Press 2001) (1998).

³ Lomborg argues that “[m]ankind's lot has actually improved in terms of practically every measurable indicator.” *Id.* at 4.

foolish and despairing version of the future. "We have nothing before us," they seem to say, "unless we are vigilant now." They claim that natural systems are already degraded, that our resources are limited, and that population and consumption will outrun raw materials and nature's absorptive capacities if we do not change our ways now. This is all bad science, Lomborg argues. Worse, it is an apocalyptic fiction promulgated by environmentalists to garner political support and feather their own nests. Whether malevolent or merely misguided, the false environmental Litany is harmful, according to Lomborg. It redirects society's scarce resources away from their proper uses in building global markets and reducing poverty, and towards insignificant, puny, and unjustified environmental goals.

Insofar as Lomborg establishes that some prominent environmental voices have been sloppy in their use of science and statistics, he does us all a service. Insofar as he offers alternative but supportable views and interpretations on some environmental fronts, he deserves attention. Insofar as he asks "whether we could do more good spending our resources on helping especially the third world by investing less in global warming abatement and more on, e.g., clean drinking water, sanitation, and all the other simple but important needs,"⁴ he asks an important question.⁵

But much of his argument is an unfortunate diversion. In particular, Lomborg frames the larger issues of environmental science and policy in a way that deserves criticism on at least three grounds. First, he repeatedly structures his argument to imply that science will eventually resolve environmental policy questions, and that until the science is certain we should not intervene. Lomborg thus seems to assume that science determines environmental policy, when it in fact is better described as an important component of environmental policy.⁶ Meanwhile, while we wait for certainty, the forces of population growth, development, globalization, and consumption continue undeterred. Fundamentally, Lomborg wrongly dismisses the precautionary principle as unnecessary or misguided.⁷

Lomborg's second framework mistake concerns risk and rhetoric. Environmental risk is unlike the familiar risks of ages past. For

⁴ Bjørn Lomborg, *Comments on the Critique by World Resources Institute and World Wildlife Fund* (Dec. 17, 2001), at http://www.wri.org/press/mk_lomborg_09_things.html. Lomborg also expressed his desire to address clean water and sanitation in preference to other environmental issues in the course of the PBS current events special produced in connection with the 2002 World Summit on Sustainable Development. *NOW* (PBS television broadcast, Aug. 30, 2002), transcript available at http://www.pbs.org/now/transcript/transcript_132full.html (last visited Oct. 3, 2002) (on file with the CASE WESTERN RESERVE LAW REVIEW).

⁵ It is still a problematic one because excessive reliance on risk assessment is itself problematic. See Part II.A.1. *infra*.

⁶ See Part II.A.1. *infra*.

⁷ See Part II.A.2. *infra*.

individuals to assess it, that is, for societal dialogue about environmental risk policy to occur, we are forced to depend on competing communications by rival expert groups as to the nature and severity of environmental risk. As public choice theory would suggest, these voices will themselves be subject to capture by various interest groups. Lomborg's condemnation of environmentalist rhetoric thus oversimplifies the problem. From all sides, rhetoric is an inevitable part of environmental policymaking, and the kind of neutrality to which Lomborg appears to advert is simply unavailable. The science cannot contain the rhetoric.⁸

Thirdly, there is the issue of inappropriate overgeneralization. Over and over, Lomborg asserts that as a general matter all is well on one environmental front or another. This overgeneralization is a mainstay of his optimism, but it makes many an urgent regional or local environmental crisis vanish from view. Even if the oceans as a whole are doing fairly well, for example, the Black Sea may be in terrible shape, or the Aral Sea may be dead. Moreover, environmental hotspots are often created by the very processes of development that Lomborg champions, as anyone familiar in a rudimentary way with the environmental justice literature could tell you. Distribution of environmental goods and bads, as of wealth, has to be on the table for discussion. But it is not, in *The Skeptical Environmentalist*, because it is masked behind Lomborg's overly general arguments about average per capita income and average environmental well-being.⁹

After briefly exploring *The Skeptical Environmentalist* on its own terms,¹⁰ this essay will sketch out each of these other criticisms. The bottom line is that if one takes Lomborg on his own terms – and many of those responding to him have done so – one faces a good fight about environmentalism and science. But if one looks past the arguments presented and to the framework errors, *The Skeptical Environmentalist* comes up short. It is very far from the full and encyclopedic account of environmentalism that it purports to be. It mistakes science for policy judgment, misunderstands the pervasiveness of rhetoric in environmental discourse, and slights distribution and environmental justice.

⁸ See Part II.B. *infra*.

⁹ See Part II.C. *infra*.

¹⁰ See Part I *infra*.

I. THE SKEPTICAL ENVIRONMENTALIST ON ITS OWN TERMS

The Skeptical Environmentalist is much to deal with even on its own terms. Its scope is global and its detail can be overwhelming.¹¹ One could spend forever arguing whether so-and-so committed such-and-such a statistical mistake, or whether one particular footnote (out of Lomborg's over 2,900 footnote references) is misleading or outdated.¹² But the book overall boils down to some fairly simple and not so new arguments. Lomborg argues that science in general and statistics in particular are misused by environmental advocates. Contrary to popular belief, he says, the world's resources¹³ are not going to hell in a handbasket, as a general matter. Things are getting better, environmentally speaking.¹⁴ This is presented as scientific argument. Lomborg thus joins a line of environmental contrarians that includes the likes of Julian Simon¹⁵ and more recently Gregg Easterbrook.¹⁶ Those he disagrees with reach back to the neo-Malthusian concern with overpopulation and exhaustion of resources that is one of the roots of modern environmentalism, including the Club of Rome report¹⁷ and President Carter's Global 2000 assessment,¹⁸ and are represented nowadays by the annual Worldwatch Institute *State of the*

¹¹ One reviewer aptly described the book as "encyclopedic." Jonathan H. Adler, *Dissident from Denmark*, 54 NAT'L REV. 42, 42 (Apr. 8, 2002) (Book Review). Lomborg is nevertheless criticized for having left out important issues. *E.g.*, David Pimentel, *Exposition of Skepticism*, 52 BIOSCIENCE 295, 295-97 (Mar. 2002) (book review) (Lomborg erred by assessing food supply without examining the loss of agricultural land; Lomborg's optimistic assessment of world hunger focuses on calories and fails to consider malnutrition, when in fact people die in great numbers because of deficiencies in protein, iron, iodine, and vitamins A, B, C, and D). I see no treatment of sprawl and related land use issues facing developed countries.

¹² Lomborg is to be commended for trying to be so transparent about his sources.

¹³ Lomborg's specific studies are divided into four parts, examining human welfare (including population, life expectancy and health, hunger, and prosperity), LOMBORG, *supra* note 2, at 43-87 (Part II); resources (food, forests, energy, minerals and other non-energy resources, and water), *id.* at 89-160 (Part III); pollution (air pollution, acid rain, indoor air pollution, allergies and asthma, water pollution, and waste), *id.* at 161-211 (Part IV); and future problems (chemical induced cancer, species loss and biodiversity, and global warming), *id.* at 213-324 (Part V).

¹⁴ To be sure, "[t]hings are better – but not necessarily good[.]" *Id.* at 4. But "when things are improving we know we are on the right track." *Id.* at 5.

¹⁵ *See, e.g.*, THE RESOURCEFUL EARTH: A RESPONSE TO GLOBAL 2000 (Julian L. Simon & Herman Kahn eds., 1984) (stating that stresses involving resources, population and environment will be less in the future; that the world's people will become richer; that the outlook for food and necessities of life will be better; and that life for most people on earth will be less precarious economically than now); THE STATE OF HUMANITY (Julian L. Simon ed., 1995) (portraying an outlook for a decrease in pollution, and increases in cleanliness, resource availability, nutrition levels, standards of living, life expectancies and education levels).

¹⁶ *See* GREGG EASTERBROOK, A MOMENT ON THE EARTH: THE COMING AGE OF ENVIRONMENTAL OPTIMISM (1995).

¹⁷ DONELLA H. MEADOWS ET AL., THE LIMITS TO GROWTH (1972); *see also* PAUL R. EHRLICH, THE POPULATION BOMB (1968).

¹⁸ COUNCIL ON ENVIRONMENTAL QUALITY & DEPARTMENT OF STATE, THE GLOBAL 2000 REPORT TO THE PRESIDENT: ENTERING THE TWENTY-FIRST CENTURY, vols. I - III (Gerald O. Barney, ed., 1980).

World report.¹⁹ Indeed, *The Skeptical Environmentalist* is in part a contrarian State of the World report.

To be sure, correct science and statistics are indispensable in addressing environmental risks of various stripes. Appropriate decisionmaking must be informed by science, although, as will be explored below, science often cannot be the fulcrum on which environmental decisionmaking rests.²⁰ Insofar as Lomborg's effort is a rebuttal of scientific conclusions and recommendations that are sometimes carelessly made or sloppily supported, it should be welcome. He has caught environmentalists being careless or uninformed. Sometimes he has presented opposing but also reasonable interpretations of common data. To be sure, Lomborg himself is also accused of making mistakes in his statistics, and of using entirely outdated studies and shifts in expert positions unfairly to impeach those he challenges.²¹ Fair is fair; what is sauce for the goose is sauce for the gander.

Lomborg unfortunately mixes his critiques of environmental science with another, more virulent thread of argument and innuendo. For he does more than just examine and disagree with the suite of "environmental jeremiads"²² that have helped to constitute and motivate modern environmentalism.²³ He attributes ulterior motives to them. According to Lomborg, environmentalists who systematically predict gloom and doom, a pessimistic view of a deteriorating environment which Lomborg derisively labels "the Litany,"²⁴ do so in order to promote themselves and their agenda more effectively. Rather than measured scientific debate, we thus have a calculated, induced popular panic. He argues that this panic leads to the empowerment of environmental interests²⁵ and to the waste of public re-

¹⁹ E.g., WORLDWATCH INSTITUTE, *THE STATE OF THE WORLD 2002* (2002). Lomborg begins criticizing *The State of the World* on the very first page of *The Skeptical Environmentalist*, saying that although it is "one of the best-researched and academically most ambitious environmental policy publications" and is thus an "essential participant" in the debate over the state of the world, it is "frequently unable to live up to its objectives." LOMBORG, *supra* note 2, at 3.

²⁰ See Part II.A. *infra*.

²¹ Andrew C. Revkin, *Environment and Science: Danes Rebuke "Skeptic,"* N.Y. TIMES, Jan. 8, 2003, at A7 (a branch of the Danish Research Agency has concluded that Lomborg displayed "scientific dishonesty" in his book *The Skeptical Environmentalist*).

²² Marc R. Poirier, *Property, Environment, Community*, 12 J. ENVTL. L. & LIT. 43 (1997) (arguing that environmentalists and property rights advocates square off in a rhetorical battle consisting on the one hand of "environmental jeremiads" predicting doom and gloom and on the other of "property rights encomiums" that take an altogether rosy view of property rights and market mechanisms).

²³ One additional classic environmental jeremiah, in addition to those mentioned above, is RACHEL CARSON, *SILENT SPRING* (1962).

²⁴ LOMBORG, *supra* note 2, at 3.

²⁵ Lomborg discusses a 1991 article in *SCIENCE* quoting a conservationist who expressed doubt about the lack of data for the species extinction hypothesis, but asked to remain anonymous for fear of reprisals within his profession. As Lomborg put it, "There are many grants at

sources on costly and unnecessary measures that get in the way of solving society's real problems.²⁶ Environmentalists are not just mistaken in their science; as Lomborg tells it, they are sinister in their misuse of it. Environmentalism becomes a conspiracy, in Lomborg's version.

It is worthwhile to examine the "Litany" accusation at more length, because Lomborg's emphasis on it, and on related challenges to the bona fides of environmental scientists, shifts the tenor of the whole work. Lomborg introduces the concept on the first page of the book and the first and last chapters are substantially about the Litany. Lomborg writes:

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 . . . 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.²⁷

The Litany is summarized by one commentator as follows:

- Natural resources are running out.
- The population is ever growing, leaving less and less to eat.
- Species are becoming rapidly extinct, forests are vanishing and fish stocks are collapsing.

stake." *Id.* at 254 (discussing Charles C. Mann, *Extinction: Are Ecologists Crying Wolf?*, 253 *SCIENCE* 736 (1991)).

²⁶ "The constant repetition of the Litany and the often heard environmental exaggerations has [sic] serious consequences. It makes us scared and it makes us more likely to spend our resources and attention solving phantom problems while ignoring real and pressing (possibly non-environmental) issues." *Id.* at 5.

²⁷ *Id.* at 4 (footnotes omitted).

- Air and water are becoming ever more polluted.²⁸

Lomborg says that the Litany is everywhere, in “the images and messages that confront us each day on television, in the newspapers, in political statements and in conversations at work and at the kitchen table.”²⁹ In study after study within *The Skeptical Environmentalist*, Lomborg concludes that a pessimistic position has no scientific support, and then makes a cursory statement that the public believes it anyway because of the pervasive power of the Litany. The Litany thus takes on the aspect of an evil spell, cast over the populace, to keep good scientists from doing their good and vital work.

Lomborg’s repeated invocation of the sinister “Litany,” and his rhetoric throughout *The Skeptical Environmentalist*, “seem[] to indicate that there is more going on here than debate over scientific facts or . . . statistical inference.”³⁰ As reviewer Geoffrey McNicoll put it, “The divergence in conclusions between [Lomborg] and his opponents is only in part a scientific disagreement.”³¹ It is not just about choices of statistics or misunderstandings of data. McNicoll continues, “The larger source of divergence is that the broad conclusions in dispute are not the immediate products of some objective statistical procedure but derive from marshaled argument. The debates over them take place in a realm above the data. . . . What is at issue is indeed contrasting views of what kind of society – and world – we would like.”³²

Indeed, Lomborg occasionally does acknowledge that his difference is motivated by a different view of ultimate values and world-views, as McNicoll points out.³³ But for the most part, Lomborg’s posture is that he is the clear-thinking, unbiased scientist, untainted by rhetoric, while his opponents are sloppy scientists, fuzzy thinkers, and underhanded rhetoricians.³⁴ This posture is unconvincing, in part since *The Skeptical Environmentalist* begins and ends with the anti-Litany rhetoric. And despite Lomborg’s many good points, too often he can be seen to lapse into an unconvincing attempt to show that things are rosy when they just are not. For example, in his generally

²⁸ *The Litany and the Heretic: Why has Bjørn Lomborg Created Such a Stir Among Environmentalists?*, THE ECONOMIST, Feb. 2-8, 2002, at 75-76. Accord, Adler, *supra* note 11, at 42 (“You’ve heard the ‘Litany’ before: Resources are running out, population growth is outpacing food supplies, species and their habitats are disappearing, and pollution keeps getting worse, In sum, humanity is despoiling the planet . . .”).

²⁹ LOMBORG, *supra* note 2, at 3.

³⁰ Geoffrey McNicoll, *The Skeptical Environmentalist: Measuring The Real State of The World*, 27 POPULATION AND DEVELOPMENT REVIEW, 801, 803 (Dec. 2001) (book review).

³¹ *Id.* at 804.

³² *Id.*

³³ *Id.* at 803 (citing LOMBORG, *supra* note 2, at 319, 321).

³⁴ As McNicoll puts it, “In Lomborg’s implied depiction the debate is between rational beings like himself and woolly, parti-pris thinking.” *Id.* at 804.

optimistic discussion of air pollution, he fesses up that the air quality in the megacities of the developing world is awful, indeed far below the minimum standards set by the World Health Organization.³⁵ But, he argues, things are not so bad "in the long run,"³⁶ for as these countries achieve a sufficient level of economic prosperity, the demand for environmental amenities will become increasingly important, and increasingly more affordable as well.³⁷ After all, London outgrew its pollution problems between 1585 and the present.³⁸ However, Lomborg does not mention that in many of these developing economies growth means enormously more reliance on coal and an increased use of combustion engines.³⁹ Also, even on Lomborg's own optimistic population assumptions, the world's population will stabilize at some 12 billion, and more and more of these people are trying to crowd into the megacities of the developing world. This can hardly help air pollution there, any more than it helps alleviate the appalling lack of water, sanitation, and housing. Moreover, the graphs Lomborg relies on show air pollution beginning to decline at around \$4,000 per capita annual income in constant 1985 U.S. dollar equivalents.⁴⁰ Lomborg's data on per capita income for developing countries shows a mid-1990s figure of about \$2,300 for all developing countries, and a rate of improvement that is extrapolated in linear fashion would predict that the \$4,000 per capita mark will be reached about 2050.⁴¹ And this is an average of all developing countries, with some countries and their megacities far below that average. In short, whatever the prospects in the "long run" for the megacities of the developing world, for the next couple of generations they are sure to be sites of environmentally induced disease and death for millions of human beings.⁴² They will be horrible, poisonous places for the billions who will live and die in them. Lomborg simply refuses to take this fact on squarely, and glosses it over.

³⁵ LOMBORG, *supra* note 2, at 175.

³⁶ *Id.* at 177.

³⁷ *Id.* at 175-77 (relying on WORLD BANK DEVELOPMENT REPORT 1992, DEVELOPMENT AND THE ENVIRONMENT 41 (1992) and Nemat Shafik, *Economic Development and Environmental Quality: An Econometric Analysis*, 46 OXFORD ECONOMETRIC PAPERS 757, 764 (1994)).

³⁸ *Id.* at 165 fig. 86, 175-76.

³⁹ *E.g.*, China.

⁴⁰ LOMBORG, *supra* note 2, at 177 figs. 96 & 97.

⁴¹ *Id.* at 71 fig. 32. One study finds higher turning points for four air pollutants than Lomborg uses, \$8,000 instead of \$4,000 in 1985 U.S. dollars. Thomas M. Selden & Daqing Song, *Environmental Quality and Development: Is There a Kuznets Curve for Air Pollution Emissions?*, 27 J. ENVTL. ECON. & MGMT. 147, 153 (1994).

⁴² For the four air pollutants they studied, even though they do find an inverted U-curve, Selden & Song predict that "the global flows of all four emissions [will] remain at or above their 1986 levels throughout the entire next century even in the most optimistic scenarios." Selden & Song, *supra* note 41, at 158.

The supposed correlation between economic development and the environment – first, development brings increased pollution, then, with enough wealth, decreased pollution – is known as the environmental Kuznets curve.⁴³ Lomborg introduces the environmental Kuznets curve by name briefly in his discussion of poverty and prosperity,⁴⁴ but its theoretical presence pervades the book. Yet Lomborg does not present the other side of the debate as to whether the hypothesis represented by the environmental Kuznets curve is always or only sometimes accurate. For example, with specific regard to air pollution, one 1994 study found that levels of sulfur dioxide, fine smoke, and suspended particles would decline at moderate income levels and rise again at high income levels.⁴⁵ Another study found that suspended particulate matter and sulfur dioxide would improve with income, but that river quality would worsen.⁴⁶ Lomborg does not acknowledge that the usefulness of the Kuznets curve might in any event be limited in designing environmental policy. One team reviewing the literature on environmental Kuznets curves reached the following general conclusions:

[T]here is no warrant for interpreting (apparent) confirmation of the [environmental Kuznets curve] hypothesis as justification for policy inaction. The existence of a[n environmental Kuznets curve] relationship across nations today would not guarantee that global environmental degradation would decline automatically with time and economic growth. Policies to achieve sustainable development must incorporate explicit incentives to reduce environmental degradation, rather than assume that the problem will take care of itself as the global economy continues along its current development path.

Second, and perhaps more important, [environmental Kuznets curve] relationships offer very little in the way of guidance on the real policy choices concerning sustainable

⁴³ David I. Stern, et al., *Economic Growth and Environmental Degradation: The Environmental Kuznets Curve and Sustainable Development*, 24 *WORLD DEVELOPMENT* 1151, 1152 (1996) (discussing Simon Kuznets, *Quantitative Aspects of the Economic Growth of Nations, VIII: The Distribution of Income by Size*, 11 *ECON. DEVELOPMENT & CULTURAL CHANGE* 1 (1963); Simon Kuznets, *Economic Growth and Income Inequality*, 45 *AM. ECON. REV.* 1 (1955)). Kuznet's original hypothesis did not address environmental matters. He theorized that as wealth in a society increased, inequalities in income distribution would diminish.

⁴⁴ LOMBORG, *supra* note 2, at 72 ("[T]he historic consequence of economic growth seems to have been that inequality initially increased, then stabilized, later to fall as the country gradually got richer. This pattern is known as the Kuznets Curve.").

⁴⁵ Stern et al., *supra* note 43, at 1153 (summarizing G.M. Grossman & A.B. Krueger, *Economic Growth and the Environment*, 112 *Q. J. ECON.* 353 (1995)).

⁴⁶ *Id.* at 1153-54 (summarizing NEMAT SHAFIK & S. BANDOPADHYAY, *POLICY RESEARCH WORKING PAPERS, WORLD BANK, ECONOMIC GROWTH AND ENVIRONMENTAL QUALITY: TIME SERIES AND CROSS-COUNTRY EVIDENCE* (1992)).

development. Meeting the needs of the present without compromising the ability to meet those of the future requires that decision makers have available to them a range of scientific and socioeconomic information on the implications of the alternative policy choices open to them. Such information is not, and cannot be, contained in simple single-equation regressions.⁴⁷

Another fundamental problem with the way Lomborg uses the environmental Kuznets curve hypothesis is that he extrapolates it to a future that may be very different from the times and places where the correlation represented by the curve holds true. It is essential to examine how it is that the environmental Kuznets curve works before one can blithely generalize that with enough wealth environmental problems will shrink away. For each type of pollutant, what market and political mechanisms make it plausible to assert that sufficient wealth brings environmental relief? Only after this examination can one decide whether wealth in a future society will have the same effect.⁴⁸

The lacunae in Lomborg's arguments based on environmental Kuznets curves should lead the reader to question how careful Lomborg is being, and whether he does not have his own litany to fall back on. Indeed, at one point Lomborg encounters an embarrassing anti-Kuznets curve and tries to simply dismiss it. The issue is water pollution, specifically the fecal coliform indicator. Lomborg reports that the data indicate that the correlation of fecal coliform and wealth is unlike the air pollution curves. While pollution increases up to about \$1,375 (in constant 1985 U.S. dollar equivalents) and then begins to decline, it begins to rise again at about \$11,500.⁴⁹ Lomborg simply dismisses fecal coliform as an indicator,⁵⁰ moving on to bio-

⁴⁷ *Id.* at 1158; see Kenneth Arrow et al., *Economic Growth, Carrying Capacity, and the Environment*, 268 *SCIENCE* 520 (1995) (cautioning against reliance on environmental Kuznets curves to guide environmental policy); M.A. Cole, A.J. Rayner & J.M. Bates, *The Environmental Kuznets Curve: An Empirical Analysis*, 2 *ENV'T. & DEV. ECON.* 401, 411-12 (1997) (concluding that meaningful environmental Kuznets curves exist only for local air pollutants in urban areas, and that outgrowing pollution problems is by no means an automatic process; pollution levels have fallen only in response to investment and policy initiatives); see also Selden & Song, *supra* note 41, at 148 (finding substantial support for the inverted-U hypothesis as to four air pollutants, hypothesizing that the mechanism has to do with urban concentrations from the transportation sector that are locally controllable, and forecasting that, despite the correlation between growth and environmental quality, emissions will not return to current levels before the end of the 21st century unless concerted actions are taken).

⁴⁸ Thanks to Ahmed Bulbulia for insisting on this point. The relationship between income and environmental quality is complex and operates through a number of channels, including preferences, technology, and economic structure. Shafik, *supra* note 37, at 757.

⁴⁹ LOMBORG, *supra* note 2, at 202-03 & fig. 109. Lomborg reads the turning point at \$11,500 – it looks like \$10,000 to me.

⁵⁰ He argues that as they grow richer people use groundwater and are less dependent on river water, so that there is less urgency and political inclination to push for cleanup of rivers.

logical oxygen demand (“BOD”), which he says is really much more important.⁵¹ Coincidentally, the environmental Kuznets curve for biological oxygen demand has the appropriately optimistic inverted-U shape, so that Lomborg can turn once again to his argument that water pollution can be outgrown.⁵² The maneuver is unconvincing. There is a separate and important reason for using fecal coliform as an indicator – the presence of human sewage in water speaks to the risk of transmission of water-borne disease, not just the ecosystem welfare that is at the root of using BOD as an indicator. Moreover, Lomborg’s dismissal of fecal coliform is especially odd because elsewhere in the book, and in subsequent public statements, he berates environmental advocates for being concerned with the niceties of aesthetics when the real, urgent problems are those of poverty, including – you guessed it – unsanitary water supply. When the environmental Kuznets curve for fecal coliform did not fit Lomborg’s general pro-development and anti-environmental argument, he switched allegiances, suddenly rooting for ecological concerns over public health ones. It is this kind of inconsistency that makes reading the book ultimately so unsatisfying. One wonders just how much of Lomborg’s own argument one can rely on, given his own willingness to depart from the very principles he accuses environmentalists of abusing.

Beyond a critique of Lomborg’s own argument as to specific resources (where sometimes he seems right, sometimes wrong), *The Skeptical Environmentalist*’s overall argument raises larger framework issues about how to understand the relationship of science, rhetoric and distribution in a risky world. The remainder of this essay will sketch out these larger issues.

II. PROBLEMS WITH LOMBORG’S FRAME

A. *Science in a Risky World*

1. *Problems of Policy Choice and Uncertainty*

Lomborg seems to expect science to go all the way to the finish line in terms of determining environmental policy. This is a fundamental misunderstanding of the science/policy interface. A related error that Lomborg commits, implicitly and occasionally explicitly, is

Id. at 203. One problem with this argument is that in crowded developing countries groundwater alone may well be insufficient. Consumption of river water remains essential.

⁵¹ “[T]he level of oxygen is a much more important measure of water quality than fecal coliform.” *Id.*

⁵² Actually, other authorities disagree on the curve for dissolved oxygen. See, e.g., Shafik, *supra* note 37, at 764-65 (noting that dissolved oxygen situation worsens with increased income).

to disregard and devalue the precautionary principle, which states that where a risk is not yet well understood, it may nevertheless be advisable as a matter of public policy to take measures against it, especially where the danger involved would be irreversible, synergistic, or catastrophic.

First, as to the science/policy interface, even if Lomborg's arguments are intended to present a strictly on-the-level critique of environmental science, they are misleading. In these matters one cannot isolate science from politics and policy. As Sheila Jasanoff explains:

Science, because of its claims to value-neutrality, seems to provide the only forum where nations can set aside their differences in favor of a common, rationalistic approach to problem solving. To "scientize" an issue is at once to assert that there are systematic, discoverable methods for coping with it and to suggest that these approaches can be worked out independently of national or sectarian interests. Science represents for many the only universal discourse available in a multiply fragmented world. The yearning to resolve social problems by appealing to the apolitical authority of science persists, overriding the evidence that scientific knowledge is deeply embedded in politics and culture.⁵³

However, science is not so neutral as it appears:

[T]he processes of science often resemble those of politics, and the similarities become most apparent when scientific activity draws near to the political arena through channels such as expert advice. In the limiting case, the scientific controversies that so frequently erupt in the course of policymaking simply retrace the patterns of more enduring conflicts in society.⁵⁴

Jasanoff ultimately questions whether scientific knowledge "presents an effective counterbalance to a hegemonically created world order."⁵⁵ Thus, many ultimate decisions, even when in-

⁵³ Sheila Jasanoff, *Science and Norms in Global Environmental Regimes*, in *EARTHLY GOODS: ENVIRONMENTAL CHANGE AND SOCIAL JUSTICE* 173, 173 (Fen Osler Hampson & Judith Reppy, eds., 1996)

⁵⁴ *Id.* at 175.

⁵⁵ *Id.* at 194. She explains:

To the extent that modern science both constitutes and is constituted by particular forms of politics, it can scarcely provide an independently authoritative mechanism for dealing with the destructive consequences of that political order, such as environmental degradation or ungovernable technologies. Shares in a common scientific worldview are more likely to perpetuate than deeply challenge the political structures to which they are tied by bonds of reciprocal legitimation.

formed by the best available science, are politically motivated.⁵⁶ They inevitably involve deciding how much risk is acceptable. Moreover, they involve balancing one risk against another, often with different groups bearing the risk.⁵⁷ As Dan Tarlock points out, environmental arguments are thus inevitably both moral *and* scientific.⁵⁸ Also, the question of acceptable risk may often conceal within it a second question – acceptable to whom? There are two distinct types of distributional issues here – the intergenerational equity argument of fairness to future generations in the use

Id.

⁵⁶ As Dan Tarlock writes, “Science alone . . . cannot control the definition and responses to environmental problems. Because they are fundamentally resource allocation and distribution conflicts, they are political problems.” Dan Tarlock, *The Role of Non-Governmental Organizations in the Development of International Environmental Law*, 68 CHI.-KENT L. REV. 61, 62 (1992). For general discussions of the pros and cons of relying on risk assessment as the fountainhead of environmental policymaking, compare STEPHEN BREYER, *BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION* (1993) (focusing on federal regulation of substances that create public health risks and the problems inherent in federal risk regulation, and arguing for the reform of risk assessment and management by creating a more centralized authority within the Executive Branch), and Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985) (arguing for reform of environmental risk regulation because the status quo is malfunctioning, economic incentive systems are better alternatives, and there is an increasingly urgent need to improve the environmental goal setting process), with Adam M. Finkel, *A Second Opinion on an Environmental Misdiagnosis: The Risky Prescriptions of Breaking the Vicious Circle*, 3 N.Y.U. ENVTL. L.J. 295, 297 (1995) (parting company with Justice Breyer’s methodology for reforming risk assessment and management, and suggesting that his views are only a “recipe for further divisiveness and irrationality”); Clayton P. Gillette & James E. Krier, *Risk, Courts and Agencies*, 138 U. PA. L. REV. 1027, 1031 (1990) (challenging both sweeping delegations of risk management to experts and bureaucrats, and management of risk through participatory democracy”); Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 COLUM. L. REV. 562, 564 (1992) (seeking “to identify[] and provoke discussion on normative problems that arise when environmental policy is made by comparative risk analysis”); Sheila Jasanoff, *The Dilemmas of Risk Regulation*, ISSUES IN SCIENCE & TECHNOLOGY, Spring 1994 at 79-80 (commenting that Justice Breyer “seems to forget his own dictum and proposes an institutional solution that is almost guaranteed not to increase trust”); and Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1627 (1995) (arguing that bureaucrats engage in a “science charade” by failing to identify the major interstices left by science in the standard-setting process and failing to reveal the policy choices made to fill these interstices). See also CHRISTOPHER H. FOREMAN, JR., *THE PROMISE AND PERIL OF ENVIRONMENTAL JUSTICE* (1998) (critiquing environmental justice for abandoning expert-based risk assessment); Bruce D. Israel, Note, *An Environmental Justice Critique of Risk Assessment*, 3 N.Y.U. ENVTL. L.J. 469 (1995) (critiquing expert-based risk assessment for abandoning environmental justice).

⁵⁷ This winners/losers argument is in part an inevitable consequence of the fact (as Lomborg correctly insists) that society’s resources are limited and that environmental panic may cause scarce resources to be misallocated. By hypothesis, different risks to different groups are at stake. Someone’s interests will be sacrificed or remain unaddressed. For a variety of reasons, then, these decisions cannot be accurately portrayed as solely scientific. They are fundamentally decisions about distribution.

Also, it makes no sense whatsoever to single out the costs of environmental regulation for this critique, when they are typically a small part of a country’s regulatory expenditures (as they are in the United States) and when other expenditures have not been subject to the same kind of comparative cost benefit analysis. See Finkel, *supra* note 56, at 373-74.

⁵⁸ Tarlock, *supra* note 56, at 65.

of resources,⁵⁹ and the intra-generational equity arguments on behalf of currently existing but disfavored and disempowered communities.⁶⁰ Where future generations are concerned, all we can do is to try to think through how we ought to treat them; we cannot include them directly in the political process.⁶¹ Where the various potentially affected groups are already in being, however, making decisions about risk and resource allocation implicates some thorny issues about perspectives on utility, democracy and sovereignty, and political process.⁶² These issues highlight the question of who should decide which risks are acceptable to whom. Thus, Lisa Heinzerling argues that the numbers generated by risk assessments are not value free; they reflect choices as to methodology, discount rate, and range of benefits considered.⁶³ Robert

⁵⁹ See, e.g., EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY (1989).

⁶⁰ We can call these environmental justice arguments. See discussion *infra* Part II.C. See generally, e.g., Alice Kaswan, *Environmental Laws: Grist for the Equal Protection Mill*, 70 U. COLO. L. REV. 387 (1999) (identifying distributional justice and political justice themes within the Environmental Justice movement); Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENVTL. L. REP. 10,681 (2000) (identifying four themes within the Environmental Justice Movement: distributive justice, procedural justice, corrective justice and social justice).

⁶¹ For example, in reworking his famous *Theory of Justice*, John Rawls has modified the uncertainties of the "original position" as to the position one will eventually assume in society so as to include uncertainty as to which generation one will be in. DAVID HUNTER, ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 336 (2002) (discussing Rawls' acceptance of an intergenerational critique of the theory presented in JOHN RAWLS, A THEORY OF JUSTICE (1971); the critique is Jane English, *Justice Between Generations*, 31 PHIL. STUD. 97 (1977)).

⁶² See discussion *infra* Part II.C.

⁶³ Lisa Heinzerling, *Regulatory Costs of Mythic Proportions*, 107 YALE L.J. 1981, 2042-64 (1998). Heinzerling argues that the pseudo-specificity of the numbers in risk assessments conceals these value choices. *Id.* at 2064-69. See also Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553 (2002) (similar critique of cost-benefit analysis).

In *Regulatory Costs of Mythic Proportions*, Heinzerling also makes a most fascinating claim, that most of the United States policy arguments attacking excessive expenditures for risk reduction are based on one single table developed in 1986 by an employee of the Office of Management and Budget. The table "is in the nature of a modern urban legend, a vivid, plausible, 'false-true tale,' circulated broadly, embellished with local detail, and believed implicitly." Heinzerling, *supra*, at 1984. While the table finds costs as high as \$72 million per life saved, Heinzerling believes that there are several unjustifiable methodological errors in it, and that the true cost of almost all the regulations described in the table and actually implemented is at worst still less than \$5 million per life saved. *Id.* at 1985. In other words, once the numbers are set straight, risk regulation is not out of control. The whole problem of foolishly expensive risk regulation is a chimera. See also Lisa Heinzerling, *Five-Hundred Life-Saving Interventions and Their Misuse in the Debate Over Regulatory Reform*, 13 RISK 151 (2002) (critiquing in detail the flaws of another specific study on the misplaced costs of risk regulation); Lisa Heinzerling & Frank Ackerman, *The Humbugs of the Anti-Regulatory Movement*, 87 CORNELL L. REV. 648 (2002) (identifying a few other similarly flawed sources also central to the critique of excessive expenditure for risk reduction). Heinzerling's tale of bad information circulated unquestioningly and relied on for policy arguments is startlingly like Lomborg's critiques of environmentalists' recycling of bad information. Considering that Lomborg makes precisely the kind of excessive regulatory cost argument that Heinzerling says is almost always traceable to the numbers in the 1986 table or other bad numbers, it would be well worth tracking down exactly where Lomborg's numbers have come from.

Kuehn criticizes risk analysis because it does not always capture the “risks borne by all segments of the population, nor does it always capture the concerns of all members of the public.”⁶⁴ James Freeman and Rachel Godsil argue that “[t]he problem comes down to competing rationalities” and that “the choice of approach [to risk assessment] is an ethical and political one that technical experts have neither the knowledge nor the authority to dictate, because the issue transcends technocratic expertise.”⁶⁵

Nor is science always so unbiased as Lomborg assumes. Scientific researchers and institutions have their own financial needs, their own plays for power and status, that can inform their choice of subject matter and spin. This is the very charge Lomborg occasionally levels against environmentalists. In a politically polarized field like environmental regulation, it is beyond peradventure that some scientific experts become associated with polarized positions on *both* ends. Without saying that they necessarily go outside of the limits of good science, they certainly can be tempted to push the limits of acceptable conclusions and to characterize those who disagree with them as advocating unsupportable results. And even though most scientists are above this, one hopes, the overall rhetoric of science policy is not. In adversarial situations where a lot is at stake, parties at the extreme will often be sought out and proffered by various interests to voice their “expert” view of the science at issue. Thus, even when the bulk of the scientists cluster around some moderate position, policy advocates will often choose experts whose positions are more extreme, though still within the bounds of what is acceptable scientific argument. This phenomenon is often discussed in the context of the problem of scientific expertise in litigation. But the filtering out of moderation of expertise applies equally well to larger public debates that require science to inform them – for example, policy debates about environmental risks.⁶⁶ In short, “[e]conomically interested or moti-

⁶⁴ Robert R. Kuehn, *The Environmental Justice Implications of Quantitative Risk Assessment*, 1996 U. ILL. L. REV. 103, 116. They also typically fail to address cumulative and multiple exposures, *id.* at 118-19, non-cancer effects or ecological, welfare and quality of life concerns, *id.* at 127, and they are often based on a assumed uniform body, that of a healthy 70 kg white male. *Id.* at 125. See generally SHRADER-FRECHETTE, *supra* note 1 (discussing risk assessment, rationality and objectivity generally).

⁶⁵ James S. Freeman & Rachel D. Godsil, *The Question of Risk: Incorporating Community Perceptions into Environmental Risk Assessments*, 21 FORDHAM URB. L.J. 547, 566 (1994) (quoting Gillette, *supra* note 56, at 1085). See generally Robert D. Bullard, *Unequal Environmental Protection: Incorporating Environmental Justice in Decision Making*, in WORST THINGS FIRST? THE DEBATE OVER RISK-BASED NATIONAL ENVIRONMENTAL PRIORITIES 237, 260 (Adam M. Finkel & Dominic Golding eds., 1994) (arguing that “[r]eliance solely on ‘objective’ science for environmental decision-making – in a world shaped largely by power politics and special interests – often masks and reinforces institutional racism”).

⁶⁶ For an account of how risk assessment can become polarized in a specific context, see William Boyd, Note, *Controlling Toxic Harms: The Struggle Over Dioxin Contamination in the Pulp and Paper Industry*, 21 STAN. ENVTL. L.J. 345 (2002). See generally Donald T. Horn-

vated actors . . . invoking the authority of 'science' will be able to present expertise which is in line with their interests."⁶⁷ Dan Tarlock writes, "Science's power to legitimate intrusive and costly regulation by invoking the idea of exclusive truth makes the 'ownership' of science one of the most contested issues in modern environmentalism."⁶⁸

Lomborg's account leaves all of this out. He puts science on a pedestal and then portrays the debate as sullied by environmentalist politics that misuse science. But is it also and inevitably sullied by anti-environmentalist and anti-regulatory politics and rhetoric.

2. *The Matter of the Precautionary Principle*

The precautionary principle is another inevitable consequence of the science/policy interface. If a risk seems threatening enough, we often cannot wait for science's deliberate processes to establish with appropriate scientific certainty what the risks are.⁶⁹ Over the last generation, environmental thought has developed, and international environmental law has begun to recognize, a precautionary principle that suggests that sometimes we must take precautions to forestall potentially catastrophic or irreversible future environmental harms even in the face of weak and uncertain information.⁷⁰ "The precautionary

stein, *Lessons from Federal Pesticide Regulation on the Paradigms and Politics of Environmental Law Reform*, 10 YALE J. ON REG. 369 (1993) (critiquing a blunt risk-oriented reform of federal pesticide regulation and arguing for an approach focused on reducing the causes of pollution).

⁶⁷ Christian Joerges, *Law, Science and the Management of Risks to Health at the National, European and International Level – Stories of Baby Dummies, Mad Cows and Hormones in Beef*, 7 COLUM. J. EUR. L. 1, 15 (2001).

Aaron Wildavsky suggest another factor in the polarization of science in popular environmental debate: ignorant journalists. Wildavsky argues that journalists, in their attempt to present what appears to be a balanced picture of various scientific arguments, often seek out opposing viewpoints, even when one of those opposing viewpoints is at the margins of acceptability within the scientific community. Thus, they unnecessarily perpetuate polarization and debate in the popular understanding of various science policy issues. AARON WILDAVSKY, *BUT IS IT TRUE? A CITIZEN'S GUIDE TO ENVIRONMENTAL HEALTH AND SAFETY ISSUES* 383-84 (1995). See generally Sharon Dunwoody & Hans Peter Peters, *The Mass Media and Risk Perception*, in *RISK IS A CONSTRUCT* 293, 300-02 (Bayerische Rück, ed., 1993) (discussing media selection of opposing experts in the name of objective reporting on risk).

⁶⁸ A. Dan Tarlock, *Who Owns Science?*, 10 PENN. ST. ENVTL. L. REV. 135, 135 (2002).

⁶⁹ See, e.g., François Ewald, *The Return of the Crafty Genius: An Outline of a Philosophy of Precaution*, 6 CONN. INS. L.J. 47, 73 (1999-2000) ("Precaution starts when the decision (necessary) must be made by reason of and in the context of a scientific uncertainty.").

⁷⁰ For example, Principle 15 of the 1992 Rio Declaration on Environment and Development states: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The legal status of this principle is uncertain. The European Union claims it is part of customary international law; Canada claims that it is just emerging as a general principle of international law; and the United States claims it is an approach to be used in certain narrow circumstances. HUNTER ET AL., *supra* note 61, at 406-08. The precautionary principle has also begun to appear in domestic judicial decisions.

principle . . . provides a framework for governments to set preventative policies where existing science is incomplete or where no consensus exists regarding a particular threat.”⁷¹ Lomborg’s whole argument seems to pretermitt the precautionary principle, and at the very end of the text, he attacks it.⁷² Lomborg basically assumes that governmental regulators (at whatever level is appropriate) should forbear until the scientific experts do manage to show a likelihood of harm. Meanwhile, life will go on as usual. Although Lomborg does not go into it, life as usual clearly includes the processes of modernization, industrialization, and export of risk that in fact create many of the environmental problems of affluence.⁷³ However, if we simply call off environmental regulators altogether so long as the science is uncertain, we can expect at least some costly, irreversible, and avoidable catastrophes to occur. Lomborg needs to provide some account of

Id. at 410-11. The Rio Declaration’s statement of the precautionary principle does seem to be self-limiting, as it requires measures taken to be “cost-effective.” *Id.* at 406.

⁷¹ *Id.* at 406. For other recent discussions of the precautionary principle, see, for example, Gail Charnley & E. Donald Elliott, *Risk Versus Precaution: Environmental Law and Public Health Protection*, 32 ENVTL. L. REP. 10,363 (2002) (arguing generally that risk assessment is preferable to environmental regulation based on the precautionary principle); Rena I. Steinzor, “You Just Don’t Understand” – *The Right and Left in Conversation*, 32 ENVTL. L. REP. 11,109 (2002) (replying to Charnley & Elliott, and arguing that the precautionary principle is a well-established, important and successful part of American environmental law); Christopher D. Stone, *Is There a Precautionary Principle?*, 31 ENVTL. L. REP. 10,790 (2001) (presenting a number of different versions of the precautionary principle).

⁷² LOMBORG, *supra* note 2, at 348-50. Lomborg is certainly not alone. See, e.g., WILDAVSKY, *supra* note 67, at 427-47 (chapter entitled *Conclusion: Rejecting the Precautionary Principle*). Hunter et al. describe it as “perhaps the most controversial of all international environmental principle[s].” HUNTER ET AL., *supra* note 61, at 407. In a nutshell, Lomborg argues that all areas informed by science already appropriately address the problem of scientific uncertainty, and that to state and apply the precautionary principle for environmental policy separately amounts to excessive caution and bad decisionmaking. LOMBORG, *supra* note 2, at 350.

⁷³ One can distinguish two kinds of environmental risks, those that come from poverty and those that come from development and abundance. The former kind involve such issues as lack of access to clean water and sanitary disposal of waste, and the depletion of open access resources such as fish and firewood when populations grow out of balance with regional supplies of these resources – basically tragedies of the commons. One should not neglect to include here basic issues of hunger and access to medical care, issues high on the agenda at the 2002 World Summit on Sustainable Development in Johannesburg. Overpopulation is another such issue. Environmental risks deriving from development and abundance include almost all problems of toxic pollution of air, water and land, the disposal of solid waste, the risks inherent in useful but hazardous chemicals and industrial processes, the urban and suburban sprawl and consequent destruction of productive agricultural land made possible by modern transportation, the various stresses created by concentrated urban life, the continued depletion of renewable and nonrenewable resources due to high consumption patterns, and at the same time continued pockets of hunger, inadequate shelter, lack of access to medical care or education, and environmental disamenities. Indeed, markets also facilitate the reallocation and export of risk, at all scales from the local to the global. Gerard C. Rowe, *Environmental Justice as an Ethical, Economic, and Legal Principle*, in ENVIRONMENTAL JUSTICE AND MARKETS MECHANISMS: KEY CHALLENGES FOR ENVIRONMENTAL LAW AND POLICY 58, 63 (Klaus Bosselman & Benjamin J. Richardson, eds., 1999).

when one should act in the face of scientific uncertainty to protect the environment. But he does not do so.⁷⁴

Environmental decisionmaking under scientific uncertainty is inevitable. This is not to say that science is irrelevant. Far from it. Christian Joerges writes:

Judgments as to the social acceptability of risks not only involve delicate normative, political and occasionally ethical considerations, but also presuppose a balancing of benefits and costs. The politically accountable or legally competent decisionmaker cannot refrain from discriminating between "junk" and "serious" science and from taking decisions under scientific uncertainty.⁷⁵

Of the precautionary principle, François Ewald, one of France's leading experts on risk, writes:

[T]he decision . . . belongs to the politician without being able to have access to expert knowledge, and it is the result more of an ethic, of the respect of certain procedures, than of a morality, linked to the application of a preexisting framework. This does not mean that scientific expertise is useless, but that it will not release the politician from the sovereignty of his or her decision.⁷⁶

Most if not all environmental policy decisions are inevitably moral and political in nature, despite their dependence on science to inform them.⁷⁷ This may make decisionmakers uncomfortable, as they cannot maintain "the mythical separation of values from science."⁷⁸ But Lomborg cannot expect science to absolve environmental decisionmakers of responsibility,⁷⁹ nor can he take an across-the-board

⁷⁴ Cf. WILDAVSKY, *supra* note 67, at 427-47. While attacking the precautionary principle as a general matter, Wildavsky in fact principally focuses on claims for regulatory precaution concerning exposures to tiny doses of toxic chemicals, arguing that the science does not support such claims and that the expenditures involved in taking precautions in these particular matters in fact have harmful effects because they divert resources foolishly to deal with insignificant risks. Wildavsky also takes swipes at global warming, acid rain and the effects of asbestos. In fact, Lomborg has also made a fairly persuasive case on the issue of risk from tiny amounts of toxic chemicals, acid rain and global warming (as to the last, in terms of the costs of prevention versus the eventual costs of mitigation – though here there are also severe distributional issues, as prevention costs are focused in the developed world while mitigation costs will be spread worldwide). Had Lomborg focused his attack on the precautionary principle on such examples it would have been more persuasive.

⁷⁵ Joerges, *supra* note 67, at 15.

⁷⁶ Ewald, *supra* note 69, at 77.

⁷⁷ Indeed, because environmental regulation "constantly pushes the limits of scientific understanding . . . the most important decisions must be made under conditions of extreme uncertainty." Tarlock, *supra* note 68, at 140-41.

⁷⁸ Finkel, *supra* note 56, at 358.

⁷⁹ As Timothy O'Riordan and Stephen Rayner wrote a decade ago, concerning using scientific uncertainty to avoid difficult political choices: "It is little wonder that politicians are

position that when science is not yet clear, governmental regulation is never appropriate. To do so elides the moral and political foundations of environmental decisionmaking.

B. Rhetoric in a Risky World: Problems of Expertise and Communication

In identifying the Litany and giving it such a prominent place in his argument, Lomborg basically accuses environmentalists of using the rhetoric of catastrophe illicitly. One obvious response is that the rhetoric of catastrophe is shared by all parties to the debate. In an arena crowded with issues, claims of impending disaster may be an effective way of getting political attention.⁸⁰ More novel is an argument, which I develop primarily from the writings of German sociologist Ulrich Beck, that political debate about risk necessarily takes the shape that Lomborg accuses environmentalists of foisting on the public. If Beck is right about the politics of fear and the inevitability of expert and media intermediaries who interpret risk to the masses, then Lomborg's accusations lose much of their force. The muddle of environmental and anti-environmental rhetoric is just another inevitable part of the complexity of environmental policy. Lomborg's expectation that it would be otherwise is at best a naive outlook fueled by his simplistic and idealized view of the role of science in environmental policymaking.

I argued in Part II.A.1. above that debates over science policy will tend to become polarized because of the large interests at stake. It might seem that exaggerated reliance on potential catastrophic outcomes is the province of environmentalists. Those opposed to the environmentalists' dire predictions, it might seem, can hardly be put in the catastrophe camp. But there are other kinds of arguments from catastrophe. I will name two. One is the "overregulation is underregulation" argument. Lomborg himself provides a fine example. He stresses the plight of two billion people without clean water or sanitation, who will not be rescued if we listen to the foolish fears of the Litany. This is not an argument from ecological collapse, but it is surely an argument from catastrophe, social catastrophe through mis-

investing heavily in climate change modelling and associated panels and conferences. They seek scientific unanimity as a precondition for committing themselves to policies that will transform the economy and attempt to alter human behavior. Thus scientific uncertainty is used to avoid difficult commitments." Timothy O'Riordan & Steve Rayner, *Risk Management for Global Environmental Change*, in 1 GLOBAL ENVIRONMENTAL CHANGE, Mar. 1991, at 91, 93. They continue: "Hierarchies apparently prefer to reduce methodological and conceptual uncertainty to technical issues of quantitative precision wherever possible. Technical uncertainty can be managed by the routine application of decision rules that absolve the decision maker of individual responsibility for the outcome." *Id.* at 101.

⁸⁰ Stefano Nespore, *Environmentalism and the Disaster Strategy*, 19 UCLA J. ENVTL. L. & POL'Y. 211, 217-18 (2000-01).

allocation of resources.⁸¹ The other typical argument from catastrophe for the right is the property rights argument. Regulate what property owners can do with their own property, and we face the destruction of civil society, the end of investment, the loss of personal freedom, and so on. In discussing environmental rhetoric, I recently constructed an opposition of the environmental jeremiad and the property rights encomium.⁸² But one must recognize that there is also a standard property rights jeremiad.

The problem of environmental rhetoric may be further illuminated by German sociologist Ulrich Beck's description of our brave new world in *The Risk Society*.⁸³ After the nuclear accident at Chernobyl, Beck reflected on how an accident in a European backwater had suddenly imperiled a large swath of Europe. Risks of this type knew no national boundaries. Moreover, the problem of nuclear hazards and similar environmental risks was qualitatively different from the kinds of risks faced by industrial society prior to the present day. Some kinds of previously familiar risks were "outside" risks, ultimately external to society and its controls – famine and flood, for example. Other previously known risks were familiar and within the understanding and often the control of the individual.⁸⁴ Now society as a whole faces self-imposed risks of large but uncertain dimensions. They are in fact within human control, as they derive from our own technology-based activities.⁸⁵ They are correlated to economically valuable activities, so that we do not want to avoid them altogether, but to manage them and in fact to allocate them. But these new risks

⁸¹ It also seems curiously naive on the question as to whether the political will exists to achieve a transfer of resources for this end. To be sure, the 2002 World Summit on Sustainable Development has committed to reducing the number of people without clean water and sanitation by 1 billion. *Water: A Key Resource for Sustainable Development* (Mar. 2, 2001), available at The Official United Nations Website for the World Summit on Sustainable Development/Johannesburg Summit 2002/PrepComI Documents, <http://www.johannesburgsummit.org>. We shall see.

⁸² Poirier, *supra* note 22.

⁸³ ULRICH BECK, *RISK SOCIETY: TOWARDS A NEW MODERNITY* (Mark Ritter trans., 1992) (1986). Actually, I find this text somewhat disjointed, so what follows may be Poirier's interpretation of Beck. (We are assured in an introduction that the text is "quite accessible" in the original German. Scott Lash & Brian Wynne, *Introduction to id.*, at 1.) I also rely on Beck's reformulation of his theory in ULRICH BECK, *ECOLOGICAL POLITICS IN AN AGE OF RISK* (Amos Weisz trans., 1995) and ULRICH BECK, *WORLD RISK SOCIETY* (1999), as well as Hans Lübbe, *Security: Risk Perception in the Civilization Process*, in *RISK IS A CONSTRUCT*, *supra* note 67, at 23, and NIKLAS LUHMANN, *RISK: A SOCIOLOGICAL THEORY* (1993).

⁸⁴ Beck writes, "[h]azards bring about cultural blindness . . . because our senses fail use . . . in respect of chemical and nuclear contaminants." BECK, *ECOLOGICAL POLITICS*, *supra* note 83, at 50. Kristin Shrader-Frechette's procedural theory of risk management also distinguishes between personally chosen risks and societally imposed risks. SHRADER-FRECHETTE, *supra* note 1, at 5; see also Gillette & Krier, *supra* note 56, at 1029 (distinguishing new "public risks" that are large, general and often centrally managed, and a category of previously existing "private risks" that are either individual or naturally occurring).

⁸⁵ They may not be within the control of the locality, nation or region that suffers the ill effects, however.

are not easily worked into clear directives for political action. They are beyond the comprehension of all but the experts, and in many cases the severity of the risks involved, and the uncertainties of long-term, synergistic or catastrophic effects are not understood or agreed upon at all. Because the risks are difficult or impossible for the average citizen (or perhaps for anyone at all) to appreciate, we live in a state of constant apprehension about them. Moreover, we depend vitally on the interpretations of others, often of supposed experts, for our weak and partial understanding of these risks.⁸⁶ Thus, one aspect of the risk society described by Beck is a constant rhetorical battle over the nature and severity of various risks and how they are to be distributed and managed.⁸⁷ We are crucially and permanently dependent upon conflicting versions of the risk articulated by others. Many versions of the risk will be attributed to incompatible expert accounts.⁸⁸ Insecurity is increased by such clashes of experts.⁸⁹

Aaron Wildavsky uses a felicitous term to describe part of the problem here: "mediated science."⁹⁰ And he thinks he has a solution. The citizen must him- or herself become educated in the complexities of the science at issue. "Citizens who train themselves to read and understand the primary sources, the original scientific studies, can participate meaningfully; those who do not, cannot."⁹¹ Wildavsky proposes "a combination of citizen labor and development of citizen skills to study the scientific and technical literature so as to understand what is known and, with that understanding, to make intelligent use of experts in order to reach informed judgments. Becoming knowledgeable is the right way to exercise judgment, and it is also the

⁸⁶ Lübke, *supra* note 83, at 31 ("we rely on the advice of experts to compensate for our dwindling ability to form judgements on the basis of our own knowledge and experience").

⁸⁷ Beck outlines another aspect of the risk society. He argues that previously politically crucial concerns over distribution, based on wealth and class, will be supplemented or perhaps supplanted by larger and more nebulous conflicts over risk allocation that are not class-based. E.g., BECK, *ECOLOGICAL POLITICS*, *supra* note 83, at 137; Ulrich Beck, *From Industrial Society to Risk Society: Questions of Survival, Social Structure and Ecological Enlightenment*, 9 *THEORY, CULTURE & SOCIETY* 97 (1992). I have doubts about his point. The allocation of environmental disamenities so often follows the trail of wealth and subordinate status that Beck ought not to discount wealth, class, race and other subordinate status (e.g., indigenous peoples) as important structural factors for political struggle in risk-based conflicts. Beck may be correct that a new type of supranational struggle involving regional allocations of risk is emerging alongside wealth- and distribution-based conflicts.

⁸⁸ Lübke, *supra* note 83, at 31-32 ("The situation becomes precarious . . . when the expert advice, on which we in complex and dynamic societies have to be able to rely, begins to lose its credibility. But this is precisely what always happens if the experts for their part disagree to the point of mutual acrimony. The number of cases in which this happens is on the rise.").

⁸⁹ FRANK FUREDI, *CULTURE OF FEAR: RISK-TAKING AND THE MORALITY OF LOW EXPECTATION* 131-33 (1998); Lübke, *supra* note 83, at 31-32 (describing loss of trust because of the need to depend on experts who disagree).

⁹⁰ WILDAVSKY, *supra* note 67, at 392.

⁹¹ *Id.* at 408.

best guarantee that citizen preferences will shape public policy."⁹² There is just one little problem with Wildavsky's suggestion, in my view. Citizens won't do this, and indeed most of them *cannot* do this. As Timothy O'Riordan and Steve Rayner write, "Most people in the world are necessarily preoccupied with the immediate demands of making a living from their local environment. The privilege of observing and understanding the complex interaction of biophysical and socioeconomic systems over long distances and historical timescales is the property of a tiny elite."⁹³ Wildavsky's modest proposal unfortunately addresses itself to only a small slice of the bourgeoisie.⁹⁴

There are other accounts of environmental rhetoric that may help to explain and perhaps justify, at least in part, the apocalyptic narratives that Lomborg describes in the writing of certain environmentalists. Stefano Nespore offers an interesting explanation: the rhetoric of environmental disaster speaks to the future of the wealthy, and thus serves to motivate their action on environmental matters without raising issues of distribution that would, in fact, be less successful as a rhetorical matter.⁹⁵ Indeed, it is well recognized that *actual* disasters have often spurred recalcitrant legislatures to take action on environmental matters.⁹⁶ Generally speaking, as I have suggested elsewhere in the context of flood disasters, a threat to the community such as a natural disaster may prompt legislators and the citizenry generally to abandon temporarily their self-regarding modes of interaction and think first of the community's overall needs.⁹⁷ Environmentally-motivated self-restraint is often put in terms of sacrifice for the good of the community, and environmental policy decisions might thus be bolstered by talking about impending disasters so as to motivate

⁹² *Id.* at 409 (discussing Robert A. Dahl, *The Problem of Civil Competence*, J. OF DEMOCRACY, Oct. 1992, at 48).

⁹³ O'Riordan & Rayner, *supra* note 79, at 91.

⁹⁴ Moreover, Wildavsky evidently presupposes a receptive, democratic government in which educated citizens can appropriately voice their well-informed decisions. I believe democracy to be a precondition over the long term for environmental policies that are both accurate and legitimate. But this prerequisite democracy does not exist in some parts of the world. The reigning government's view of environmental science and hence of environmental policy may be the only view allowed. This is one of the reasons that governance is a central factor in the sustainable development debate.

⁹⁵ Nespore, *supra* note 80, at 216-17. See also Marc R. Poirier, *Introduction: Facing the Passaic*, 29 SETON HALL L. REV. 1 (1998) (the costly cleanup of the polluted lower Passaic River is politically impossible because the river is no longer used by the white middle class, who have deserted the towns along this stretch of the river).

⁹⁶ See, e.g., Tarlock, *supra* note 56, at 68-69.

⁹⁷ Marc R. Poirier, *Takings and Natural Hazards Policy: Public Choice on the Beachfront*, 46 RUTGERS L. REV. 243, 277-80 (1993) (discussing Bruce A. Ackerman, *The Storrs Lectures: Discovering the Constitution*, 93 YALE L.J. 1013, 1020-33 (1984)); see also Daniel A. Farber, *Politics and Procedure in Environmental Law*, 8 J. L. ECON. & ORG. 59, 66-67 (1992) (arguing for republican moments during perceived crises as the basis of much environmental decisionmaking and discussing James Pope, *Republican Moments; The Role of Direct Population Polls in the American Constitutional Order*, 139 U. PA. L. REV. 287, 291-93 (1990)).

community-regarding actions. This rhetorical strategy certainly has worked in the past. To be sure, this analysis does not answer Lomborg's challenge as to whether the disaster rhetoric is in fact backed by science, nor the separate challenge as to whether in a particular instance an action urged by the disaster rhetoric is in fact wise, efficient, fair, or whatever standard you may seek to use. But it does explain why the disaster rhetoric is used, and why it in fact may be a sensible trope for environmentalists.

It also occurs to me that apocalyptic literature did not originate with environmentalists. There is, for example, the Apocalypse.⁹⁸ To argue that disaster looms unless we change our ways is in fact a familiar rhetorical trope. Indeed, stories of impending disaster and escape through reformed behavior are undoubtedly a standard way of framing morality tales.⁹⁹ While the admixture of scientific evidence is relatively recent (though it goes back at least to Malthus), one could probably develop quite a persuasive argument that apocalyptic environmentalism is relying on a thoroughly traditional narrative structure for social criticism and ethical expression. Again, this does not answer Lomborg's critiques that the science may be wrong or that the particular actions urged may be wrong-headed, but it does help to explain why apocalyptic tropes recur. We are neither hypnotized nor brain-dead; this is quite familiar territory in terms of narrative structure.

C. *Distribution in a Risky World: Problems of Hotspots, Local and National Sovereignty, and Environmental Justice*

Lomborg's optimism about the world's resources is over and over again based on general or average assessments. Even if he is right about the averages, there are pockets of desperate poverty and, equally, of desperate environmental crisis that remain. A two meter rise in sea level over the next hundred years may not mean that much in many places, but it means a great deal in Bangladesh or the Nile Delta. Even if there is enough food to feed the world, the fact that 800 million people go to bed hungry cannot be overlooked. Even if the oceans are overall in good shape (a more questionable proposition), it cannot be gainsaid that the Aral Sea is dead and the Black Sea is dying. Rather than carefully distinguishing the places and resources where environmental crisis is indisputably occurring, Lomborg's broad optimistic pronouncements and his equally broad con-

⁹⁸ Revelation. And of course before that there were the prophetic jeremiahs. *E.g.*, Isaiah 1:1 (lamenting the fall of Israel and prophesizing that God's coming); Jeremiah 1:14 (prophesizing an evil '[o]ut of the north'); Jonah 3:4 (prophesizing overthrow of Nineveh).

⁹⁹ *See, e.g.*, MARY DOUGLAS, PURITY AND DANGER 2 (1966) (analyzing pollution in terms of "rituals of purity and impurity" as "positive contributions to atonement").

demnation of environmental pessimism leave enormous numbers of the world's population in the lurch, when environmentally-grounded responses at the local, national, and regional level are in fact called for. This failure to look at distribution is at least as serious as any of the other flaws in *The Skeptical Environmentalist*. Lomborg's description of the state of the world is simply incorrect and incomplete.

The overgeneralization also means that many solutions to local, national, and regional environmental problems go unexamined. Many of these are quite doable, not at all the kind of budget-busters that Lomborg challenges with a certain amount of at least theoretical justification. Altering agricultural practices, for example, may be mostly a matter of education and some relatively inexpensive technology.¹⁰⁰ Probably some public health, water, and sanitation issues are equally straightforward to resolve with relatively small infusions of funds. But by insisting that it is the best of times, Lomborg forecloses close discussion of these matters. Moreover, he casts doubt on the sincerity and trustworthiness of those very environmental advocates, part of whose function has been to shepherd in just such kinds of changes. So the overgeneralization is actually quite counterproductive here.

By overgeneralizing, Lomborg also avoids dealing with the problematic side of the development he champions. Some kinds of development bring on environmental degradation. Lomborg's beloved environmental Kuznets curves even say so. For a while, development means worse environment. (For the poorer among the developing nations, the environmental Kuznets curve suggest that the environment locally will be getting worse for a good, long while.) It is unlikely that these burdens will fall equally on all, any more than they do in the United States, where polluting factories and waste handling, storage or treatment facilities are often concentrated in neighborhoods populated by people of color or the poor.¹⁰¹ Oftentimes industrializa-

¹⁰⁰ See, e.g., Sandra Postel, *Restoring Degraded Land*, in THE WORLD-WATCH READER ON GLOBAL ENVIRONMENTAL ISSUES 25 (Lester R. Brown ed., 1996). Here we must distinguish and set aside the thorny issue of intellectual property rights in newly hybridized or genetically engineered crops, and questions of the safety and public acceptance of genetically modified organisms. These are much more contentious and potentially costly.

¹⁰¹ See, e.g., Kuehn, *supra* note 60 (collecting examples). Whether these processes of concentration of land use and environmental disamenity are the process of deliberate targeting and conscious discrimination has been the subject of much debate. Even if they are not, as for example Vicki Been has argued, the point stands that market processes themselves do in fact sometimes predictably allocate environmental risk to poor and minority communities. See Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 YALE L.J. 1383, 1386 (1994) (arguing that market dynamics and conditions occurring after a facility is sited may account for disproportion of minorities in undesirable areas); Vicki Been, *What's Fairness Got to Do With It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 CORNELL L. REV. 1001, 1007 (1993) (arguing that "even if the current distribution [of facilities] could be rearranged to yield an unquestionably fair distribution, the interaction of poverty, racial discrimination in housing markets, and the normal foras

tion and affluence bring their own kinds of hotspot problems. These may be pollution in the vicinity of the extraction of petroleum or mineral ores (e.g., disputes over environmental degradation in Ecuador and the Niger Delta); risks associated with manufacture of chemicals (e.g., the Bhopal disaster); the processing of recycled materials (e.g., lead levels in Cairo, which recycles a good percentage of Europe's batteries); or the storage and disposal of hazardous waste. Generally speaking, globalization "has carried with it a remarkably uneven distribution of costs and benefits."¹⁰² Among the inequities of globalization is massive, rapid environmental change.¹⁰³ It may be possible, at least some of the time to "fram[e] policies and practices to suit local environmental, development, and social needs and conditions,"¹⁰⁴ but a framework approach that systematically demonizes environmental criticism and blesses development is hardly a good place from which to undertake this delicate and complex task.

In short, Lomborg's tendency to overgeneralize about the state of the environment incapacitates local environmental justice arguments and analyses. This is ironic, as Lomborg himself is making such an argument at the level of social justice when he discerns that poverty is the fundamental issue that needs to be addressed. Thus, a closer look at the taxonomy of environmental justice claims is warranted.

Robert Kuehn, looking back over a decade or more of the environmental justice movement, has suggested a fourfold typology of environmental justice concerns. Environmental justice arguments can be about distributive justice, procedural justice, corrective justice, or social justice.¹⁰⁵ Distributive justice typically in-

of residential mobility might soon recreate a situation where those living next [to facilities] were predominantly poor and people of color"); Vicki Been & Francis Gupta, *Coming to the Nuisance or Going to the Barrios?: A Longitudinal Analysis of Environmental Justice Claims*, 24 *ECOLOGY L.Q.* 1, 9 (1997) (revealing study results that neighborhoods surrounding facilities engaged in undesirable land uses tend to become predominantly African Americans and Hispanics as time passes). These social and market processes need to be examined as root causes of environmental injustices. See Sheila Foster, *Justice From the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement*, 86 *CAL. L. REV.* 775, 790-92 (1998) (arguing that the patterns of distribution cannot be understood without first examining the processes leading to racial disparities).

¹⁰² William L. Thomas, *Rio's Unfinished Business: American Enterprise and the Journey Toward Environmentally Sustainable Globalization*, 32 *ENVTL. L. REP.* 10,873, 10,878 (2002) (quoting GORDON SMITH & MOSES NAIM, *ALTERED STATES: GLOBALIZATION, SOVEREIGNTY, AND GOVERNANCE* 8 (Int'l Dev. Research Ctr. 2000)).

¹⁰³ *Id.* (discussing GEORGE SOROS, *ON GLOBALIZATION* 10 (2002)).

¹⁰⁴ *Id.* at 10,883.

¹⁰⁵ Kuehn, *supra* note 60, at 10,682. Kuehn credits his taxonomy originally to ROBERT D. BULLARD, *DUMPING IN DIXIE: RACE, CLASS AND ENVIRONMENTAL QUALITY* 116 (2d ed. 1994) and Robert D. Bullard, *Overcoming Racism in Environmental Decisionmaking*, 36 *ENV'T* 11, 12-13 (1994). He also relies on KENNETH A. MANASTER, *ENVIRONMENTAL PROTECTION AND JUSTICE* 23 (1995); Alice Kaswan, *Environmental Justice: Bridging the Gap Between Environmental Laws and "Justice,"* 47 *AM. U. L. REV.* 221, 230 (1997); and Dorceta E. Taylor, *The*

volves the disproportionate public health and environmental risks borne by people of color and lower incomes.¹⁰⁶ Dr. Robert Bullard calls it “geographic equity.”¹⁰⁷ These kinds of environmental justice issues simply disappear from view when geography itself is made to disappear through the use of overgeneralizations.

Procedural justice is about fairness in the decisionmaking process, and raises issues of inclusiveness, representation, parity and communication.¹⁰⁸ When Lomborg makes environmental decisionmaking out to be a matter of expert science, he excludes democratic dialogue and process. Cost-benefit and risk assessment tools may themselves be flawed generally or in the way they treat specific subpopulations.¹⁰⁹ And when Lomborg elevates the environmental Kuznets curve correlation to a cure-all without looking at how access to resources influence political decisionmaking processes, he obscures the ways in which the market (or other political processes) can allocate risks to the least powerful in society, even if overall society’s economic well-being or environmental well-being is increasing.¹¹⁰

Rise of the Environmental Justice Paradigm, 43 AM. BEHAV. SCI. 508, 537 (2000). Kuehn, *supra* note 60, at 10,682 n.1.

¹⁰⁶ Kuehn, *supra* note 60, at 10,684. Kuehn clarifies that this is not about spreading risk around, but lowering risks for everyone. *Id.* Kuehn provides some international examples, involving transnational shipment of hazardous wastes; harms to indigenous peoples during resource extraction; and sale of pesticides banned in the United States for use in developing countries. *Id.*

¹⁰⁷ BULLARD, *supra* note 105, at 116; Bullard, *supra* note 105, at 13.

¹⁰⁸ Kuehn, *supra* note 60, at 10,688 (discussing *inter alia* BULLARD, *supra* note 105, at 116; Bullard, *supra* note 105, at 12; Kaswan, *supra* note 105, at 224); *see also* Eileen Gauna, *The Environmental Justice Misfit: Public Participation and the Paradigm Paradox*, 17 STAN. ENVTL. L.J. 3 (1998) (arguing that environmental decisionmaking paradigms must be adjusted to include procedural access by disempowered group); Ian Macduff & Amanda Wolf, *Negotiating the Principles and Applications of Environmental Justice: Implications of Participation*, in ENVIRONMENTAL JUSTICE & MARKET MECHANISMS 129 (Klaus Bosselman & Benjamin J. Richardson eds., 1999) (presenting various justifications for procedural concerns of environmental justice advocates). Kuehn suggests that international development projects and transnational export of toxic waste often are flawed as a matter of procedural justice, because they do not include locally impacted communities or indigenous peoples in the decisionmaking process. Kuehn, *supra* note 60, at 10,689.

¹⁰⁹ Lisa Heinzerling, *The Rights of Statistical People*, 24 HARV. ENVTL. L. REV. 189 (2000) (concluding that the use of regulatory analysts and scientific risk assessments have dehumanized suffering and death, allowing suffering and death from environmental factors to continue); Kuehn, *supra* note 64 (addressing “whether the use of quantitative risk assessment causes greater environmental impacts on people of color and low income groups”); Kuehn, *supra* note 60, at 10,690 (citing Carl F. Cranor, *Risk Assessment, Susceptible Subpopulations, and Environmental Justice*, in THE LAW OF ENVIRONMENTAL JUSTICE 307 (Michael B. Gerrard ed., 1999) (arguing that increased reliance on risk assessment allows some groups not to be protected by environmental law)); Thomas McGarity, *A Cost-Benefit State*, 50 ADMIN. L. REV. 7 (1998) (arguing that many of the solutions offered by free marketers to fix the existing environmental regulatory regime will actually reduce the protections that such current statutes offer to citizens and the environment); *see supra* Part II.A.1.

¹¹⁰ *See* Richard J. Lazarus, “Pursuing Environmental Justice”: *The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787, 792-93 (1993).

The third of Kuehn's categories, claims to corrective justice, involves "fairness in the way punishments for lawbreaking are assigned and damages inflicted on individuals and communities are addressed."¹¹¹ Lomborg is addressing an account of the state of the world's resources, not the unequal effects of law enforcement. Consequently, corrective justice issues, to the extent they are separated out,¹¹² are just not part of the scope of what Lomborg addressed.

The social justice aspects of the environmental justice movement look more broadly at social, racial, and economic justice. These might include housing, neighborhood conditions, and education, for example.¹¹³ Indeed, the agenda of the 2002 World Summit on Sustainable Development shows a high quotient of social justice issues, making hunger, poverty, and AIDS central themes as much as development and environment. Insofar as Lomborg is motivated by a concern to steer resources towards the understandable and soluble problems of the developing world, like provision of clean water and sanitation, it is hard to fault his objectives. His argument fits within the social justice aspects of the environmental justice movement. But insofar as he does not examine the mechanisms of social justice, broadly defined, and leaves it to unexamined political processes to achieve these broader objectives on the unexamined basis of the environmental Kuznets curve correlation, he undercuts his own stated goals with overgeneralization. What he needs to do is to say, with Charles Dickens, "It was the best of times, it was the worst of times . . ." and then pay some serious attention to the details of the "worst" side.

CONCLUSION: ENVIRONMENTAL SCIENCE IN RELATION TO ENVIRONMENTAL JUSTICE

In *The Skeptical Environmentalist*, Lomborg attacks scientific and statistical flaws in environmental arguments, and identifies general sloppiness in what is supposed to be science. His arguments deserve to be treated with respect and responded to respectfully. But what is sauce for the goose is sauce for the gander, and where Lomborg falls down on his own terms he should be taken to task. Lomborg's overall project fails in a way that is more serious, however, by fundamentally misconceiving the role of science in environmental policymaking. Risk analysis omits important distributional and political concerns. Lomborg fails to notice the various ways in which scientific discourse about environment and development is inevitably caught up in rhetoric, perhaps because to do so would make the rock-

¹¹¹ Kuehn, *supra* note 60, at 10,693.

¹¹² Not all environmental justice theorists would do so.

¹¹³ Kuehn, *supra* note 60, at 10,698-99.

bottom truth of science seem much less reliable and our human condition much more precarious. Lomborg also fails to notice that the apocalyptic rhetoric of environmentalism is not absolute or all encompassing, and that despite its excesses it may also be part of a plausible rhetorical strategy to motivate otherwise inappropriately complacent actors to take potential risks seriously. Indeed, the mechanics behind reliance on increasing wealth to resolve environmental issues – Lomborg’s beloved environmental Kuznets curve – undoubtedly on the ground depend on just the kind of apocalyptic rhetoric that he seeks to discredit and disable.

As important as it is, science must only inform policymaking, and cannot supplant it. Science cannot absolve the political decisionmaker of responsibility, both political and ethical, for choices about what risks are acceptable – decisions that amount to determining whose interests to sacrifice. Dan Tarlock has written that “environmentalism is at base an ethical theory of science”¹¹⁴ The framework flaws in *The Skeptical Environmentalist* are symptoms of a desire to replace ethics and politics with science.¹¹⁵ Then the numbers can take the blame.¹¹⁶ But these are not statistical lives at stake, but real lives, real in their specificity and in their geographical and political situatedness.¹¹⁷ Thus, the various shortcomings of Lomborg’s frame come together. His reliance on science and his failure to recognize the pervasiveness and inevitability of rhetoric have as a consequence the blinding of decisionmaking to specificity. He simply omits from his consideration the political, perspectival discourse that would bring specificity and thus distributional justice into view.

The fault is not Lomborg’s alone. As I have argued elsewhere, since the early days of modern American environmentalism there has been a tendency to suppress and exclude from environmental discourse and environmental institutions the messy and uncomfortable issues of distribution and the even messier and more uncomfortable

¹¹⁴ Tarlock, *supra* note 56, at 75-76. He hastens to add that simple interest advocacy by environmental NGOs, uninformed by science, will quickly delegitimize them. *Id.* at 76. Science is necessary, but not sufficient.

¹¹⁵ The overall principle – both fair and efficient, and above all impersonal – is supposed to be supplied by economics. Resources are scarce, and they must be allocated to where they will do the most good. The mechanics are supposed to be supplied by science – we should do our best to understand which risks are real and which chimerical, and then to apply the formula, which will tell us whose interests it is fair and efficient to sacrifice. But as Adam Finkel reminds us, the separation of values from science is “mythical,” Finkel, *supra* note 56, at 358, and “economists depend on leaps of faith every bit as much as risk assessors do.” *Id.* at 367.

¹¹⁶ See Heinzerling, *supra* note 63 (concluding that there is room to disagree and argue against Morrall’s table, which shows the cost per life saved through risk-reducing federal regulations); O’Riordan & Rayner, *supra* note 79, at 101.

¹¹⁷ E.g., Heinzerling, *supra* note 63; Kuehn, *supra* note 64 (arguing that “quantitative risk assessment does violence to the concept of environmental justice because risk assessment disproportionately places the burden of pollution and environmental hazards on racial minorities and low income groups”).

issues of local politics and power.¹¹⁸ Part of the method of this exclusion has been to talk science.¹¹⁹ While local grass roots environmental, urban justice, and sovereignty struggles have always kept issues of distribution, local politics, and sovereignty alive on the ground, it is only with the emergence of the environmental justice movement circa 1990 that a strong collective voice emerged, and with it the beginnings of a critique of the standard methodologies of traditional environmentalism. Lomborg's frame for critiquing environmentalism in important ways remains stuck within the old environmental frame. It seeks to refine environmental discourse and to address global poverty, but it does so in terms of science and statistics, without talking about local political issues and processes. Lomborg's concern for the poor may be heartfelt. The fact that his method undermines his effort is due not only to his own shortcomings, but also to larger shortcomings of mainstream environmentalism, which Lomborg has failed to recognize and has in fact adopted.

¹¹⁸ Marc R. Poirier, *Environmental Justice / Racism / Equity: Can We Talk?*, 96 W.VA. L. REV. 1083 (1994). See DAVID SCHLOSSBERG, *ENVIRONMENTAL JUSTICE AND THE NEW PLURALISM: THE CHALLENGE OF DIFFERENCE FOR ENVIRONMENTALISM* 9 (1999) (examining the environmental movement to determine how to construct political actions and campaigns based in plurality). The exclusion of distributional issues has been less in the international sphere, where the presence of developing countries at the 1972 Stockholm conference guaranteed at least some attention to poverty and distribution and led eventually to the 1992 Rio Declaration and to the current World Summit. HUNTER ET AL., *supra* note 61, at 178-216.

¹¹⁹ There was also, to be sure, an incorporation of a romanticized nature ethic that antedated the environmental movement but that became one of its strands.

