Hope and the Climate Scientist
Response to McKibben's *Human Flourishing Depends on What We Do Now*

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It is difficult to be a climate scientist these days, watching the decline in both the environment and in American public belief in climate change as an issue. Less than 40 percent of the American public thinks there is solid evidence for global warming due to human activity, according to a 2009 Pew Survey Report.[1] The same report found that only 35 percent believe it is a very serious problem. Those numbers have dropped significantly from 2008, when 44 percent gave that response.[2] The difference can be traced to intensive lobbying—with millions and millions of dollars spent in 2008 both on lobbying on global warming and on advertising.[3] The corporate opposition to this issue is very well organized and powerful; most Americans do not realize how effective it is.

For example, the Intergovernmental Panel on Climate Change (IPCC) has been severely criticized recently. The IPCC is conservative by charter: they do not say anything unless it has been agreed on by hundreds of scientists and is in the published literature. A recent IPCC report said that glaciers in the Himalayas would be gone by 2035.[4] The truth is we do not know how long it will be before those glaciers melt. What the report should have said was that they might be gone by 2035, but there is now an international investigation of the IPCC and its credibility because of this one sentence out of 2,000 pages. That is one indicator of the degree of organization of those opposed to action on climate change. This one sentence has been used

to distract attention from the overall problem of climate change and the specific problem of the melting of glaciers.

All over the world, the melting of glaciers threatens agriculture. For example, agriculture in California depends on rivers fed by snow melt from the mountains of the Sierra Nevada. Snow falls in the winter and melts throughout the summer and is a source of water for farming. By the end of the century, maybe sooner, those rivers will run dry during the summer, the peak of the growing season. There is not enough space to build reservoirs to make up for the natural capacity of the mountains. This is true throughout the western United States. The concern in the Himalayas and in the Tibetan plateau is similar; the rivers there sustain agriculture for three billion people.

Bill McKibben gives us hope by reminding us of the involvement of people around the world and the example of the ability to motivate them. He also appeals to human values, values we share. That appeal touches me powerfully, particularly because climate scientists are uncomfortable talking about values. We like to talk about observations. In thinking about values and the value of human flourishing, of simplicity, I am enticed by McKibben's question: could we do less, could we actually live better with less? Part of me aspires to that. Yet, when I think about the world energy systems to which we have become accustomed and which have greatly improved the quality of our life in many ways, part of me worries that less is not enough.

Let me explain what I mean. Many of us, especially those interested in the environment, have a romantic attraction to simplicity, to a life lived simply and in harmony with nature. I suspect we share an uncomfortable intuition that many of the world's problems, including climate change, come from modern technology and the overconsumption of natural resources. If only we could convince everyone to live simpler lives and consume less, perhaps our relationship with nature would move back into balance. At the same time, we should not be naïve about how much we depend on technology. I do not mean only our computers and smart phones, although I am as addicted to those gadgets as anyone. I am thinking more about areas such as health technology. Most people would prefer to live here in Cambridge, Massachusetts, today than to live as an average person in many developing countries because of the differences in infant mortality, adult mortality, and many other health care differences that we take for granted.

In terms of climate change, it turns out that living with less is really not enough. Even if the average person in the world emitted as much greenhouse gases as the average Chinese person—four times less than the average American—we would still have a terrible climate problem. Solving climate change means getting to zero emissions—and that means new technology and lots of it. Convincing people to live with less could reduce energy demand and perhaps slow the rate of greenhouse gas emissions in the future, but I fear that the widespread adoption of zero-carbon energy technology may come quicker in a rapidly growing economy, with people wanting more and better technology. Of course, we still have a lot of work to make sure that the low-carbon technology is indeed cheaper and better. But therein lies the challenge.

I am worried about the tough choices that lie ahead. How will a social movement for acting on climate change deal with those tough choices? Many of the social movements that I have read about and studied over the years have had relatively simple and relatively few ideas or principles to apply. Again with climate change we face some very hard choices and complex tradeoffs. For example Bill McKibben talked about the virtues of distributed energy; in particular he mentioned the solar panels on his home. Solar panels and photovoltaics are expensive; he is fortunate to be able to afford them. Most people in this country would find the cost prohibitive, at least right now. And there are other hard choices. For example, the density at which you can extract energy from the wind is about one watt per square meter, when you average out the spacing of windmills. By way of comparison, the amount of energy you can extract from a square meter of land in a coal mine in Wyoming is approximately a thousand times that of a wind farm, assuming you extract coal over a hundred years. A coal mine is ugly, but it is very dense and confined to a comparatively small area. I am not trying to minimize the horrible effects of burning coal. However, when we talk about wind power as an alternative, we are not talking about building a few windmills, but thousands upon thousands of them. Already Cape Wind in the Nantucket Sound of Massachusetts has garnered strong resistance.[5] Similarly, environmental groups have opposed plans for a solar thermal plant in the Mojave Desert because of concerns over endangered species.[6]

Over the last forty years, environmental groups around the world, but especially in the United States, have defined themselves and built their memberships on the basis of opposition to development. Part of this is grounded in the idea of wilderness and its conservation: essentially environmental groups have lobbied against new building. They have espoused the spirit of what McKibben evoked: let us make do with less.

In contrast, fixing climate change will be a bigger construction project than any other in the last fifty years. It will make building the interstate highway system seem trivial. It is about replacing the infrastructure that has driven the industrial revolution around the world over the last 150 years. And it will cost money: more than 1 percent of Gross Domestic Product (GDP) per year is my guess (and probably closer to 2 percent), but it could be more. For the United States that would be at least two hundred billion dollars a year.[7] We are probably willing to spend twenty billion a year; we are not ready to spend two hundred billion. If the United States spent two hundred billion for thirty years and all the other countries in the world spent proportional amounts, we could fix the problem. It is about building; it is about construction; it is about steel in the ground and concrete and massive building projects—and every single one of them will be opposed by some people who do not want that project located at that particular site. I doubt that Bill McKibben wants windmills throughout the Adirondacks, and neither do I.[8] Wilderness is important, too. If we do not want windmills in the Adirondacks or in Nantucket Sound, where do we agree to put them? These are choices with which we have not yet grappled.

We must have a social movement to support the changes that are needed to address global warming, but it will have to be a social movement unlike any other. Those within it will have to step forward and make difficult decisions, supporting tradeoffs. It is difficult to unify people when they disagree about which tradeoffs should be made. How will we navigate these choices?

It is a tough time to be a climate scientist and tough to be anyone who knows and cares about what is happening to our planet. None of us know whether we will be able to organize and alter human systems soon enough to matter. Despite my concerns and caveats, Bill McKibben's words and actions give us hope for that possibility.

Notes

1. See Pew Survey Report, "Fewer Americans See Solid Evidence of Global Warming," Washington, DC: Pew Research Center for the People & the Press, October 22, 2009, 1; available online at http://people-press.org/report/556/global-warming.
2. Ibid., 2. Similarly, the percentage of those believing that there is evidence of global warming dropped from 71 percent in 2008 to 57 percent in 2009. On the somewhat positive side, the latest survey report shows little decrease in those percentages for 2010, with 59 percent believing in global warming and 34 percent believing global warming is due to human activity. See Pew Survey Report, "Little Change in Opinions about Global Warming," October 27, 2010, 2, http://people-press.org/report/669/.
3. See for example, *The Washington Times,* "Lobbyists See Profit in 'Going Green,'" April 22, 2009, which quotes the Center for Responsive Politics (CRP) as saying that the number of lobbyists working on energy and environmental issues before the U.S. Congress increased to 7,811, an increase of 6 percent over 2007, while related lobbying fees grew to $389 million, an increase of 43 percent over 2007. The same article also discusses an $18 million advertising campaign by the American Coalition for Clean Coal Electricity (ACCE). See also the Center for Public Integrity's website section on the global climate change lobby for a general overview (http://www.publicintegrity.org/investigations/global_climate_change_lobby/). As of the end of 2009, they estimated the number of climate change lobbyists in the United States at close to 3,000, a 400-percent increase since 2003, with 80 percent of the lobbyists working to slow down responses to climate change (Marianne Lavelle and M.B. Pell, "The Climate Lobby from Soup to Nuts," December 27, 2009). See also the CRP's website and its statistics on lobbying by industry sector (http://www.opensecrets.org/lobby/top.php?indexType=i), gathered from the Senate Office for Public Records; for 2010, CRP estimates the energy industry spent $435 million on lobbying (CRP, "Energy and Natural Resouces: Sector Profile, 2010").
4. For the paragraph in the report, see Rex Victor Cruz, Hideo Harasawa, Murai Lal, Shaohong Wu, et al., "Chapter Ten: Asia," *Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,* ed. Martin Parry, Osvaldo Canziani, Jean Palutikof, Paul van der Linden, and Clair Hanson (Cambridge: Cambridge University Press, 2007), 493. For an example of the reaction, see Neil MacFarquahar, "Overhaul of U.N. Climate Panel Is Urged," *New York Times,* August 31, 2010, Section A: Foreign Desk, 6.
5. See the website of Save Our Sound, http://www.saveoursound.org. As the main organization of opposition, they list recent news articles from their perspective.
6. See, for example, Felicity Barringer, "Environmentalists in a Clash of Goals," *New York Times,* March 24, 2009, Section A: National, 17, and Todd Woody, "Desert Vistas vs. Solar Power," *New York Times,* December 22, 2009, Section B: Business, 1.
7. The 2010 GDP of the United States is almost 15 trillion dollars; see Bureau of Economic Analysis, U.S. Department of Commerce, Press Release: "Gross Do-

mestic Product: Fourth Quarter and Annual 2010, Advance Estimate," January 28, 2011, 4.

8. Editors' note: In the discussion afterwards, McKibben cited his support for a local windmill project in the Adirondacks because of his fear of the dangers of global warming. He wrote an op-ed in the *New York Times* in support of it. See Bill McKibben, "Tilting at Windmills," *New York Times,* February 16, 2005, Section A: Editorial Desk, 21.