CARNEGIE COUNCIL *for Ethics in International Affairs*

Ethics Matter: A Conversation with Bill McKibben

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Bill McKibben, Marlene Spoerri

Transcript

Introduction

MARLENE SPOERRI: Welcome to Ethics Matter. I'm Marlene Spoerri of Carnegie Council for Ethics in International Affairs.

Few people have influenced our understanding of global warming quite like today's guest. Though scientists first clued in to the warming of our planet more than a century ago, it wasn't until the release of *The End of Nature* in 1989 that folks like you and me began to take notice. The person who got our attention was Bill McKibben. In *The End of Nature*, McKibben sketched a harrowing reality, one in which man's relentless pursuit of growth would threaten the very survival of the planet.

McKibben has since become one of the world's leading environmentalists. In addition to serving as the Schumann Distinguished Scholar at Middlebury College, he has written a dozen books about climate change and had his articles featured in *The New Yorker, National Geographic*, and *Rolling Stone*.

But in 2007 McKibben decided writing alone wasn't enough. So he turned to activism. McKibben is the co-founder and president of 350.org, where he is working to build a global grassroots movement to solve the climate crisis. In 2009, McKibben and his colleagues spearheaded one of the largest global coordinated rallies ever. And that was just the beginning.

Two years later, 350.org did the unthinkable: They used nonviolent protests to delay a decision on the Keystone XL Pipeline. The victory helped offset a project that scientists say would have catastrophic consequences.

But what brings Bill McKibben to Carnegie Council today is not only the attention he has paid to global warming; it's what he says is the solution. McKibben believes our best hope lies not in appealing to our wallets, but in appealing to our ethics, our most basic sense of right and wrong. When it comes to taking on the fossil fuel industry, McKibben says pure self interest will not cut it, but moral outrage might.

I am delighted to have the opportunity to discuss this and more with Mr. McKibben today.

Thank you so much for being here. It's a real pleasure to welcome you to the Council.

BILL McKIBBEN: What a pleasure to be with you.

Remarks

MARLENE SPOERRI: Let's start with how you got cued into this issue. As I mentioned, *The End of Nature* hit bookstores in the late 1980s. That was a time when not a lot of people were talking about global warming. So what first got you interested in it?

BILL McKIBBEN: That's a good question, because it wasn't where I naturally came from. My first work out of college in the early 1980s was I wrote "The Talk of the Town" column for *The New Yorker* for five years. So I spent my time wandering the canyons of this city and enjoying it immensely.

When Si Newhouse bought *The New Yorker* and fired Mr. Shawn, the longtime editor, I took the good excuse to move up to the Adirondacks, in the wilds. I fell in love with what is the great wilderness of the American East, spending all my time outdoors. At the same time, I was reading the early science about climate change and realizing that this wild place that I was so in love with wasn't going to be as wild anymore.

And at the same time, the third element was that I was reading, for the first time really, the great American literature. Of all literatures, the literature of our contact with the natural world around us is I think our finest, and especially in contemporary times—well, all through, from Thoreau on—but to read Wendell Berry and Gary Snyder and Ed Abbey and people like that was revelatory for me.

Out of that, very quickly, came that first book, *The End of Nature*. I think I was 27 or 28 when I was writing it. Out of that, and sort of unexpectedly, and sometimes not completely happily, came what has turned into a lifetime of work.

MARLENE SPOERRI: So your earlier work showcases global warming as what you say is a philosophical threat, something that could potentially happen in the future. You have written since that "global warming is no longer a threat, it's a reality." Could you tell us briefly about what that reality is today? Where are we?

BILL McKIBBEN: Sure.

So far we've raised the temperature of the Earth one degree—which doesn't sound like very much, and it really isn't. We're talking about three-quarters of a watt per square meter of the Earth's surface of extra solar energy. So less than one of those tiny white Christmas tree lights per square meter of the Earth's surface.

It turns out, though, that, taken *in toto*, that is quite a lot of energy, and it has been enough to melt the Arctic. After this past summer, which was truly epic in its melt, one can safely say, I fear, that the Arctic is broken. We have taken one of the largest physical features on the planet and dismantled it.

You can say the same thing about most of the other major physical features on this planet. The oceans, which are our very metaphor for vastness, and which even 25 years ago we had no reason to think you could seriously change, they're about 30 percent more acid, it turns out, than they were 40 years ago. The chemistry of sea water changes dramatically as it absorbs carbon from the atmosphere.

Terrestrially, the thing that I think hits us most often is the simple fact that since warm air holds more water vapor than cold, the atmosphere is about 5 percent wetter than it was 40 years ago. That's a staggering change in a basic physical parameter of the Earth. What it does is very effectively load the dice for more drought and more flood, both of which we see.

So that one degree is a very big deal. One of the reasons it's a big deal is it gives us fair warning of what to expect going forward. We're not going to erase that one degree. In fact, the scientists who predicted what would happen so far are confident, robust, in their declaration that unless we get off coal and gas and oil very quickly, far more quickly than any government currently plans, that one degree will be four or five degrees before this century is out, which in turn will raise just basic problems about the survival of our civilization.

The agronomists think that from this point forward every degree increase in global average temperature should cut grain yields about 10 percent. If you were watching the Midwest this summer, you have some idea of how that's possible.

Try to imagine this Earth with 20 or 30 or 40 percent fewer calories on it and then see whether you think any of the other things that we worry about—development, war and peace, hunger, women's issue, all the things we are about and hope about devoutly on this planet—whether any of them will have a chance of getting our attention. I think not.

MARLENE SPOERRI: One of the things you do so effectively is that you are able to translate these scientific breakthroughs into terminology that you and I can understand. One of the things that I've learned in reading your books is that it can be difficult to read your book and sleep soundly at night. A lot of what you describe is, as you say, quite frightening.

BILL McKIBBEN: This is my great strategy, by the way, is I unload my angst on everybody else. [Laughter] Then I sleep like a babe.

MARLENE SPOERRI: I could imagine that that fear might compel people not to act, that you say, "Well, things are so bad, let's do nothing."

BILL McKIBBEN: It's funny. I've never tried to instill fear, but I've never shied away from it either, which often is what the communications professionals advise.

My point of view, and since our point of view at 350.org, has always been that reality is what it is and we should describe it. I think that people are actually quite capable of dealing with it.

When we formed 350.org, we took its odd moniker from what the scientists said was the most carbon we could safely have in the atmosphere. "Any value above 350 parts per million CO2," they said, "was not compatible with the planet on which civilization developed, under which life on Earth has adapted." Strong language. Stronger still if you know that outside tonight every place on Earth it's 395 parts per million CO2 and climbing about two parts per million per year. Hence the melting Arctic.

We took the name because we wanted to organize globally, and hence Arabic numerals were more useful than slogans would have been. But we did it against the advice of people who said, "It's too depressing. We're already past it. People won't understand it. It will just scare them."

To me it was just more reality. To me it was like when you go to the doctor. If you go to the doctor and the doctor says, "Keep eating like this and someday your cholesterol will be too high," very few people actually do anything. But when you go to the doctor and the doctor says, "Look, you're in that zone where people have heart attacks now," that's the moment when people start taking their pill or eating their vegetables or whatever it is they're going to do to deal with their problem.

We found that to be the case with 350. Only really a small percentage of people in that doctor's office

say, “I need an absolutely full disquisition on the lipid system before I go any further,” and only really, really stupid people go home and search the Internet until they find a website that says “cholesterol is a hoax and doesn’t exist,” or whatever. [Laughter]

We think that reality in this case, not fear, is a good motivator. But even if it wasn’t, it just strikes me that it is at root the most central ethical duty we owe each other, is simply to tell the truth about where we are. I think if everybody understands in the end that we are facing an enormous serious problem that will be hard to deal with, and we just all decide, “It’s too hard, we’re not going to deal with it, forget it”—well, that will be sad, but at least we will have made a decision, a joint, informed, ethical at some level decision that it’s just too hard for us and we can’t go on.

My guess is, if we can get people to understand, then they’ll make the much deeper, more difficult, but more human decision to do all that we can about it.

MARLENE SPOERRI: You’ve said in fact in the past that individuals have a lot of ambivalence about going green. You’ve written that tackling climate change is a little bit like trying to build a movement against yourself. Can you talk a little bit about that and how you at 350.org and how you yourself are trying to convince people to put aside their immediate self-interests, say, and begin to prioritize moral considerations?

BILL McKIBBEN: Let’s think about it from the other way around. One of the things that we spent a lot of time in the environmental movement doing, once we learned about global warming, was suggesting to people a series of personal actions that they could take—screwing in a light bulb. I remember when my book came out, the other environmental book of the moment was called *50 Simple Things You Can Do to Save the Earth*, which was a very American notion both that you would save the planet and that the things would be simple.

The truth is, though it’s very important that we put in the right light bulb and change our lifestyles and drive the right car, if we’re having to have to drive a car at all, and so on and so forth—we actually can’t make the math of climate change really work that way. If we’re going to do what we have to do in the short window of time that physics and chemistry allow, then it will be through systemic change that it happens.

Hence, our moral duty, our ethical duty, strikes me as much less involved with changing a light bulb and much more involved with doing the more difficult work of organizing, to change those structures of power and systems that lead us where we are.

So that’s the work that we engage in the most at 350, though we’re all cognizant that you need to also walk the talk as best you can. When I’m at home in Vermont, I have a very light carbon footprint. My house is covered with solar panels and we eat local food and I drive the first hybrid Honda car in the state of Vermont, so on and so forth. I blow all that the minute I head to the airport to go out and organize. I tell myself it’s because, in the end, organizing is actually how we’re going to get this done, if we’re going to get it done, about which there is no guarantee.

MARLENE SPOERRI: In terms of where we are in the impact of that organization, I think, given what we’ve witnessed in the last presidential debate and where we are in the political discussion right now, despite all that organizing, it seems like the environment, climate change, simply is not a political issue.

BILL McKIBBEN: Which is very interesting, because the polling—and there was a new poll out today—illustrates that now upwards of three-quarters of Americans are cognizant that global

warming is underway, and the polling indicates that candidates would actually do well to talk about it.

Which leads one to the question—and this is I think in some ways the key question—why we haven't as a society engaged in dealing with this problem, why there has been in Washington a 20-year bipartisan effort to accomplish nothing, entirely successfully.

I think the answer mostly has to do with the incredible power of the fossil fuel industry. This is the richest industry that the Earth has ever seen. No hyperbole. Exxon made more money last year than any company in the history of money. *[Editor's note: Check out Steve Coll's Carnegie Council recent talk, Private Empire: ExxonMobil and American Power.]*

I'm no theologian. I'm a Methodist Sunday school teacher, which isn't saying that much, but even from that standpoint, I think I'm safe in saying that these companies have more money than God. One of the things they have effectively used it to do is to make sure that their completely amoral campaign of altering the planet's atmosphere remains undisturbed.

They're the only industry that's allowed to dump their waste into the atmosphere for free. Nobody else. I mean if you walk down the block to Lexington Avenue and you go into the first restaurant and ask the guy, "What do you do with your garbage at the end of the night?"— he'd like to be able to just shovel it out into the middle of Lexington Avenue because that would be cheaper than paying someone. But if he did that, Manhattan would have more rats than it already does.

Almost a mark of civilization is that we clean up after ourselves—except if you're the fossil fuel industry. And because they don't have to, they are exceptionally rich and they will defend that, even though it's now clear to them—really has been for a very long time—the damage that they're doing.

One needs always to understand just how radical that is. This piece I wrote for *Rolling Stone* this summer, that went kind of oddly viral, laid out in just purely mathematical terms the uncontested facts of the situation.

The world's governments have agreed that two degrees is as much as we should heat the planet, at most. That's the red line they have chosen. It's much too high, since one degree has melted the Arctic, but two degrees is the one place we agreed on.

Two, the scientists tell us basically with pretty much precision how much more carbon we could put in the atmosphere and have any hope of staying below two degrees, about 565 gigatons.

Three, scariest, the fossil fuel industry has in its reserves ready to burn 2,795 gigatons, or five times as much—and they will burn it if they can get away with it. That's what their share price is based on. Exxon by itself, one company with 10 guys or something on its board of directors, has 6 or 7 percent of the carbon necessary to break the planet, and they are going to burn it, and they spend $100 million a day looking for more.

That means that they are, I think, a rogue industry, outlaws—not against the laws of the state, because they basically get to write the laws of the state—but outlaws against the laws of physics and chemistry. Understanding the radicalness of that is really important.

Environmentalists in this case are deep conservatives trying hard to preserve a planet something like the one that we were born onto. Radicals work at oil companies. If you're willing to make your fortune by altering the chemical composition of the atmosphere, then you are engaged in an act more radical than I think any human act I can think of in the past. That's what we somehow need to internalize if

we are going to build the movement necessary to break their political power before they break the planet.

MARLENE SPOERRI: And yet, as much as you make this ethical argument, there is, in a sense, an ethical argument to be made on the opposite side, which is often made, and we all hear it in commercials every day, which is this notion that if we exploit domestic energy resources, for example, we will be creating jobs. The criticism that is lodged against environmentalists is that essentially if we go down this path it's going to be a job killer.

BILL McKIBBEN: If you wanted to cast around in our economy for what thing would create the most jobs if you devoted the resources to doing it, it would be rewiring our country for clean energy. Task number one is insulating properly every house in the country and task number two is putting solar panels on top of as many of them as you can. In neither case is anyone going to ship their house to China in order to get it insulated. It is going to have to be done here by people who know how to swing hammers, the people who are no longer employed building McMansions because we don't need any more of those. Anything to do with renewable energy is far more labor-intensive than anything to do with fossil energy.

The cost, the real cost, would be to those companies now making huge windfall profits selling fossil fuel. They could, of course, rejigger themselves as energy companies, not fossil fuel companies, and they'd do fine. They just wouldn't make the absolute historic profits that they're making at the moment.

When we talk about Americans being addicted to fossil fuel, I think we basically have it wrong. We use too much energy and we should use a lot less. But none of us care where it comes from. We'd be just as happy if it came from solar panels and windmills. The people who are addicts are in the executive suites of big energy companies. They're addicted to those profits right now. Until we put, among other things, a serious price on carbon that reflects the damage it does in the atmosphere, that internalizes those externalities, then we'll continue to have the greatest market failure and moral failure we've just about ever seen.

MARLENE SPOERRI: Can you tell me a little bit more about this notion of the green economy? Tom Friedman, for example, has come out very strongly in this approach that we can essentially grow ourselves out of global warming through advanced green technologies. You are quite critical of that in *American Earth*. Can you talk a little bit about that?

BILL McKIBBEN: My guess is that we may have waited too long to adapt, where all we're going to do is toss out the internal combustion engine, toss in a windmill, and carry on as before. I think that that's going to be actually at this point hard to do.

Unfortunately, one of the privileges that comes with having written the first book about this many years ago is the ability to say, "If only you'd listened to me then, things would have been easier," and that transition would have been easier.

We're already kind of up against it in a lot of ways. My guess is that, because of that, but also because of the nature of the energy sources we're moving to, the world will look somewhat different in the future and, I think, in many ways somewhat better.

Fossil fuel is very magical stuff, but it's only available in a few places. It's highly concentrated and easy to move around, and therefore it has led to a kind of centralization of things. It made sense to build a big, huge power plant and bring all the coal there and ship the power out.

Sun and wind are kind of the opposite. They're omnipresent but diffuse. Just as we're seeing, happily, the rise of a local food movement that begins to challenge the hegemony of the agribusiness model, so too we are beginning to see—and I hope we'll see much more—the rise of a more localized energy system. I look forward to that.

MARLENE SPOERRI: Can we turn a little bit to Keystone and the successes that you had there? Talk a little bit about that. You're shaking your head.

BILL McKIBBEN: "Successes" is overstating it. Environmentalists never win anything but temporary victories, and this one is likely to be more temporary than most, given the resources that the fossil fuel industry has to throw at it.

We got involved in this thing, which no one had really ever heard of, except for very few people, in the spring of 2011. I got involved because my friend Jim Hansen, a great planetologist at NASA, put out a little paper just saying that people might want to pay attention to these tar sands. They're the second biggest pool of carbon on earth. Apparently, if you burned all the economically recoverable oil in them, it would produce more carbon than all the carbon we've produced so far burning everything else on the planet. There's like 140 parts per million worth of CO2 up there in those tar sands.

He said, to put in a way that he thought nobody could miss, "Should we burn this on top of everything else we're burning, then it's game over for the climate."

You would think that when your most important climatologist says that that people in government or industry might—someone might say, "Well, that's not a good idea, game over for the climate. Let's think of something else to do." But as far as I could tell, nobody blinked. It was just full speed ahead with this plan.

So we decided we needed to do something about it, since the decision was coming very soon, and since no one knew about this thing. We thought maybe our only hope was to apply some of the lessons that really great tacticians, like Dr. King, had bequeathed us.

So we sent out a letter. I wrote it and it was signed by a bunch of my friends, people like Wendell Berry and Gus Speth, and said, "People, will you come to Washington to get arrested?"

We had no idea what to expect. As it turned out, much to our surprise and much to the police department's surprise, it turned out to be the largest civil disobedience action in 30 years in this country. In the course of two weeks, 1,253 people went off to jail. By the time we were done, this was very much on the map.

A couple of months later, after we had circled the White House shoulder-to-shoulder with people five deep, President Obama decided that he would take a year to review this and think more about it. That year will be up after the election. If he wins the election, we'll find out whether he was acting cynically or whether he was acting straightforwardly.

If Mr. Romney wins the election, he has declared this will be his first task, will be to approve the Keystone Pipeline. He added that would it be necessary he would build it by himself, an image I find so delightful to contemplate that some part of me almost hopes he has to. [Laughter]

MARLENE SPOERRI: One part of the success you had in Keystone, however temporary that success may have been, is this notion of building somewhat of a nonpartisan alliance, getting

congressmen from both sides of the aisle to back you to some extent. How do you begin to do that?

BILL McKIBBEN: This was really interesting to find out. As soon as this thing got into Congress—we won our delay by being very out and open with the president. Since he had to make the decision, we were sort of in the open field and debating with him. It was sort of the way one imagines politics should work.

Then, once he had made his decision, Congress went to work to try and overturn it, especially the majority in the House. I had grown up being told that Congress was the populist arm of our government. It turns out to be untrue. It just was like a black box. It just disappeared. There were hardly any hearings.

When people started taking votes, it turned out that partisanship was a mild indicator of what was going to happen. A much, much better indicator, in fact a perfect indicator, was how much money people had taken from the fossil fuel industry. If you tell me that, then I can tell you with unerring accuracy how it was they were going to vote on these questions. It was actually kind of shocking in a sense to me. I'm not naive, but I didn't quite understand.

I was up on a dais like this in Washington last fall. The magazine *Politico*, a sort of trade journal for politics in Washington, had their big end-of-the-year thing. They had three panels, one on energy and the environment. It was me and a Republican Congressman named Lee Terry, who had been working very hard to build this thing, and Ed Markey, the congressman from Massachusetts who had been opposing it. We were engaging in that kind of strange banter of Washington—you know, we're just all colleagues even though we have completely different views of the world and it doesn't bother us.

I was doing all right, until at one point one of the reporters said, "How come you think Congress is working so hard, once the president made this decision, to force him to go the other way?"

Without even thinking about it, I said, "It's pretty clear, because big oil wants it overturned and they've told their fleet of congressmen what to go do."

I could feel this guy Lee Terry bristle next to me. "Are you saying we're bought off?"

Part of me is—I am a Sunday school teacher—I felt a little bad. I tried to kind of—but then I just said to him, "You do understand this is how everybody in America thinks that you operate. You take money from people whose interests you then judge. That's crazy. If it was going on in the NFL, if the owners of the Jets and the Giants trotted out before the game and started awarding large bundles of money to each of the referees and the game was decided on which one of them had the largest bundle of money to award, we'd be outraged. It would be on the front page of every newspaper in America. But that it is what now happens in our political system, we kind of take it for granted."

One of the things I've come to think is that on a lot of these issues those of us who are citizens need to be a little willfully naïve now and just say, "This isn't okay. We can't let this keep happening. Yes, we understand in political realism terms Exxon is very powerful and they may well win this fight. But that doesn't mean we're not going to make a fight of it, because it's simply wrong to do this."

Questions

QUESTION: My name is Larry Bridwell. I teach MBA students at Pace University.

A couple of summers ago, I read this book—I think the name of the author is James Lovelock. He talked about this Gaia concept of the Earth. I think he's an environmentalist. What struck me about his work is the emphasis he placed on electricity being the vehicle for civilization and that this modern 21st century civilization absolutely depends on electricity.

I use that as a prologue for nuclear power. As I was driving to public transit, I heard someone talk about marginal nuclear power. So my question is: If we're going to have electricity, are we going to be forced to have nuclear power in the future to offset the loss of fossil fuel?

BILL McKIBBEN: Electricity actually really is important, and we want in some ways to do more things by electricity than we are at the moment, especially move ourselves around. The advent of electric cars or plug-in hybrids and stuff is very good news. It allows us to start getting off liquid fuels quickly—not as quickly as if we were wise enough to use bicycles and buses, but more quickly than we otherwise would.

The question is how you produce it. My guess, having looked at all of this for a long time, is that nuclear power is unlikely to be a very big part of that for two reasons.

One, I don't foresee, especially post-Fukushima, a kind of political system in most of the world that would let it happen.

Even before Fukushima, it wasn't happening. The reason basically had to do with cost. Environmentalists helped shut down nuclear power, but really it was Wall Street that pulled the plug on it. It's too expensive. It's like burning $20 bills to generate electricity. It requires, if you're going to do it, massive government subsidy. If you're going to apply that subsidy, you're better off doing it with other things that will generate more kilowatt hours per buck.

Now, that said, we should keep trying to figure out if there are some ways to do it that are more acceptable than the ones we've got now. You read about developments on the fringes, Thorium reactors and so on and so forth. But my guess is that in the timeframe we've got this is not going to be the place we go.

The good news is we are getting really a lot better at using the soft renewables like sun and wind. There were days this past summer when Germany, which is the one large country, the one non-Scandinavian country, that has taken this challenge seriously, generated more than half the power it used on that day from solar panels within its borders.

Many of you have been to Germany. It's foggy and Wagnerian. Munich is north of Montreal. If one can do it there, one imagines that perhaps Arizona and California and Nevada and places might be suitable for this sort of technology.

QUESTION: My name is Sasha. I work for the NRDC [Natural Resources Defense Council]. I'm an advocate there, so big honor.

Back in 2009, after the climate bill failed, it seemed like a lot of smart people were doing navel-gazing and decided that we should stop talking about climate and we should talk about public health and green jobs and national security and other things. I'm just wondering what you think about that. Should we be doubling or tripling down on talking about climate, or has that become too ideological and we should diversify the message?

BILL McKIBBEN: I may be the wrong person to ask. I know that there's endless conversations on

framing and messaging and conference after conference, all of which I try to avoid going to. Part of the reason is I have never had any trouble getting people to understand this in terms of climate and to understand the huge problem that we face.

Now that said, I think it's quite reasonable to talk about all the ways that it ramifies. In a sense, climate change is less a kind of problem at this point than a sort of lens through which to look at the world, in almost the same way that economics was in the last century. Almost any discipline you can think of, any question you can think of, is now magnified in some way by this problem that we face. I think that probably the pace of events will force us to begin looking at all these things through this lens.

National security—I think it's very clear at this point that the biggest threat anyone can posit to national security and international peace is no longer terrorism or whatever it is; it's that the physical integrity of the planet is unraveling.

When you begin to do things like raise the oceans and make droughts more likely, one of the first things you do is put lots and lots of people on the move. The most destabilizing thing that can happen on this planet is having lots and lots of people on the move. So it's perfectly all right to talk about it in those terms.

And it's perfectly smart to talk about it in terms of health. There was a study last week estimating that 400,000 people a year were now dying from the effects of fossil fuel, including climate change, on this planet. On and on.

But I don't think that there's any use in trying to pretend that we are not talking at heart about a basic physical reordering of the Earth. People need to know that the biggest change that has happened in the course of human history is under way. I continue to trust that as people understand that, they'll begin to make the changes they need to make.

QUESTION: My name is Rose Chafee-Cohen, and I teach high school students at Kent Place School in New Jersey. They sent me with some questions to consider.

One thing that they were curious about was whether you felt population growth was an underlying problem for climate change or whether it was more focused on the lifestyles of different populations of peoples. Maybe you could speak a little bit about that.

BILL McKIBBEN: Sure. And thank your students, please, for their questions.

I actually wrote a book years ago about population, called *Maybe One*, an argument for smaller families. In this case, population allows us to be relatively optimistic. It's the one trend where we've made real progress. Thirty years ago, the average woman on this planet had six children. That's now, even if you factor out China, 2.4 and continuing to fall. A huge change.

The reason that it happened was we figured out the thing that was crucial in order to make this happen, the change that would lead to a really staggering shift in how we live. When you educated women and empowered them to one degree or another, every place around the world, fertility fell like a rock off a table.

Now, that's really good news. It means that we can make changes if we find what the right levers are. The question is what the right levers are for making consumption go the same way, because that's what's driving climate change at the moment. The biggest driver by far is growing consumption

in places with stable population, i.e., China. That's where the next increment of carbon is coming from. Our hope is that a price on carbon might have some of the same powerful solvent effect on that consumption curve that female education had on the fertility curve.

It's true that the current population of the planet is 7 billion, will reach about 9 billion by mid-century, and that's simply because there are still a lot of people coming into their childbearing years. Even with small families, the population will grow for a while before it plateaus.

But that's not the main driver at this point because most of those people are being born in places that use so little energy that it makes no difference. We forget sometimes just how wide that gulf is. I think in my last book I said that the average American family uses more energy between the stroke of midnight on New Year's Eve and dinner on January 2nd than the average sub-Saharan African family uses in the course of a year. So the number of Tanzanians in climate terms is a rounding error.

But it's a very perceptive question because it gets at those questions of momentum and curves and how we bend them. As I say, the good news is it's possible to bend curves sharply. We're not powerless. We can change.

If you think about it, one would have imagined that fertility was far more hard-wired into us in some Darwinian fashion than consumption, which seems, at least on its surface, to be a kind of cultural phenomenon as much as a biological one. So that gives one some hope.

QUESTION: Ron Berenbeim.

Fundamentally, I think this is a global problem and can't focus particularly on the individual actions of the American government or any other single government.

You referenced some of the potential geopolitical issues that might drive some sort of concerted action—migration, hunger, erosion of coastline, and so on; resource wars—all sorts of security and peace issues that arise. Therein, it seems to me, lies some sort of potential for concerted global action. But so far I would have to describe it as somewhat disappointing.

BILL McKIBBEN: I would describe it as pathetic. We've done no more internationally than we've done in Washington.

Look, to begin with, the reason at this point that American action is important is because we're the second-biggest at this point emitter of carbon and, since carbon lasts 100 years, we're by far the biggest source of what's up there at the moment, and in per capita terms we're the biggest emitters by far. No one is ever going to quite catch up with us there I don't think. So what we do has both great physical leverage but also great moral leverage. I mean we're the place where this problem started. If we can't agree to do something about it, it's a bit rich to ask the rest of the world to do something. That said, if we do act, it is still going to be hard for the rest of the world, the poor world, to act.

We talked before about the ethical issues on the other side. Jobs in America doesn't strike me as the key one because, as I say, I think we can produce lots of jobs doing the right thing.

The power of the fossil fuel industry is one of the two huge obstacles we face. The other is the gulf between rich and poor in this world, which was always a sin and is now a tremendous practical obstacle to getting done what we need doing. If you're in China or India or anyplace else right now, the cheapest, easiest way to repair poverty is to do exactly what we did, which is burn a lot of coal,

because it's lying around and it's cheap.

We have to, both out of practical necessity and out of moral necessity, figure out how to help those developing parts of the world to leapfrog the fossil fuel era and go straight to the energy future, to do with energy what people did with, say, communications, where we skipped the telephone-pole stage and went straight to cell phones. It's going to be harder here because it's more expensive and whatever else. But it's quite possible to imagine and begin to see village-scale solar or that kind of thing emerging.

And it's quite worth remembering that other countries have begun to make really far more interesting commitments to a renewable energy future than we have.

I did a long piece for the *National Geographic* last year on China and energy. China obviously has made lots of mistakes emulating our model, putting up lots of coal-fired power plants. They have also done more than anybody else in the world on renewable energy. By far the biggest installed renewable capacity in the world, a huge percentage of our renewable capacity, is solar hot water heaters in China. Two-hundred-and-fifty million Chinese, 25 percent of Chinese, when they take a shower in the evening their water is coming from solar arrays on the roof, compared with less than 1 percent in this country. Most of that 1 percent in fact goes to heat swimming pools.

The thing that really brought home to me the craziness of this was a day spent with a guy named Huang Ming, who runs the biggest of these solar hot water companies, Himin Solar. He is a very rich man now, but an engineer and a good guy.

We talked for the afternoon. Then he was describing his private museum of artifacts. Some of them were pictures of him with world leaders and this sort of stuff you'd expect. But in the place of pride was a kind of rusting solar panel. He said, "Do you know what that is"

"No."

"That's one of the solar panels that Jimmy Carter put on the White House in 1979 to generate hot water and that Ronald Reagan took down in 1985 because he wanted manlier forms of energy than that." [Laughter]

When I saw that it just brought home to me our political failure and the fact that we could lead in a different way.

Copenhagen and the great climate summit there in 2009 was the place where in a rational world this would have had a good Hollywood ending—faced with the invading aliens, the world would have come together to mount a concerted defense. Instead, it was a horrible failure.

I was prepared to be—I was—very depressed. But we brought the largest delegation to Copenhagen, 350 young people from all over the world. Many of them that last day just kept coming up to me and saying, "Don't be completely depressed." These were kids from places where reality intrudes more than it does here. They kept saying, "We didn't expect to win this right away. We're up against the most powerful industry on Earth. It stands to reason that they will fight hard. We've got to go back and fight harder."

That's what we've been trying to do. The night after the election here we are going to launch a roadshow all across America that just takes on the fossil fuel industry directly and tries to get colleges and churches and institutions like the Carnegie Council to divest their holdings in the fossil

fuel industry, just as we divested from South African business a quarter-century ago.

In fact, we have a wonderful piece of tape from Desmond Tutu, who has been a big help at 350 from the beginning, just saying, "This is the moral issue of our time in the way that apartheid was 25 years ago. Companies are unable to listen to moral arguments, but they are able to listen to pressure. So bring the heat"—basically. He's a little more elegant than that in his phrasing, but that's what he meant.

We are going to try. We're going to do it first here and then we're going to do it around the world. We're having a global youth summit in the spring in Turkey. We work in every country on Earth except North Korea, so I don't know if we can get North Korean youth to attend—but from every place else there will be people there.

One of the reasons we are doing it is to sort of say, "The UN is not accomplishing at the moment what it needs to accomplish. In fact, it's acting more or less as a kind of sham, a kind of cover, for inaction. Its endless series of annual conferences that get nowhere are a disgrace. It's time to call them on that and say, 'Here's what we need and here's what we're going to be working for.'"

We'll see.

QUESTION: Pat Hatry. I'm a lawyer. I did a climate ride to Washington.

Can't we do something in a more positive vein? For example, I know of a place in the Monadnock region in New Hampshire that's way up on a hill, that's got 300 acres, and it's always windy, it's always sunny. Couldn't we get a group together to do a pilot kind of thing with lots of windmills? We'll have to fight the city and the state and the hills—god forbid, the ridge would change—and make a lot of electricity and show by example what we can do when we harness people.

BILL McKIBBEN: We've already done this. We've got plenty of examples now around this country that this stuff works just fine.

The reason that we don't have more is not that we don't know that it works—we do. It's that as long as we allow this special perk to remain for the fossil fuel industry, as long as they don't have to put out their waste, then the competition is always going to be lopsided. It's always going to be artificially cheap to use fossil fuel. That's the reason that we don't progress faster.

If things cost what they should cost, and we can do that without bankrupting anyone, if they did, then those scales would tip.

At this point I don't think we need the technological demonstration anymore. We know it works. At this point, having waited this long, market forces will help, but we are also going to need a kind of almost wartime footing in order to do things with the speed that we need to do them.

But you're very right, there's a lot of wind and a lot of sun going to waste every day across this continent and around the world.

QUESTIONER: And the ocean waves, too.

BILL McKIBBEN: And the ocean waves.

QUESTION: Hi. My name's Joe Rinehart. I've been working for a long time on issues of mountaintop removal and supporting mountaintop removal activists. I've also come to see there's a lot of other

issues, especially in these affected communities, or in the Bronx or any community. I was wondering, how do we do climate change organizing that also empowers people—either solves secondary problems, like lack of economic development—or how do we do the technological change or how do we do the organizing that empowers people to have change?

BILL McKIBBEN: First of all, thank you very much for that work. We get to work a lot with people working on mountaintop removal and on fracking, and the people who were on the front lines in the tar sands who are often indigenous people. The same thing around the world, all over the world.

It actually turns out to be just the worst possible curse to live in a place with fossil fuel beneath the soil. I'm very grateful for the fact that Vermont, where I live, has nothing of value underneath the ground.

We can't solve all problems at once. If we wait until the point where we can, then we won't solve any of them. But we have to do these transitions with people in mind. Everybody who has proposed, say, a price on carbon or a cap-and-trade law or anything else has tried to do it in a way that would have lots of money for retraining people who are currently mining coal or whatever it is, because they don't deserve to be the victims of that kind of transition.

That said, it's going to be hard everywhere. We are going to make changes in pretty much every facet of our lives if we ever take this really seriously.

We can't let, for instance, the argument that there are 3,000 or 4,000 jobs to be had building a tar sands pipeline become the argument that sways the day. We have to say, "Realistically that's not worth the cost in environmental damage that it creates."

I think, as I said, that the clean energy future that we need to head towards would be far more beneficial to more people, especially people lower on the totem pole, than the people who benefit from the fossil fuel industry.

My mother's family is all from West Virginia, so I know that coal has been a curse on that part of the world for a very long time. But it's an ingrown curse now, and getting rid of it is hard as well. None of this is easy.

QUESTION: My name is Andrew Chinworth. I'm a graduate student at NYU studying energy and environmental policy. I'm originally from Indiana, and I spent the summer there in a town that could have come straight out of a Wendell Berry novel, and I got to experience the drought first-hand.

When people talk about the drought, they talk about the corn and the soy crops. But the USDA [United States Department of Agriculture] just released numbers that they're making the second-highest amount that they've ever made in history. So the people who are really hurting are people running things like CSAs [community-supported agriculture] and things that help supply farmers markets.

Is there hope for switching what we are subsidizing, and is there hope for that future? Can you talk about that?

BILL McKIBBEN: Absolutely. This is a very good question.

The first thing to be said is this drought and this summer were really epic. July was the warmest month ever measured in the United States—any year, any month. Still 70 percent of the country is in

drought at the moment.

And you're right, the biggest victims, at least for the moment, are not corn and soybean farmers. Their crop insurance will carry them through. There are victims among people growing other things. And of course the biggest victims of all are the people all over the world who have watched the price of cornmeal go up 40–50 percent. For you and me, when you buy a box of corn flakes you pay more for the box than for the corn. So we can basically cope with this. But if you have to get up every morning and find the coins to go to the market to buy the cornmeal to make the tortillas for your family, by far the biggest thing that happened this year was that the price of cornmeal went up 40 percent, and wheat right behind it, and everything else.

We should obviously not be subsidizing what we subsidize. The next farm bill should be a food bill, and it should have to do with making the transition away from agribusiness to growing in the ways that we know we can grow that will do less damage to the environment and be more resilient in the face of trouble coming.

One way to make that happen is to put the price on fossil fuel that it deserves. If we do, it will be much harder to conduct that industrial agriculture that has reduced our farm population to the point where only 1 percent of Americans farm, half as many as are in prison.

The good news is—and it is good news, and it allows us to end on a happy statistic—the USDA said last year that for the first time in 150 years the number of farms in America is increasing instead of decreasing. We see all the growth at the small end of the scale, with people beginning to produce food for their neighbors, for the people around them, not just pour it into the big corn syrup commodity food stream. That's good news.

It reminds us that a different world than the one we live in is possible. That's good news because the world we live in and the way that we live in it is not in the end tenable. That's what it means when the Arctic melts. That's not a good sign. That's a sign that what we're doing we cannot keep doing.

So for a variety of reasons, ethical and prosaically practical, we have no choice but to get off what we are doing. Either that or just go down with the ship. Those at this point are the two possibilities.

If this is a test of anything in the end, it's a test of whether that big brain was a really smart adaptation or not. Was it connected maybe to a big enough heart, a big enough ethical sense, to get us out of the trouble that it is clearly capable of getting us into?

MARLENE SPOERRI: Thank you so much.

Audio
It's wrong to say Americans are addicted to fossil fuel. The addicts are oil and gas company executives, who won't give up their profits. Until we put a price on carbon that reflects the damage it does in the atmosphere, we'll continue to have this catastrophic market failure and moral failure.

Video Clip
It's wrong to say Americans are addicted to fossil fuel. The addicts are oil and gas company executives, who won't give up their profits. Until we put a price on carbon that reflects the damage it does in the atmosphere, we'll continue to have this catastrophic market failure and moral failure.

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