

Climate Crisis, Designer Babies, Our Common Future
An evening with John A. Powell and Bill McKibben

Marcy Darnovsky: Okay, well I am Marcy Darnovsky, from the Center for Genetics and Society. Wow. And I am here to welcome you tonight. And we're really excited about this conversation tonight. We think that the idea is to bring together a set of issues, a set of critically important issues that aren't often considered together, and to bring together a wonderful set of speakers who haven't been on the same stage before tonight, so this is a first. And to have them help us think in smart and engaged ways about these very urgent issues. _

So for us as the Center for Genetics and Society, we see that both climate change and proposals to control all the traits of our children in future generations, that these are both connected, that these are connected to each other and that they're both urgent challenges of social justice.

But to be honest when we came up with this idea for an event called "Climate Crisis, Designer Babies, Our Common Future," we really were not sure what to expect. We didn't know if other people would see the dots that needed to be connected the way that we do. And actually what happened was that the registration started pouring in. And we got up to 400 for this 200-person room and we said, oh we'd better stop. And we put a notice and we put a note on the website that said, "Sorry, we're not going to be able let you in," and the registrations kept coming in. So there's interest in it, and I'm really happy that you're all here, with seats, with stickers, that you will be with us tonight for this conversation.

So before we jump into it, I just want to take a very few minutes for some housekeeping details and introductions. So first the plan for the evening: We're going to begin for the first hour or so with Osage offering John and Bill some questions and having them talk with among themselves. And after about an hour we're going to turn to your questions, and we're going to wrap up around 8:00 or shortly thereafter, not 8:30 as some of the publicity says. So we are going to leave about 20, 30 minutes for questions from the audience and there are two ways that you can submit questions. And you can do it either way at any time throughout the conversation.

So the first way is the old fashioned index cards that were on all of your seats. You can write your question on that, and Osage will pause a little bit before we turn to audience questions. And remind you about that and ask you to pass the index cards to the center and then we'll collect them from you. So the people on the aisles in the center, if you don't mind holding on to them for just a few minutes.

The second way that you can submit questions is at any point during the conversation, you can email your questions to the Gmail address shown at the bottom of these screens. So it's CCDB1018 which stands for, climatecrisisdesignerbabiesoctober18th@gmail.com. And we'll try to get to as many questions as we can.

Two more logistical points, please silence your cell phones is number one. And number two, I wanted to let you know that we are recording this event and the event will be posted on the websites of the sponsoring organizations. And we'll send you an email if you've registered so that you will have that URL.

Okay so now a few words about this evening's co-sponsoring organizations. The Haas Institute for a Fair and Inclusive Society at UC Berkeley is the first. And the Haas Institute brings

together scholars, community advocates, communicators and policy makers to identify and eliminate the barriers to an inclusive, just, and sustainable society, and to create transformative change toward a more equitable world. And we have representatives from the Haas Institute here. John is the director, Osagie is a fellow, a professor; I'm going to introduce them later. So, I'll tell you there's a real title and the chair of research cluster from the Haas Institute and other folks in the audience.

The second co-sponsoring organization is the UC Berkeley School of Public Health whose mission is to improve the health of the most vulnerable populations in California and worldwide. And we have many thanks to give to the School of Public Health for making this wonderful room possible, and for making this nice reception that we had just before we started possible.

And the third co-sponsoring organization is the Center for Genetics and Society, my organization. And we're an independent social justice organization. We're based here in the city of Berkeley. We work to ensure an equitable future in which human genetic and reproductive technologies benefit the common good.

And I invite you and urge you to take advantage of the many resources and riches that each of these organizations has online.

So now I want to just very briefly introduce our speakers for tonight and I'm going to start with John Powell, who is the director of the Haas Institute for a Fair and Inclusive Society. And professor of law, African American studies, and ethnic studies and that's all here at UC Berkeley. John's writing over the years has focused on issues including structural racism and racial justice, poverty and housing, voting rights and affirmative action, spirituality and social justice, and the needs of citizens in a democratic society. His most recent book is titled "Racing to Justice: Transforming Our Concepts of Self and Other to Build an Inclusive Society". And I wanted to add that under his leadership, the Haas Institute has organized a series of biannual conferences called "Othering and Belonging". Which has the wonderful tagline: "Advancing scholarship, narratives, movements, systems and policies that support a more fully inclusive we."

Bill McKibben is an author, an environmentalist, an activist. Early in his career he was a staff writer for the New Yorker and then in 1989 he wrote a book called *The End of Nature*. Which is widely credited as the first book on global warming for the general public. In 2008, he with a group of students at Middlebury College co-founded the organization 350.org.

And I think there's some folks here from 350 tonight as well. 350.org is the first global grassroots climate change movement and it's organized 20,000 rallies in every country in the world except for North Korea. Bill didn't personally organize all 20,000. But Bill has been recognized for his work by the Right Livelihood Prize, the Gandhi Prize and the Thomas Merton Prize. And he's written more than a dozen books. And the most recent, which he actually was the instigating factor for tonight's conversation is called *Falter: Has the Human Game Begun to Play Itself Out?*. And you'll hear more about that.

Finally I want to introduce Osagie Obasogie. And Osagie actually wears a hat for each of the three co-sponsoring organizations. Two are part of his title at UC Berkeley, he is the Haas

distinguished chair and professor of bioethics in the joint medical program in the School of Public Health here at UC Berkeley. And he chairs as I said, tried to say before, he chairs the Haas Institute's Diversity and Health Disparities Research Cluster. He is also a long time senior fellow at the Center for Genetics and Society. His, a recent book with Becky is well known for in 2013 is called "Blinded by Sight: Seeing Race In the Eyes of the Blind," which describes how blind people perceive race. And just last year I had the pleasure of working with him on an anthology called *Beyond Bioethics Toward a New Bio-politics*. And that's it. Now I have the pleasure of turning it over to Osagie to John to Bill. Thank you.

Osagie Obasogie: Great. Well thank you Marcy for the introduction. So as Marcy noted in her remarks, this conversation starts from a unique provocation. And that's the idea that climate change and human genetic engineering seem like two separate conversations. So the form would be oriented towards understanding how human behavior can lead to dire consequences for the environment.

And the latter more focused on this idea of how reproductive and genetic technologies can allow scientists and researchers to control the traits of future humans. But a closer look lets us, allows us to see that there are, these ideas are shared by common ideology and that both could drastically undermine our human future.

So, this discussion is really oriented towards or trying to bring attention to the role of social values and social structure in thinking through these challenges. And to show that the parameters of the discussion, it's not simply about technical issues such as carbon emissions or how to edit the genome but more fundamentally about how we treat and understand what another and the kind of future that we want to build together.

So, the first question I'll ask is for Bill. And so Bill you're known by most people by your writing on climate change and the climate crisis. So why did you include the idea of designer babies in your most recent book "Falter"? And to those who are unfamiliar with the term *human genetic engineering and modification*, can you briefly go over what that is and what challenges it poses for a given feature?

Bill McKibben: Absolutely. First, what a pleasure to be here. And so many thanks to Marcy who deserves enormous credit for persevering with this question for a long time when it was hard to get people to pay attention. And now is finally, it comes to the moment when people are, it's awfully good to have you here ready to go. And I'm very grateful for all the help over the years and thinking through these questions.

Look, some of this some of this we're talking about very locally, some of this work that what we now called CRISPR technology came from right nearby. And it's fascinating work, incredible technical accomplishment that holds all kinds of promise and not at all to be dismissed.

It's probably important when begin, since not everybody knows all about this, to just make the most basic distinction between what you would call somatic genetic engineering and germline genetic engineering. The first is an extension of medicine as we've known it. It's treating [people] who have an illness—existing people—with something that can be corrected

through. And I don't personally, I mean, there's plenty of questions to be asked about the role of big pharma and how we deliver medical care and so on. But I don't see a philosophical dilemmas and things that arise from the idea.

Germline genetic engineering is very different. It's the use of this technology to improve human beings in embryo to produce new characteristics they would not otherwise have. And ones that they will then pass on, yay, onto the generations as it says in the good book. And that does seem to me something that we might want to pay serious attention to.

I will say just as we start, I mean, when I wrote *The End of Nature* in 1989, we were at the beginning of this discussion about climate change. It hadn't yet happened. We were still talking about something sort of issuing warnings about what would happen if we didn't. Well, we didn't do anything about it. We went full speed ahead. And now we're in a world where, to keep Northern California from burning down, we turn off the power now for millions of people. So that's the smallest of the inconveniences. I mean, there's other people who are already leaving the islands where they've lived for 5,000 years or whatever else because what we've done.

I think one of the things we should say about germline genetic engineering is it would be good to have the conversation before, not after we've turned the world upside down. It would be nice to have that conversation and to have it, at least it overlap in certain ways with what we've all learned about climate change.

The iron law of climate change is: The less you did to cause it, the more and sooner you suffer. They're a series of questions about power and things embedded in all of these questions. But also a series of questions about what it means to be a human being.

One way to think about both these things is that, human beings have become extraordinarily powerful in a way that they never were at least. Maybe you can date it to the first explosion of the first nuclear weapon. But certainly our ability as a species to change the composition of the atmosphere, and hence the temperature of the planet and hence things like the existence of ice caps or coral reefs or whatever. And to do it all in the course of 30 or 40 years is a pretty remarkable extension of our power.

And now the possibility to change what human beings have been for as long as there have been human beings is a pretty remarkable thing to contemplate. A pretty remarkable extension of our power, our size. And so we should think long and hard about it. And that's why it's so good to be having these conversations now it seems to me.

Osagie Obasogie: Thank you. And so, John, much of your scholarly work and advocacy has focused on civil rights and civil liberties, structural racism, housing and poverty as well as democracy. So how have these concerns connect with the climate crisis as well the prospect for human genetic engineering?

John A. Powell: Well, first of all, let me join Bill in thanking Marcy and Osagie, and the various organizations around Berkeley that are supporting this effort and thank all of you. These are

really, really important issues. It's hard to imagine anything more important. And in some ways, so as I was suggesting in terms of reading about my history.

When you hear all this, there's all these different areas and they may sound disparate. But really what I'm concerned about now is I'm concerned about is about human beings and life. And so if you think about it, and I focus most on people who are at the margins. And I'm doing work right now and been doing for the last few years in Detroit around water.

And a lot of people know about Flint, but Flint was actually part of the Detroit Water System. And when I go to Detroit, which is the largest black city in the United States, although it's declining in population. And you say, "What do you think about climate change?" People say, "Don't think about climate change." They say, "What do you think about water?" Then you hear a lot of expletives; people think about water a lot. Literally, people are not getting water. People are dying from polluted water. People can't afford water. And, well, while we talk about Detroit we could be talking about Cape Town. We could be talking about Mexico City.

In the United States there are 740 cities in the United States that is facing a water crisis. And it's interesting that it shows up and the way it shows up is that in the first instance, people see it as race. It's like, "Well, those black people in Detroit they don't know how to actually manage their water."

Detroit Water System actually serves 40% of Michigan. It was built 150 years ago. When they dug up Woodward which is the main thoroughfare in Detroit to repair some of the pipes, some of the pipes were made out of wood. That's how old they were. And at the time that they made those pipes, there were two black people in Detroit probably, maybe three. But it wasn't a black issue.

So, the way society organized around these issues on racial terms. And therefore the solution that came out of Detroit was to separate the water system in Detroit from the suburbs. So now you have an essentially the black water system in Detroit and the whitewater system in the suburbs, and it's the same water system. But the rates are different; the way people are treated are different. So these issues are deeply, deeply connected all the time. And as Bill suggested, if you look at people who are suffering the most in terms of the immediate effects, because all of us will suffer, the earth will suffer, not just people in Detroit, but people in the Southern hemisphere. And they actually express their frustration, their needs sometimes, in terms of moving. So now know that climate refugees outnumber war refugees and the number is going to keep going up. And that gets turned in terms of race. So it's, "Why don't those brown and black, why don't people stay where they—oh, wait a minute, they're under water or the soil is changing."

So, to me, those issues are so integrally related, and one of the failures is to help people see the relationship, to help people understand the relationship. And two other things I want to say about this, and one of the reasons we can't see it in part is like Detroit. And I may keep coming back to Detroit. I'm from Detroit many of you may know that if you heard me talk before. When issues show up in the black, brown, Native community they're ignored. And it's only then when they migrate to the white community it's like, "Oh, we have a problem." And we sometimes lose

decades because we, again, when they show up in the black community, the Native community it's like, "There's something wrong with those people." We don't look at systems. And the other thing of course that Bill does a really great job in his book, is that in order to address Detroit or any of these problems, you need collective action. And we have an ideology that's dominant in the country and in many parts of the world, and certainly here in the Bay Area, where we have what I call progressive libertarians who don't believe in collective action. They think collective action is bad. And some of us who are so satisfied with the map to our progresses fall into that same trend. "I don't join groups. I'm a liberal. I'm a libertarian."

And you can't address climate change, you can't address water, you can't address designer babies at the individual level. Before I turn it back to you, Osagie, let me just, two of the points I want to make.

First of all, Osagie, he's asking questions today but he's one of the few people who's the most creative in terms of pulling different things together. And just we are really lucky to have him here at Berkeley. And I also want to acknowledge Denise Herd who is my deputy director at the Haas Institute. But I should not be here. I flew in today from New York. But that's not the reason I should not be here. I should be on grandfather maternity leave because Monday, my daughter picked up a five-week-old baby. And I should be there helping. But I tell you that because it's pretty cool. But also I talked to my daughter today and she's completely frustrated. Because 95% of the baby formula is toxic. And she's running around trying to get non-toxic baby formula that affects the brain and affects, this is climate change. And where did she, she has to go try to get European. They'd be informed because they don't let them pollute in the same way that the United States does. So it is immediate. This is not an abstract issue. This is an issue that affects all of us.

Osagie Obasogie: Thank you. So next question is for Bill. So much of the conversation around climate change focuses on these highly technical issues such as carbon emissions and the rise of ocean waters. And simply around designer babies isn't always, is often a technical issue about "off targeted" and other types of scientific topics such as that. But in your new book "Falter," you focus on a key ideological challenge that animates many of these concerns. It is this hyper individualism that John touched upon a few minutes ago. And I was wondering if you can elaborate more about how hyper individualism is driving many of these concerns.

Bill McKibben: Sure. I mean, if there's been a guiding philosophy for America for a considerable while now, it's been: You're the most important thing on the planet. You yourself sitting there, that's what it means to live in a high consumer society. Don't limit yourself in any way because that would be bad for the economy.

And the ultimate expression of this, in many ways, would be the ability to, well to purchase and design your child. Think about, let's think about, and one of the great ironies of it is that this libertarian notion that one should be allowed to do it is in some ways the most anti-individual, anti-libertarian idea there's ever been.

I mean, think, there's a thousand good practical reasons that I think we'll talk about, to be very wary of human genetic engineering questions around diversity, around power, around money,

around things that can go wrong. Let's just put those aside for one minute and say what if it works exactly as it should and everybody has access to it. So you go into the clinic and you plopped down your \$5,000 and tweak your child as best you can, get all of the best upgrades, a couple of IQ points and whatever it is that has been advertised for us. So, we'll simplify a little bit here, but this is precisely what the people who write about and fantasize about this industry talk about.

Selecting traits for your child, personality, demeanor choosing on a spectrum that ... and they're not at all fanciful to think about. We know a lot about how you control dopamine and serotonin and things now. So, it's not that at all implausible to think about. Okay, so you've upgraded your child, your child emerges, you go back a couple of years, your daughter's decides another second child, you know. You go into the clinic and you plop down your \$5,000 a few years later. Well, science marches on. Your \$5,000 buys you good deal more this time around, right? Some more by whatever it is. Well, what's your first child now? You're first child now is iPhone 6. One of the features of a technology is obsolescence.

One of the features of human beings for a very long time has been a deep connection back into time with everything that came before. We can look at, cave paintings on the wall from 40,000 years ago and have some reaction to them as if they're from, because they are from people more or less like us.

Consider now from the point of view of the child who has been engineered. You're 12, 13, 14, you wake up some morning and you find yourself feeling unaccountably happy with the world. Is this because you've, I don't know, fallen in love for the first time? Or is it because your spec is kicking in? That you're getting the hit of whatever you've been, well, that's a deeply new thing for humans to have too. I mean, and it goes deeply to the question of what is a human? And how do we want to imagine ourselves? For me, these are the first set of sadnesses that hang over this question just, in a way, as for me, the first set of sadnesses that made me think about climate change in a deep way back at the beginning.

We're not about, I mean we didn't yet have, we could anticipate the practical and dangers and horrors that were coming that people who would have to, couldn't farm in Bangladesh or who would, all of those sort of things. But really we could also anticipate the end of a kind of relationship with a world larger than us. A world that ran to some degree on its own principles. A world that we could fit into instead of dominate. And that sadness for me was what first animated ... it's not so much what animates my work now because now we're in the thick of the fight. But it's worth I think, trying to just for a minute step far enough back to figure out what we value about well, what we value about a child coming into the world.

Osagie Obasogie: Thank you. So this question is for John. So how has climate change a racial justice issue? You talked about this a little bit earlier with regards what's happening in Detroit. But I wanted to give you an opportunity to talk a bit more broadly about how these issues that are often thought about changes to the environment, may have disproportionate impact on certain populations and communities.

john a. powell: Well, we'll talk about that, but not right now. Because I'm going to actually start with the disposition that actually creates the supposition that we should dominate nature not simply who it affects. And actually talk about this some in my book. Because what Bill just described, in terms of, I'll be a little bit provocative in some of you've heard me say this before.

So, who is, who are these people that believe that nature is to be dominated? That we're to extract stuff from the earth and then leave it? That everything has utility to control by someone else? That some parts of life and people are better than already before we even do any design? That certain people are better than other people?

john a. powell: And I want to suggest that's the core of both what we might call ideology of whiteness and more specifically what we call white supremacy. It's believing that certain groups of people are better than other groups of people, and the people that are less than are to be exploited.

And the people that are less than, are often times exploited in part because they're actually close to nature. So why is it that it took so long? We're just coming up on the 100th year anniversary where women got the right to vote in the United States. Why did it take so long? Because we have this whole ideology that women, while we needed them, but we couldn't trust them cause they were too close to nature.

Bill McKibben: Too emotional.

john a. powell: And so those things that was considered, and I say we not because I wasn't considered part of that we. And it's actually very graphic when you look at it, that most, one of the most infamous cases in the United States history is Dred Scott. Which many people think led up to the Civil War and pushed us years earlier into the Civil War than would have been otherwise.

And the issue of Dred Scott among other things was, "Could black people be part of the politic? Could black people be real citizens? Could black people belong?" And the Chief Justice of the Supreme Court Judge Taney said, "Rather blacks were free or enslaved. It was inconceivable that they could be part of the politic." Inconceivable. And that no state had the power to confer upon black people the rights of federal citizenship. And in a sense we're still fighting those battles. So that notion of the right to exploit, the right to extract, right to dominate is already deeply embedded in the ideology of whiteness especially as expressed in America.

And so, it's not surprising then that the people who actually are closest to that ideology, are willing to have a fairly problematic relationship to nature. And one of the books I like is called *Down to Earth*. And the art that makes the invocation that we should not say, "We're humans have advocating for nature." It's more accurate to say, "We're nature advocating for nature." And so, if you accept that motion of superiority, even with the designer babies, we are already into what I would call a racism, a sexism, a hostility toward nature.

And some people, I think in Genesis 1:23, God gave man, man dominion over the earth and every living thing. Wow. What a terrible position, right? So it's already there. It's already there.

And then that extension and anything then that tries to interfere with that is seen as just wrong. Not just as wrong, but it's like we're the best, we're the smartest. And the assumption is if I have power to have money, it's because I deserve it.

And I think we have to go beyond challenging white supremacy to challenge human supremacy. To assume that ... I mean, wasn't it Galileo that got kicked out of church for 500 years? Because he suggested that maybe the earth and by extension humans were not the center of the universe. And some people are reasserting that, yes, we are the center of the universe and you're just here to do our bidding. And that we, does not include people of color does not include women, does not include people with disabilities, does not include nature. If you think about it, and this runs throughout our history.

John A. Powell: The justification for taking land from native people, was that they were not using the land productively. And they were letting the land just exist. And it's like, that's clearly savage. And again, that was a Supreme Court case. *Johnson v M'Intosh* if you want to read it.

So this wasn't just some wild eye, crazy ... this was the court justifying, "Look at them, they're wasting all this land. We could be exploiting this land, we could be mining this land, we could be extracting this land." And so it became both an attack on the land and attack on native people at the same time.

So those things have always been closely related. And I think this notion of supremacy and domination and separation from each other and from nature, runs throughout where we talk about racism, sexism, homophobiaism, and more importantly, whiteness. And I always make the point that whiteness is not a biological or genetic trait, it's a psychological social trait. And we need to, and I say in a just world, no one would have to live their whole life embodied in whiteness.

Osagie Obasogie: Do you want to add to that, Bill?

Bill McKibben: No, I think that that's really powerful. And I think that to go off the last part of that, it is worth remembering that that kind of impulse towards domination appears in a lot of places now in our world. So for instance, the first two designer children in the world were born last year in China. And the Chinese seem to have adopted that. Well, at least that doctor had, but of course he was working as it turns out hard with a lot of Bay Area collaborators to accomplish what he was accomplishing. And it's been good to see that there was at least, and I think Marcy and her colleagues are responsible for some of this, at least some good pushback against that as it emerged. That it started to shock the conscience a little bit of, I think that there probably were some scientists who were beginning to say to themselves, "What are we on the edge of unleashing here?" Just as people are beginning to understand what on earth it is we unleashed as we in the developed world, dug up as much carbon as possible and burned it to get as rich as possible.

And now I mean, it's entirely true. As I said before, that the first I mean, this is the greatest single injustice that we've ever figured out how to do. I mean literally now, I mean, we've taken away through colonialism and 1000 things from people around the world. But to take away the

ability to grow food on the piece of land where your ancestors grew up for the last 200 generations? I mean, that's the almost the last thing to take away, you know what I mean? But as with all horrors unleashed eventually it comes back to bite even those who unleashed it. It was remarkable last year to watch a California city literally called Paradise literally turn into hell inside half an hour.

And those kind of scriptural overtones date right back to Genesis 1:23 and some, because we did not do what we were told in Genesis 2. We failed to dress and keep this garden that we had been given. And instead sought to take from it everything we could. And now that we're going to do the same thing with the wilderness that's represented by the genome. I mean, the eventual biting back here will be when we realize that whatever we are, we're not totally human exactly anymore at the end of it. And that will be a profound I think, moment of reckoning for everyone if indeed, we're still sort of in the business of reckoning anything. If we still have that, if our serotonin hasn't been turned up so high that we're just pleased with whatever's going on, we'll see.

john a. powell: Osagie, if I could just add to that. I think you get this I mean, examples are complete once we started looking for. So think about enslaved black women. The United States slave trade was that it ended in 1806. No more slaves were supposed to—enslaved people—supposed to be brought to the United States. So what do we do? So women, black women became cattle. They became, they literally, black women, their job was to produce babies to be slaves. And the babies could be by white men or black men: It didn't matter. But it was produce babies naturally, not really of their lives, but to be enslaved.

And then later they decided, okay, maybe we have enough black people. So they start sterilizing black women saying you can't have kids anymore. And they didn't just limit it to black women. They said, okay, if you get some quote unquote defect called the disability, you shouldn't have any offspring. So we started sterilizing women who were disabled. And I just came from New York and I was meeting with among other things, Alexis McGill, who's head of planned parenthood and reproductive justice. And today there's 75 lawsuits trying to hold on to the woman's right to control their body. This is attack, right? So there's the same notion that somebody, usually men, feel like they have the right, not just to control their own body, not just to control what they think can do, but they control everybody. And they used, will use the courts and guns and laws to make this happen.

So, this right to control, right to dominate, extends across nature, extends across people, extends and it's so closely related between how we think about race, how we think about the other, who belongs, who is in the *we* and who's not. And we certainly don't include certain people in the *we*, we don't include nature in the *we*.

Bill McKibben: Yes.

john a. powell: Nature is just there to be exploited on and when it's completely exploited, we'll go to Mars and start all over again.

Bill McKibben: And that's no joke. It's worth noting that the one common denominator between all the richest people on earth right now is that they're building rocket ships. Okay. I mean literally that's their, I mean one does from time to time think we might be better off if they departed. That's the end game.

Osagie Obasogie: So, I just remind folks that we will start question and answer session in a few minutes. So, do you have your index cards in your seats? So, jot down questions and move those cards to the middle and someone will come by and pick them up. Then we also have the opportunity to email questions in at the address on the screen.

So, Bill in *Falter*, you're making really interesting ideological and political connection between climate deniers like the Koch brothers and transhumanists who are, it's a group of people who want to use technology for extreme purposes such as radical life extension and enhanced intelligence. So how did these two worldviews connect in terms of the climate deniers and these transhumanists?

Bill McKibben: Well, this goes back to some of this question that we were discussing before about individualism. And one of the things that I try to do in the book, and I've got to say it was the most painful part of the writing for the book, was really spend a lot of time thinking about someone who I think it turns out to be one of the most important political figures in recent history: Ayn Rand. Who I think you can make an argument may be the most important, if most malevolent, political philosopher of our time. Her basic credo is, "You're not the boss of me. Don't tell me what to. No one to tell anyone what to do. Be as selfish as possible." Okay? That's A, not a caricature in any way of her thinking. It's exactly what she kept saying. And B, it's basically been our political credo in this country at least since Reagan. That's what it's about. Collective action, the government that's the problem, not the solution. Do what you want.

And so, you see that with the Koch brothers who want no one infringing on their right to pollute the world as much as they want. They and their many, many kindred billionaires now around the country who are part of this same network. There's a guy I described in the book who is one of their big funders who's done an immense amount of damage in Michigan, who in part was motivated by the fact that the EPA came down on him.

He got mad because they wouldn't let him sell arsenic-tainted mulch for use in playgrounds. Okay. I mean, so, I mean, "Don't be the boss for me." So you go to Silicon Valley and they seem not at all like the Koch brothers. They're all, everybody's driving Teslas and going kite sailing on the weekend and whatever it is.

But they're absolutely in the same place about not wanting anyone to get in the way. I mean, the guy who started Uber, Travis whatever his name was. Literally had Ayn Rand's book cover his avatar on Twitter ... one after another. I mean, that's their hatred of the idea that anyone might get in the way of their disruption of things is ... and look at the results.

I mean, if there's a, you know, analog in the political world to what happened with climate change and the pollution of the most fundamental. In the political world, the incredible pollution

of our minds, are political by the kind of constant, endless iteration of lies and nonsense across Facebook and whatever is the perfect analog.

I mean, right through today, Mark Zuckerberg is denouncing anybody's attempt to in any way control the endless spewing of whatever you want. Well because in the end, he's made tens of billions of dollars doing it so how could it be wrong? That kind of entitlement—to be allowed to do anything you want—it was argued for by people like Rand, not only on philosophical but on utilitarian grounds.

This was the way, and people like Milton Friedman whatever, this was the way you would grow the economy fastest. And perhaps in that, at least in the short one they were right. If you take off all limits on behavior, all attempts to regulate whatever, at least for a little while, things get very large.

If that's your only goal at least for a little while, that's probably what to do. But it turns out that I mean, it turns out that if your philosophical system melts the polar ice caps, that's a bad sign. Okay. That perhaps you need a different philosophical system. And I think at this point, every possible amber light is flashing.

But that's why it's so important to have this discussion around things like designer babies *now*. Because that's the ultimate expression of this. And interestingly, and this goes to what you were saying about libertarian, progressive libertarians and things. There are people who say, plenty of people who say, "Don't tell me what to do with my kid. It's my baby dumpling." And many of them are progressive. "Don't interfere. I just want to do what I want to." Okay.

Just let it be said and I was saying this before. Even if you are an arch libertarian, no one ever thought of anything less libertarian to do than exert extraordinary control over what your offspring will do, feel, think, be, look like. No king has that control over their subjects. These questions around control and power, and individualism are at the heart of, I think both these crises.

Osagie Obasogie: Hey, John, did you have thoughts on this?

John A. Powell: Sure. I talk about in my book about Hobbes, and it's so interesting because someone asks Hobbes the question, "Can someone have complete control? Do we have to do whatever he wants to?" And it was *he*—it wasn't *he* or *she*, it was just *he*. And Hobbes said, "Yes, one person." It is only one person could have the power to do whatever that person wanted to. Everybody else becomes subjugated to that person. And of course, part of what Bill is suggesting is that we're deeply, deeply interrelated. If I burn coal on my land and you live next door, it affects your lungs. When I throw plastic in the ocean, it doesn't stay in my ocean, the whales, the dolphins, the things that we live with and things that depend on, that our lives depend on.

So, the inconsistency of the libertarian and weak intellectual greed that runs through, I mean it's easier to attack the Koch brothers. And although they were extremely effective, and then one question is, "Why were they so effective?" And it was deliberate. It wasn't just accidental.

I mean, they try some things they fail, they try some things. They want no government taxing them, they want no government regulations. And it was an ideology that they were deeply embedded in and they spent billions perfecting it.

And then we have a different version of it here in the Bay Area, where people are constantly basically saying, “I don’t want anyone telling me what to do. I don’t want anyone telling me what to try, I don’t want, if I don’t want to wear a seat belt that’s fine.” So in the United States context, this is profoundly tied up with race. Profoundly.

The United States is exceptional in its extreme individualism. Exceptional. And if you trace the history of that, because there’s a period where people of European descent and people of African descent and made common cause. They lived together, they had chosen together. They fought against the elites together. And the elites decided that’s not a good thing. “We don’t want these people together, so let’s separate them.” And the whiteness that came out of that was really the middle stratum. It’s like, because you’re not enslaved anymore. And in fact you have a new job and has two primary functions of your job. One of them is to police your black brothers and sisters that yesterday you made common cause with them. And they created the slave patrol, and you were drafted into patrolling those people who literally a few days ago were part of your tribe. And the other was allegiance to the elites.

So I’ll try to remind people that whiteness in the United States was not the top of the hate; it was actually the middle stratum, and service of the elites. That’s exactly what the Koch brothers have been able to do. And they keep, that’s what’s so insidious. What you get is you get anxiety.

Bill McKibben: Trumpism.

john a. powell: Trumpism, you get guns. I mean, last thing I said about Hobbes, most of you probably didn’t read Hobbes this morning. That’s understandable. Hobbes’ idea was that in the state of nature, we were in a constant war of everybody against everybody. Because his idea of people left to their own devices, they would just kill each other. He had no idea of how that, in hunter-gatherer society, people did not kill each other. But that’s, it was factual. In a state of nature we are killing each other. So we come into a society for the purpose not to be solidarity, not to have belonging, not to connect to each other, but to protect our stuff from each other. Our government’s role is to protect our stuff from each other. “I know you are after my stuff, so I want to get government to stop you.” But then Hobbes said, “But wait, we can’t trust government, who’s going to protect us from government that’s supposed to be protecting us from the other person?” And out of that comes the idea of guns. So we need guns to protect us, not just from each other but to protect us from government.

Think about this in the United States, outside of the military and outside of the police and the rapid expansion of guns happened after the Civil War. You got a lot of black people wandering around now who are no longer in slaves. “Oh shit, we’d better get guns.” We meaning white people. And there are 400 million guns outside of the military and outside of police in the United States today. People trying to protect themselves is not working out so well.

Osagie Obasogie: Thank you. Bill, did you have anything to add?

Bill McKibben: No, that's, nothing to add to that.

Osagie Obasogie: Great. Okay. Now, I really want to encourage folks to check out John's work on "Othering and Belonging" that really explores these ideas in more depth. It's a really interesting way to think about the arrangements that we have in society right now.

So, Bill in your book "Falter," you talk the, this idea of leverage or the ability to fundamentally alter ... I say fundamentally and permanently alter the way that the way, excuse me, fundamentally and permanently altered the world in ways that cannot be changed.

So, I was wondering if you could describe this idea and moreover, how does leverage innocence lock in inequality? Do you see any similar dynamics between the concerns around climate change and those in, with CRISPR-Cas9 gene editing with regards to leverage being a way to frame the way that inequality gets locked in?

Bill McKibben: Sure. Well, let's first just say we live in a time of enormous leverage. Because there's a lot of us, but mostly because we live at a level that consumes and uses an immense amount of stuff. Again, noting the *we* that John's been noting. It was literally impossible for people to change the world until fairly recently, because the world was much bigger than we were.

You could pollute wherever you happened to be, but you had no way to melt the ice caps in the Arctic. You had no way to change the chemical composition of the atmosphere. There were, there is, kind of pointed out there were endless and ingenious number of ways to oppress other people and hold them down.

But no one had actually invented a way to make that permanent until one figured out how to start playing around with genetic modification that would be inherited forever. And by the way I mean, we're not, I mean, this is not some set of fantasies that people outside the ... have. Our first books I've read about this many years ago was by one of the guys who was then—may still be—a professor at Princeton, a guy named Lee Silver. And who also now runs one of the most biggest gene, what's the name of his company?

Marcy Darnovsky: GenePeeks

Bill McKibben: GenePeeks. So in his book, he makes no attempt to argue that somehow this technology will be available equally to mean, to his credit, he doesn't even pretend that there is any chance that we will. And why would you, I mean, we live in a world where, in a country, the richest country in the world. But large sections of it can't even get dental care. So why would we think that we were going to make gene improvement widely available? So he says, "Well, here's what's going to happen. Just let's be serious here. Before very long after a few generations of doing this, we'll have two species of people, the gene rich and the naturals. And they won't be able to mate anymore."

That's a pretty extreme version of the things that John had been calling our attention to. And this is not someone who is opposed to this technology; it's someone who's going to try and make endless amount of money off it. He understands precisely where it's going. There's that lock-in, is precisely why we should think about this first.

And you can see what happens if you don't think about things in time by looking at climate change. Because we're now locked into a lot of things. We don't, I mean, there remains, I don't want to be despairing completely about climate change, though it's a pretty desperate moment.

There remain things that we must do, and I've spent my life doing them, trying to make those fights. But let's be clear: We've already locked in deep permanent change this is already by far the largest thing that human beings have ever done. It will be read in the geological record for millions of years to come, what we've done already.

So when you live at a moment of leverage like that, you've got to be a lot more careful. It was memorably Oppenheimer at the explosion of the first bomb at Alamogordo who looked up and quoted from the Hindu scripture from the Gita. He said, "We are become as gods destroyers of worlds."

We were able, because the human imagination at work is a powerful thing. We were able to imagine the effect of mushroom clouds over cities well enough that, so far we've avoided repeating what we did at Hiroshima and Nagasaki. The next year it seems like we may be going to test some of that you know where.

But the human imagination so far, was not capable of understanding that the explosion of a billion pistons inside a billion cylinders could cause the same kind of damage. But it could; we melted the ice caps. The human imagination so far is not yet, I think, capable of understanding that CRISPR technology used unwisely is capable of remaking human beings into something else.

We better get our imaginations in gear because we live in a moment of great leverage. And we ... the people of this time and place, especially the we, that John is describing, are going to make a lot of these choices. And very, very fast—like, climate change we have 10 years of leverage left or so, the scientists tell us. And with germline genetic engineering, we're obviously tiptoeing up to the line and the Chinese went across it, last autumn. So leverage is probably a key word.

Osagie Obasogie: Great. And John, do you have thoughts on this idea of locking in inequality?

John A. Powell: I do. So, a couple of things so, in his book, Bill makes the observation that 70% of Americans believe that climate change is real. So you would think in a democracy, you get 70% of the people saying something was a problem, there'd be action. After Parkland in terms of the mass shootings, I think the number was even higher, where something like 80% of Americans saw that sensible background checks made sense. Never even got a vote ... Yeah, never even got to vote. So when we talk about leverage, we have to ... and I'll just say when I was reading those books, it's a great book it is so depressing. Maybe I should go to the end to see what the happy ending is. I think that's the next book. So, the thing is, what do we need to do?

How do we actually exercise, leverage ourselves? And we make a mistake that in democracy, first of all, we assume we have a democracy that the majority actually will carry the day.

Bill McKibben: That's right.

john a. powell: It doesn't happen. Why doesn't it happen? And how do we actually understand power to move things? And a friend down in Stanford named Doug McAdams writes about this. He says, if you look at the democracies and studied them, you find out it's the people who are best organized, who actually moved on democracy and, and it can be best organized in terms of money, best organized in terms of people or both.

Again, money, in a way, is collective action in of itself. If you're a billionaire that's already leveraged for collective action. Most of us, probably none of us don't have \$1 billion. What we have is each other. Now, here's the route. If we have each other and we can actually make government really work for us, we're never going to get 100%.

So, it's not going to be like you're going to sit down and have a rational conversation with Exxon about climate change. Because Exxon, again Bill talks about this in his book, Exxon knew before we knew the climate change was real. But by some accounts is somewhere about \$80 trillion worth of fossil fuels still buried.

So, they have a different strategy. Okay, we got to mess up the earth, we're going to take the \$80 trillion and we have all these different escape outs. Move up to the top of the mountain, buy an island, leave the planet, bye suckers. And, so, it seems to me that in terms of getting control, we have to have a way of doing that. And I say that because even those of us who are considered ourselves the left have bought into the ideology that we can't trust government and we can't engage in collective action. There's no way that we can actually address climate change. There's no way we can actually address the oil industry. There's no way that we can address the gun industry without collective action, and without an effective government. So, we have to actually move beyond just sort of ...

And what we know is that millennials, which are now larger than baby boomers—so, those are the two largest age groups in the United States. Millennials are larger. They protest but don't vote. Baby boomers vote but don't protest. Baby boomers win, so we have to have a different strategy for exercise and leverage to actually get this job done.

Bill McKibben: I think that that's absolutely right. And one way to say that is, "The thing that Exxon would most like people to believe is, if there's a problem with the climate, the solution is for each of you slowly to change your habits. It's your fault, go at it."

john a. powell: Recycle.

Bill McKibben: Right. And it's very good idea to recycle, and my house is covered with solar panels or not. But I do not try to convince myself, fool myself, that that's how we're going to deal with this problem. Climate change has reached the point where you can't deal with it one Prius at a time. Okay. The most important thing that an individual can do, in a sense, is be

somewhat less of an individual, and join together in the movements that offer some hope for reshaping the basic economic and political ground rules. And that's hard and that's also possible. And there are reasons for hope at the moment.

I mean it was, I've spent much of the last stretch helping organize these climate strikes that we saw in September with 7 million people in the street. And it was great fun to get to work at, to know a little bit and work with people like Greta Thunberg and all the young people around the world who had been just doing their ... There are 10,000 Gretas around the planet doing fantastic work. Extraordinary number of them from indigenous communities, from frontline communities, various kinds it's really fun to watch. So that's good. There's also something mildly undignified about taking the largest problem that's ever existed on the planet and assigning it to junior high school students to solve. So it would be good for everybody to getting here.

I would just want to say one real tribute to the people in the UC system who worked for a very long time and a month ago won a great victory when the UC system divested its holdings in fossil fuels much as it did in apartheid South Africa, a generation before. Thank you so much to people who worked for that. It meant a huge amount.

Osagie Obasogie: Great. Well thank you. So I think this is a good place to end this conversation and to start a new one. So this is how this is going to work is that we've had folks who have been collecting questions from you all, both online and cards. And they have been emailing them to me. So, I'm going to check my email and start reading questions. Here's a part of it. Okay. So first question, what are some preliminary policy recommendations to ensure CRISPR- Cas9 doesn't further help inequities due to race and socioeconomic status? Excuse me.

Bill McKibben: Well, if you ask me, I think actually this is, I mean I think we know where to draw the line at least for now. And I mean, literally it's: You draw the line at the germline for now, it seems to me, and say, "Don't make a heritable genetic modifications in embryo, don't do it." You can go up to that line and we can, there can be long, important ethical discussions about how to do what to do short of that line, how to do it. But until wiser minds than ours evolve, I think we'd be very wise to stay short of that actual line. "Draw a line in the gene," as it were.

John A. Powell: Yeah, I agree. I worry, though, because I don't think it'll work. I mean, once something is there, it's not just the Chinese, right? It's like once something is there, the temptations to do it and the incentive to do it. I mean, just look at the, what's happening here at Berkeley and around the country where parents are cheating...

Osagie Obasogie: Right.

John A. Powell: ... to get their kids in good schools. So if you're a billionaire parent and let's say you have a son or daughter that's who's has an IQ of the greatest genius in the world. Donald Trump, he might say, "Let's do something." Anyway, so I think we have to actually do have to draw that line.

We also have to change the incentive structure. Because one of the things that happens in terms of education and other things is we create the scarcity model. And so, the idea that if you're the smartest, if you're this, then you get to collect all the stuff in opposition to everyone else.

And I'm on a lot of these committees, like the Future of Work. And it's always a question about, "Well, if we don't need all these people to work because of the robots, then what are going to do with the people?" I think, wrong question. If robots are creating wealth, who does this wealth belong to?

And I make two assertions, all wealth is common wealth. Say that again. *All wealth is common wealth*. Now, how we distribute that wealth what we do with it, it should be a collective decision. And we shouldn't decide because I have a robot and the robot does something, that whatever the robot creates is mine.

The same in terms of quote unquote *intelligence*. And then the question, the provocative question I asked is, "If we do have robots"—and just something in the paper that baristas in the Bay Area will soon be robots. There's already one in San Francisco. So you'll get you get your coffee served to you by a robot. But I also asked the question, "If robots are black and white and male and female, would it be paid the same? Just asking."

Osagie Obasogie: Yes. We have a robotic coffee machine on this first floor on this building. And I've been raising that, the ethical issues around that with my students for the past year or so. And so I'll leave it at that.

So, we have two questions that are similar, so I'll read them at the same time and we can dive in. So, the first question is, "What promises and challenges do you see for the potential use of genetic editing technology for the adaptation of humans to climate change?" And then the second question in a similar vein is, "There seems to be some real resonances between geoengineering solutions to climate change and engineered babies. Can you speak to this?"

Bill McKibben: Sure. You want me to take this first? You want to be first to do it.

John A. Powell: Pulling it up and I'll hand it back to you. The first question using genetic engineering to adapt to climate change: Not going to happen. First of all, some people will do that, but that we will be very small. And again, I keep referring to Bill's book. So one imagined solution it's like, we will "science" our way out of this. And I will also invite you to read Harare's book if you haven't already read it. He says, okay, so we're talking about two, maybe three different species. So you have natural humans, then you have enhanced humans, and then you have robots. Do we think they're going to all get together, get along harmoniously? And Harare suggests, he says, "How will robots and even enhanced humans that are more intelligent and more powerful and live longer than natural humans? How would they relate to natural humans?" He says, "If you want to get an idea, look at how humans relate to other animals."

There's nothing to suggest that that's going to be equitable, that that's gotta be fair, that that's going to be humane. So, the idea that we're going to let the Earth go, excuse my French, to shit, but we'll have people who can live in a shithole.

Another book I recommend is called the *Three-Body Problem*. It's written by a Chinese science fiction writer. And there's one scene in one of his books (it's a trilogy) where the elites are trying to figure out how to leave the planet. And they only have a spaceship big enough to take a few people. And, again, Bill addresses this in his book. Not everybody is going to go, they aren't talking about 7 billion people in the hands. They're talking about a select few. Many of them, they're down at Silicon Valley or in Texas where they do oil. They're not talking about us. So I don't think it's a real solution. I don't think it's a healthy solution and it still has this extreme break with nature.

It's like we can conquer nature, but we can enhance ourselves to deal with the fact that nature is no longer supporting us. So to me it's just extremely problematic.

Bill McKibben: Check this out. There's one guy that I write about in this book. What's his last name, Savulescu, Salavescu something Julian from Oxford. Who, his thing about how we're going to adapt human beings genetically engineered them to deal with climate changes. Human beings can't figure out these problems on their own democracy; it won't work whatever. So we're going to breed genetically engineered children to have a lot of compassion. And then they will grow up and pass the necessary laws to deal with climate change. I mean, laying aside the distinct practical problem that this, by the time this race of ... wonder kids reached the age where they're enacting these things, the planet will already be four degrees warmer. Just lay aside the practical problem, which does not somehow seem to have occurred to this Oxfordian and his work. I mean, just think about what that says about his understanding of who we are, which is a species not in any way good enough to deal with the problems facing us.

There's a kind of horrible dislike of human beings at the core of a lot of this work. And of course there are reasons to dislike human beings. There are parts of us there, but there also are very good things about human beings. I mean, we're funny and kind and often .. and worth, we should be willing to defend our worth as a species and to demonstrate our ability to solve the problems that are before us. And the point, this goes directly to the point that you made before. The problem, the reason we're not solving climate change is not because there aren't enough people who care about this and would like to solve it. 70% of people would. I mean if there were any people on earth that one hoped you could retroactively genetically engineer it would be people like the Koch brothers. Who are, do have something, something has slipped in their humanity to the point where their selfishness is so deep that it threatens all of us. But I do not think we should try to retroactively genetically engineer them. I think we should build big movements that stopped them from doing what they're doing.

We're getting ready as the spring comes on to launch. I just had a piece in *The New Yorker* about the way that the biggest financial institutions in the world are deeply implicated in the funding of the ongoing destruction of the planet. We're going to do our best to take on Chase and Citi and BlackRock and the heart of global capital. And we'll see if we're capable of doing this. Look, the two great technologies of the 20th century were solar panels and nonviolent social movements. And the two of those things offer us some hope of being able to deal with these problems, but none of it happens by itself. It's collective action that is required and it's possible. It's not

guaranteed. That's one of the things that's nice about the human condition that we're now in. Nothing is guaranteed. We get to figure it out for ourselves. And if you could build a race of robots that didn't ever pollute the world or cause trouble or whatever else, and they replaced us, that would be unbalanced to me, an enormous loss. Because what would be the point? The game that we've been trying to play for 10,000 years would be over. And it would, you know what I mean? Literally it seems to me it would be *game over*. And that's our job to avoid. Our job is to keep the game going. And if it has, it doesn't have an end, it seems to me, the human game. There's no end point that we're headed for, but there is a kind of aesthetic to that game and it's to try and increase the amount of dignity in the world. That's how you tell if you're playing it well. And at the moment we're definitely not.

john a. powell: So, before we go to the next question, I just want to do one provocation. So, I'm not a humanist, so there is a game but I don't think it's a game of just humans. We share the earth with thousands of other species. So, this isn't just about us.

Bill McKibben: That's right.

john a. powell: We have to, we're in a relationship with them in some profound ways. Sometimes we don't like it. But to me, if we managed to manage to maintain humans and let everything else die or kill everything else not let it die, kill it. That's what it is. To me is still a very sad world.

Bill McKibben: And there are literally half as many animals on this planet as there were in 1970. So we're exactly halfway to the end of that project.

Osagie Obasogie: So this is a question that we touched upon for the past hour-and-a-half or so, but I think it's useful to have an explicit conversation. And the question is, what's the relationship between designer babies and eugenic thinking?

john a. powell: Very close. And it is, I mean, it's the idea that you're designing a super race and especially in this environment. I mean, who's going to make those decisions? Who's going to have the money? There's already implicit in the assumption that if you're rich, you're smart, and if you're smart you deserve it. And people may have cleaned it up a little bit, so they don't say it in terms of racial terms or whatever. But it's a very similar mindset, because some people are deserving. Some people belong and some are surplus we don't need them. Some people actually come very close to saying that, some people are smart enough not to say it but it's right there.

I remember being in discussion with someone about the distribution of wealth in the world. And someone argue that we shouldn't be taking rich people's money from them because they had worked to earn it. So here, let me give you two things. If you made \$5,000 a day and didn't spend one penny of it. And you started that practice when Christopher Colombia got lost trying to find the New World, you still wouldn't be a billionaire. You still would not have \$1 billion. The second is, I said to this person, "So, you're saying people who have a billion dollar estate worked hard and made it, they deserve it." They say yes. And I said, "So you're saying that Bill Gates has worked harder than 37 million black people combined?" Because he has more wealth. This one person has more wealth than all the black people in the United States. Are you

really saying, I get, I believe he worked hard. But the ideology that if you're rich and you're smart, I think that's one of the things that we, the people who organize around Trump, he must be smart because he's a billionaire. And anyway.

Bill McKibben: Amen.

Osagie Obasogie: Do you want to add to that?

Bill McKibben: No.

Osagie Obasogie: Okay. So we're...

Bill McKibben: I want to second that.

Osagie Obasogie: You want to second. So we're just about at time, at our time. And so for our last question someone asked, "Are there any signs of hope?" So we all know, we're all very familiar with how bad it is. And how can things not be so hopeless or what can we do to change or are there positive signs of hope that change will occur?

john a. powell: Well, things are not always a straight line. They are efforts. We live here in California. California is trying, we have higher EPA standards and as you know the federal government that Trump is now talking about suing California and reduce our EPA standards.

I think there's a tension because sometimes people think you generate hope by giving people good news. And if you tell people things are bad, then you just depress them and is not a recipe for action and we need action. But the climate extension people actually, it's generating movement by actually sharing people. But you have to give people something to do, something it's like, "Okay, then what?" And I think but "then what?" has to be willing to be fairly radical. Because sometimes we're hemmed in by, we're willing to make change but we're not willing to.

Again, Bill, I love the fact that a lot of economists will say, we're willing to make changes, but we can't slow down gross national product. In other words, we still have to grow at exactly the same rate. We still have to have as many cars on the road. We still have to, and so all the things that already in place Hima said, we have to be willing to radically shift that. And I think people are, and I think people are willing to do that.

But we have to have imagination, we have to have collective action, we have to reclaim government and insist that government works for us. This is not a political ad, but Bernie Sanders when he ran for president in 2016, they attacked him over and over and over again because he's a socialist. Today, especially a lot among millennials, more people identify as being socialists than capitalists. That's actually an amazing in a very short period of time and socialism in among other things so just kind of a collective action. We need to harness that. So I think that there's some opportunity there.

And I'll just end by saying, hope, I'm not buying it, but neither am I buying despair. We got to engage and act. We don't know if we're going to win this game. We're not going to be around,

but if we don't show up, we definitely won't be around. So, I wouldn't want to encourage us to get active, to get engaged, and we will think and use big brains that we have to make a difference.

Bill McKibben: Yeah, absolutely. And then there's a sense in which the things that we're dealing with now are a question of whether the big brain was a good adaptation or not. It can clearly get us in a lot of trouble, can't it? And my suspicion is that it may have more to do with whether we have big hearts or not that get us out of that trouble.

Yet as reasons for hope I mean, look we've, let's talk about different kinds of engineers. Not genetic engineers, but engineers who've been building solar panels and wind turbines have dropped the price of them 90% in the last decade. That's an incredible gift. That means that if we wanted to make rapid progress on climate change, we could. We can't solve it at this point. We can't stop it, but we may be able to stop it short of cutting civilization off at the knees if we work really hard. And if we do it around the world, as Tama, Nadia and the back of the room has pointed out powerfully again and again. I mean, so that's hopeful if as you say we then decide to act on it. That's the question.

And it's not like humans have not faced deep existential threats before. I mean, our parents or grandparents generation faced the threat of fascism in Europe. And people had to cross the Atlantic and either kill or be killed in order to deal with it. And we don't have to do that. I mean, no one is asking you to go shoot someone in order to get renewable energy built; just the opposite.

We need to work together in a broad global cooperation to get something done. That's the challenge for our time, but we have to engage at the same kind of level. I mean, we have to really engage. The planet is way outside its comfort zone. So it's time for us to be outside our comfort zones, not just doing the obvious easy things, but doing the hard things that movements demand.

And the other thing that we have to do is actually do the hard work of thinking. That's what the work, that's where we are right now around these questions of genetic engineering. It's a question of not ignoring something until it's past the point where we can't do anything about it. It's the question of harnessing our imaginations, which are the best thing about us in a lot of ways. Our ability to imagine things in order to work through the implications of this, in order to think about what it would mean to engineer a child. And it's no accident that the people who are doing the best job of this are science fiction writers. They're almost the only people in our society who have the job of figuring out the relationship between technological change and individual human characters, people. And it's no wonder that science fiction went from being, kind of Buck Rogers "gee whiz" kind of stuff to being the most dystopian part of the bookstore. Because these technologies are too big. They overwhelm human beings. The ability to have a character who is a recognizable human being begins to, in those tellings, they exist only in resistance to these dominating technologies. So there's hope for the moment. That's where I want to end: by reminding us that neither of these are problems like the kind of problems that we're used to dealing with. Where you get to just keep coming back at them over and over and over again. We've got lots of difficult problems like that. Donald Trump tries to take away everybody's healthcare and so people suffer and die and go bankrupt and that's terrible. But it

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doesn't mean that at the end when reason returns to our political life it will be impossible to pass healthcare like every other industrialized country in the world does. Eventually we will. Climate change and the germline are not like that. There are tipping points past which we go where there won't be an ability any longer to deal with. No one has a prescription for how you refreeze the Arctic once you've melted it. And so these are time limited problems that demand our attention now precisely because they ratchet in only one direction.

And that's why it seems, I mean, I did not grow up with the expectation that I was going to be fairly routinely landing in jail. That was not part of my life plan. But it seems to be where you, occasionally I, end up now because these things seem deeply urgent. And because for people who look like me going jail's not the end of the world; it's always the end of the world is the end of the world. And hence one does what one can.

So, one, it's good to be hopeful, but you have to earn the hope. And that's, I mean, I think that's where we are and I feel we've earned certain amount of hope tonight just by raising and talking about these questions. And the actions, subsequent actions of the people in the audience who've been listening to us will determine whether that hope has a justification or not. I look around at you all and I'm pretty convinced that you're already doing the right things and you're likely to continue doing them. Just amp it up to some please. So, thank you very much.