

Climate Change and the Pursuit of Happiness

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Dr. Robinson: This conference is very well targeted towards the important issue of our time. It's not something that is ever going to go away in any of our lifetimes. We exist essentially in a mixed world of nature and culture, of climate technology, population issues and pollution issues, economics, science, and they all add up together into a slurry or a mix that's hard to unpack and talk about because so many features of them come in at once.

Inevitably, this means that this is a talk about ideology. We cannot escape it when we're talking about these issues. I want to first, therefore, define ideology in a way that's useful for me in terms of this talk and I think useful for all us when we think about it. The definition I like to use comes from a French theorist that Bill Burling would have been familiar with. Louis Althusser who asked us to define ideology as an imaginary relationship to a real situation.

This is a good definition because what it does, it puts the emphasis on both the real and the imaginary. There is a real situation. It is not a world of dreams in which we all can have relativistic ideas about and all be equally right. There is a real situation out there, but we can only have an imaginary relationship to it because it's too big. It's beyond any one person's ability to comprehend and even see. We need to have this imaginary relationship in order to filter the facts, the overwhelming input of sensory data and concepts.

It has to have an organizing and principle in terms of being able to understand it, and so we have this imaginary relationship to the real situation. We need it. What I want to do is take us away from this definition that comes out of American culture where you were ideological, but I am correct. When we talk about ideology, we seem to be saying something negative. But I'm saying is that we all have one and that you actually they're necessary.

If you did not have an ideology, you would end up having a disability. You would be similar perhaps to an autistic person for whom the world is just an in rush of incomprehensible data or information that has not been processed.

Let's think about ideology as something that we all have as a person who wears glasses the image of spectacles comes to mind immediately to me. An ideology is like the glasses that you wear and you need it in order to see the world sharply and then the project becomes, can you identify places that are blurred out? Can you identify blinders? Can you identify opacities in your vision that could be clarified by a further self examination? So that you're imaginary relationship to the real situation just simply

becomes more powerful in terms of how much you can see. How much you can understand.

With that image in mind, I want to go forward and the whole rest of this lecture will be an ideological talk. I think that being said is important to self identify my own ideology as far as I understand it so that you can see where I'm coming from. The first part of it is just as obvious as can be. I'm a science fiction writer, and so my ideology is that of a science fiction writer by which I mean to say, the science part of it is a matter of believing in science, of trusting in the work of the scientific community in this world, and in believing and trusting in scientific method.

I'd like to suggest that science itself is a kind of ideology. It's an imaginary relationship to a real situation also. The reason that I think that it is perhaps privileged in this world and powerful in terms of interacting with the natural world is that it has a reality testing. When it states something about the world, it's interested to find out whether that statement is true or not and therefore, investigates it. If it finds out that it's true, that's very good and you can move. If it finds out that it's false, it tries to correct itself.

So there is what you might call a ping factor which has come out of a sonar technology. You put out a proposition; you get a ping back from the world. Then, you begin to revise your position accordingly depending on what you get from the pings of your attempts to understand the world, to investigate it. Science is a kind of ideology and I believe in it. I think it works. I think it's one of the best that we have not only for dealing with the natural world, but also for dealing with each other.

The other part of being science fiction is literature of the future. What's interesting is to look at our culture now as if you were I mean perhaps 200 years further on to look back the present. This is a powerful, powerful imaginative stance to the world. The first that it does is it removes the idea that we are the most sophisticated culture that has ever been. Every culture as it comes along thinks that it is the most sophisticated, not only it is sophisticated its ever been so far, but the most sophisticated that it is possible.

If it were possible to be more sophisticated that we would do it and therefore we are the acme of human civilization. Every body believes this. And then, 20 years later, your fashions and your ideas looked ridiculous. What's interesting is to say, "Well, let's make that mental motion now." Let's say that the year 2009, 2010 is filled with ridiculous choices and strange ideas that in 50 years from now we're going to look antiquated historical. What becomes interesting at that point is to try to identify them now and see if you can become even more sophisticated than your own cultural moment.

This is what science fiction is always trying to do by putting its stories into the future and saying, "Well, given where we are right now, in 50 years, we will be at point X or point Y." This mental process of casting yourself into the future is a very powerful ideological tool.

Given that ideological stance and the American leftist part is I think evident in my work. Any utopian writer is talking about progress and history as being possible and achievable by what we do right now. It's a political stance. As a novelist, I don't want to

identify myself with any particular political program, but merely in the broadest terms possible say that I am an American leftist that from the moment of Tom Paine and he's urging that the American Revolution be even more revolutionary than it was. On through the IWW, all of the strikes, all over the various movements in America to try to increase the prosperity of the working class and all of us together, right up to the current day are the movements that I support with my writing and my speaking.

Now, you have a sense of my ideology to gauge the rest of my talk by. It's a dangerous moment. The climate change that is coming has the potential to be devastating. In that situation, when the question comes up, what should we do about it? I would like to take the point of view of the scientific community in several different ways.

One of the first questions I like to ask is well, what are we as creatures? What would make us happy? How can we get by on this earth when there are 6 billion of us? So I go back to this basic question of well, what is a human being. That takes us into the very dangerous realm of sociobiology. Very quickly, I want to say that the sociobiology when it was introduced by E.O. Wilson in 1970 was immediately denounced and often denounced by people who call themselves the leftist. Because it looked like it was the return of the social Darwinism.

It looked like Herbert Spencer had comeback again and that there were now scientist saying, "Well, look we're just primates and therefore Mike makes right. Therefore, we live in a world where nature is read in tooth and claw." In 1970, this was really last thing that people wanted to hear that humanity has a genetic history of gangsterism, of patriarchy, of alpha males beating up on everybody else with their crew of thugs. The point was that if there was news from our primate history that it was bad news. We didn't want to hear it, so don't bring it up because we needed to get pass that stuff.

But the problem was that we are primates and we were still primates. The work of sociobiology was radically reconfigured by one of the E.O. Wilson's students; her name is Sarah Hardy who wrote a book called Mother Nature. You really opt to read because not only does it give the elements of sociobiology itself, but it also says it's not all about gangsters and alpha males. In effect, these were males of the 1950s and 60s looking only at chimpanzees in one park, and what they were seeing was reinforcing their own predisposition to see certain behaviors.

If you look at different species of primates, you see completely different behaviors. Even if you look at the chimps more closely, you'll find that there are very complex micropolitics going on between the males and the females such as it aren't as patriarchal as it looked. It isn't all about the alpha male at all. You begin to get a picture of even chimpanzees as something like European political structures where there is a presidential figure who does all the ceremonial things and looks like the big person the equivalent of the alpha male, but then there is also a prime minister that actually runs the government and does all the detailed work and makes the decisions about everything that's really important and that would actually be the females of the primate troop.

With that in mind, suddenly what we learned about ourselves as primates becomes I think more interesting and more important to us now particularly since we can't get away from it. We're still animals. We still have physical needs. What I got interested in presuming this train of thought was the idea that we're species that's relatively young. We evolved in the last million years and only became *Homo sapiens* perhaps a couple hundred thousands years ago.

Over a period of a fairly long time like say from a half million years ago to 10,000 years ago, we changed from whatever we were before some kind of pre-human species into the human beings. This is an interesting thing where you can a mother-daughter chain of generations holding hands. The chain of generations if they were actually individuals holding hands would stretch across approximately the width of Missouri, Kansas City to St. Louis. The one side, the older side, would be some kind of pre-human primate and at the other end of the land would be human beings. It's a non-broken chain going from one to the next.

This is rather remarkable thing to think about because that's only 500 miles worth of people lined out. It's not as stupendous or infinite number of generations, and yet the change happens. So you look at that lifestyle. What were they doing in those years to become human? What you'll find is that there is a very, very stable lifestyle. When you look at the archeology, the *Paleontology* of the tool sets of the human beings and what we can tell about this early humans and pre-humans is that they were living the same lifestyle for all those years. They have approximately the same tool kit.

And yet despite that, we were turned into humans and in particular the brain was shifting from about a third of its current size to its current size. In evolutionary terms, that is really fast. That's a huge change. In effect, the brain was blowing up like a balloon in those years to the point where we got the brain is as big as it can get and mother still give birth. We've maxed out on terms of brain size and head size for a species. It all happened in a course of a half million years or so where we were living a stable lifestyle. This is almost a paradox or a mystery.

What was it in that stable lifestyle that was causing the brain to blow up like a balloon and also all of the other changes, physical changes, in our bodies that we're associated with become inhuman. I have a just quick list. This is not a complete list nor do I need to go into too much detail about it because I really think that you will recognize everything that a Paleolithic people did because there are really no surprises here.

Let me just quickly list things that I've thought of, spending the day outdoors, walking and running, looking for things, making things, throwing rocks, cooking and eating, talking and listening, signing and making music, dancing, sex, finding a mate, racing kids, looking at fire, seeing by a moonlight, killing animals and being killed by animals, making ones bed at night, I mean a fresh bed every night, exploring new land, and also feeling emotions and this means all the emotions including terror, religious feelings and the sensation of right and wrong which actually predates humanity, sense of justice predates humanity which we can tell by experiments with our primate cousins who have

very strong sense of right and wrong as we can find out by running cruel little test on them.

What I want to point out? The reason I bring up these activities is because a lot of them are biological activities that we still have to do now simply to stay alive. We still do a lot of those Paleolithic activities. Some of them we don't as much as we used to. Looking at fire which when you think about must have been an absolutely crucial thing for humanity in its earliest days. People were manipulating fire perhaps a million years for their own purposes and cooking with it, using it to scare off dangerous animals at night, and keeping themselves warm.

It was a crucial combination of sensations and emotions, physical reality and yet we don't do it much anymore. When you do see a fire, the eye goes to it immediately. The brain develops without our choices about it. I mean, it's a genetic thing the growth of the brain. There is probably a huge section of the brain that is ready to see fire and looking for it and yet we don't see it as modern civilized people very much. I've read people speculating that perhaps the reason that we like go to the movie so much because you're sitting in the dark with the whole bunch of other people looking and flickering in front of you.

This would explain why it doesn't really matter if the movie is good or bad. It's still a good experience to go to the movies. We call this list of the Paleolithic activities almost all of them in modern civilization have been changed into something else. You can do more of them. You can do them better. They have been technologically augmented or replaced by another activity that is like them but somehow better. Walking, you could actually get in the car and drive. If you're looking for something you can use telescopes. If you're making things you've got industrial power behind you. If you're throwing rocks at things which is clearly one of the main things that Paleolithic people did. Well, we have all the sports, the world of sports, and even shooting rifles and guns all the way up to shooting off nuclear missiles.

You can think of as being spectacularly developed or technologically augmented form of an early Paleolithic activity that we recognize. Now, a lot of the changes the modern versions of these Paleolithic activities, they changed the value of what you do. Say you have to run all day to chase on a deer; you have a certain physical sensations at the end of the day. If you drive that same number of hours you don't have the same sensations even though you've covered a lot more ground.

In many ways, the differences between what we did as Paleolist and we do with our modern technology have changed the value of what's going on. If you throw a rock and you hit something that's moving in a distance it's quite an experience. If you're playing a video game and on the screen by your manipulations with your thumbs you have managed to hit something on the screen this is a virtual version of the physical activity. You don't get the same feelings at the end of it. You don't have the same biochemicals in your brain, but you also have the full knowledge of what you can do as

an animal versus what you can do as a technologically boosted modern human. They are not the same, so as you always exist in the discrepancy between those things.

Some of the changes are radical enough that they completely change what it's all about. Sex is the obvious thing. You have sex as an act between two people if it becomes virtual then you have pornography, if it becomes augmented then I don't what you have. In any case, it's not the same as it was. It doesn't even have the same value in our brains. The replacement activity is not the same as the original activity and we know this. We know this at all times.

You look at what we know about ourselves as human beings. You look at this period of time when the brain grew from a third of its size to its current size and our body has changed into what they are now. Then, you look at the society that we live in now, the culture that we live in now. Many of these activities have also been commercialized. They've been turned into commodities. You buy them. Rather than doing them as free activities you buy a more powerful replacement virtual or augmented activity and this is part of modern consumer society. We know this too.

I have been to the South Pole. I took a flight there in the same way that I took a flight to Springfield, Missouri. I do not feel that going to the South Pole was any accomplishment on my part. Whereas if I had walked there from the coastline which is currently a sport and used to be an exploration then I would have a completely different feeling about what I have done. This is true all across the board. Let's keep that in mind.

I guess, I want to speak very briefly about the mind set. We're therefore in as modern humans which I call it technological sublime. It's a phrase that comes out of French post-modern criticism. As far as I can tell in this original usage, it doesn't seem to mean anything at all, but what I mean by it is that with the help of our technology we're always in the state of the sublime which is a term out of the enlightenment. It has to do with a combination of emotions.

In the enlightenment when people begun to appreciate nature, they wanted to say that nature rather than being a wasteland that had to be crossed or defeated in some way was beautiful. The idea of beauty was inadequate because beauty was a classic notion that had to do with symmetry or had to do with perfection. There were ways in which nature was clearly not beautiful, and yet it was some kind of positive emotion. Edmund Burke and others in German philosophy came up with the concept of the sublime which Burke very usefully defined as the combination of beauty and terror.

Where I feel this feeling most often is in the mountains where the terror comes from the fact that you might fall and die or that you are seemed to be looking at the window of an airplane but the airplane is not there. There is something terrifying about it, and yet it's also beautiful. Though your physical body is telling that you're in danger, but your mind is telling you, no you're not actually in danger. That's the sublime. We live in that state all the time.

Now the Paleolithic I think the true sublime came about at moments when beauty and terror collided and the universe seemed awesome. If you were chased by a leopard back to the campsite but you survived it. Then that was a sublime moment. If lightning struck 100 hundred yards away and you managed to survive it. That was a sublime moment. If the Shaman said, "Ok. Now, it's time to eat these mushrooms and then we're going to go down into the cave and on the roof of the cave there are going to be pictures of animals. We're going to make more pictures. That was no doubt a sublime experience also. But all these were relatively rare.

The norm was ordinary physical reality, and then the sublime would breakthrough like an eruption of cosmic meaning and structures to our lives. But in the technological sublime, every time you get in a car and you're driving 60 miles an hour, there's a part of you that knows that this is dangerous. Yet you may think, "Ok. I'm used to it" but there's always a part of your mind that knows what you're capable of as an animal that knows that this is an extraordinary thing. If you can stay warm when its 20 degrees below zero this is a sublime achievement and has to do with clothing, a very early technology. It goes on like that all up and down the line.

Talking to somebody on the telephone who's on the other side of the country watching television, doing anything on the Internet, or looking at screens, there's an aspect of our mind that knows that this is beyond what we are capable of as animals. Therefore, we always exist in a state of the technological sublime. We don't have a great sense of grounding in what we are as animals because we live in the technological sublime almost all the time.

One of the things about the technological sublime is that it leads to a kind of a sense of incompleteness. Ok. I just scored 50,000 points in my video game and yet I somehow feel like I haven't done anything. Therefore, I will score 100,000 and that will make me feel like I've done something. This is the addictive response. I don't get the pleasure that I wanted of the activity, therefore if I only do it more I will get that pleasure. You keep on in that cycle of addiction so that this works for drugs and it works for all kinds of different activities. The technological sublime leads to a kind of an addictive notion that if only I did more, I would finally get the pleasure out of it that it seems I ought to have, and yet it never happens.

There's a kind of a consumption cycle that we are in as Americans. This brings me to the somewhat indirectly to the subject of this conference which is the sustainability problem. This is also now a carbon burning problem. They all come together in a way. I mean, as Americans, we are 5% of the world's population and we are using up on an annual basis about 25% of the natural resources that are being used up. We are about 5% of the world's population and we burn about 25% of the carbon every year. These things kind of fit together.

It ends up being a consumption problem, but it's not entirely a matter of just your numbers, it's a matter of how much individual humans are using on the planet. We have something like 6 billion people on the planet right now, but the billion in the developed

worlds are using resources that vastly exceeds the people who are in the developing world and who are the poorest on the planet. About 3 billion people on this planet live on \$20 a day or less and so their consumption rate is just vastly lower than the standard Americans.

In our culture, what we need to understand is that environmental impact is very similar to the Ben diagram with the three circles here. What I would say is that ecology might be also a matter of population and pure numbers, but then the famous formula from Paul Ehrlich that the IPAT formula impact equals population times appetite times technology. I think we could say that appetite might relate to social equity and technology might relate to economy. In any case, there are three factors involved that are multiplier of each other. This conference has used a slightly different vocabulary to discuss different aspects of the problem, but it is very true that is a multiplex problem that you need to consider all these aspects in order to make sense of it.

The pure population on the planet is 6 billion headed towards somewhere like 9 billion. That is not the principle problem of impact. It's not surely 9 billion humans. It's how those 9 billion live on this planet. Then, we get to the questions of consumptions, simply how much you consume. Also, questions of technology, is your technology clean or is it dirty? There is an image in our minds of the Stalinist cities when Stalin decided that Russia was going to be turned from a futile nation into a modern nation and something like 10 years. Environmental concerns were not on the radar, and so certain cities were absolutely destroyed in an environmental sense.

There's a great city called Chelyabinsk 56 in the Euro Mountains that is filled with pools of poisonous liquids that are still on the ground and all the metal in the city has rotten, all the concrete has rotten. It's an inhabitable city. This image of a dirty technology is I think something that we need to keep in mind because we all globally exist in a dirty you might say brutal early technology something like out of this image that we developed as quickly as possible in order to ameliorate suffering and increase our ability to do things, our power over nature. But have accidentally, with nobody particularly planning it, had poisoned the planet.

One of the most innocuous gases of all turns out to be most dangerous in these terms, carbon dioxide. The byproduct of us is burning the fossil fuels. It turns out that it should never be in quantities in the atmosphere above about 350 parts per million that when you get above that you begin to go into a jungle planet age. Before the Industrial Revolution, it was 270 parts per million. Now, we're at 380 parts per million. The big discussion is whether we can stop our increase of carbon dioxide at 450 parts per million. This is what the European Union would like.

Many scientists say there's no chance of that happening. We're going to hit 560 parts per million. The whole scientific community has essentially gone off like a fire alarm. They have said, "Wait a second. We're talking about a completely different planet at that point. At 560 parts per million, we're talking about something like 7 or 8 degrees Fahrenheit average global temperature higher than now. At that point, the ice caps melt, the Arctic Ocean ice cover melts in which case we have a feedback loop where things get

warmer and warmer.” We get to jungle planet, the ice planet, sea level somewhere between 7 meters and 20 meters higher which floods about a quarter of humanity.

When you think about what happened to New Orleans after Katrina, you have to think about that happening on a global scale to perhaps a quarter of humanity. We are simply not equipped to deal with an emergency of that kind. Also, a lot of the carbon dioxide goes into the ocean and changes the pH balance of the ocean. It’s already changed measurably since the start of the measuring period. The problem is that more acid ocean might kill off the smallest creatures at the bottom of the food chain that needs calcium shells and their shells would simply get eaten away.

You know how food chain works. The bottom of the food chain goes and everything else above it also collapses, and we are the top of that food chain. This is an enormous problem, and yet we can’t just solve it by turning down the thermostat. It is important to decarbonize as fast as possible, but this is something that we have the technologies for. Another words, there is clean power generation and there is clean transport. They both exist as technological capability already, but the problem is how huge they are and their scale.

When we discover there was chemical that was destroying the ozone layer, we managed to change in about 10 years because that was merely the chemical used to create refrigerator fluid. But this problem that we have with fossil fuels extends to everywhere in life. It is the way that we generate electricity and the way that we move ourselves around in the planet. Both of those are so huge that the scale of the problem is what is daunting. One of the things that are very wearisome about it is that in the ordinary operation of our economic system in capitalism, there is no mechanism for pricing the damaged that is going to be done to the environment and to future generations.

We live in an economic system that systemically devalues the future. It is part of the calculations in ordinary economics that you amortize the damage being done to the future generations with the idea that they can solve their own problems. This is actually beyond that. It’s a complicated issue. I don’t want to spend too much time on this aspect of it, but one way to think of it is that in economics they talk about concept called predatory dumping. If you sell something for less than it cost to make it and then you managed drive out all possible competition then you raise the prices later. It’s called predatory dumping. Sometimes it is illegal, sometimes it’s not.

It is a define method for driving out competition in an ordinary free market place. In this case, it’s a global thing that we’re doing. We are selling all of the things that we make for less than it cost to make it if you include the environmental cost for the future. Our predatory dumping, the victims in this competition is the future generations to come. So you can say that we are absolutely kicking ass on our competitors in this battle because actually they’re not even born yet. It’s very easy to win that battle.

Even if these were not a memorial to build Berlin, I would want to bring up the social justice aspects of this problem. We still live in a world that is essentially a successor to feudalism. Capitalism succeeded feudalism. The basis the power shifted from land to

money, but the hierarchy of power and privilege has never much changed. It is a more mobile society, but its still pyramid based in terms of rich and poor. What you have is a kind of a pyramid where the level of adequacy might be conceptualized as a horizontal line across the middle of the pyramid where half of the population is below the line of adequacy and the other half is above.

Well, the two parts of that social schematic and by the way, the gini figures to see the differential between rich and poor has been measured statistically as not that different now than it was in feudal times if you just look at it statistically and try to account it as a fact in this world rather than an idea or a concept.

In this pyramid, the two most damaging parts to the climate the environmental impacts come from the very top and the very bottom. The poorest people on earth have a horrendous impact on the environment because they need to feed their children at night, and therefore, they deforest to cook their food. So deforestation and top sale lost are intensely damaging at the level of the poorest on this earth. They have no choice. They need to feed their family that day.

On the end of the scale, the very topmost part of the pyramid is also equally damaging to the environment or even more so because of hyperconsumerism, this extra and unnecessary consumption of resource. So social justice where you think of the line adequacy of what would be adequate for human beings which I would say would be food, water, shelter, clothing, healthcare, and education for everybody. Everybody should be above the level of adequacy, but there's no need for it to be a pyramid. It might be nice to have it be an oval or kind of flat oval like egg on its side where there aren't many people who are absolutely at the level of adequacy.

There aren't very many people who are super rich, but everybody is just kind of in the middle and getting along. This is sort of the goal for our civilization. It's no longer just a goal because it's a utopian idea that it would be nice. It's actually a survival goal. It's a funny thing that's happened over my career.

When I begun I was a utopian writer. All he writes about societies where everything is perfect and now 30 years later, I write about worlds in which we managed to survive and I'm still called the utopian writer. The definition of utopia has taken a huge downgrade during this last 30 years. But now, we have to think of it. I mean its utopia or catastrophe. We have to think of social justice as being a climate change technology. It is weird to talk about technology when you're talking about human habits, but I think we need to do that. We need to think about technology as being more than hardware, more than machinery. I mean if you're computer didn't have a software it will be a hunk of metal. So the concept of software, of systems, and ideas being crucial to technology is already there in us because of the way our computers work. They are all like that.

Social justice is a technology. Language is a technology. Law is definitely a technology. The laws are changeable. One particular aspect of social justice is it is very clearly a climate technology is the population problem itself. We have about 75 million more people per year, every year, year in and year out. The world is bigger in terms of

population by approximately the population of the British Isles. Even if we were doing everything else right, the rapid growth of the human population is a problem even though it's only one aspect of the triple problem.

Well, when you look at growth rates of population what you find is in the most developed countries and in the countries crucially where women have all the human rights that are promised to all of us by the UN declaration of human rights which every country has signed then you have replacement rates of about 1 kids per woman. This is below replacement rate. The replacement rate is 2 kids per woman. In all of the countries that have a full robust social justice and women are just citizens like all the men, like all the kids and they have full legal and property rights then you have a stable population.

It's only in the poor patriarchal and messed up countries failed states where you have replacement rates that are sometimes 7, 6, 8 kids per woman. This is unsustainable. This is where most of the growth is happening. What we have seen that the market have approved this. It is in countries like Thailand, Indonesia, and the prosperous parts of Mexico. You've seen population rates of 5 or 6 kids per woman dropped to two kids per woman in a single generation sometimes even less just from the changes of laws and habits of education and full legal rights.

So here very, very obviously social justice becomes a climate change technology. It's really nice I think that we have two such important goals that are intertwined and a positive feedback loop. The better things are in the one hand, the better they become on the other. They began to increase the positive feedback loop of getting ourselves out of this century without a gigantic crash.

I want to finish up and shift over to possibility of questions with the final remarks about this situation is that all of these if you will agree with me hypothetically this describe the situation. Then actually it can be seen as a good thing. If climate change were not bearing down on us and become an emergency problem in the next 20 years, we would not go out in any of these problems with the same surge of urgency. We would also not have an obvious social goal or meaning to civilization in the developed world.

Meaning is important. You need to have meaning to your lives. When we have this situation especially messages to young people, you say the world has been saying to the students and the young people of the world, "Sorry. We torched the worlds. You're going to have to live like martyrs and never get to have the fun that we had in the 1950s." Well, this is just wrong in several different levels. Although we were consuming five times as much resource as the developing citizens of the world, we weren't five times as happy.

If you take any statistical measure of happiness in the United States particular as Americans, we weren't doing that well. The health factors, the social security networks, they all were universally lower than many other nations on earth especially in Northern Europe. In other words the hyperconsumption wasn't making us hyper happy. And in fact, it was making us unhealthy, physically unhealthy. What you got was a situation

where the addictive cycle of consume more and more and more and get less and less healthy.

Now, the drive to decarbonize and to create a sustainable civilization is a project that will return us to a kind of health and happiness are almost synonyms. You can't have happiness without your health as anybody knows has been in poor health statically and as a society and a civilization unhealthy then we can't possibly be pursuing happiness as the original American dream because we've mistaken what happiness was and put our cultural efforts into consumption rather than into a true quality of life.

Now that becomes more and more obvious and so now, there is meaning for us both us consumers and producers. As consumers you can say, "Well, let's look at my carbon burn." We all are going to burn some carbon. Is it really making happier or is it just because it's what everybody else does. One thing the sociobiologist and all biologist have made quite clear is that we are social primates and generally want to do what everybody else is doing. We just conform to the norm of our culture.

Now, when we are looking at our culture we need to make a kind of giant group decision to go against the grain of the last 50 years of American consumption and say, "We're going to do things differently and not only that but we're going to be happier as a result." So as consumers, we go back to a strain of American life that crucially includes Ralph Waldo Emerson and Henry David Thoreau. I mean Waldo can be the book of the 21st century like it was the book of the 19th century and really perhaps the great book of American civilization so far. That book is more relevant than ever, Waldo, Thoreau. You check it out.

And then also, in terms of careers, what do you do with your lives as students? You end up with a lot of debt. You work for all your life. You bring up your family. You end up dying. What was the point? But when you hem culture that is an imaginary moment like this the world where two generations can tell us, there is nothing more invigorating than having a cause that enlist everybody into it and everything that everybody does is devoted to a higher cause.

Now, a war against tyranny is a good cause but it's also war. It's rather destructive. In our case, it's a matter of taking a civilization that has a bad power base and is essentially carbon burn that's going to destroy the biosphere for future generations and rapidly swapping out to a clean tech that will allow for a permaculture and for the kind of sustainability that we're talking about during this conference.

That being the case, there's a project. This is something for scientist, as for engineers. It's for people in the humanities. It's for people on the arts. It doesn't even matter what your field of interest is. There is a way to adapt it to the green economy, the new economy, the green project. Whatever it's called, this sort of emergency project of civilization is a way to design what's good or bad in terms of your life as a consumer and a producer.

This is the way in which I have been arguing that climate change although dangerous as can be is also an opportunity to get ourselves into a lifestyle that is not only something

we can give on to our descendants but also will give us more entertainment and can I say fun while we're alive on this planet. We have to look at it as being a lucky thing in that regard and start working on it immediately. Thanks.

[Applause]

Healthcare is a right. I mean, this is a leftist position. It has been throughout. The Italians would say or had a phrase that their worker's right community held forever, "Health is not for sale." Well, that is not a saying that really computes in America. Of course, health is for sale here but it ought not to be. It ought to be one of the basic rights. It can be arranged such as it is just something that we do for ourselves as a collective.

A lot of this is scary in certain context because it brings up the idea of government. Government has been demonized for the last 25 years or so. I never see the reason for that. I mean, I just go with Lincoln, "Government is of the people, by the people, and for the people." You have to look at it very closely to see what a powerful statement that is.

Government is just us, so every time the word government is said especially when people are somehow cursing it, you ought to replace it with the word we. And then, I think we get a much stronger sense of how much especially in a democracy which we are in. It's really down to us. There's no reason to demonize government per se. The government is just us. We pay private industry to do private things. The whole demonization of government has been a mistake.

I think in the last year or so it has become easier to say that without surprising people. Yes.

Male audience 1: You said earlier about 300 parts per million from NASA. Do you think leader currently starting out? Do you think about 300 part per million you think that how many parts per million could we start?

Dr. Robinson: What's the end?

Male audience 1: That everyone be concern about how many parts per million. Do you think that we're going on that way?

Dr. Robinson: I only am saying what I hear the scientific community is saying. They are absolutely together on this. It's not absolute unanimous, but it's as close as human beings have ever been that we need to keep it below 450 parts per million. There is a group you can look at called 350.org that says that whenever it gets above 350 we are badly in danger of cooking the planet. They advocate that we actually have carbon sequestration that we actually draw down some of the carbon we've put up there. It's going to bump up for a while.

During most of our lifetime, it's going to continue to go up because we can't possibly change our technology fast enough even the fastest we can go. We'll have a rise, but then we are going to have to develop some technologies. It might just be growing more forests that will draw it back down to 350.

James Hansen, if you Google him, and I know he's a controversial figure but his graph comes right out of the data. It shows CO2 levels in temperature tightly tied to each other. For 800,000 years it goes and it's like the blade of the saw, it goes up, it goes down. The two are together. It ranges between 250 and 350 throughout all of those centuries with the high temperature as being at 350 and then for a reason probably astronomical it drops again having to do with the solar system. And then, suddenly with us it just shoots up into the chart, into the graph stratosphere. Those are the numbers I think.

We're adding about 2 or 3 parts per million per year. We're adding it faster all the time. We need to get it back down. And so, this is an overarching cultural project.

Male Audience 2: I have picked in the effect of the major volcanic eruption on the increase in weather.

Dr. Robinson: Do you say does that happen?

Male Audience 2: No. They had a a possible eruption into the order.

Dr. Robinson: Sure. Each time there's a major eruption of the volcanoes on this planet, enough sulfur dioxide is tossed up in the atmosphere that it serves as a sunscreen and things cool off, sometimes for a really long time for the biggest explosions. People had factored that in. And now, they talk about geoengineering, a very dangerous concept. I recognize it because it's basically terraforming for marginal that you do giant things to the planet to cool it down.

Well, it's dangerous because almost everything has been proposed. It seems to have unexpected side effects that might make things worse. One of them has been the toss particular it's up into the high atmosphere and tries to shade us a little from the extra heat we'd be getting. Dim down the sunlight a little. It would be a nice idea, but we would still have to get rid of CO2 because of all the CO2 falling in the ocean and acidifying the ocean.

Most of the big geoengineering ideas given for helping us in this problem are not going to be enough. The only one that I've heard that is really kind of good is just that we need to reforests every place that we deforested. Forests are tremendous in dragging down carbon, so that's one of the great clean and kind of wonderful methodologies that we have.

Male Audience 3: Yeah, reforestation. How can we stop that now with the applied market view and the lost of the forest in the Rocky Mountain?

Dr. Robinson: This is a scary thing that has been mentioned. In some forests are now dying from the climate change has happened already. The drying out of the American West, I mean the American West is already dry; ok? It is less than 10 inches of rain per year. One of the things you might be interested is each bioregion should look at the effects on climate change on its own region. What will happen in the Ozark Watershed? What will happen to Missouri in climate change?

Will you the line of tenacious of rain per year is somewhere west of you and I think you guys get more like 40. I mean you can tell me later, but in any case, what if the line moves and you're getting the same amount of rain that Utah or Nevada gets? That's not a happy prospect. You need the amount of rain that you get to keep the biome that you've got. So, yeah, for us lost is an ongoing problem. There is not a whole lot you can do about these beetle infestations. There is infinity of them. You can't just use pesticides.

It is a super scary thing, but also life is very robust. I mean life wants to live and if we can help it out maybe forest in one area will be dying but we're growing or planting forest in another area. We're just going to have to play the game. We're in the game of global planetary management. We don't know how to do it. We're going to have to learn it on the fly because we got an emergency situation. All these stuffs just have to discuss. The society has to agree. We need to pay for the people to do the work, to do this work, so it becomes a communal project again.

Female Audience1: Well, it seems that before this administration we weren't really discussing these issues. We would want to know about it. It wasn't coming out of the White House. I guess, my question is if reforestation and reducing parts per million are the two things that can happen right now, what is the best methodisms to make that occur? Does that come at the community level? Is that State? Federal? Is it all of the above? Is it global? I think at least in this county, we tend to work towards our stated goals.

Dr. Robinson: Right.

Female Audience1: If we could focus on those goals and save cost and effect to a certain figure, I think that's doable, but I just don't understand the mechanism to get this.

Dr. Robinson: Well, I think it is in everything. It's local. It's national. It's global. It's also in our own lives its personal behavior especially as American since we are such high consumers that what we do matters more than what an individual in India does even. It's also has political factors. It's what you do as a consumer. It's what you do with your jobs as a producer because your students are still choosing their jobs. Everybody who's got a job has a got a different way of approaching that can be devoted to this project or not.

And then, it becomes as voters. Because we are in a democracy, we don't need to convince everybody that this is a problem. That's good because you're never going to convince everybody especially in this polarized political landscape of America right now,

but if you get your 55% people on board that this is important then I think you can make enormous project.

Cultural change happens fast. There is a huge difference in the culture between 1928 and 1932, between 1978 and 1982, between August 2001 and October 2001. You see rapid cultural change and maybe we're seeing another rapid cultural change in the change over these administrations, but I really would like to depoliticize this in terms of the two parties. I mean, I'm just a member of the Democratic Party because I want them to become more left than they are. My parents are Republicans. Good friends of mine are Republicans. What I want to say to them is "That's ok except for the climate thing. Don't let parts of your leadership talk you into the idea that this is not problem or the scientific community are not in agreement on this because they are."

What you see in the polling data is that in 2002, the two political parties were about an equal agreement on global climate change being a problem and that now, they are not in agreement. What I think is happening is that certain element of the Republican Party are misleading their ordinary membership and saying, "Well, the scientists don't agree. This is not a problem. This is just a government take over blah, blah."

I just finished a novel about Galileo. You know, the Roman Catholic Church came down on Galileo real hard. They said, "You know what? The earth doesn't go around the sun. That's ridiculous." You don't want to get caught in saying something like that because it takes a couple of centuries to crawl away from a statement like that. What we've got is something that is almost as clear. The scientific community is saying to us with an almost unanimity that climate change has already started, it's going to continue, and it could lead to a mass extinction event. We need everybody that we could possibly convince to get on board with that. It doesn't matter that it might take more government for a while.

We live in a mixed economy. It's a Keynesian economy. There is government. There is business. They are on like a teeter totter. They have uneasy relationship. You don't even demonizing their side. They're just all part of the modern world and hopefully we can come together on that basis and try to make sure we don't destroy the biosphere for the generations to come.

Male Audience 4: Hi Mike. A lowly elected official and I want to say that one of the things that hope paralysis progress in its regards that people are waiting for the next cheapest technology. As a science, we can write – it could be interesting if you could address this question of doing what we can right now or sit back hoping that Google or General Electric or Cisco or some of that who come along with some amazing like having projects sort of breakthrough, a cold fusion or algae or something. Because that topic, that theme that we're 6 billion people, we can always invent our way out of this problem recurs constantly to the point where we stay around and waiting for it. Can you address that question of what is the balance between work and work, reasonable technologies that can get us out of this mess being paralyzed the way that has been happening?

Dr. Robinson: That's a very good question. I only can judge this as a science fiction writer, but I have been educated by scientists on the topic. I think what we need to do is to not burn up the coal that's available. The amount of oil still on the planet left to burn is not significant. We're going to run out of it before it adds a horrible carbon load to the atmosphere. After a couple thousands years, the CO2 level will go back down.

But the coal, we have a gigantic supply of coal. We could certainly torch the planet if we burn the coal. Its being burn for electrical generation. As ordinary citizens, I think you can just say, "We'll always vote against the burning of coal for electricity." Go to alternatives. You've got wind power. Solar is still a working progress, but wind power works really well. I mean, Spain gets 80% of their electrical power from wind stations already, Denmark about the same.

We've got a gigantic vast windy Midwest. All we need to do is to agree to pay for it and there can be rapid swapping out to already existing technologies. Now, if algae or some other super cool future technology eases the problem that's good but we still have to not burn the coal. The next time you buy a car go for a real small clean burning car, hope for an electric car that you can afford. It works for what you need. With each one of your purchases you do what is called mindful consumption. Is this really helping me? Is it helping the planet? Is it making me happier or is it just what everybody was doing five years ago?

Mindful consumption can help a lot in the meantime. And talk, talk about how we can't burn coal. When people say clean coal, well okay, that's a super high tech technology that doesn't exist yet. It be nice if we get it work out eventually, but in the meantime I think we need to look at wind solar and various kinds of water power, wave power, tide power, current power. There are possibilities in the ocean, but they also are evolving technology. They aren't anywhere near as advanced as wind. This is what I would say.

Let's consider that we have to act, and there isn't going to be a miracle technology. The fusion is always 30 years away. And 30 years from now, it will be 30 years away. It just goes on and on like that.

Male Audience 5: I wonder if you could save the world without what you say is smart consumption about making good consumption total. If it's to a certain extent to which would be smart consumption is being marketed. In fact there's a lot of views right now but the social life wherein. The worst that you could do is take existing part that you have and see it jump in my smaller part is going fuel efficient. This process of manufacturing these automobiles as a genetic consequence. There seems to be a reasonable idea that the answer is good consumption and good side effect that all of consumption has to be taken in the equation. Could you comment on that?

Dr. Robinson: Yeah. That's a good point. All I can say is that we are going to be consuming. We all eat. We all need to get around. I'm a Californian. I drive a lot of miles myself. In a big country like what you live in here driving. You know, we live in two bigger countries for public transport to be all that useful. Smart consumption means being even smarter than the advertising lines. That's why I don't like this word

sustainable development anymore because it seems to be it's been a captured term that now means well let us be able to do what we always did before without changing and that would be nice.

It's that word development which is really code for capitalism. Can we please still have capitalism? I've been talking about post-capitalism which is kind of shocking notion that nobody ever talks about. You know, history keeps changing and there isn't going to be a time when we're in an economic system that can accurately be called capitalism. "Oh, my God!" I say so what? What's this patriotism towards capitalism per se that you hear so vigorously promoted by certain people in this culture. Why? It's just one economic system.

I guess it comes out of the Cold War, but it's not necessary. I think now everything just needs to be rethought words like government and business. What if they were just this is the view from Mars? What if they're just organization A and organization B? And one of them provides all the roads and the airports and the police protection and defense. You give it about 10% of your income. The other one can hire you or fire you and tell you where to move in the country and thinks about, you know over half of the economic value of the work that you've done before you ever saw it.

So which is better organization A or organization B? You can recontextualize all these arguments. I would just say the reason I brought up the long part of my talk about the Paleolithic is that as animals we can be happier with less consumption than we've been consuming as Americans. You can always go back to the – essentially the Paleolithic baseline, I call it. I'm not advocating Ludditism. I like clean tech. You can say the Paleolithic with good dental care as a benchmark for what we want.

There are some technologies that are so good that you don't want not to have them. That's the best I can answer. A lot of what we've been doing hasn't been actually increasing happiness and we could be both happy and cleaner. It's one of those nice positive feedback loops.

Male Audience 5: I just have, I guess a statement from my question. For me, it doesn't really matter whether people believe in global warming or not. It's no longer an issue. The issue is that worthy only purchase on this planet but have the ability to change our future and just a little bit on your thoughts on since we're the only creatures able to do that, isn't our duty to change our future?

Dr. Robinson: Well, I think so. This has to do also with the question of stewardship and also the other mammals on the planet because there are the ones that are really going extinct at a rapid rate the large mammals in particular and also the amphibians. The other creatures that we share the planet with are they are beautiful and they're important. John Miro has called them our horizontal brothers, our horizontal brothers and sisters. This is the good way to think of them. They are suffering badly for things that we're doing that aren't even helping us.

I have a utopian vision of the future of this country that simply has its habitat corridors that the wild creatures have their free ways just like we have our free ways. We get by. We have our agriculture. We have our freedom of movement, and so did the big mammals on this land. It all can come together in that sense.

But you're right. We're the only ones that can make these choices. This stewardship, this responsibility for the whole rest of the biosphere is frightening because we are ignorant. We can't even make soil. I think it's important to talk about soil. I mean, I come from an Ag college. This is an agricultural region, the Midwest that depends on land. We all depend on land and on Ag, and yet we don't even know how to make soil. You can't go down to a factor and make soil. You actually have to grow it the way that you would grow some kind of other crop and yet it's very slow and we have top soil loss.

The sense of responsibility is sometimes a little overwhelming. You look at your kids and you think about their kids and you'll realize that it isn't like we're giving up a beautiful happy lifestyle. We have dysfunctional and you might say neurotic lifestyle that's wasteful not only of the planet but of our own lives. And so, when you see the two, you get into this possibility for a positive feedback loop. Better lives for us and a better biosphere maintenance system at the same time.

This is the project of our century. This is why the young people now have something to look forward to and that they have project. "Ok. We've got to make permaculture." Well, we barely started and yet science is very powerful. Culture is very malleable, very quick to jump on good causes. And so, I recon we can do it.

[Applause]

Thank you.

Moderator: Thank you, Dr. Robinson.

[Applause]

Dr. Robinson: Thanks for coming.

[Applause]

Thanks very much.