

Are Human Lives Improving?

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Announcer: This is Climate One, changing the conversation about energy, economy and the environment.

In 1968, Paul Ehrlich's book "The Population Bomb" warned that the number of people on earth was spiraling out of control.

Paul Ehrlich: *We were worried then about the problems of feeding human society when there was three and a half billion people on the planet. Now we've got way over seven billion people.*

Announcer: This and other dire predictions about humankind earned Ehrlich a reputation as a prophet of doom. Harvard psychologist Steven Pinker, on the other hand, prefers to look on the bright side.

Steven Pinker: *When you measure dimensions of human well-being you find to the surprise of many newsreaders that they're all improving.*

Announcer: Optimism vs. pessimism – are human lives improving? Up next on Climate One.

Announcer: Is our planet's glass half empty, or half full?

Climate One conversations – with oil companies and environmentalists, Republicans and Democrats – are recorded at the Commonwealth Club of California, and hosted by Greg Dalton.

In their 1968 book *The Population Bomb*, Paul and Anne Ehrlich warned of the dangers of overpopulation. These included mass starvation, societal upheaval and environmental ruin. Not all of their dire predictions have come to pass. But unless we do more to alleviate the world's problems, Ehrlich still sees little hope on the horizon.

Paul Ehrlich: *I'm very pessimistic about the future but very optimistic about what we could do. I*

have to say that I've become less optimistic about what we could do, for among other things, of course, because we're not trying any of it.

Announcer: Glass half empty, to be sure. But cognitive scientist Steven Pinker says that, despite dark headlines, in many ways life is getting better for most of the planet.

Steven Pinker: *People are living longer. Global extreme poverty has been sinking, probably less than 10% of the world today lives in a state of extreme poverty... And then education, literacy...now 90% of the world population under the age of 25 can read and write.*

Announcer: On today's program, Greg Dalton explores reasons for hope with Steven Pinker, author of Enlightenment Now: The Case for Reason, Science, Humanism, and Progress.

Later in the program, we'll hear from Paul Ehrlich, who is now a professor of population studies at Stanford University. Greg talked with Ehrlich earlier this year.

First, here's Greg's conversation with Steven Pinker.

Greg Dalton: So tell me how humanity is progressing in terms of poverty, disease, and early death.

Steven Pinker: Well when you measure dimensions of human well-being you find to the surprise of many newsreaders that they're all improving. People are living longer. The average lifespan across the globe is about 72 years for most of human history it was about 30. Global extreme poverty has been sinking, probably less than 10% of the world today lives in a state of extreme poverty. 200 years ago it's more like 90% and in fact, it's fallen just by three quarters just in the last three decades. War is in the classical sense of battles between two armies of nation states is becoming obsolete the last one was the American invasion of Iraq 15 years ago and rates of death and war have been falling. Education.

Greg Dalton: Though people might cite Syria there's still lots of war --

Steven Pinker: There's still civil wars. Civil wars in general kill fewer people than wars between countries although the Syrian civil war is the worst war in a generation. It has set the curve creeping a little bit back upward, but it is still a fraction of what it was in the 60s, 70s and 80s. And then education, literacy, the natural state of humankind is to be illiterate. Now 90% of the world population under the age of 25 can read and write.

Greg Dalton: You write about the optimism gap or optimism bias; that is that people look at their own lives through rose-colored glasses; when it comes to divorce, illness, crime those things happen to other people. Tell us about that.

Steven Pinker: Yes. We as a species are subject to this strange bias where we often think we're luckier than average. Now it's nonsensical, it's a contradiction in terms. But people think they're less likely than the average person --

Greg Dalton: We live in Lake Wobegon.

Steven Pinker: We live in Lake Wobegon, absolutely. On the other hand when you switch the question from what is your life like to what is the country's life like then people turn from Pollyanna to Eeyore they become pessimistic about the state of the country. They think that the nation schools are failing but their own kid's school it's all not bad. They think that streets are, their city are too

dangerous to walk on, what about your neighborhood, oh it's pretty safe. So this is sometimes called the optimism gap, I think one general call is the I'm okay they are not syndrome. And it does distort our view of the state of the nation and the state of the world.

Greg Dalton: So if the statistics say that humanity is progressing and we are wired for optimism then why aren't we Americans happier? There's the world happiness index put up by the United Nations, the U.S. has never cracked the top 10. In fact it dropped four spots in 2018. So if what you're saying is true, why aren't we happier?

Steven Pinker: Yeah, it's something of a mystery why the United States underperforms in happiness. Now the United States is in general a happy country. Most people most Americans say they're happy and we're not in the top 10 but we are in the top 15 or top 20. But we punch below our wealth in terms of our prosperity because in general prosperous countries are happier, and indeed, you know, the USA is on the whole a happy country but not as happy as you'd expect considering how rich we are.

And I don't think anyone really knows the answer; partly it's because maybe because of the large greed, inequality so even though on average we're richer, there are off a lot of people who aren't so rich. Maybe because our social safety net is weaker so that people even if they are doing okay they worry that they are one illness away from ruin. It may also be because there's a kind of disillusionment from the American high of the 50s and 60s where everything just seem to be great. America was a beacon of freedom throughout the world, spreading peace and prosperity holding up the international order. Then there was the disillusionment of the 70s which have gotten worse in the last few years. But the honest answer is no one knows for sure.

Greg Dalton: You mentioned inequality and some people said that the way you approach statistics that the macro aggregate sort of doesn't always uncover the concentration of wealth. That a lot of the gains recently the stock market have gone to very few people which is can be distorted depending on the statistics you use.

Steven Pinker: Well that's a good reason why the stock market is not a very good index of human well-being. So I don't concentrate on the stock market.

Greg Dalton: Or the economy.

Steven Pinker: Yeah. Well it depends what the GDP per capita by itself can be misleading because it doesn't take into account the distribution in the range. On the other hand, globally as I mentioned earlier, extreme poverty is sinking, plunging really. And even in the United States although there has been stagnation of wages for the last 30, 35 years. If you take into account the government benefits, the hidden welfare state. We don't tend to think of the United States as having a robust welfare state. But when you look at things like the earned income credit, the Social Security, food stamps, Medicare, there actually is a pretty a lot of redistribution in the United States. And when you take that into account then the rate of poverty has fallen. And if you take into account what people can afford, that is how much food they can afford, how much clothing, then by that measure too poverty has fallen in the United States.

Greg Dalton: You write about eco-pessimists. What's your take on environmentalism and eco-pessimists?

Steven Pinker: Well I think like most reasonable people I think that preserving the environment is one of our great imperatives one of our highest priorities. But there has grown up around the environmental movement a kind of philosophy that I think has become counterproductive, which is

that humans are a kind of a scourge kind of a cancer on the planet that by starting the industrial revolution and seeking economic growth, we are digging our own graves. That the only solution is to reverse economic growth, live a simpler life like our ancestors a couple of hundred years ago and get back to kind of pristine harmony with the land.

There's an alternative approach to protecting the environment sometimes called eco-pragmatism or eco-modernism associated in part with Stewart Brand here in the Bay Area. The author of the Whole Earth Catalog in the 1970s, which in large part was responsible for kickstarting the environmental movement. But Stewart and others have pointed out that there been many benefits to our capture of energy and deploying it to make our lives longer and safer and richer, to allow us to travel, to heat our homes. But we should see environmental protection as a way of getting the greatest human benefit with the least cost to the environment. That's going to involve a heavy reliance on technology both existing and new to give people what they want and what they are not gonna give up while protecting the environment to the greatest extent possible. It'll never be perfect, as one economist put it. There's an optimal amount of pollution in the environment just as there's an optimal amount of dirt in your house. Cleaner is better, but not at the expense of everything else in life. We're not doing all that well, but we are in many regards a number of corners have been turned and the state of the environment has been improving in terms of urban waterways in terms of air quality other than CO2. And most consequentially for human life in terms of indoor air pollution from burning dung and wood in the developing world in terms of consuming water contaminated with human waste. There's been improvement in all of those measures of pollution.

Greg Dalton: And the current administration is trying to rollback a lot of the safeguards and policies that made that possible.

Steven Pinker: Indeed. It's horrifying. And my own view is that the people who are concerned about the environment in a way almost done themselves a disservice by failing to note the tremendous progress that's been made as a result of the very environmental regulations that the Trump administration is seeking to dismantle. Because if environmentalists say well the environment is getting worse and worse and worse well then the Scott Pruitts of the world will say well, what good are all these regulations, all they're doing is constraining economic growth and putting businesses into bankruptcy. And we have to make a choice as to whether we want to be prosperous or have or protect the environment it's one or the other.

Now what the environmental movement I think should be emphasizing is that we actually not only can have both but we have enjoyed both thanks to the combination of improvements of technology and improvements in legislation protecting the environment. Since the EPA was formed in 1970 even though there are more Americans we drive more miles our GDP has gone up, but the rate of the emissions of the five major air pollutants have all gone dramatically down by an average of I believe more than more than 50% or 60%. It's not enough but the last thing we should be doing is undoing the progress that we have been making and I think it's worth emphasizing that we can have economic growth and increase protection of the environment if we are smart about both technology and regulation.

Greg Dalton: One person that you cite in your book, Paul Ehrlich, author of The Population Bomb, Stanford biologist, you've called him a misguided moralist on twitter. I'd like to play a clip of him. I asked him recently in an interview about your book on enlightenment and here's what he had to say.

Paul Ehrlich: *There are still 600 million people in India who have to defecate outside because they don't have toilets. And the issue is the violence that we have committed against those people and all future generations by working so hard to destroy our life support systems and to use up the energy slaves often for ridiculous reasons that we took from them and that we inherited. It's a complex*

thing but just saying everything is better is fine, if you're a not-too-bright faculty member at Harvard. But if you're an Indian villager or a member of a Chinese minority or are living up in the mountains and so on, the world doesn't look quite so bright.

Greg Dalton: So that's Paul Ehrlich and echoing the critique, well a review in the New York Times which was humanities say okay but don't ask about individuals.

Steven Pinker: Yeah, first of all Ehrlich is totally wrong. In fact it's the lives of people in China and India that improved the most dramatically. As we mentioned, extreme poverty these are the people at the bottom end of the scale. The number in extreme poverty has been plummeting it's actually the people that are complaining are the Americans. The Indians and Chinese actually have a much more optimistic attitude because they see their lives dramatically improve. And the idea that the reason that they don't have toilets is because we've stolen them from them is, historically, it was a little bit inaccurate it's not like several hundred years ago the world had toilets and American and British invaders came to India and plundered them. The natural state of humankind is not to have improve water, or to have sanitary facilities or to have energy to heat our homes or move us around.

There's a big difference in what you think of as the state of nature if you have a romantic view that life was ideal in the past, the kind of fall from Eden, the Jean-Jacques Rousseau view, then you might think that modernity has been a terrible mistake we got to reverse it. If you look back to how people actually did live to the high rates of violence to the high rates of child and infant mortality to the life expectancy at birth of about 30, the fact that people were bound to their village, had no awareness of how life was lived elsewhere in the planet. You realize that modernity has brought us many gifts at a cost that we should not be paying indefinitely, namely damage to the environment. But the challenge should be how do we get the benefits of modernity without the cost in environmental degradation.

Announcer: You're listening to a Climate One conversation with cognitive scientist Steven Pinker. Coming up, how tribal affiliations can get in the way of human progress.

Steven Pinker: *We're Californians, we're Americans, we're Giants fans or Celtics fans...But if your tribal affiliation determines your opinion on climate change or taxation or involvement in foreign wars, that is pernicious.*

Announcer: And we'll hear Greg's interview with the author whose 1968 bestseller earned him the nickname "Doctor Doom." Coming up, when Climate One continues.

Announcer: We continue now with Climate One. Greg Dalton is talking with Harvard psychologist Steven Pinker about human progress and problem-solving.

Greg Dalton: You write that anthropogenic climate change is the most vigorously challenge scientific hypothesis in history. You also say "Humanity never faced a problem like it." So talk about climate change.

Steven Pinker: Yeah that's one area in which we by most we have not made progress. I think the threat is severe there's a good scientific consensus on that. And it's humanity's greatest challenge just because so much of our lives depend on energy, which in turn has meant fossil fuels. Now there is a process that all industrialized countries have undergone that they have relied less on carbon for

their energy sources. That is the portion of energy that comes from carbon as supposed to other sources tends to reach a peak when a country industrializes and then falls. And that happened in England first with a switch from wood to coal to oil to other sources to renewables and nuclear. Happened later to the United States and it's happened to China and India.

Now that by itself can't solve the climate crisis because if we're using more energy altogether even if a smaller fraction of it is from burning carbon it still means that more CO₂ is being emitted and other greenhouse gases. But it does show that modernization and industrial economies aren't inherently tied to a flaming carbon; that the natural progression is to move away from it which we have to figure how to accelerate dramatically.

Greg Dalton: And so what does accelerate that is, human ingenuity, is it technology? What are the accelerants because this year we've seen a lot of fires a lot of heat records destabilization and scientists say that this is going to not only continue but accelerate.

Steven Pinker: Well the biggest I mean the improvements that we've enjoyed so far have come from switching from more carbon intensive fuel energy sources to less carbon intensive energy sources. From coal to oil to gas and then to nuclear and renewables. I think that the -- my own view is that the two things that need to be done are carbon pricing so that every economic decision that everyone makes factors in the damage to the environment that comes from burning carbon. And improvements in technology in zero carbon energy sources.

Greg Dalton: And you write that people have difficulty thinking at scale and climate is so big. So I'm interested, you're wearing your psychologist hat, how people process climate. Because there is a man with a gun with the intent to do harm, you know, cable news channels get all worked up and people respond directly. But with something that's perceived to be abstract and long-term as climate the human brain seems to process that different.

Steven Pinker: Yes. So there are some cognitive limitations that is very hard to think in terms of millions of tons, billions of tons of CO₂ or terawatts versus gigawatts. You have to really write down the number of zeros unless there's that. There is the fact that our fear circuitry is engaged by immediate threats like snakes and spiders and --

Greg Dalton: Tiger in the woods.

Steven Pinker: Tiger and men with daggers and malevolent agents trying to do us in. But I think there are actually two other factors that are far more consequential. And in this regard I kind of diverge from a lot of my fellow cognitive psychologists who point to these cognitive biases. And those cognitive biases are real. People who've read Daniel Kahneman's book, "Thinking Fast and Slow" or Michael Lewis' "The Undoing Project" about the work of Kahneman and Tversky will show how we have these cognitive limitations.

But I think two far bigger factors are first of all, the fact that carbon pollution is a tragedy of the commons, which is to say that everyone benefits from the fossil fuels they burn in heating their homes getting around. Whereas, the costs are diffuse and if I make a personal sacrifice, if I walk to work or if I shiver in the winter or sweat in the summer. It really isn't gonna save the climate. Only if everyone does it, but everyone making the decision by their own lights thinks well why should I be the one to make the sacrifice. If I do, it will bring no benefit to humanity and harm to me.

Greg Dalton: Presuming you don't like that walk to work. Maybe you enjoy that walk to work.

Steven Pinker: Well no, I personally do so, yes. And I wrote by example.

Greg Dalton: Yeah. Some people say there's a false trade off that the green economy involves price and sacrifice and that's not always the case, sometimes green is better.

Steven Pinker: Indeed. And in fact we should make --

Greg Dalton: My electric car is far better than my gasoline car.

Steven Pinker: Yeah, we should make it as little the case as possible that is with improvements in technology absolutely. But nonetheless, at any level, any benefit to the environment is going to be trifling at the individual level but the cost to the self is going to be huge. So every person rationally thinks well, why should I give up my air conditioning it's not gonna save the planet, it's going to make life miserable for me. That's why some of the decisions have to be centralized, why you need carbon pricing imposed by government. Voluntary sacrifices, you know, unplugging your chargers and bringing your own coffee cup to work. They're nice and I do them and I pose for posters saying other people should do them, that's not gonna solve the problem.

Greg Dalton: In fact you say they are distraction.

Steven Pinker: I think they're a distraction, yeah, so maybe I should stop volunteering for those posters. The other huge psychological problem this has not been given enough attention is political tribalism. That once climate change got branded a left-wing issue it became a sacred cause for people on the right to deny it, to oppose it. And since humans are ingenious rationalizers if we have a position that we want to defend because it's associated with our team, our tribe, the people that we respect, then we're pretty good at spin doctoring evidence to be consistent with it and dismissing evidence that's inconsistent with it. And surveys have shown that the main predictor of denial of man-made climate change is not scientific ignorance but political ideology. The farther you are with the right the more you deny human made climate change. And in fact, people who acknowledge climate change actually don't know a whole lot of necessarily know a whole lot about climate, climate science. Often they're ignoramuses but they just know that they're, you know, they're to the left of center and that's what you're supposed to believe. Conversely, if you're right of the center you're supposed to deny it. So part of the psychological wedge that we have to insert in order to mobilize people around climate change is to depoliticize it as much as possible. I should credit this argument to Daniel Kahn a legal scholar at Yale.

Greg Dalton: Right. There's some climate deniers are highly intelligent.

Steven Pinker: Yeah, you don't want to get into a debate with them unless you have spent a lot of time boning up because they will be clever litigators. They love every scrap of argument they can muster.

Greg Dalton: One thing that I was really interested to learn in your book was that you write that Pope Francis' encyclical backfired with conservative Catholics, which was backed up by a study. Why do you think that is the case, why did the *laudato si* the Pope's encyclical on climate change backfire with the very audience it was targeted at?

Steven Pinker: Because that target which are conservative Catholics belong to a political coalition that is opposed to anything the left supports. And a litmus test if you're being a member of the American right in good standing is to deny the existence of climate change. So partly it's arbitrary it's like a tribal creed. But also the fact that Pope Francis framed the environmental issues in terms of human rapacity human evil the problems are economic growth in science and technology. We've got to get back to the Bible; we've got to get back to Catholic dogma if we want to be good people. There may be some people who are receptive to that but there are others who say, well, thanks but

I'd rather be comfortable and have my car. And I think a better way of putting it is let's make the massive changes that we have to make so that people can get around without burning carbon without emitting oxides of nitrogen and sulfur dioxide and particulate matter into the air. Now let's go back to a simpler and more puritanical lifestyle.

Greg Dalton: Right, voluntary virtue won't do it. But how do we get beyond the tribalism? If tribalism is the root cause we evolve in small social groups. How do we get beyond that?

Steven Pinker: The general answer is that our cognitive category of tribe is pretty plastic. We all belong to many tribes at once. We're Californians, we're Americans, we're Giants fans or Celtics fans. We're Cal alumni or Stanford alumni. We have intersecting tribes that we belong to. And one is to try to make the salient tribe we belong to not aligned with policy because policy actually affects, it's one thing to be loyal to your school or to be a sports fan because that's just fun, there's no consequence. But if your tribal affiliation determines your opinion on climate change or taxation or involvement in foreign wars that is pernicious.

So it's not obvious how to do it in a hurry, but certainly having people who are not branded as champions or mascots for particular causes be affiliated with particular policies is important. In that regard it was unfortunate that one of the champions for combating climate change was Al Gore, the Democratic vice president and candidate for president who put kind of a left-wing stamp on it. So part of it is to try to undo that, find people on the right who acknowledge the reality of climate change. Second is to try to disconnect particular issues that need action such as reducing carbon emissions from philosophies and ideologies like Romanticism, like the growth like anti-capitalism that people may have other reasons not to sign on to. And to dissociate possible remedies from the acknowledgment of the existence of the problem in the first place.

Now I don't think that for example geo-engineering is going to get us out of climate change although it might buy a little bit of time it might be a temporary stopgap to mitigate some of the worst effects. That's not how we're gonna -- for many reasons we can't just turn the ocean into carbonic acid.

However, one study showed that if you even mention the possibility of geo-engineering then people are more likely to at least acknowledge that climate change is a problem. Now this of course is illogical; how you solve a problem is independent of whether a problem exists. But if people don't think that acknowledging the problem commits them to some solution that they don't like, such as undoing capitalism or undoing growth, their minds are more open to the existence of the problem in the first place.

Announcer: You're listening to Climate One. Steven Pinker is a professor of cognitive science at Harvard and the author of Enlightenment Now: The Case for Reason, Science, Humanism, and Progress. Greg Dalton spoke with him about reasons for optimism in the face of global challenges like war, poverty and climate change.

Earlier this year, Greg sat down with Stanford professor Paul Ehrlich. He and his wife Anne Ehrlich wrote the 1968 best-seller "The Population Bomb." In it, they warned that the world's population was spinning out of control, and that the outcome would be widespread famine and chaos.

Here's Greg's conversation with Paul Ehrlich.

Greg Dalton: One of the critiques of the book is often that it is overly dark it's doomsday and what would you say that today?

Paul Ehrlich: It's much darker today. And you can prove it. In other words, there's no -- after all, we were worried then about the problems of feeding human society when there was 3 1/2 billion

people on the planet. Since then, something on the order of 200 to 500 million people have starved to death or died of nutrition related illness. Now we've got way over 7 billion people. We have something on the order of 800 million that's more than double the population of United States, hungry and starving and another billion or two who are micronutrient malnourished. And people will say well, we don't have any food problem. Well, the people saying that, of course, usually don't. I don't have a food problem. I wish I had a little bit more of a food problem. But if you've ever traveled in poor countries, you can't miss the undernourished kids. And the fact that people are micronutrient malnourished means they can't function well in society. So when we try and get society to take action on our existential problems we have trouble doing it.

Greg Dalton: Some organizations, Oxfam included, say that the world produces enough calories. It's a matter of distribution, getting them to the right place. Is that your view?

Paul Ehrlich: At the moment that's probably true. That is if we did everything right and distributed things fairly, then everybody can have a decent diet. Of course, what do we distribute fairly? In places where there's a lot of hunger the food isn't distributed fairly because the father has to get more than the kids or everybody starves. If you look at the problems of humanity and that's one of the reasons that I and my colleagues have put too much time into it, equity is a huge issue. Money isn't distributed fairly in the United States or anywhere else. Human beings don't distribute stuff fairly. So one of our challenges is to find a government that will arrange things so that even the people who are at the short end of the stick get more than enough to have a decent life. We don't do that, even in the United States.

Greg Dalton: So you're talking about wealth redistribution?

Paul Ehrlich: Well if you use the term redistribution, of course you get into trouble. I use it all the time to get into trouble because the economists think that growth is the only thing that counts and efficiency is the only thing that counts. Whereas, I know as every scientist knows perpetual growth is the creed of the cancer cell it can't occur. And that equity is going to require redistribution. You cannot get say 8 billion people, which is where we're going to be very soon, all living like the Koch brothers. It just can't be done. So we obviously need redistribution -

Greg Dalton: Or 8 billion people even living like you and me. That would be the problem.

Paul Ehrlich: Oh yeah, by the way, when I say rich versus poor, which I may sometime in the program. I'm counting us in the rich. And the problem of overconsumption of course is the other side of the coin. Other words the big problem for our life support systems is the aggregate consumption. The stuff that we extract from nature to use and that's clearly the product of the number of people and the average per capita consumption. Saying it's only consumption is like saying well the area of a rectangle is only the width. It turns out when you multiply two things together they both are equally important. And in this case population and per capita consumption are what really important. And one of the huge things is people, many people like us consume too much and then there is several billion who don't get to consume enough and that's one of the huge problems that's not normally discussed in those terms.

Greg Dalton: Some people talk about voluntary restraint or virtuous restraint. You know consuming less, not buying things on impulse, driving smaller cars, smaller houses. Do you think that kind of virtuous restraint is going to make a meaningful difference, that humans will really do that?

Paul Ehrlich: It may make a little difference but it's not going to make a lot. We need joint social action. For example, just to give you an idea of the magnitude of things. People, when I was

involved in one environmental organization they were crazy about recycling. And recycling can be good. It can be bad also; it depends on where you are and what you're recycling. But the claim would be made if we push recycling then people will get more involved in the environment and I would say true. It's also true that they could wheel their recycling bins pass the three Humvees in the garage to the curb and feel that they're being very environmentally sound. And the answer is we need huge changes.

To give you an example from the demographic side from population. Having one less child is the equivalent if you have one less child of you giving up driving entirely 20 times. In other words giving up driving only saves the environment and climate area this is in climate at all that if you give up having a child, you save 20 times as much greenhouse gas not going into the atmosphere as you would if you gave up driving entirely.

Greg Dalton: For your whole life?

Paul Ehrlich: For your whole life.

Announcer: You're listening to a conversation about how to cope with the fallout from our exploding population, with Stanford professor Paul Ehrlich. Coming up – things get even more crowded.

Greg Dalton: *Are we headed toward what, nine or ten billion people?*

Paul Ehrlich: *More likely eleven. There's almost no way that you're going to have fewer than 7 billion people on the planet at the turn of the next century unless we have a large-scale nuclear war or absolutely vast plagues or famines.*

Announcer: That's up next, when Climate One continues.

Announcer: You're listening to Climate One. Greg Dalton is talking with Paul Ehrlich about his dire predictions for the planet in his 1968 bestseller, "The Population Bomb."

Let's continue with their conversation.

Greg Dalton: So let's talk about climate. How has climate affected your projections looking into the future? Because you were pretty dark in 1968 and you say it's darker now. How has climate figured into that?

Paul Ehrlich: Well in 1968 we did discuss in The Population Bomb the fact is crystal clear to anybody who's thought about it. If you put crap into the atmosphere, you're gonna change the climate. There was a lot of debate back then about whether it was going to be largely cooling or largely heating which was coming. That's because in 1968 various people hadn't done the research to show that carbon dioxide, the main greenhouse gas, was accompanied by another bunch of gases that almost accounted for another half of the warming and that's what shifted things in the direction of warming.

Sadly, of course, then we thought that climate was going to be a big problem may be around 2100,

of course it's a big problem today and it's getting worse and worse. And again the morons in Washington are pulling out of the inadequate climate arrangement that went on in Paris. This is the trouble with having people who are totally ignorant and greedy running a country and that's our caucustocracy and other countries are almost as bad, but the U.S. is the most powerful nation in the world and it is winning its war on the environment with the present administration.

Greg Dalton: You say impacts today. How is climate affecting food production, you know, it's often thought of as a future concern. How is it an immediate concern?

Paul Ehrlich: Well, a lot of the emphasis given in the mass media is on sea level rise, even here at Stanford campus in Palo Alto, California we'll be able to out walk sea level rise. It's a relatively gradual process unless we're extraordinarily unlucky with the dynamics of the glaciers in Antarctica, but my guess is we won't be. What we know for sure is places like Miami are going bye-bye in the relatively near future, going right now. In other words, they can't keep the water out coming up through the rocks.

Greg Dalton: Sunny day flooding, right?

Paul Ehrlich: Yeah, right. But much more critical is the impact of climate disruption on agricultural systems. We're already seeing we were doing very well increasing the yields on basic crops. Humanity's feeding base for non-protein is largely wheat, maize, corn and rice and they are affected by higher temperatures. We're already seeing reductions in the rate of improvement there. They may even go further; a lot of people at Stanford like David Lobell are working on this huge problem. Agriculture is utterly dependent upon climate. We do irrigate a lot and that's very important, but the water for irrigation has to come somewhere. You may in California for example; the snowpack is getting in more and more trouble in Sierra. That's the water storage for our summer agriculture. If it comes down as rain in the winter, doesn't do any good for the farmers at all. So we're seeing impacts around the world on agriculture already from the amount of climate change we've seen from a relatively small influx of greenhouse gases into the atmosphere. And it's gonna get worse and worse because we're not taking the steps to do it. We're reversing it; we have again a government that's trying to destroy the environment because it has no clue that the environment is what supports them.

Greg Dalton: But isn't it possible also that the grain belt, the corn belt could reach up into Canada, that Russia could have arable land; new land comes into agricultural production because of the warming climate.

Paul Ehrlich: In some areas you may get more production because the climate change. If the corn belt moves into Canada, the corn plants are going to have a lot of trouble growing on the Canadian Shield. You got to develop the soil first before a belt of good agricultural land will actually shift. Developing the soils only take 10 or 20,000 years and so after that, maybe we'll be able to grow a lot of corn in Hudson Bay or on the Canadian Shield, but basically I wouldn't wait around for it.

And of course as it gets warmer in places like the United States we're moving more and more to tropical agriculture. Tropical agriculture is traditionally less productive than temperate zone agriculture. Among other things, the pests go all year round in the tropics, whereas in the temperate zones we have the benefit of a pest controlled period called the winter which allows us that a lot of stuff grown better than we can in the tropics. The prospects for doing better with food in terms of production are I would say very shaky. And in terms of distribution, I see things going in the wrong direction. We're caring less and less; we're putting less into redistribution of food even though we've improved the systems for doing it, but there's less interest particularly in our government in helping other people.

Greg Dalton: Professor Ehrlich, you talked about the capacity to grow more food but that was the main critique of The Population Bomb is you underestimated the productivity gains, the green revolution. Isn't that fair to say that you underestimated the world's capacity to feed to generate a lot more food with new technology?

Paul Ehrlich: It's fair and unfair because first of all the estimates we took and cited were from agricultural economists. And I think the general mistake which I certainly shared because I didn't know anything about it. I was talking to people that we cited that knew, I'm no agricultural economist I'm more of one now than I used to be. But the technology was clear what we were worried about more than anything else was how rapidly it could spread and what was underestimated was the brilliance of many subsistence farmers who knew a lot more about what they could do on their land than a lot of the people at industrial agriculture. But it certainly there are a bunch of mistakes in The Population Bomb. Any scientist who is asked about his work 50 years before who still and particularly one it's a broad thing, who still thinks exactly the same thing he thought 50 years before is a pretty weak scientist.

Greg Dalton: Steven Pinker at Harvard has a new book called Enlightenment Now. And he's written a previous book saying that life is safer, longer, healthier, more prosperous, people are better educated, societies and cultures are more tolerant, more fulfilling, that there's more progress in humanity than you give it credit for.

Paul Ehrlich: It's true that a relatively small group of people in Western societies with science and certain form of progress, but with science with the idea of democracy which was usually democracy for white men but let's skip that and so on, did make a lot of "progress" in various areas. And what's not usually mentioned by the Pinkers is for instance one of the main things that allowed that was slavery to start out with. If you know your history the role of slavery in the development of the West absolutely gigantic. So slavery is in there.

Then we adopted other people's energy slaves. In other words, it was made possible by using up the sun's energy stored and fossil fuels at a horrendously rapid rate and taking it from other people in the world. You know the old-line about the Middle East. How did our oil get under their sand? And they're suffering to this day over our wars to get oil, which is the main thing that the West has fought over for many years. That science, it's still not clear whether it was a smart move. It came from agriculture. We moved into agriculture that allowed specialization, specialization allowed industrialization. Industrialization allowed a moron an absolute moron narcissist to have the power to blow up civilization and destroy humanity and most of the animals on the planet. One single person. Is that advantage? You know, I have my, there are questions. I live a very good life but I spent a lot of time with people who don't have that opportunity.

Greg Dalton: But there are hundreds of millions of people in India and China, who've moved out of poverty, into the middle class. Now you could say that China and India are paying a big environmental price for that material wealth. I lived in China in the late 80s. I go back now and the people are better fed, better clothed, better off. So can't you give some recognize that there are have a lot of people, hundreds of millions of people have moved out of poverty better life, better health.

Paul Ehrlich: You can recognize that it's certainly true. There are still 600 million people in India who have to defecate outside because they don't have toilets. And the issue is the violence that we have committed against those people and all future generations by working so hard to destroy our life support systems and to use up the energy slaves often for ridiculous reasons that we took from them and that we inherited. It's a complex thing but just saying everything is better is fine, if you're not too bright, a faculty member at Harvard. But if you're an Indian villager or a member of a

Chinese minority or are living up in the mountains and so on, the world doesn't look quite so bright.

Greg Dalton: Humans are very adaptive species. That's why we're here. What are the prospects that we can adapt to a warmer world with more turbulent agriculture? We've adapted to some pretty big challenges in the past. Can we basically ride this out?

Paul Ehrlich: Well, I'd like to hope we'll be able to. And in fact, our research is aimed primarily now at figuring how to avoid the same mistakes after the collapse. In other words, we're hoping the collapse won't be caused by a large-scale nuclear war which will basically for instance people say, oh don't worry we won't need currency, we'll use bitcoin. Use bitcoin without electricity?

Greg Dalton: Bitcoin uses a lot of energy.

Paul Ehrlich: Yeah. I mean, we're approaching energy limits which we may get around with quantum computing and so on and so forth. But we're not gonna get around the basic distribution and political problems. My view has been for a long time that I'm very pessimistic about the future but very optimistic about what we could do. I have to say that over the last decade or so, I've become less optimistic about what we could do for among other things, of course, because we're not trying any of it. Whereas right now we have deteriorating infrastructure in the United States. Our water handling infrastructure is going downhill fast. Water is absolutely essential. We should be not only rebuilding the infrastructure, but designing it for flexibility because we don't know where the water is going to be needed as the climate change. We're not doing a thing.

Greg Dalton: Right. The system we built is not adequate for today. But just a few years ago a lot of people were running around, peak oil, peak oil, peak oil, that there would be peak supply. And then fracking comes along, a technological innovation supported in part by the U.S. government and forecast this year 2018 U.S. oil production could surpass Saudi Arabia. That was not foreseen five or 10 years ago. And now the peak oil people are pretty much quiet or they're talking about, peak demand, but peak supply, this resource we were gonna run out of is suddenly abundant.

Paul Ehrlich: This is absolutely typical thinking, not yours I mean. Sure, what about 10 years from now. In other words, the people look at timescales that evolutionary biologists and ecologists look at very, very differently. And we're also fracking is moving us towards peak environmental destruction. What they're doing in Canada with the oil sands and so on destroying a huge portion of the country for the temporary use of oil. Now if they were moving -

Greg Dalton: For one species and one generation.

Paul Ehrlich: Exactly. And of course I don't even want to get into the rights of the biodiversity that were destroying people. I recently saw an article saying there is no ethical reason not to destroy biodiversity. Well ethics are entirely invented by human beings. And there's a huge portion of our population that thinks it's unethical. They wipe out the songbirds and so on and so forth. Besides the fact that it's killing us at the same time. So it's a complex issue, but they're always going to be people who say oh well we're going to come up with some magic; we'll pull the technological rabbit out of the hat to save us. And they forget when you look at the last past technological rabbits. They've often had very nasty droppings.

Greg Dalton: You talk about foregoing population. Are we headed toward what nine or 10 billion people?

Paul Ehrlich: More likely 11.

Greg Dalton: Eleven.

Paul Ehrlich: More likely if we avoid the huge die off. There's almost no way even with billions of people dying prematurely that you're going to have fewer than 7 billion people on the planet at the turn of the next century unless we have a large-scale nuclear war or absolutely vast plagues or famines and I mean losing 15 billion people or something over the period. But not likely to have a very small thing. What we need to do obviously and should've started 40 years ago is give women absolutely equal rights and opportunities. Make sure everybody has access to modern contraception and backup abortion. Teach everybody that you can have lots of fun with sex without having lots of children and change our entire society.

Greg Dalton: If you're just joining us my guest at Climate One is Paul Ehrlich, Professor of Population Studies at Stanford University. I'm Greg Dalton.

Climate is often framed as a moral issue. What did you think of Laudato si' or "Our Common Home" from Pope Francis?

Paul Ehrlich: I wrote an article with John Hart at Berkeley, whose title was changed by nature, which published it. They change the title to something like the Pope doesn't do enough for women but our title was Two Cheers for Pope Francis. I think he is a more flexible individual than this majority of people who have been in that position. He's well educated. You have to understand that the Roman Catholic Church has a social science and a natural science academy. They're interested in hearing what's going on in the world. And I think they're changing gradually in the right direction but they have the same problems we have in the United States, politics, stuffy idiots who don't understand the world. I am personally a fan of the Pope and that will get him in trouble.

Greg Dalton: You have this reputation as Doctor, you know, the prophet of doom. Do people kind of avoid you at cocktail parties or picnics? They think oh it's gonna be that you're a downer?

Paul Ehrlich: I don't talk about these things at cocktail parties. I just drink.

Announcer: Greg Dalton has been talking with Paul Ehrlich, Professor of Population Studies at Stanford University. Ehrlich wrote the 1968 bestseller "The Population Bomb" with his wife, Anne Ehrlich.

Earlier in the program, Greg talked with Steven Pinker, Professor of Psychology at Harvard University. His latest book is "Enlightenment Now: The Case for Reason, Science, Humanism, and Progress."

To hear all our Climate One conversations, subscribe to our podcast at our website: climateone.org, where you'll also find photos, video clips and more.

Greg Dalton: Climate One is a special project of The Commonwealth Club of California.

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