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Yes, humans do have the power to destroy life on earth as we know it. But I think the key words there are "as we know it." There has never been any "natural" state of the earth. Lands covered by forest today were once covered by glaciers. Long before humans were around the earth was in the constant process of "destroying" itself. More than 99 percent of the species that existed before humans came along went extinct (also before humans came along). I know that humans have hastened that trend, but it's not like the natural world wasn't doing a pretty good job of continually rewriting itself over time. And, I might add, that humans, for all their power to change the earth, are also the only species able to "save" the earth. Somewhere out there is a meteor on track to crash into earth with devastating results sometime in the next 1000, 5000, 50,000 years. It's anyone's guess. But it's inevitable and only humans are busy looking for such rocks capable of wiping out most of life on earth. And only humans will have a chance to do anything about it (alter the meteor's course, destroy it with a nuclear device or a laser or some device we probably can't even imagine yet, etc.).

You ask good questions. Obviously I can't answer for Deutsch, and I know you weren't expecting me to, but scientists were already a decade ago, I believe, quite concerned about the warming earth. In any event, I looked at the index of Deutsch's book and he does devote several pages to the topic (by the way, the references I sent you before were from pages 48 – 51; I think I failed to mention that). On pages 437 – 441 he does discuss climate change. He is, of course, too smart to deny that the climate is warming. And he would have no interest in denying that. But he seems to be of the Bjorn Lomborg school of thought that we should be careful to realize that attempting drastic cuts in the use of fossil fuels will impoverish many developing countries (and considerably slow economic growth in the developed world). This may make future generations *less* prepared to able to deal with climate change. More on Lomborg later.

Anyway, Deutsch does write (any grammatical errors or typos are mine):

"...Consider, therefore: what if the relevant parameters had been just slightly different and the moment of disaster had been in, say, 1902... when carbon dioxide emissions were already orders of magnitude above their pre-Enlightenment values. Then the disaster would have happened before anyone could have predicted it or known what was happening. Sea levels would have risen, agriculture would have been disrupted, millions would have begun to die, with worse to come. And the great issue of the day would have not been how to prevent it but what could be done about it.

"They had no supercomputers back then... to recover from the disaster, society would have needed more scientific knowledge, and better technology, and more of it – that is to say, more wealth. For instance, in 1900, building a sea wall to protect the coast of a low-lying island would have required resources so enormous that the only islands that could have afforded it would have been those with either large concentrations of cheap labor or exceptional wealth, as in the Netherlands, much of whose population already lived below sea levels thanks to the technology of dyke-building.

"...Today, a coastal defense project would be well within the capabilities of almost any coastal nation – and would add decades to the time available to find other solutions to rising sea levels.

"If none are found, what to do *then*? That is a question of a wholly different kind, which brings me to my second observation on the climate change controversy. It is that, while the supercomputer simulations make (conditional) *predictions*, the economic forecasts make almost pure *prophecies*. For we can expect the future of human responses to climate to depend heavily on how successful people are at creating new knowledge to address the problems that arise. So comparing predictions with prophecies is going to lead to that same old mistake.

"Again, suppose that disaster had already been under way in 1902. Consider what it would have taken for scientists to forecast, say, carbon-dioxide emissions for the twentieth century. On the (shaky) assumption that energy use would continue to increase by roughly the same exponential factor as before, they could have estimated the resulting increase in emissions. But that estimate would not have included the effects of nuclear power. It could not have, because radioactivity itself had only just been discovered, and would not be harnessed for power until the middle of the twentieth century. But suppose that somehow they had been able to foresee that. Then they might have modified their carbon-dioxide forecast, and concluded that emissions could easily be restored to below the 1902 level by the end of the century. But, again, that would only be because they could not possibly foresee a campaign against nuclear power, which would put a stop to its expansion (ironically, on environmental grounds) before it ever became a significant factor in reducing emissions. And so on. Time and again, the unpredictable factor of new human ideas, both good and bad, would make the scientific prediction useless. The same is bound to be true – even more so – of forecasts today for the coming century. Which brings me to my third observation about the current controversy.

"It is not yet accurately known how sensitive the atmosphere's temperature is to the concentration of carbon-dioxide – that is, how much a given increase in concentration increases the temperature....

"Trying to predict what our net effect on the environment will be for the next century and then subordinating all policy decisions to optimizing that prediction cannot work. We cannot know how much to reduce emissions by, not how much effect that will have, because we cannot know the future discoveries will make some of our present actions seem wise, some counter-productive and some irrelevant, not how much our efforts are going to be assisted or impeded by sheer luck. Tactics to delay the onset of foreseeable future problems may help, but they cannot replace, and must be subordinate to, increasing our ability to intervene *after* events turn out as we did foresee...

"There is a saying that an ounce of prevention equals a pound of cure. But that is only when one knows what to prevent. No precautions can avoid problems that we do not yet foresee. To prepare for those, there is nothing we can do but increase our ability to put things right if they go wrong. Trying to rely on sheer good luck of avoiding bad outcomes indefinitely would simply guarantee that we would eventually fail without the means of recovering.

"The world is currently buzzing with plans to force reductions in gas emissions at almost any cost. But it ought to be buzzing much more with plans to reduce temperature, or how to thrive at higher temperature. And not at all costs, but efficiently and cheaply. Some such plans exist – for instance to remove carbon dioxide from the atmosphere by a variety of methods; and to generate clouds over the oceans to reflect sunlight; and to encourage aquatic organisms to absorb more carbon dioxide. But at the moment these are very minor research efforts. Neither supercomputers nor international treaties nor vast sums are devoted to them. They are not central to the human effort to face this problem, or problems like it.

"This is dangerous. There is yet no serious sign of retreat into a sustainable lifestyle (which would really mean achieving only the *semblance* of sustainability), but even the aspiration is dangerous. For what would we be aspiring to? To forcing the future world into our image, endlessly reproducing our lifestyle, our misconceptions and our mistakes. But if we choose instead to embark on an open-ended journey of creation and exploration whose every step is unsustainable until it is redeemed by the next – if this becomes the prevailing ethic and aspiration of our society – then the ascent of man, the beginning of infinity, will have become, if not secure, then at least sustainable." (pp. 437-441)

Perhaps the world's best authority on cost-benefit analysis is the Danish statistician Bjorn Lomborg. He writes in his book, *Cool It*, "That humanity has caused a substantial rise in atmospheric carbon-dioxide levels over the past centuries, thereby contributing to global warming, is beyond debate. What is debatable, however, is whether hysteria and head-long spending on extravagant Carbon Dioxide-cutting programs at an unprecedented price is the only possible response. Such a course is especially debatable in a world where billions of people live in poverty, where millions die of curable diseases, and where these lives could be saved, societies strengthened, and environments improved at a fraction of the cost." (p. ix)

"Large and very expensive Carbon Dioxide cuts made now will have only a rather small and insignificant impact far into the future. (p.8)

"We need to remind ourselves that our ultimate goal is not to reduce greenhouse gases or global warming per se but to improve the quality of life and the environment. We all want to leave the planet in decent shape for our kids. Radically reducing greenhouse gas-emissions is not necessarily the best way to achieve that. As we go through the data, we will see that it actually is one of the least helpful ways of serving humanity or the environment. (p.9)

"When we look into the future, the UN expects that people in both the developed and developing countries will become richer. In the industrialized world, people will see their incomes grow sixfold, as we saw during the last century. Income in the developing countries is expected to grow twelvefold. (p.47)

"When we try to help the developing world by cutting our carbon emissions, we are trying to help people far into the future, where they will be much richer. We are not helping a poor Bangladeshi in 2100 but much more likely a rather rich Dutchman. And in case you wonder whether global warming will mean that Bangladesh will be underwater in 2100, we will see below that a rich Bangladesh will lose only .000034 percent of its present dry-land area.

"The question then becomes whether we wouldn't do better by helping a poor Bangladeshi today. He or she needs our help more, and we can do much more for him or her. Helping a present-day Bangladeshi become less sick, better fed, and better able to participate in the global marketplace will not just do obvious good. It will also enable him or her to better Bangladeshi society, grow the Bangladeshi economy, and leave a richer more robust Bangladesh to future generations, who will be much better equipped to deal with global warming. To me, that's a compelling case for action. (pp. 48 – 49)

"Do we want future generations to say that we have spent trillions of dollars and perhaps done a little good for rich people in a hundred years? Or do we want future generations to thank us for giving billions of poor people a new beginning and a better life, which will enable them to better deal with whatever challenges the future holds?

"In other words, do we just want to *feel* good, or do we actually want to *do* good?" (pp. 51 – 52)

"If we focus too much on global warming we could easily end up making future generations far worse off, with the average person in the developing world missing out on incomes 70 percent higher in 2100." (p. 160)

To your second question, yes, humans have been around much longer than the age of technology. But I don't think that was the only kind of problem solving Deutsch was referring to in the earlier quotes I sent. Simple things like banding together (humans quickly evolved to be social animals), learning to use fire and simple tools, learning the benefits of trade, were all early achievements that allowed humans to use their larger brains to stay alive in a world in which their adversaries were much larger and more powerful. There was some luck involved in the human race even surviving. There was no guarantee. We could have been wiped out. But then we would have missed out on all this fun. :) Thanks for listening (reading).

Shalom,

Phil

P.S. I have no more use for global warming deniers than I have use for creationists or flat earthers. But I think guys like Deutsch and Lomborg do add a much needed voice of reason between the extremes of the far left and the far right. When the environmental movement takes its lead from people like AOC who predict that there will be no more airline travel in 12 years (I guess we're down to about ten years now from when she said that), or a Norwegian teen who left a bigger carbon footprint behind in building her boat than a ticket on any scheduled airline flight ever would have left, I can only shake my head.