

## **While scientists disagree over man-made climate change, the energy industry is wrecking our planet**

I have recently finished reading an excellent book by Freeman Dyson, who is a renowned physicist and mathematician, still active at the age of 93. He worked at the Institute for Advanced Study in Princeton, New Jersey, while Einstein was there, and he worked closely with Richard Feynman, who was one of the great physicists of the twentieth century.

The book is called [The Scientist as Rebel](#), and was published in 2008. It is a wide-ranging collection of essays, book reviews and recollections, written by Dyson over a large span of time. He has an excellent, clear written style, and the book will be of interest to anyone with at least a passing interest in science, and the great characters that have pushed forward the frontiers of research, and discovery.

One chapter that particularly caught my interest is on the subject of climate change, a link to which I include [here](#).

Since 1980, Dyson has been involved in the study of climate change - particularly, how increasing CO<sub>2</sub> affects the climate, and Earth systems. His years of detailed research have lead him to some eye-opening conclusions, some of which fly in the face of the prevailing scientific view.

Of course, there are plenty of prominent scientists who dispute the notion that man-made climate change is a real and existential threat. Few, if any, have a CV as stellar as Dyson's, and few can claim to have researched the field so thoroughly, over so many years. Importantly, as a retired scientist, Dyson is untainted by any question of collusion with the energy industry, which is still overwhelmingly reliant upon the extraction of fossil fuels.

To begin with, he writes, "the fuss about global warming is grossly exaggerated." He accepts that the release of CO<sub>2</sub> into the atmosphere as a result of human industry is contributing to climate change, but that the effects are nowhere near as profound as most climate studies have lead the public to believe.

Furthermore, there are natural mechanisms that work to mitigate the release of CO<sub>2</sub> into the atmosphere, which are not taken into account by the scientific community-at-large.

As an example of this, he cites the "roots and shoots" mechanism by which plants sequester atmospheric CO<sub>2</sub> in the ground.

Plants absorb CO<sub>2</sub> from the atmosphere through their leaves. As the concentration of atmospheric CO<sub>2</sub> rises, the "roots-to-shoots" ratio increases - that is to say, the roots increase in size, in relation to the foliage. When this more "rooty" vegetation dies, more of the plant, as a percentage of its total mass, is biodegraded beneath the surface, returning the CO<sub>2</sub> it has absorbed during the course of its life to the topsoil. In this way, plants actively regulate the amount of CO<sub>2</sub> in the atmosphere, using the top soil as a reservoir.

He writes that it is impossible to calculate how much CO<sub>2</sub> is scrubbed from the atmosphere, globally, in this way, but that it is likely to be significant. It would take just a *tiny* increase in the volume of the world's top soil, year-on-year, to account for all of the CO<sub>2</sub> released by human industry. And yet, this enormously powerful effect is largely ignored by climate science.

Increased levels of atmospheric CO<sub>2</sub> are inextricably linked to global warming in the public mind, despite the fact that water vapour is a far more significant greenhouse gas in most regions of the world. Dyson argues that atmospheric CO<sub>2</sub> has been pinned up by the media as public enemy number one, because it is the greenhouse gas generated by human beings (among other emitters). Our hopelessly anthropocentric world view prevents us looking beyond our own noses, in this case, as in many others.

Dyson argues that far from being considered a threat, atmospheric CO<sub>2</sub> should be acknowledged for its beneficial effects. Not least, because the rise in CO<sub>2</sub> has caused an increase in the growth of vegetation, globally.

According to Dyson, it has been confirmed by satellite that the 40% rise in CO<sub>2</sub>, which has occurred in the last 40 years, has coincided with a 20% increase in vegetation growth - which is broadly in line with predictions he and his colleagues made early on in their research. As he points out, this increase is enormously beneficial to agriculture, and to biodiversity.

In an [interview he made recently](#), he describes the prevailing view that climate change is "evil" as a "religion". He adds: "I don't understand it and I don't pretend to understand their motives."

He goes on to say:

"We will continue to burn our own coal, and probably it does us good, the Earth will get greener as a result."

Here is where I take issue with Dyson. While the degree to which the man-made component to climate change is disputed, and will continue to be disputed for the foreseeable future, due to the immense complexity of climate science, what cannot seriously be disputed is that we are trashing the ecosystem, to our considerable detriment.

Leaving CO<sub>2</sub> out of the picture, the burning of fossil fuels is having a very real, and disastrous, effect on human life. The World Health Organisation estimates that air pollution accounts for seven million premature deaths a year - a third of those occurring in China, where industrialisation is occurring on an unprecedented scale.

Coal mining is responsible for tearing huge chunks out of the landscape, and causing widespread devastation. While the industry has declined in Europe, it is booming in Asia, where health and safety regulations are not up to the task of protecting the workforce. It is estimated that around 5000 coal miners die every year in China alone, and many thousands more are blighted with chronic health conditions.

As for the comforting idea that the Earth will get greener thanks to our continued burning of fossil fuels - this might be true, were it not for deforestation.

I am writing this in Indonesia, the country that has the highest rate of deforestation in the world. In 2010, it was estimated that half of this country's primary rainforest has been lost, and forest clearance continues at a rate of about one million hectares per year - exceeding that of Brazil. Around 80% of the logging is illegal, and much of the timber goes to China, which now accounts for around a third of the world's furniture manufacturing.

Much of the forest clearance is done to make way for palm oil plantations, of course - an energy "solution" which is responsible for accelerating deforestation, in south-east Asia, particularly.

My point here is: even ignoring the impact of human industry on climate change entirely, it is clear that our addiction to combustible fuels - such as palm oil, and coal - is *destroying* the natural world.

Once the rainforests are gone, they are gone forever - at least so far as human timescales are concerned.

Atmospheric pollution is turning some of the world's largest cities into carcinogenic flash points, and leading to millions of premature deaths every year.

Mining and fracking are destroying huge areas of the landscape and leaching poisonous chemicals into the ground, which are disrupting food chains, with effects that are impossible to predict, in the long term.

The solution *must* be to invest heavily in renewable energy, so that we can make the transition to a post-carbon economy.

The technologies that harness wind, sunlight, and hydro power, have matured over the last few decades, and they are getting better all the time. The wealth exists to roll the technologies out on a large scale, and there is no reason why this cannot be done. There is a great weight of inertia to fight against, in the form of existing methods of energy production, which is why strenuous efforts must be made now.

While scientists debate the degree to which humans are accelerating climate change, our global problems are stacking up. It is time now to put pressure on governments to legislate against dirty and harmful kinds of energy production, and in favour of renewables. This is the only realistic solution we have to prevent a many-layered environmental crisis unfolding in the decades to come.

*August 2017*