

A discussion with John Seed on 'the ecological footprint of science'



'It is fun to discover how nature works, to find out, for example, that humans have to make cement at 1800 degrees Fahrenheit, while a hen can make stronger cement at 103 degrees, and a clam can do still better at the temperature of seawater. What's the trick? We still don't know. If we found out, would we pave everything in sight?' (David Brower¹)

From the initial quest of our science to understand the Universe, have we strayed so far that we are destroying the very foundations of life and disrupting our life support systems? This was the main thread of the discussion with John Seed on 12 January 2010 at the Raman Research Institute, Bangalore. John Seed is an Australian environmental activist who was touring India to motivate people to protect the Earth. He was formerly a systems engineer for IBM who quit his job, took to Buddhist meditation, and is now working on the protection of rainforests. During 1979–82, using Gandhiji's principle of satyagraha and lessons learnt from the Chipko movement, John Seed and his group saved a majority of rainforests in New South Wales. He is the founder and director of the Rainforest Information Centre in Lismore, and is the co-author of a book *Thinking Like a Mountain – Towards a Council of All Beings*. He believes in the philosophy of deep ecology – the central idea of which is that 'we are part of the earth, rather than apart and separate from it'².

Have we ever understood our universe? Can we be a 100% sure of all our scientific discoveries?

We can't be a 100% sure of anything. We don't know whether the sun will rise

tomorrow – all the evidence suggests that it probably will because it always did. But we can't ever prove anything. All that we can do is disprove things. All the things that we felt so certain about 100 years ago look so quaint now. Certainly, if we are still around 100 years in the future, scientists will look back at the science today and see how gullible people were in 2010. At the same time, evidence accumulates. For example, 100 years ago we didn't know that we lived in a galaxy. We didn't even know that there were galaxies.

The continual accumulation of evidence and data and the support of theories makes us increasingly confident that we are moving close to a real understanding of the nature of things. But have we reached the end of that understanding? Absolutely not! Are there things that we totally believe to be true now which we will see in the future are false? Of course there are!

Where is science leading us?

I was talking earlier today with Ravi Subramaniam, Director of the Raman Research Institute and we were discussing the same question. I fear that science could be leading us in a kind of direction where, for instance, rather than cleaning up the pollution, we could genetically engineer human beings so that they can tolerate it. If we put our minds to it, we can do this. However, it's not the direction I want to go. But science could be leading us in this direction. Much of the talk today about geo-engineering in relation to climate change, putting billions of small mirrors in the sky to reflect the sunlight, putting iron filings in the sea . . . all these things worry me.

What I want is for people to fall in love with the Earth, with Nature, and then do everything they can to hold on to the wildness and to the biological systems which in the past have meant that we don't have to regulate the atmosphere, we don't have to create the water, we don't have to create fertility in the soil, because nature gifts them to us. And I vote that we don't destroy this gift.

Should we question the basic principle in doing science?

I personally believe in science. I believe that the desire to understand and to more

fully inhabit the Universe is an ancient, primal part of being a human being and I honour that. Not that it shouldn't be questioned. But when I question that, I still say I love science and empiricism and the fact that wherever on Earth you look through a telescope, you get the same answer; it's not a matter of opinion, it's not like a religious question that one person believes one thing and another person believes another, it's not like that.

Do the costs of science far outweigh the benefits?

I think the jury is still out on that one. If science leads us to the extinction of human beings, yes, then the costs outweigh the benefits. But the wheel still spins!

What about the costs to Nature?

I profess a philosophy called 'deep ecology'. The man who first coined the term was a professor of philosophy from Oslo University, Arne Naess. When he was asked for a definition of deep ecology, Arne Naess answered 'asking deeper questions'. This came from his philosophical position as a sceptic. Scepticism in philosophy says that the question is always more important than the answer; a good question is very valuable; any answer is temporary and provisional; no answer is final; and the purpose of the answer is to make the question deeper.

So, to me, this is one of those questions where, whatever answers we come up with are provisional and should only be seen as a way of making the question deeper and not as some kind of final answer to the question. I wouldn't like to give a 'yes' or a 'no' answer to this question, but just say 'very good question'. I wish scientists were asking themselves this question. I am glad that someone who is writing scientific journalism for scientists is asking this question, and I hope it pricks and challenges and goads the scientists . . . because, I am afraid that the answer might be 'yes', maybe the costs of science outweigh the benefits.

I believe that today more than 100 species probably became extinct. How do we weigh that? What is the life of a species worth? We humans have been evolving for 4½ billion years, since the first cell of life on Earth. Every one of those

species has been evolving for the same period of time. The proof-less thought that we are the most important thing in the Universe is an incredibly arrogant position to take!

On the other hand, we are part of Nature. That means that our artefacts and our science are also part of nature. There's no such place as outside where we can throw our rubbish. It's arrogance to think that we are the reason for the whole Universe to exist, that we are the crown of Creation, that we are the only important thing and everything else is just a resource for us. But it's also arrogance to think 'Oh! We are a cancer that is destroying the Earth, we are separate from the Earth!'. If the Earth is committing suicide (which I do not believe), then we may be the instrument of that suicide. But we didn't come from somewhere else; we are *part* of this. So whatever we are doing is also part of this, and blaming ourselves is neither helpful nor warranted.

The actions of human beings are creating the sixth mass extinction since the beginning of life. The Earth from time to time sweeps the stage clear. 232 million years ago, 95% of all plant and animal species died and out of the 5% of remaining species dazzling creativity radiated forth. If we do the same thing now, then, something equally marvelous will surely be in place 10 million years from now. All the ecological niches would be full, again. So, there is nothing unnatural about this; it happens all the time. This is the story of life.

It's not that biodiversity exists *in spite* of these extinction events; it's precisely *because* of these extinction events. If the dinosaurs hadn't been swept away, then the whole mammal explosion wouldn't have taken place. And now, sitting in the wings, cockroaches or maybe ants, or even just bacteria are waiting for the chance to flourish in a new epoch.

What would be the ecological footprint of science and technological innovations?

Their ecological footprint is the sixth mass extinction to take place in the history of life. If there should be an archaeologist 10 million years from now sifting

through the fossil records – whatever happens next, the sixth mass extinction, would be visible. So that's a pretty substantial ecological footprint visible 10 million years in the future.

Of course, what happens next – nobody knows. Maybe when human beings realize how close to the edge we have brought ourselves, maybe that will squeeze something new out of us. One of the previous mass extinctions took place when our ancestors were single-celled bacteria. At a certain point we had become so successful that we had eaten all the ocean nutrients and no more food was available. At that time, I would say, forced by the threat of extinction and starvation, our ancestors learnt to capture photons of light from the sun. With the help of these photons and energy in the light, we broke carbon dioxide to get carbon and we broke H₂O to get hydrogen to build carbohydrates needed for our bodies.

So, it was the environmental pressure and the pain of food shortages that somehow squeezed that new selection. Before, if somebody had learnt how to capture photons of light from the sun, it would have been of no advantage; there was food everywhere! Maybe there is, now, a selective pressure for a new sustainable human consciousness, a consciousness that will turn science into a servant rather than being a way that human beings get rich and dominate everything else.

Why does it always happen under pressure?

That's the thing about natural selection – it's basically selection under pressure. It's differential survival. When there's pressure, one thing dies while another thing lives. And whatever is the quality that allows us to meet that challenge, that is the quality that has more babies. I believe that human consciousness is just as natural as everything else in the world. And that means that the evolution of human consciousness will be subject to the same laws.

From the time when science and technology were used to fulfil man's basic needs and necessities, it is now being used to fulfil his luxuries and desires. Do

we indulge in science to increase our convenience?

We spend 100 dollars for every one of the 6½ billion human beings on Earth on advertising, to create false needs to force people to want things that they don't really need and this costs the Earth. When we understand that we have to dig up and cut down the Earth in order to turn it into the plastic to make these junk products, we don't want the junk; we just want a feeling of well-being and satisfaction.

You *never* feel alright by feeding these addictions which never come to an end. Imagine if the best minds in science were trying to discover 'How can we allow people to have this feeling of satisfaction in a non-destructive way? How can we allow people to feel love? How can we allow people to just feel satisfied without having to destroy the Earth to do it?'. In no time we would find a way to do this. If science was to direct itself to these kinds of inventions and discoveries, very quickly we could be like, say, certain monks who consume very little yet radiate happiness. This isn't something that is *that difficult* actually.

But who is the master of science? Who dictates to science what is the project? I'm afraid that it's some Caesar, it's money, it's pay that dictates the project and I don't know what we can do about this. But I feel hopeful that if we just decided that we want more of this beautiful Earth, not just for ourselves but for million years into the future, then it's not too late, we could still have it. All that we have to do is to understand how close to oblivion this whole momentum has brought us and just hit the brakes and say 'I don't want to go there!'.

1. Brower, D. and Chapple, S., *Let the Mountains Talk, Let the Rivers Run: A call to save the Earth*, Sierra Club Books, San Francisco, 2000, p. 148.
2. Johnstone, C., <http://www.rainforestinfo.org.au/deep-eco/johnston.htm>, retrieved 23 January 2010.

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