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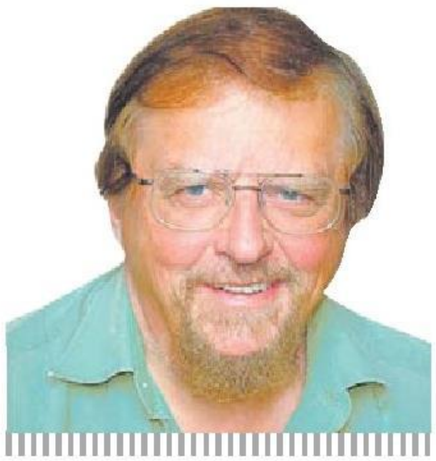
# Welcome to the Anthropocene



Gwynne Dyer

Geology moves very slowly – and so do geologists. The Working Group on the Anthropocene was set up in 2009, but only presented its recommendation to the International Geological Congress in Cape Town last Monday. The Working Group's experts have concluded that we are now living in a new geological epoch: the Anthropocene. That is, the epoch when human beings are reshaping the Earth.

The radical idea of defining an entire epoch by the impact of human civilisation on the planet was advanced for the first time in 2000, by Nobel Prize-winning scientist Paul Crutzen. Modern human beings have been around for 200 000 years, he pointed out, but only in 1950 did our numbers and the products of our science and industry grow so great that we became a dominant factor in the planet's evolution. Now we make the weather (by causing global warming with our greenhouse gas emissions). We are even melting the ice and raising the sea level.

**The Earth system is immensely complex and there are large parts of it that we do not even understand.**

And if there are geologists a hundred million years from now, they will be able to detect our existence just by examining the rocks.

The acid test for defining a geological epoch is: are there clear differences in the make-up of the rocks? With us, it's easy. In the '50s, radioactive elements (radionuclides) from hundreds of open-air nuclear bomb tests appear in the sediments all around the world.

Even more ubiquitous are the tiny fragments of plastic, the particles of aluminum and concrete, and the tiny balls of unburnt carbon that pour out of our power stations, all embedded in the muds that will one day be rocks. We have already left indelible evidence of our existence in the rocks.

The goal of those who want to declare a new Anthropocene epoch, however, is not just to tidy up the geological record. They want to highlight the fact that we are now in charge of the planet.

Crutzen didn't just propose a new epoch. In 2006, he was also the first scientist to go public and say that we may have to resort to "geo-engineering". We are disabling the Earth's natural mechanisms for maintaining a stable environment, he said, and in order to survive we may have to take responsibility for maintaining all the global cycles and balances ourselves.

That is a terrifying thing, because the Earth system is immensely complex and there are large parts of it that we do not even understand. Another scientist, Jim Lovelock, pointed out what a crushing burden we'll have to shoulder.

Lovelock's great insight was that the Earth's living things, its atmosphere, its seas and its rocks are all part of a single interacting system. He boldly called it Gaia and in the act of recognising it, he realised that it was breaking down.

Writing in 1979, he warned that if we disable Gaia's natural functions, one day we will find that we have inherited "the permanent lifelong job of planetary maintenance engineer". "Then at last we would be riding that strange contraption, 'the spaceship Earth'," he wrote.

"We can guess that at less than ten billion people we should still be in a Gaian world. But somewhere beyond this figure ... lies the final choice of permanent enslavement or gigadeath to enable the survivors to restore a Gaian world."

So far we are only seven-and-a-half billion people, but that's no consolation. The world's per capita energy consumption is much higher than Lovelock foresaw. We may be on the brink of that final desperate "choice" already.

Welcome to the Anthropocene.