

Geology & ecosocialism: A major step towards the Anthropocene

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Othe impact of our species on the planet. Alan Thornett looks at current debates:

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We are at a crossroads in terms of the impact of our species on the planet. The actions of modern human beings, '*homo sapiens*'—i.e. us—are set to determine, during the course of the 21st century, whether or not the planet we live on, along with millions of other species, will remain habitable .

Global warming, caused mainly by CO₂ emissions from the use of fossil fuels, is accelerating. Each successive year is now the hottest on record. Fifteen of the sixteen hottest years on record have occurred within this century. Last year was the hottest by a wide margin. There were exceptional temperatures in Spain, Austria, in parts of Asia, Australia and South America. In May a heatwave in India claimed more than 2,000 lives and ranked as the fifth deadliest on record [1]. A heatwave in Southern Pakistan killed more than 1,200 people. The litany goes on; spelled out in ever more extreme events.

A recent study has shown that human activity has destroyed a tenth of Earth's remaining wilderness in the last 25 years and there may be none left within a century if trends continue [2].

Against this disastrous background, a uniquely important scientific decision has just been taken by a little known (but highly significant) body known as Anthropocene Working Group (AWG) [3] , comprised of 38 Earth systems scientists and convened by geologist Jan Zalasiewicz of Leicester University. It involves the adoption of the 'Anthropocene' as a new geological time unit.

This is a decision that, in my view, reflects (and is a response to) the full depth of the ecological and climate crisis we face today and its implications.

The idea was first advanced in 2000 by the Dutch atmospheric chemist Paul J Crutzen—who won the Nobel Prize in 1995 for his pioneering research on stratospheric ozone depletion—and Eugene F Stoermer, a biologist from the University of Michigan.

Their case was (and is) that the impact of human beings on the planet is now of such an order that the current geological epoch, the Holocene (the interglacial period), which has existed for the past 11,700 years, should be brought to an end and superseded by the 'Anthropocene', or the 'age of humans'.

The division of the Earth's 4.5bn year history (into eons, eras, periods and epochs) is determined by the International Chronostratigraphic Chart (Geological Time Scale), which is administered by the International Commission on Stratigraphy.

We are currently in the Phanerozoic eon of the Cenozoic era and the quaternary period, which is further divided into two epochs: the Pleistocene and Holocene. The Pleistocene was characterised by climatic fluctuations and periodic ice ages, in the Northern hemisphere, the last of which was 11700 years ago leaving us in the current epoch of the Holocene—a much more stable epoch conducive to the global growth of the human species.

The adoption process

Practical steps towards adoption of the Anthropocene began in 2009 when the AWG (of which Crutzen is a member) was asked to study the proposition and make a recommendation.

The AWG has now reached a decision this year(2016)—by a majority of 35-1— to propose the endorsement of the change to the Anthropocene. They agreed that the concept is indeed scientifically and 'stratigraphically' sound and that the Anthropocene should be formally added to the International Chronostratigraphic Chart and a new epoch declared.

This rather dramatic development was presented to the 35th plenary of the International Geological Congress which took place in Cape Town from August 27 till September 3. Afterwards Chris Rapley, a climate scientist from University College London, stressed the importance of the decision this way in an interview with the Guardian:

'Since the planet is our life support system—we are essentially the crew of a largish spaceship—interference with its functioning at this level and on this scale is highly significant. If you or I were crew on a smaller spacecraft, it would be unthinkable to interfere with the systems that provide us with air, water, fodder and climate control. But the shift into the Anthropocene tells us that we are playing with fire, a potentially reckless mode of behaviour which we are likely to come to regret unless we get a grip on the situation.' (*Guardian* August 29th, 2016)

The tone he strikes is right. Such a momentous decision, if finally endorsed, would mean that for the first time a geological epoch had been determined by the impact of a single species rather than by the planet's main flora and fauna composition or by geophysical events. It would (rightly) imply that humanity itself has now become a geophysical force equal to some of the great forces of nature such as meteor strikes, volcanic eruptions and tectonic movements that have previously brought about such changes.

The step the AWG has taken is crucial for all those who value the environment and want to defend it. It sounds the alarm, in a clear and unavoidable way, as to the full depth and character of the ecological crisis and the anthropological driving force behind it. Any tendency, to dismiss the Anthropocene as an obscure geological debate amongst the scientific community should be firmly rejected. The scientific community have, and not for the first time, made a very important contribution to the defense of the planet.

A number of books have been published, in the course of the AWG deliberations, backing the approach it has been developing. These include *The Anthropocene: the Human Era and How it Shapes the Planet* by Christian Schwagerl (published in 2014 by Synergetic Press). Its foreword by Paul Cruzen, describes the book as a 'navigation system for the new world of the Anthropocene that lies before us'.

The AWG published its own book in 2014: *A Stratigraphical Basis for the Anthropocene*, which sets out the evidential basis of their thinking. In 2015 Routledge published *The Anthropocene and the Global Environmental Crisis*, edited by Clive Hamilton, Christophe Bonneuil, and Francois Gemenne, which is an excellent introduction to a complicated subject [4].

Recommendation

The AWG recommendation is not the end of the story, of course. There is still a rigorous procedure to be completed before a new epoch can finally be adopted by the scientific community.

The AWG proposal now forms the basis of a recommendation to its parent body—the Sub-commission on Quaternary Stratigraphy (SQS). If it is supported there it will then go to the SQS's parent body, the International Commission on Stratigraphy. It will still need to be ratified by the Executive Committee of the International Union of Geological Sciences—and by a 60% majority.

If all of this is successfully completed the Anthropocene will then it will be officially added to the Geological Time Scale.

Despite the complexity of this procedure, the AWG's recommendation is (according to those in a position to judge) likely to prove decisive, and there could be an official adoption of the Anthropocene within two or three years.

The date of the Anthropocene

Possibly the most controversial question the AWG dealt with was the precise date from which the Anthropocene epoch should be deemed to have started. They considered a range of propositions from the time modern humans entered the scene 160,000 years ago, the beginning of agriculture, the onset of industrialisation, the date of the invention of the steam engine, and various dates in the mid-20th century.

Behind this was the need for geologists, on the basis of their rules and conventions, to identify changes in the fossil record, in rock sediment or glacier ice for example, which mark the point at which the transition took place. Some AWG members argued for using the plutonium fallout from nuclear weapons testing in the early 1950s. There were plenty of other possibilities: plastic pollution, soot from power stations, concrete particles, and even the bones left by the global proliferation of the domestic chicken.

The date they eventually came up with was mid-20th century (i.e. around 1950), which coincides with what they describe as the 'great acceleration' of human impact on the planet.

Whilst it is necessary to put a precise date on the Anthropocene it is not a single event but a long-term process of environmental damage that is becoming increasingly irreversible. The press release the AWG issued announcing of their conclusion points towards this:

'Changes to the Earth System that characterize the potential Anthropocene Epoch include marked acceleration to rates of erosion and sedimentation, large-scale chemical perturbations to the cycles of carbon, nitrogen, phosphorus and other elements, the inception of significant change to global climate and sea level, and biotic changes such as unprecedented levels of species invasions across the Earth. Many of these changes are geologically long lasting, and some are effectively irreversible.'

The left and the Anthropocene

In my view the concept of the Anthropocene is not only broadly right, but goes to the heart of the debate on the ecological crisis today and has implications for the kind of eco-socialism that is crucial for a successful ecological struggle in the 21st century.

This does not mean, however, that the concept is universally accepted amongst Marxist ecologists. In fact there is a vigorous and ongoing debate taking place, on the left, for and against it. Naomi Klein, for example opposes the concept. This, to my mind, is not only wrong but illogical—since effectively contradicts the now widely accepted notion that climate change, and the wider ecological crisis, is an anthropologically generated process. Why not argue that climate change is a product of capitalism rather than human activity.

One of the leading advocates of the Anthropocene is Marxist ecologist John Bellamy Foster; the editor of *Monthly Review*, and the author of the prestigious *Marx's Ecology -materialism and nature*. He spoke on the subject at the SWP's Marxism-2016 in July.

His punch line was that the logic of the Anthropocene means that the term 'ecological crisis' is no longer an adequate description of today's situation. What we are facing today, he argued, is 'an earth system turning point'... 'a crisis of the entire earth system itself brought on by human beings'. This means that humans have become a geological force in their own right changing the nature of the planet itself and resulting in an 'anthropogenic rift' in its biosphere.

One of the reasons he had been keen to speak there, he said, was that he wanted to urge the whole left to take the issue far more seriously. Leading speakers from the SWP, however, whilst saying that this idea was 'interesting' stopped short of endorsing it.

Camilla Royle, the deputy editor of *International Socialism*, writing on the Anthropocene, also finds the Capitalocene a 'useful' proposition, but again stops short of full endorsement. Another strong supporter the Anthropocene idea is Ian Angus, the Canadian Marxist ecologist and editor of the ecosocialist website *Climate & Capitalism*. He has written several articles to this effect, and has a book *Facing the Anthropocene: Fossil Capitalism and the Crisis of the Earth System* to be released in October (2016), which I have not yet seen.

The capitalocene

The strongest and most coherent (but entirely mistaken in my view) case against the Anthropocene is made by the Marxist ecologist (and FI comrade) Andreas Malm, of Lund University in Sweden. Opposition to the Anthropocene, which he calls a 'myth', effectively forms the conclusion his (otherwise excellent) book *Fossil Capital—the rise of steam power and the roots of global warming* where he brands it as 'species thinking'. [5]

Malm's alternative proposal to the Anthropocene is the 'Capitalocene'. Such a designation, he

argues, would be based on ‘the geology not of mankind, but of capital accumulation.’ (Page 391) Steam engines, he says, ‘were not adopted by some natural-born deputies of the human species. By the nature of the social order of things, they could only be installed by the owners of the means of production.’ [Emphasis original]... ‘Is there any reason to consider it any more truly representative of ‘the human enterprise’ than the Luddites or the plug drawers or the preachers of steam demonology?’ We should ‘not mistake capitalists for human beings’ he argues. (Page 267)

The Anthropocene, Malm argues: ‘might be a useful concept and narrative for polar bears and amphibians and birds who want to know what species is wreaking such terrible havoc on their habitats, but, alas, they lack the capacity to scrutinize and stand up to the human actions; for those who may do so—other human beings—species thinking on climate change conduces to paralysis’. (Page 272)

Camilla Royal says that she is attracted to the case he puts but since the word “Anthropocene” has already entered common usage it may simply be too late to start proposing alternative terms - a rather strange argument when we are talking about the definition of an historical epoch.

Marxism or ‘species thinking’

Andreas Malm appears to suggest that the Anthropocene, or any notion of assessing the environmental impact of modern humans on the planet as a species, runs counter to a class based (or Marxist) analysis of society. But why? The Anthropocene does not imply that humans are all equally responsible for their impact on the planet. The scientists who proposed it don’t think that. Malm seems to suggest that people have no responsibility for our own species whilst capitalism exists and only assume this after capitalism is gone.

In fact, the Anthropocene concept is completely consistent with the approach of classical Marxism (Marx Engels and Morris) of human being as a living part of nature and not in conflict with it. They did not hesitate to talk about the impact of human beings.

In *The Dialectics of Nature* Engels wrote the following remarkable passage: ‘At every step we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside nature—but that we, with flesh, blood and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other creatures of being able to learn its laws and apply them correctly’.

In other words, capitalism itself is a human activity, as Jason Moore argues: “human activity not only produces biospheric change, but relations between humans are themselves produced by nature”.

We therefore have a duty to deal with the impact of our own species on the biosphere of the planet taking into account sharp class divisions that exist and the fact that the rich and the powerful, and corporate interests, are the principal driving force of this and bear the main responsibility. This does not, however, mean that we can ignore the overall impact of our species on the viability of the planet. We would do so at our own peril.

The idea of the Capitalocene, in my view, is not just a scientifically wrong concept but could lead to an underestimation of the depth and scope of the ecological crisis.

The left and the Capitalocene

Not that Malm is alone on the left in proposing the Capitalocene. His views are strongly reflected in two recently published books: *Anthropocene or Capitalocene* edited by Jason W Moore (Kairos, 2016) and *The shock of the Anthropocene* by Christophe Bonneuil and Jean-Baptiste Fressoz (Verso, 2016).

Neither of these books, however, in my view, add much of substance to the position originally set out by Malm: i.e. that it is the capitalist system, not modern humans as a species, that are responsible for what is happening to the planet. They both correctly expand on the grossly ecologically destructive nature of capitalism. Capitalism is indeed the most environmentally destructive system of society that modern humans have produced—with the possible exception of Stalinism. There is no dispute about that.

But this misses the point. The question is not whether capitalism is ecologically destructive but whether the ecological crisis can be **reduced** to capitalism. To do so, in my view, is a far too narrow perspective from which to make a judgment on either the character of the epoch or the impact of modern humans on the planet. In the end, capitalism is a human activity.

While ecological destruction increased dramatically with the industrial revolution, the destructive impact of modern humans on the planet long preceded the arrival of both industrialisation and capitalism. I agree with Camilla Royal on this when she says that 'It seems premature to associate the Anthropocene so closely with the industrial revolution'.

She points out that Crutzen and Stoermer were clear that their proposal for the industrial revolution start date was just a suggestion and that they expected there would be further debate on the issue. She goes on to say that there is some justification for dating the start of the Anthropocene to a time 'when humans caused the extinction of many large mammals or even to the first surviving evidence of any *human activity*' [Emphasis original] I agree with that as well.

Disproportionate impact

I have long argued that human beings have had a disproportionate impact on the planet throughout their 160,000-year history. As they (*i.e.* we) migrated out from Africa they wiped out most of the megafauna, big land animals and flightless birds they encountered, who were defenceless against their huge brains, remarkable hunting skills, and collective organisation—often going far beyond their immediate needs. A fifth of all species were eliminated in this way. This was the case in Australia, New Zealand, Madagascar, Indonesia, the Americas and Europe. In Europe deforestation and the onset of farming methods transformed the medieval landscape beyond recognition.

Whilst this destruction was not a challenge to the epoch (*i.e.* the Holocene) as such, at that time, it was already clear that modern humans had an enormous capacity as an agency for change. We were a special case as far as our ability not only to change the environment but to destroy it. We also had a uniquely destructive relationship with other species in that all were vulnerable to our activities.

Today, we are facing the biggest extinction of species—the 'sixth extinction'—since the demise of the dinosaurs 65m years ago. Today forty per cent of all mammal species face a short to medium term threat of extinction against a background rate of one every 700 years. Amphibians are disappearing at staggering 45,000 times the background rate. This is a rate of extinction that ultimately puts at risk all species on the planet, including, eventually, our own. Species extinction on this scale is not

only at the heart of the ecological crisis today but is the single most compelling factor in the case for the Anthropocene.

Industrialisation

The key mistake made, by advocates of the Capitalocene is to conflate the industrialisation and the rise of capitalism. The ecological challenge represented by industrialisation itself: i.e. the invention of the steam engine, the internal combustion engine, and the massive expansion of production and population made possible by these, whatever mode of production took control, was gigantic.

Whilst a socialist society (or more precisely an ecosocialist society) would create far better conditions to defend the planet, the absence of capitalism is not enough. For most of the 20th century capitalism ceased to exist over a third of the globe, in the Soviet Union Eastern Europe and China, yet environmental destruction was at least as damaging as it had been under capitalism.

Environmental destruction not only started a long time before capitalism but will continue for a long time afterwards unless a viable sustainable alternative is consciously fought for and constructed. This is what ecosocialism is about. Not just the struggle for a socialist society, but for an ecologically sustainable socialist society. One that ends and reverses the drive for growth and that lives in harmony with nature and not at its expense –a fundamental change in our relationship, as human beings, with the planet we inhabit.

Big step forward

The AWG decision to recommend the Anthropocene was a remarkable achievement for Crutzen and Stoermer, who have campaigned long and hard for this decision to be made with many frustrations along the way. In 2011 Crutzen, for example, along with the German environmental journalist Christian Schwägerl, demonstrated his frustration at the slow progress being made:

'It's a pity we're still officially living in an age called the Holocene. The Anthropocene—human dominance of biological, chemical and geological processes on Earth—is already an undeniable reality...

'For millennia, humans have behaved as rebels against a superpower we call 'Nature.' In the 20th century, however, new technologies, fossil fuels, and a fast-growing population, resulted in a 'Great Acceleration' of our own powers. Albeit clumsily, we are taking control of Nature's realm, from climate to DNA. We humans are becoming the dominant force for change on Earth. A long-held religious and philosophical idea—humans as the masters of planet Earth—has turned into a stark reality. What we do now already affects the planet of the year 3000 or even 50,000.' (Climate Energy Policy and Politics pollution and Health Science and Technology Asia., January 2011)

In the end the persistence of Crutzen and Stoermer paid off. And the result, if indeed the AWG recommendation is accepted, will be a crucial addition to the armory of those who are struggle to save the planet from ecological destruction. It will be a warning sign to all those who doubt the depth and scope of the ecological crisis and how close we are to the point of no return.

Camilla Royal quotes Ian Angus in terms with which I would entirely agree: 'ecosocialists need to approach the Anthropocene project as an opportunity to unite an ecological Marxist analysis with the latest scientific research, in a new synthesis—a socio-ecological account of the origins, nature, and direction of the current crisis in the Earth system'. And I would add to that—as a basis for what

we do about it.

Alan Thornett

P.S.

* <http://socialistresistance.org/a-major-step-towards-the-anthropocene/9049>

Footnotes

[1] <https://www.theguardian.com/world/2015/may/29/no-relief-from-india-heatwave-as-death-toll-reaches-20-year-high>

[2] <https://www.theguardian.com/environment/2016/sep/08/humans-have-destroyed-a-tenth-of-earths-wilderness-in-25-years-study>

[3] Its full title is the Anthropocene Working Group of the subcommission on Quaternary Stratigraphy

[4] My review of it can be seen here: ESSF (article 37004), [Review for ecosocialists: The Age of Anthropocene ?](#).

[5] My review of *Fossil Capital* can be found here: ESSF (article 39187), [Geology & Marxism: The Anthropocene debate and Andreas Malm's "Fossil Capital" - a review.](#)