Exponential Growth on a Finite Planet

Science is telling us that we have less than 10 years in which to hold the global average surface temperature below 1.5degC, *writes Alan Thornet*t. After which dangerous and irreversible feedback processes will start to take control.

Those of us who inhabit planet Earth today face an existential problem. Our own species, homo sapiens (modern humans), are trashing the planet at an ever increasing and more destructive rate. We are also the first generation to comprehend the full depth of this crisis, and we could be the last with a the chance to do anything about it. The ability of the planet to sustain human life could be gone within decades, and we could face major social breakdown by mid-century. Or as Jem Bendall, an XR supporter, puts it in his essay ***Deep Adaptation*** we are facing a "near-term collapse of society with serious ramifications for future of (the planet's) inhabitants".

Temperature records, however, continue to be broken with frightening regularity. Floods, droughts and wild fires are more intense and more frequent every year. The artic sea ice will soon be gone, and parts of Antarctica are warming 5 times faster than the rest of the planet. Both the Greenland and Antarctic ice sheets are destabilising – the melting of which would raise the sea level by up to 20 metres, which would obliterate swathes of the most densely populated parts of the globe. The planets permafrost regions are now melting 50 per cent faster than previously thought – with the potential to release vast quantities of methane, a powerful greenhouse gas. The planets biodiversity, also essential to human life on the planet, is collapsing in front of our eyes.

Economic growth

The most dangerous (and intractable) aspect of the ecological crisis is endless exponential economic growth – which is central the prevailing economic paradigm, and which is driving the planet to catastrophe in just a few decades. As George Monbiot has said recently, as far as I know for the first time: 'Green growth' doesn't exist – less of everything is the only way to avert catastrophe' – and he is absolutely right.

This has been a long-term blind-spot for the left. After WW2 the whole world – on both sides of the iron curtain – emerged fully signed up to growth and productivism – including all sections of the left. In the USSR Stakhanovism was dominant despite the environmental measures taken by the Bolsheviks in the early years of the revolution. Western Marxism – mainstream Marxism in the Global North – was now devoid of any detectable ecological legacy from classical Marxism. It was as John Bellamy Foster has put it: 'in denial of the dialectic of nature'.

In the car industry – where I worked in the 1960s and 70s – there were strong trade unions, but growth and productivism was rife and unchallenged, including by the left. Environmental issues were dismissed as a middleclass diversion from the 'real' struggles around wages, working conditions.

In the 1980s ***The Alternative Economic Strategy***, the bible of the Bennite left (inside and outside of the Labour Party), was fully signed up. It started with the following statement: "The essential basis for any alternative economic strategy must be a policy for planned economic expansion". The ecology of the planet is not mentioned anywhere in its 45 pages.

There has been some change since then, pushed by the degrowth movement, but degrowth is far from universally accepted. (The degrowth movement emerged in Barcelona in 1987 and became

strong in France where collective called Research and Degrowth was founded in Paris n 2008 which held conferences every few years with attendances of three or four thousand.)

Johnathan Neale, for example, in his recent book ***Fight the Fire***, is openly opposed to challenging growth, arguing that we have to defeat poverty first – though he does not rule out doing so longer-term. The problem with this is the damage being done now and the danger that there may be no 'long-term' available to us.

The damage done by productivism in the 20th century, however, is only matched by the scale of the problem itself.

The scale of the problem

The clearest exponent of degrowth, in my view, is Giorgos Kallis, a Greek Professor of economics at the Institute of Environmental Science and Technology in Barcelona, particularly his 2018 book '***degrowth***'. He points out, for example, that with an exponential growth rate of 3 per cent a year – which has prevailed globally for the past 60 years – the global economy doubles every 24 years. It is four times bigger within 48 years, eight times bigger within 72 years, and so on. The idea that an economy can grow to infinity, he says, is "absurd."

The faster we produce and consume goods, he argues, the more we transform and damage the environment. "There is no way to have our cake and eat it if we are to avoid destroying the planet's life support systems. The global economy will have to slow down. We should extract less and produce less, and we should do it differently. To prosper without growth we have to establish a radically different economic system and way of living."

Jason Hickel (an XR supporter) takes the same view in his 2020 book ***Less is More –how degrowth will save the World***. As the

GDP grows, he says “the global economy churns through more energy resources and waste each year, to the point where it is dramatically overshooting what scientists have defined as safe planetary boundaries – with devastating consequences for the living world”.

The unavoidable conclusion from this is that with today’s growth rate, what-ever else we do to avoid the destruction of the planet – and there are myriad things we have to do – will eventually be swept aside by it.

Rising Population

A major component of global GDP is the rising human population, although not always identified as such.

Many on the radical left avoid (or even object to) discussing it. Others deny that it is happening, often quoting the falling (global) birth rate. Whilst this is true the death rate is falling as well, and the population, in absolute terms, continues to rise by 80m a year: which means it doubles every 24 years. The UN expects it to reach 9 billion by 2050 and just under 11 billion by 2100. It may then peak, but it would be too late to make any difference.

This increase compounded by rapid urbanisation. There are now 34 mega cities in the world, exceeding 10m people with Tokyo as the biggest with 37 million people. There are three others in excess of 20m – Shanghai with 25m and Chongqing and Beijing with 22m. China is currently planning a super-city with a population of 40 million in the Pearl River Delta.

One recent major study that does identify population as a component of GDP was ***The Dasgupta Review (The Economics of Biodiversity: The Dasgupta Review)***. Which was commissioned by the UK government published in February of this year. Although government sponsored it went seriously off message, arguing, rightly in my view, that economic growth and population growth

are indivisible – that you can't, in the end, contain economic growth without containing population growth.

It points to three parallel components of GDP: "population size; per capita GDP, the efficiency with which we convert the biosphere's goods and services into GDP, and the extent to which the biosphere is transformed by global waste disposal". These factors, it insists, "are not independent of one another, and are, in any case, the outcome of our own choices."

After an embarrassing public launch with Boris Johnson, David Attenborough, and many others praising it to the skies, ***the Review*** was banished to the very long grass.

Tim Jackson, a professor of sustainable development at the University of Surrey, says the following on populations in his best-selling book***Prosperity Without Growth*** published in 2009:

"A world in which things simply go on as usual is already inconceivable. But what about a world in which an estimated 9 billion people [the UN projection by 2050] all achieve the level of affluence expected in the OECD nations? Such an economy would need to be 15 times the size of today's economy (75 times what it was in 1950) by 2050, and 40 times bigger than today's economy (200 times bigger than 1950) by the end of the century. What on earth does such an economy look like? What does it run on? Does it really offer a credible vision for a shared and lasting prosperity?"

Any attempt to reduce population growth, however, must be based entirely on the empowerment of women to control their own lives and their own fertility through full access to health services, education and employment, and must reject any and all form of coercive control.

Giorgos Kallis supports this approach, including opposition to population control.

The ‘anthropogenic techno-mass’

Another major indicator of human impact is the concept of the ‘anthropogenic techno-mass’(all human made stuff). It includes all roads, factories, houses, vehicles, railways, shipping, aviation, shopping malls, fishing vessels, printing paper, plastic, computers, smartphones and all the other infrastructure of today’s daily life. The world’s plastic alone, for example, now weighs twice as much as all marine and terrestrial animals, and buildings now outweigh all trees and shrubs.

This concept was first advanced in 2000 by the Dutch atmospheric chemist Paul J. Crutzen and Eugene F Stoermer, a biologist from the University of Michigan. Their work was and followed up in 2016 by a paper entitled ‘***Scale and Diversity of the Physical Technosphere: A Geological Perspective’***, published in the ***Anthropogenic Review***.

Last year Israeli scientists published a further study of the Anthropogenic techno-mass in the journal ***Nature*** entitled ***Global human-made mass exceeds all living biomass.***

It was timed it to coincide with the point at which the Anthropogenic techno-mass – which now weighs in at a gigantic 1.1 trillion tonnes – has become equal to the total natural global bio-mass – all flora and fauna.

They also point out that creation of human techno-mass has accelerated over the past 120 years and now doubles every 20 years. It has gone from 3 percent of the world’s biomass in 1900 to parity with it today.

These findings also consistent with the idea of the Anthropocene, the decision of scientists to rename the current planetary epoch (the Holocene or interglacial period) as the epoch of the Anthropocene – or the epoch of human beings.

As far as I can tell, however, the radical, or indeed Marxist left, have yest to show any interest in it.

The Limits to Growth Report

Debate on growth is not new, of course. In 1972 it was the subject of ***TheLimits to GrowthReport*** published by the Club of Rome and written, principally, by Donella and Dennis Meadows from the Massachusetts Institute of Technology. It sold 12 million copies, was translated into 37 languages, and remains the top-selling environmental title of all time. It was highly influential – along with Rachel Carson's ***Silent Spring*** 10 years earlier – in stimulating the emergence of the modern environmental movement that was taking place at the time.

The central message of the ***Report*** was that it is impossible to have exponential growth in a finite system like the Earth without its systems sooner or later collapsing. Its conclusion was that "if 1970 rates of economic growth, resource use and pollution continued unchanged, then modern civilisation would face environmental and economic collapse sometime in the mid-twenty-first century:" which has turned out to be a remarkable accurate prediction.

It was heavily attacked by the establishment, but the left was deeply divided. The Austrian philosopher and ecologist André Gorz defended the ***Report*** in his 1980 book *Ecology as Politics.* In the end he said: "Physical growth has physical limits, and any attempt to push them back (by recycling and purification) only pushes the problem around."

In 2009 the legacy of the ***Report*** was strongly defended by Tim Jackson – an ecological economist and professor of sustainable development at the University of Surrey – in his book***Prosperity Without Growth. The Limits to Growth Report***, he says, 'with all the advantage of hindsight', has turned out to be a 'remarkably accurate' analysis.

Today, he says: “questioning growth is deemed to be the act of lunatics, idealists, and revolutionaries… But question it we must. The idea of a non-growing economy may be an anathema to an economist. But the idea of a continually growing economy is anathema to an ecologist. No subsystem of a finite system can grow indefinitely, in physical terms. Economists have to be able to answer the question of how a continually growing economic system can fit within a finite ecological system.

Jackson says the following on population: “A world in which things go on as usual is already inconceivable. But what about a world in which an estimated 9 billion people all achieve the level of affluence expected in the OECD nations? Such an economy would need to be 15 times the size of today’s economy (75 times what it was in 1950) by 2050, and 40 times bigger than today’s economy (200 times bigger than 1950) by the end of the century. What on earth does such an economy look like? What does it run on? Does it really offer a credible vision for a shared and lasting prosperity? …”

Naomi Klein puts it this way in ***This Changes Everything:*** ‘steady exponential material growth with no limits on resource consumption and population is the dominant conceptual model used by today’s decision makers.” It is, however, total nonsense. Economic growth, along with population growth, is one of the main drivers of global warming and environmental destruction, and it cannot continue at its current rate without disastrous results.

Even Al Gore in his 2013 book ***The Future*** points out that:

The rapid growth of human civilisation – in the number of people, the power of technology, the size of the global economy – is colliding with approaching limits to the supply of key natural resources on which millions of lives depend, including topsoil and freshwater. It is also seriously damaging to the integrity of crucial planetary ecological systems. Yet ‘growth’ in the peculiar and self-defeating way

we define it, continues to be the principal and overriding objective of almost all the global economic policies and the business plans of almost all corporations.

High growth rates, including that of population, were and are highly popular with ruling elites, of course, who see in expanding markets, higher profits, workers for factories and services, and soldiers for the battlefields.

The case for degrowth

Giorgos Kallis concludes his book as follows: “This book has presented the case for a radical social transformation that leads to a significant reduction in societies throughput. I have argued that degrowth is necessary because if growth continues at pace, we will cross planetary boundaries with unforeseen and in all certainty very undesirable consequences. Degrowth is not only ecologically necessary but also socially desirable. The pursuit of perpetual growth is a major obstacle to the achievement of a more equal society that lives in creative balance with the environment. Growth is fuelled by exploitation and cost-shifting. A sharing sociality cannot, and should not, be one that constantly expands, constantly creates new frontiers that only a few can access… If this is right then the future will be by necessity one of lower throughput – the question is will it be by design or disaster?”

He is right. The planet cannot survive the 20th century model of the throwaway society, particularly in the Global North. Vast amounts of commodities are churned out, driven by the advertising industry, that go from factory to landfill in very short periods of time.

The fashion industry (for example) produces 150 billion garments a year, enough to provide twenty new articles of clothing for every person on the planet. Eighty per cent of

all clothing, irrespective of the level of use, including baby clothes that are discarded very quickly, goes into landfill. Every year, consumers in the UK buy 2 million tonnes of clothes, of which more than half – 1.2 million tonnes – ends up in landfill. Religious and other popular festivals, like Christmas, result in the production of vast quantities of stuff that is used very little or even remains entirely unused before reaching a landfill site.

Alongside the clothing industry we have plastic waste. A survey by Greenpeace found that single-use plastic bottles weighing more than 2 million tonnes are sold every year; another study has shown that that by 2050 there will be more plastic waste than fish in the sea.

What kind of new society?

This issue came up in the discussion, and it is very important.

First, the ecological crisis (in my view) cannot be reduced to the capitalist system, nor the solution reduced to its overthrow – hugely destructive as it is. The environmental crisis is first and foremost anthropogenic and major anthropological damage was inflicted on the ecosphere of the planet long before the arrival of capitalism – and the struggle (hopefully) will continue long after it is gone – depending on the nature of its removal and the alternative that replaces it. The deforestation of Britain, for example, took place in the Neolithic period.

20th century models as to what a post capitalist society would look like have little to offer. The depth of the crisis today redefines the socialist (i.e. ecosocialist) project. It is no longer a struggle 'simply' to replace capitalism with an economically and socially just society. Today we have to go further. A society that (for example) rejects growth from the

outset and is capable of constructing a none-exploitative relationship between human beings and the natural world that is sustainable for the long term for both ourselves and the millions of other species with which we share the planet.

This is only achievable if it is pursued and advocated a conscious objective during the revolutionary struggle itself. This is what makes the strategic issues so important today. It is also what makes an ecosocialist world view indispensable: which criticises both the capitalist 'market ecology' and productivist 'socialism' – which ignores the Earth's limits. This involves a shift away from quantitative and toward qualitative economic criteria, and an emphasis on use-value instead of exchange-value.

Can such changes be contained within the capitalist system? No. Growth based economies collapse without growth. We therefore have to fight for such changes, in the here and now, whilst capitalism still exists as part of a longer term project to replace capitalism with an ecosocialist society. We have just 10 years in which to reach zero carbon, after the revolution will be too late. Socialism can't be built on a dead planet.

Our task, therefore, is to force the elites to make major structural changes, in the here and now, whilst capitalism still exists – including the complete decarbonisation of the global economy and its replacement by renewable energy.

Reforms are not necessarily reformist. The most effective road to revolutionary change is via the struggle for partial and transitional demands. The struggle for such demands generates both self-organisation and ecological consciousness and can take the struggle to a higher and more radical stage. In any case, if we are unable to build the kind of movement capable of forcing capitalism to make big changes, how are we going to build a movement capable of expropriating it by revolutionary means?

William Morris

Few have critiqued growth more effectively, or indeed set out the principles of a future sustainable society, than William Morris – Britain's first ecosocialist.

In his lecture '***Makeshift***', for example, delivered in Manchester in 1894 he said the following:

> *"My friends, a very great many people are employed in producing mere nuisances, like barbed wire, 100 ton guns, sky signs and advertising boards for the disfigurement of the green fields along the railways and so forth. But apart from these nuisances, how many more are employed in making market wares for rich people which are of no use whatever except to enable the said rich to `spend their money' as 'tis called; and again how many more in producing wretched makeshifts for the working classes because they are so poor that they can afford nothing better?"*

In his lecture ***Useful Work Versus Useless Toil*** delivered in London the same year, he added:

> *"Next there is the mass of people employed in making articles of folly and luxury, the demand for which comes from the rich non-producing classes and which most people would not dream of wanting. These things are not wealth but waste. Wealth is what Nature gives us: sunlight, fresh air, the unspoiled earth, food, clothing and necessary housing; the storing and dissemination of knowledge, the means of communication between humans and works of art created when humans are most aspiring and thoughtful – all the things which serve free people."*

We can't go back to the medieval village of course but there are a lot of lesions for us in what Morris had to say.

Action demands

- **A crash programme to decarbonise the economy with a socially just transition to renewable energy. A big reduction in working hours to protect jobs whilst restricting the size of the economy.**
- **Abolish the internal combustion engine. Electrify road transport, including cars, with a big reduction on the number of cars. Severely restrict SUVs. End all road building schemes. End airport expansion. Expand the rail network, no to highspeed rail. Free public transport.**
- **A massive transfer of wealth to the poorest countries to improve their living standards during a green transition. Cancel the third-world debt.**
- **End the throwaway society and built-in obsolescence. Retrofit all homes and buildings, and enforce zero-carbon standards in all new builds.**
- **Abolish industrialised agriculture, end deforestation, and cut meat consumption. For food sovereignty, reclaim the commons.**
- **Tax the polluters: put a heavy tax on carbon emissions, Tax the rich in order to end poverty and reinvest in public services and welfare.**
- **End public investment in carbon based and polluting industries, for green new deals with investment in green jobs.**
- **For a completely new relationship with nature. A national nature service including new national parks and strategic rewilding.**
- **A Universal basic income and universal basic services to protect the standard of living, health and welfare, during the transition.**

Recommended further reading

Giorgos Kallis: *degrowth*, 2018, published by agenda

publishing.

Tim Jackson: *Prosperity without growth – Economics for a Finite Planet*, published in 2009, by Earthscan.

Bill McKibben: Deep Economy, published in 2007 by Holt.

Paper: *Global human-made mass exceeds all living biomass – Nature*, October 2020.

The Dasgupta Review. '*The Economics of Biodiversity: The Dasgupta Review*' published by the UK Treasury in February 2021.
https://redgreenlabour.org/2021/04/24/a-radical-departure-the-dasgupta-review/

My review of Dasgupta – *A Radical Departure – the Dasgupta Review.* https://redgreenlabour.org/2021/04/24/a-radical-departure-the-dasgupta-review/

William Morris *News From Nowhere*.

This article, writes *Alan* Thornett, is from the rough notes I submitted as background for my introduction at the ACR's [Anti Capitalist Resistance] Critical University on the environmental crisis 2 October 2021 in the workshop on growth. It also responds to some of the things raised in the very good discussion – in particular the shape of a future ecosocialist society.

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