

Facing The Heat

April 6, 2019



In all the long duration of human history, from the ancient sacred crypts of Egypt to the glistening towers of our coastal megapolises, there has never been a crisis as severe, as devastating, or as cataclysmic as the one unfolding now. Unless drastic changes are made in very short order to the human social system that encompasses the planet, dire and frightening transformations that cannot be reversed will develop in the Earth's climate, its ocean, and its biosphere. Never has a generation faced a challenge of this magnitude. The fate of all present and future humans, and of the millions of species that share the Earth with us, now hinges on the choices and actions taken immediately by the present generation alive on the planet today.

This is not hyperbole. Scanning the daily news brings only alarm and foreboding. Crocodiles and snakes swimming down the flooded streets in Queensland, Australia after four feet of rain fell in ten days.¹ Rising temperatures in the Himalayas will melt at least one-third of the glaciers by the end of the century, even if the most ambitious climate change targets are met; if they are not and greenhouse gas emissions continue at their current rates, the Himalayas could lose two-thirds of its glaciers by 2100, exposing billions to droughts and forcing massive immigration from the region.²

Even what appears to be good news on the climate front turns out to spell disaster. A headline in the online journal *CleanTechnica* reports that the the pace of global warming has slowed, thanks to higher carbon prices and increased political ambition to tackle climate change, according to Schrodgers, a global asset manager that publishes a Climate Progress Dashboard. Reading further we find that their tracking of the progress of limiting global warming to the the 2°C above pre-Industrial levels set by the Paris Agreement had us on a path to a 4°C rise but that recently "with higher carbon prices being implemented and increased political ambition to tackle climate change . . . the pace of global warming has slowed, slightly, and the world is now currently on course for a long-run temperature rise of 3.9°C"! ³ This is not progress, this is the road to hell. A 4°C world is not a place anyone would care to exist in. It would result in sea levels a half meter or more above current levels.

If tipping points are triggered, further destabilizing the Antarctic and Greenland ice sheets, sea levels would rise even higher, flooding many of the world's most populous cities, causing hundreds of millions of people to flee inland, and sparking a massive world-wide wave of migration that would dwarf today's migrant crises. It could lead to a sea level rise of as much as 25 meters within the next few centuries. A 4°C world would devastate the world's agricultural production, with many of the world's breadbaskets becoming untenable due to desertification. Ocean circulation would slow down or stop, producing wild, unpredictable weather and storms of unimaginable ferocity. Summers will be longer, hotter, and dryer, causing huge wildfires and unlivable conditions in many areas.⁴ It is important to realize that not only would these changes be irreversible on any meaningful human timescale, but once the 2°C level is breached, cascading tipping points would almost assuredly kick in, producing a runaway temperature escalation that would not stabilize again until it reached the 4°C mark or beyond.

The Intergovernmental Panel on Climate Change (IPCC) issued a revised report in January 2019 on the impacts of global warming of 1.5°C above pre-industrial levels. It tells us that due to human activities we are now at 1°C above pre-industrial temperature. CO₂ levels are higher than at any time in the past 400,000 years, that is, since well before *homo sapiens* evolved. Global warming is likely to reach 1.5°C by 2030 to 2052, if it continues to increase at the current rate, and reach 2°C by 2045 to 2065 if emissions are not reduced. The IPCC report presents a graph of two possible future pathways, one limiting temperature rise to 1.5°C and another to 2°C, both of which require the world to reach net zero carbon emissions. The faster net zero is achieved the better the chances of stabilizing the temperature rise. If we can attain zero emission by 2040, there is high confidence of limiting the warming to 1.5°C by that year whereas a slower reduction, not reaching zero until 2055, will increase the probability of not leveling off before 2°C is reached. Both these scenarios also involve reducing the net non-CO₂ greenhouse gases such as methane, nitrous oxide, aerosols and other anthropogenic agents.⁵ The consequence would still be severe even if the temperature rise is halted at 1.5°C and truly abominable at 2°C. The pain will not be spread evenly either, with the poorest and most vulnerable people being the most effected. Furthermore, the CO₂ that is in the atmosphere and oceans when net zero is met will stay there. The elevated global temperature and the climate changes it produces will become the new normal for the planet. It will not be naturally reduced back to present levels for thousands, perhaps hundreds of thousands, of years.

It becomes clear to any reasonable person absorbing these facts that the governments, institutions, and businesses of the world must strive to effect the necessary reductions in emissions and reach net zero by mid-century or earlier. It is also clear that we are nowhere near achieving this level of commitment and in fact the international energy consortiums are continuing to extract, refine, and burn fossil fuel at an expanded rate. Even as investment in renewable energy is increasing and wind, solar, and geothermal sources of energy production continue to grow, it is shrinking relative to that in fossil fuels. Global fossil fuel consumption has increased by 40% from 2000 to 2016, with most of the increase due to natural gas from fracking.⁶

We have been told over and over again that while it is technically possible to bring our emissions down, the political will to do so is lacking. The political will will never materialize, however, as long as the richest corporations continue to exert their power over the world's governments and public institutions. Of the ten largest corporations in the world, eight are oil and gas companies, automotive companies, and the giant state-owned Chinese electrical utility, State Grid.⁷ The fossil fuel corporations continue to roam the world financing new drilling and mining of carbon, carbon that must not be allowed to leave the ground if we are to avoid the worse-case scenarios. While they take advantage of new and more extreme forms of extraction such as deep water drilling, fracking, and tar sands which are more intensive producers of greenhouse gas and lay waste to the environments and communities they exploit, they engage in massive P.R. campaigns touting their

commitment to renewable energy. Shell and Exxon Mobil have even invested in wind and solar energy projects in the past, although many of these projects have since been scuttled. As the Swedish environmentalist Andreas Malm has said, “For the world’s climate it doesn’t matter much if the market for renewable fuels is booming. What matters is that we stop using fossil fuels, right now.”⁸

But it is more than just the power and profit of fossil fuel companies that keeps the world careening down its reckless path to Hothouse Earth. It is the dynamics of the entire economic system itself that compels this behavior. This is what must be addressed if we are to achieve a net zero economy. The climate scientists who have done the research and raised the warning are far more familiar with natural science than they are with social science. More and more, however, their reports come with recommendations for the participation of the humanities and social sciences in helping to deal with the human piece of the Earth System. They recognize that it is human society that has brought this problem on itself, and human society that so far has been unable to curtail the behavior that is exacerbating the problem: the continued burning of massive quantities of fossil fuel. They understand that society must be changed, but understanding the dynamics of human social organization is a different matter from deducing the physical processes involved in climate change. Calls for radical changes to the way that energy is produced, changes that would surely disrupt the present business as usual, have led to political backlash against the whole project. As climate science struggles to understand the complex system that entangles human society and the Earth System, it ventures into the unfamiliar waters of political economy and ideological battle.

Scientists are not usually embroiled through their work in political and ideological struggles. This would seem to have been especially true of climate scientists until fairly recently. Environmental protection and energy conservation were accepted by both political parties in the United States up until the Reagan era, when the corporate elite began to see the environmental movement as part of a threat to their free-market policies and instituted a campaign against the social reforms that had been promoted in the '60s and '70s, funding right-wing think tanks, journals, and media outlets. The solar panels that Jimmy Carter had installed on the roof of the White House were ordered removed when Reagan assumed office. However, as Naomi Klein has pointed out, taking measures to control global warming and reduce CO₂ emissions was still a somewhat bipartisan project as recently as 2007, but since then the Tea Party-controlled Republican Party has increasingly attacked climate science as a UN-orchestrated plot to take away individual freedoms. Klein makes a telling point, that “as soon as they [hard core conservatives] admit that climate change is real, they will lose the central ideological battle of our time—whether we need to plan and manage our societies to reflect our goals and values, or whether that task can be left to the magic of the market.”⁹ The right wing’s fear that climate change will become a vehicle for overhauling the market-regulated economy that has produced global warming may be a more accurate assessment of the situation than the mainstream belief in market-based solutions such as cap-and-trade and faith in reckless and dangerous geoengineering projects.

The failure over the last 30 years of market-based solutions to slow the growth of CO₂ emissions is an indication that the measures needed to put an end to fossil fuel combustion and transform the world’s energy system are beyond the ability of the market to effect. Time is fast running out and the longer the wait to reduce emissions, the more drastic the measures needed to reach net zero in time. In the absence of a market-generated remedy, government intervention on a large and drastic scale will be advocated to put a stop to all oil, gas, and coal extraction, and to build the needed renewable energy infrastructure. This is the great fear of much of corporate America and its right-wing minions and while that level of government action does not appear to be a serious issue at the present moment, the reality of the climate crisis will increasingly insert itself into politics as usual.

The Green New Deal proposes to achieve net zero emissions in time to prevent runaway global

warming. After decades of inaction from the national government it is a welcome sign. There is little reason, however, to believe that the radical reforms it calls for will be accepted without a massive movement behind it. Stricter regulation of corporations, expansion of the public sector, and higher taxes for the affluent will not only be bitterly fought by those in power, they are quite possibly incompatible with the system's requirement of continuing capital expansion, an expansion that has been premised throughout the world on unimpeded access to fossil fuel, avoidance of restrictive environmental regulations, and the weakening of labor laws allowing for the expanded exploitation of labor. What's missing from the debate over the Green New Deal is a critical understanding of the dynamics of capitalism. Without it, calls for the changes necessary for a sustainable economy and thus a sustainable planet will be rejected as impossible economically as well as politically, given that the health of the capitalist economy, its continued unending economic growth, is a sine qua non of any political policy that seeks to be a player.

The reaction to the Green New Deal from Trump and Fox News was apoplectic as expected, but much of the liberal establishment was dismissive as well, though more on pragmatic grounds. Ken Caldeira, an atmospheric researcher had this to say on NPR: "In my own subjective assessment, getting to near-zero emissions over the next decade would be physically possible but sociopolitically infeasible." So what does it mean if, with the fate of the Earth hanging in the balance, the means to save us is physically possible but the sociopolitical system rules it out?

Climate change is not a consequence of human nature, it is not the result of personal greed or ignorance, and it is not the failure of individual resolve. It is the result of a system of human interactions on a planet-wide scale that follow laws of motion undirected by conscious planning but that require the constant expansion of human social production. From the beginning, that growth entailed the unimpeded consumption of the "free gifts" of nature as capitalists spread their system throughout the world, gobbling up the natural resources of colonized peoples, including in many cases the people themselves.

The continued growth of capital has always been hampered by periodic crises that have thrown the economy into recessions and depressions in which businesses failed, workers lost their jobs, and massive amounts of capital lost value. Those crises led after much suffering to new periods of growth and renewed capital expansion, but the present ecological crisis is something entirely different that will soon destroy the conditions in which any advanced society can operate. There will be no recovery and return to another round of growth once planetary conditions rule out the possibility of complex human society. Before that, however, the costs of mitigating the growing disasters will severely limit the ability of the capitalist system to accumulate the surplus needed for its continued expansion and world wide economic collapse will loom.

Meanwhile, today, as catastrophic climate events continue to run rampant across the planet, policy in the world's largest economy is directed by people who deny human-caused global warming. They plan to increase as much as possible the extraction and burning of fossil fuel and do all they can to block any attempts to transition to renewable energy at a time when it is imperative that the vast quantities of fossil fuel held in reserve by energy companies remain in the ground. Their denial of human causes of global warming, despite the overwhelming evidence, is founded on their own blatant self interest. However, there are other more subtle forms of climate change denial as well. Many who acknowledge the danger are nevertheless in denial about the need to radically change the way human society impacts the planetary system, the metabolic relationship between society and environment. They hold on to an unreasonable faith that technology can save us. Schemes for dumping huge amounts of sulfur dioxide into the upper stratosphere or launching reflective material in order to block sunlight are considered by most scientists to be open to dangerous unforeseen consequences, like severe droughts and the rapid warming of the atmosphere to even greater temperatures if it were ever halted. Nevertheless, the longer the termination of greenhouse gas

emissions is forestalled, the greater will be the push for these types of desperate and perilous measures. Others retain a blind faith in the market's ability to somehow mysteriously solve the problem. Both approaches represent attempts to continue with a policy of dominion over the planet rather than coming to terms with our place in it, as a part of the Earth System in which we must learn to live sustainably.¹⁰ They are denials of the gravity and extent of the predicament. It is a delusion to see climate change as anything other than a total threat—not just to human life but to all life on the planet. To face the problem squarely, the present generation will have to overthrow the climate deniers of all stripes and institute a new global order capable of ending completely the combustion of fossil fuels, limiting the non-CO₂ greenhouse gas emissions and providing relief and mitigation for the effects of climate change that are on the way.

Climate change has already happened. It is not something that is coming in the future. Further changes that will happen in the next decades and into the coming centuries have already been baked into the climate. The increased carbon in the atmosphere since the industrial revolution, more than half of it produced in the last 30 years, has not only already warmed the planet 1°C but will continue to warm it even further if no more carbon is added because it can take approximately 40 years for the atmosphere to catch up to the heat energy absorbed in the ocean.¹¹ Because of this thermal inertia, our fossil fuel emissions today will continue to raise the atmospheric temperature into the 2060s even if we were to go to net zero immediately.¹²

We are not used to dealing with events like this. We are much more familiar with simple contemporaneous cause and effect. Human social organization is now understood to be an essential component of the Earth System. It is responsible for the dire changes in the atmosphere that are warming the climate, heating up and acidifying the ocean, and depleting the biosphere. Just as future warming of the planet has already been baked in, so too has future change in human social organization. There is no way that the fossil fuel economy can exist in the future. There is no way that our present lifestyles of conspicuous consumption, air travel, internal combustion engines, air conditioning, etc.—all premised on carbon—will survive into the future. Either humans will reorganize their society and do away with fossil fuel combustion or the Earth System will do away with human society.

Capitalism was the driving force of the original conversion of the world's energy system from sustainable sources—wind, water and the muscle power of humans and animals—to the extraction and combustion of buried carbon-based fossil fuels in the form of coal, petroleum, and natural gas.¹³ It is the cause of the continuation of this process, which alone is responsible for increasing global warming and the current catastrophic climate crisis. There is a growing awareness of the complicity of capitalism in global warming. Some have suggested changing the term Anthropocene so as to point the blame to the particular form of human social organization responsible rather than to humans as a species. As Andreas Malm has said, “a more scientifically accurate designation, then, would be ‘the Capitalocene’. This is the geology not of mankind, but of capital accumulation.”¹⁴

Capitalists are fighting against this awareness on two fronts. On the right, conservative think tanks and nationalist political parties, including the Republican Party, peddle false information about climate science, spreading doubt on the human causes of global warming while aligning this issue with other right-wing cultural causes like opposition to abortion, gun rights, and anti-immigration measures. These concerns are used to create a base of support for policies, like decreased corporate regulation and the privatization of the public sphere, that enrich the upper stratum and maintain power in the hands of a corporate elite who can perceive the threat to their very existence posed by the kinds of measures that would be needed to deal effectively with climate change.

On the left, those critical of capital's hand in causing and furthering the climate crisis, are content to put the onus on *unregulated* capitalism. They deceive themselves into thinking that the problem

stems solely from the greed and lack of morality of the wealthy corporate owners and managers. They insist that the system of profit derived from continuous growth can be reformed sufficiently to be able to contain further climate change while allowing for the continuation of our comfortable modern lives.

The measures called for in the Green New Deal are proposed as a model for the kind of changes needed to halt the slide to an uninhabitable planet and to institute equitable policies to redress the injustices served out to the innocent victims of the fossil fuel economy, including those affected by a transition to renewable energy. As radical as these reforms may seem to some, they pale before the transformations that will be required to avert the catastrophe. Alexandria Ocasio-Cortez speaking on NPR admitted, "Even the solutions that we have considered big and bold are nowhere near the scale of the actual problem that climate change presents to us."¹⁵ It will take more than a New Deal to bring about the required transformation in energy use. Ultimately it will take a revolutionary change in the social system of the planet and the political structure that supports it. While it is true that we cannot wait for a socialist revolution to begin cutting emissions, we cannot rule out the possibility that the capitalist system is incapable of making the necessary reforms in time. Andreas Malm has argued that "the immutable arithmetic of climate change . . . tightens the screws on Marxists as much as on everyone else" and "at this moment in time, the purpose of an inquiry into the climatic destructivity of capitalist property relations can only be a *realistic assessment of the obstacles* to the transition."¹⁶ Christian Parenti, writing in *Dissent* magazine in the summer of 2013, acknowledged the fundamental conflict between the infinite growth of capitalism and the limits of a finite world but still felt that capitalism could institute reforms to solve the climate crisis in the same way it has dealt with specific public health issues in the past. Since he wrote that, however, carbon emissions have continued to grow each year and we are no closer to ending the fossil fuel economy. Meanwhile, the pain we are inflicting on this and future generations increases day by day.¹⁷

The question then is this: can this society stop emitting CO₂? Can the nations of the world convert to a totally renewable energy system by mid-century? Technically, it can be done. Mark Delucchi and Mark Jacobson, Berkeley and Stanford researchers respectively, have demonstrated that it is possible to transform the energy infrastructure of the world to all renewable energy, wind, water and solar by 2050 or earlier. They have worked out in minute detail how such a transition could be implemented in 139 countries of the world. Others, too, have shown how this is possible for different cities and regions.¹⁸ Despite this, some climate scientists teach their students that it is not possible because, in the world as it is, demand for energy is accelerating, carbon emissions are increasing, and as a result we are headed to an unavoidable increase of 4°C or even 6°C above pre-industrial levels and we must prepare ourselves for such a world.¹⁹ However, the fact that the present social use of energy is sending us into Hothouse Earth does not mean that it is impossible to avoid it. Unlike the immutable arithmetic of climate change, the arithmetic of human social organization *can* be altered by the conscious actions of its members.

Human social organization is the strength of the human species, not its weakness. Consciousness was the defining step in our evolution. It was an emergent trait arising out of the developing social interactions and cohesiveness of the earliest bands of hunter-gatherers. Individual consciousness is both a product of social/cultural development and a force in directing it. In the evolution of societies, greater conscious direction was a powerful development. Having one individual be the head of a hierarchical society allowed for conscious control over a greater number of subjects. The development of capitalism allowed for the emergence of a world-wide social organization in which individual consciousness was subsumed, not under the leadership of a hierarchical ruler but under the rules of a game in which individual welfare depended on ownership of property. This was a game that was ultimately beyond the control of conscious individuals, whose actions were channeled into directions determined by the expanding market economy. This arrangement has led among other

things to greater cultural transfer and allowed for the fluorescence of science, which is nothing more than the enhanced consciousness of the universe that produced us and in which we live as a species. Capitalism has allowed for the integration of social interactions on a global scale but it functions as an unconscious process in which individual and social knowledge is constrained by the rules of the game we find ourselves playing. Human beings have the power to change the rules and to end the game before it ends us.

If the transformation we need to save ourselves, our species, and our fellow members of the biosphere is not possible within the current political economic system, then that system must be changed and that change may very well lie beyond the boundaries of capitalism. Capital must expand to create profit and make money. That is its function. As long as oil, gas, and coal continue to produce exorbitant profits that is where capital will flow. As long as the owners of capital continue to wield unparalleled power and influence over the governments of the world then any policies that conflict with their material interests will be stifled. When the welfare of all the world's people is assumed to be totally dependent upon the continuing growth of the economy, the expansion of capital, and the accumulation of profit, any measure harmful to growth and profit will be deemed unacceptable, even, apparently, when that measure—the achieving of zero emissions—is indispensable to human survival.

A movement to halt global warming must force these boundaries, wrest control of governance from the hands of fossil capital, and establish a road to a sustainable future free from further greenhouse gas emissions and runaway climate change. It will take a widespread, militant, dedicated, and sustained social movement to demand the immediate conversion away from fossil fuels. It will require forcing an end to unsustainable capitalist practices and replacing them with a sustainable socialism that unites the people of the planet in the cause of mutual survival and assures an equitable and viable future for all. The crisis can only begin to be alleviated when the minds and the common effort of this entire generation are put to the service of the stewardship of the Earth and the benefit of humankind as a whole and no longer to that of capital and private gain. What needs to be done is clear. How to break through the impediments to achieving it is the difficult task at hand.

Notes

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19. Richard B. Rood, *The Conversation*, 7/7/17 <https://theconversation.com/if-we-stopped-emitting-greenhouse-gases-right-now-would-we-stop-climate-change-78882> "In any event, it's not possible to stop emitting carbon dioxide right now. Despite significant advances in renewable energy sources, total demand for energy accelerates and carbon dioxide emissions increase. As a professor of climate and space sciences, I teach my students they need to plan for a world 4°C warmer. A 2011 report from the International Energy Agency states that if we don't get off our current path, then we're looking at an Earth 6°C warmer."

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