

Alan Betts, Green Energy Times, 2020

<http://www.greenenergytimes.org>

Alan K. Betts (<http://alanbetts.com/writings>)

This is a collection of my 2020 articles in the Green Energy Times.

This series started in 2016. Most of these articles have been edited or updated from articles I wrote for the Rutland Herald, sometimes with different titles (as well as pictures).

They blend science and opinion with a systems perspective, and encourage the reader to explore alternative and hopeful paths for their families and society. They are written so that a scientist will perceive them as accurate (although simplified); while the public can relate their tangible experience of weather and climate to the much less tangible issues of climate change, energy policy and strategies for living sustainably with the earth system.

The politically motivated attacks on climate science by the current president have sharpened my political commentary; since climate change denial will bring immense suffering to our children and life on Earth.

I believe that earth scientists have a responsibility to communicate clearly and directly to the public¹ – as we all share responsibility for the future of the Earth. We must deepen our collective understanding, so we can make a collective decision to build a resilient future.

All my articles are available from my web-site, and can be freely reused under a Creative Commons license.

This pdf document contains the 7 articles as pdfs. Web access to editions and articles can be found at <http://www.greenenergytimes.org/back-issues-download/>

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¹ Betts, A. K. (2011), Communicating Climate Science. *EOS Transactions*, 92, No. 24, 14 June 2011. Available at <http://alanbetts.com/research/paper/communicating-climate-science/#abstract>



TIME TO RE-IMAGINE CAPITALISM

Dr. Alan K. Betts



There are many areas where rapid change is needed to confront and deal with climate change and ecosystem degradation. But our societies

mostly refuse to face and discuss these issues. Some of this is nostalgia for the past. We dream of the days in the 1950s and 60s when the consumer economy grew rapidly, forgetting that this was made possible because the US kept the price of oil below \$3 a barrel, until first OPEC rebelled in 1973 and then Iran in 1979. It is more comforting to ignore the unknown future rushing towards us than face change.

Our global capitalist system grew rich on cheap oil and the freedom to exploit the Earth and the poor. By dumping the greenhouse gases into the atmosphere, and many waste-streams into the oceans, industries never had to budget for the downstream costs. Now the webs of deceit and corruption driven by wealth and ancient doctrines try to bury the truth of the disasters ahead for our children and all life on Earth.

Instead of nostalgia for business-as-usual, which made a few very rich, our communities need imagination to create a sustainable future for the Earth and our children. We need stability not growth. The democratic cooperative society that we dream of, but wealth, power and greed oppose.

Meanwhile the ongoing corruption in Washington has distracted the American people from the real world-climate and extinction crises ahead. While we shopped on Black Friday, two million youth around the world again went on strike for the climate. Greta Thunberg spent ten weeks in the United States this fall. She had been planning to travel overland to Chile for the next round of U.N. climate talks. However, unrest there forced the COP25 climate conference to move from Santiago to Madrid in Spain.

I watched Greta's two-week journey back across the Atlantic to Lisbon, Portugal on the 45ft catamaran La Vagabonde, with its amazing and inspiring crew. They averaged 8 knots across a stormy Atlantic, while avoiding tropical storm Sebastian to their east. So Greta attended meetings in Lisbon and Madrid. The UN Emissions Gap Report 2019 is bleak, saying, "Countries collectively failed to stop the growth in global GHG emissions, meaning that deeper and faster cuts are now required."

Our central government crumbles into irrelevance on the global arena. Did our leaders read the August 7th IPCC Special Report on land degradation, sustainable land management and food security, or the September 25th Special Report on the Ocean and Cryosphere (ice)?

Did they hear the November 6th "Warning of a Climate Emergency" by 11250 scientists across the world? I doubt it, as they prefer false information sweetened with cash.

The implosion in Washington threatens our democracy and our future. 'We the People' need to get together in our communities to imagine and create a way forward, both locally and at state levels. We have to ensure that businesses are responsible for all their waste-streams, and accept responsibility for the future of the Earth and our children.



Activist Thunberg channels youth fury to U N climate summit. Courtesy image.

We have to ensure that the oil companies, who still pocket \$100 billion in profits each year from the destruction of the Earth, are held responsible for deliberately funding deception for the past thirty years. Their own scientists mapped out the long-term impact of climate change in the late 1970s, but management suppressed these reports.

We have to reject the archaic aspect of capitalism that corporations are only obligated to their shareholders, but are not responsible if their actions mean the destruction of the life-support systems of the Earth. This is clearly absurd, knowing what lies ahead for our children, while billions are being spent on trying to preserve the status quo. We have to expose the cruelty of this sophisticated extortion scheme, and collectively and imaginatively drive social change. It will not come if we sit back, wait and hope. Instead give thanks to the Earth for all that we have been given, and plan a better economic and social future for our communities.

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. Browse alanbetts.com. ♻

Resolve to Save the Earth

Dr. Alan K. Betts



OK, it is time to resolve to step away from our consumer stupor and save the Earth. Think of this as the last decade to wake up and stop de-

stroying our planet and our children's future. First stop and listen to the inner hubbub of familiar rationalizations for business as usual, our inalienable human rights, and our treasured freedom to exploit everything for profit.

Then take a deep breath, put on a coat and step outside into the splendor of the natural world that embraces and cherishes us. Listen and look around, and up and down, as if you were an indigenous person whose ancestors had been living on this land for a thousand years. Oral tradition has taught you about every plant and creature. As you listen, you can see into everything in the entire living world of the creation. You are simply part of the web of the living biosphere. You know where your food comes from, you know the call sounds of danger, and you are both alert and at peace.

Stay as long as you can and resolve to return to this living world every day. Promise to teach your children the knowledge they need to face the future. But before you step back into the warmth and comfort of your home, hold close to your heart the fact that our society intends to destroy this interconnected living world rather than create a sustainable future. Is this your choice also, or will you join with friends and colleagues and confront

the powerful interests, corporations and politicians?

Creating a viable future will not be easy, as the shift we need is a threat to so many deeply held beliefs. Many came from a century of cheap energy from burning the fossil fuels which has driven rapid climate change and the extinction of species. In fact, all the waste streams from nearly eight billion people must be brought under careful management.

But there are deeper issues of our concepts of human power and authority that are more than a thousand years old. You may have glimpsed this when you stepped outside into the mindset of the indigenous people of your land, where the concept of human power over nature did not exist. In our world, the rise of science and the industrial revolution has given humanity immense knowledge and power on the mechanistic level, but a rather limited grasp of the web of life. I know this well as I trained as a scientist. But without direction from Earth-centered moral values, the unguided use of our science and technology has led to the disaster of climate change. To our horror, we find the Earth system is clearly out of

human control. All we can do, unless we choose to be utterly stupid, is slam on the brakes.

Every year I give many talks to schools, citizen and business groups and churches. For many years I half understood why science and religion had been kept apart for centuries. I could see this was comfortable for institutional power. Scientists

were also taught not to challenge political authority, but I challenged this forty years ago. However, the clash between the scientific and indigenous worldviews raised deeper issues. I was troubled for years why the Christian churches collaborated with the colonial powers to crush indigenous people on a global scale. Yes, indigenous traditions were a

threat to church authority and doctrine. Yet the founder of Christianity was clearly deeply connected to the natural world. So being a scientist, I started looking for the truth. What I found was revolutionary to me but obvious in retrospect.

The Aramaic name of Jesus was Yeshua. He spoke Aramaic, an indigenous language where every story has several levels of meaning (The Hidden Gospel by Douglas-Klotz). Yeshua's world was the



indigenous world, and one of his core teachings was "Come with me into my world, the world of the Creator, where you will see the truth of the living web of the Creation; and that truth will set you free to act on behalf of the Creator." This truth is one more key to the deep global issues we face, hiding in plain sight. How did Christianity lose its way?

When the Roman emperor Constantine converted to Christianity, he realized this religion could benefit the imperial Roman Empire. He summoned the bishops to the Council of Nicea in 325 AD and offered a deal. Define Christianity in clear doctrinal form and choose the Greek gospels with their dualism and understanding of human power; and suppress the holistic and mystical Aramaic gospels. So, Christianity became an institutional religion with a dualistic framework that later influenced both the rise of science and the separation of science and religion; but it lost its indigenous roots. Sadly, many Aramaic speaking Jewish and Assyrian Christians, who understood what Yeshua had actually taught, became the heretics who perished over the next century or two.

To save the Earth, we now face the beautiful but challenging task of reconciling our scientific worldview with the indigenous understanding of Jesus. So, step outside into the real natural world for a second time: it is closer than you think.

Dr. Alan Betts of Atmospheric Research in Pittsford, VT is a climate scientist. Browse alanbetts.com. ♻️

The Global Economy Crumbles

Alan Betts

The collapse of the global capitalist economy in the face of the COVID-19 pandemic has valuable lessons for us. Capitalism searches for places, people and resources that can be exploited to maximize profit and minimize costs. Capitalism has no moral guiding principles, it simply demands growth and profits, with no consideration for resilience and long-term stability. Historically justice for working people was not considered, let alone justice for life on Earth.

Looking back, it is clear that the growth of the capitalist system was powered by fossil fuel. The post-WWII boom in the U.S. was possible because we controlled the global oil supply, and froze the price of oil at \$3 a barrel, until first OPEC rebelled in 1973, and then Iran in 1979. This led to financial shocks in the 1980s. At the same time the rapid burning of fossil fuels that had safely resided underground increased the atmospheric greenhouse gases, which reduce the cooling of the Earth to space. As the planet warms, more than 90% of this energy imbalance is being stored in the oceans, driving stronger storms and climate change that is accelerating. This threatens not just humanity – especially our children and grandchildren – but it is also driving the extinction of millions of species. Capitalism as it has functioned is both immoral and incompatible with a livable Earth.



But since “free-market” capitalism has externalized all its adverse impacts, it does not pay for the current oppression of people, nor for the future catastrophic long-term costs of climate change. This is clearly cruel and stupid, but it continues because it is so profitable, and a trillion dollars in profit can bribe a lot of politicians, and buy a lot of media time to deceive the public.

The COVID-19 pandemic exposes a second stupidity of a capitalism that exploits without considering resilience. In the past two decades, in the search to maximize profit, a lot of manufacturing was outsourced first to China and then other Asian countries. Now the collapse of global manufacturing links shows the foolishness of globally distributing just-in-time manufacturing to wherever components can be made cheapest.

The U.S. drug industry is an example, where the hidden goal is to maximize profit at the expense of the sick and elderly. The U.S. outsourced generic drugs to India, which then outsourced some components to China. As manufacturing and supply chains collapsed, medications and now reagents for the COVID tests have become difficult to obtain. Contrast Germany’s well-managed universal health care and the capitalist shambles in the U.S. Research scientists in Germany identified the new virus threat in late December, and with the full support of the government, developed a test by mid-January, went into production at the beginning of February, and soon could test more than 500,000 people a week. So, Germany has COVID-19 relatively under control. But in the U.S, the central government has been both incompetent and largely in denial. As a result, a dozen private companies developed competing COVID tests, using different reagents that had been outsourced to China, so availability was limited. Not surprising that in the U.S. the death rate has spiraled.

This global pandemic is one example where reality has intruded on sacred “free-market” theology. Climate change is another on a longer timescale. A third threat is that if a major solar flare strikes the Earth, which has not yet happened during the satellite era, global communications may be lost, leading to a collapse of a different kind.

Several things are needed for long-term resilience and stability for humanity and the Earth. First, a move to the re-localization of our industry, food and medical supplies, so that local control is possible on a regional scale, not by global empires which exploit people for profit without moral guidance. This will also reduce the burning of fossil fuels for global trade.

Second, we must reinvent our economic system to include all the true costs, both present and future, and especially the huge long-term costs of using fossil fuels. Now is a perfect time to add a fossil-fuel carbon tax, when the price of oil is low, to fund the transition to an efficient society powered by renewable energy. The public would not notice, but what is obvious to us is unthinkable to the rich and powerful oil industry, which is demanding instead subsidies to protect profits-as-usual.

Third, we must strip our economic and health-care systems of the many injustices embedded in capitalism, both to people and the Earth itself. It is outrageous that so many people are poor, because they must work for low wages for this unjust and unsustainable system, until they are sacrificed in a crisis. We should expect rebellion and provide guidance.

Fourth, we must step away from the endless pleas for growth, and grasp the simple reality that exponential growth of the consumer economy means sacrificing the Earth just so some can profit. This, too, is stupid when our engineers could easily and cheaply build long-lived products for a sustainable society, instead of the throw-away culture that was started in the 1950s.

We can also delight in the benefits from the large economic downturn. The decline in the pollution from air travel and less driving helps the Earth. The global drop in air pollution from the reduced burning of fossil fuels benefits the planet, and human health.

We the people now have a window of opportunity to help drive this transformation. It will take community organization and immense effort. Expect only opposition from our clueless central government, which is trying to buy its way out of this crisis by borrowing money. Remember to find time as the world slows down to sit outside and rejoin the living natural world.

Phase-out Fossil-Fuel Financing

Alan Betts

This year I am searching for solutions to the climate and extinction crises, because time has run out. As society is focused on the COVID-19 crisis, the federal government is using this as a cover to cut environmental protection for clean air and water, and attack automobile emission standards. Business and financial interests are very unhappy that the collapse of the global economy has cut carbon emissions and air pollution so substantially. However, this benefits the Earth and the climate system, as well as human health and the human spirit. For the first time in thirty years, people in the northern Punjab in India can see the glorious Himalayan mountain range 120 miles to the north.

Let us ask: what are the leverage points in our society to reduce fossil fuel use?

Bill McKibben pointed out the key role of finance in a *New York Times* article last fall titled, “Money is the Oxygen on Which the Fire of Global Warming Burns.” He listed the key pressure points: banking, asset management and insurance, so let us examine these.

JP Morgan Chase has been the leading US bank investing in new fossil fuel development. Their CEO talks soothingly about “improving capitalism to create a healthier society with affordable health care and better climate policies” (Time, 2/3/2020). Recently, they declared they would stop providing loans for new oil and gas drilling projects in the Arctic. Goldman Sachs made a similar announcement in December. Other banks should be pressured to follow suit. The Republican governor of Alaska is angry at both banks, and his budget calls for \$254 million in new tax credit payments to oil and gas drillers. Clearly Alaska's governor intends to sacrifice our children for money.

BlackRock is the world's largest asset manager, and also the world's largest investor in coal companies, coal-fired utilities, oil and gas companies, and companies driving deforestation. Recently they have indicated they will start some limited thermal coal divestment, since it is not profitable. Their web-site made this claim: “Our purpose is to help more and more people experience financial well-being. In pursuit of this, a focus on long-term sustainability is embedded across our business. From integrating environmental, social and governance practices into our investment processes, to creating positive social impact by serving the communities in which we operate, we are dedicated to helping clients, employees, shareholders and communities achieve long-term, financial well-being.” This is Orwellian doublespeak at its most tragic; since while they are diligently making money off fossil fuels, they are ensuring the destruction of the planet. This will bankrupt their clients, and make long-term sustainability a farce.

The insurance industry is the third group that routinely invests enormous sums in the fossil fuel industry, since no one can build or operate a facility without insurance. Ironically, the insurance industry understands the risks, and they have the data to know how bad the climate crisis is. The last decade was the costliest on record; with economic costs from natural disasters of over \$3 trillion. This is tiny compared with the hundreds of trillions in costs that lie ahead.

All these large financial sectors understand the climate and extinction crises, and they know that by profiting from the fossil fuel industry, they are complicit in a crime against our children and against the Earth. It is time to stop them, using whatever tactics and shaming strategies we can invent, including non-violent civil disobedience, as proposed by Extinction Rebellion. We need disinvestment everywhere from the fossil fuel industry, with growing carbon taxes both to drive the transition off fossil fuels, and to fund the huge investment needed in efficiency measures and the transition to renewables.

The financial system oppresses the poor and exploits the Earth, which is clearly unjust. We need deep change and that means struggle. A remarkable speech



Protest at the Legislative Building in Olympia, Washington. Ted Nation, an activist for several decades, sits beside the protest sign. Image: Wikipedia Commons.

by Frederick Douglass is as true today as in 1857, when he was recognizing the black Baptist minister, Samuel Sharpe, who called 60,000 slaves in Jamaica out on strike for half pay on Christmas Day in 1831. Although Sharpe was tried and executed for treason, his moral stand led directly to the freeing of all the slaves across the British Empire.

“Power concedes nothing without a demand. It never did and it never will. Find out just what any people will quietly submit to and you have found out the exact measure of injustice and wrong which will be imposed upon them, and these will continue till they are resisted.”

This is why our communities need to get together to demand a just financial structure for capitalism that is not based on fossil fuels and does not exploit the poor. For thirty years we have avoided facing this, as the climate and extinction crises have accelerated. Our politicians have accepted being bribed, and the people have quietly submitted to debt, consumerism and isolation.

But we must change – or lose a livable Earth. Capitalism was built on burning fossil fuels, but the increasing greenhouse gases are driving a global energy imbalance that is stored in the oceans for centuries. Catastrophic climate change is coming in the next few decades that will overwhelm our entire economic system, unless we change its direction now. Make no mistake, the Earth is far more complex and powerful than our technology, and climate change is one way it can strike back.

New England had an exceptionally warm winter, when for the first time our garden soil in Vermont stayed unfrozen. In every month, January, February and March, my grandchildren and I were able to dig under the rye cover crop, or the soil mulched with two inches of leaf mold. Spinach and lettuce flourished under glass for harvest in April. As global supply chains crumble with COVID, it is essential we think about resilience, and re-localize our food supply as well as our industry.

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June 21st, 2020 | Tags: [business](#), [Financial](#), [June 2020](#) | Category: [Businesses](#), [Financial](#), [June 2020](#)

Capitalism, Courage and Justice

Dr. Alan K. Betts



The response of the United States to the confrontation with the COVID-19 virus has been



Image: mronline.org

revealing. The strengths and weaknesses of America's core values of freedom, justice and courage have been exposed, along with the blatant immorality of capitalism and white racism. Little has changed since the famous "Tale of Two Cities" speech by Mario Cuomo in 1984 about how the economy leaves so many poor and fearful.

The continued collapse of our central government has been stunning. This crisis needed leadership and fast decisive action in Washington; but leadership is impossible if you cannot face the basic truths of a pandemic. Lost in angry narcissism, the president tried to hide his irresponsibility and incompetence by lying and blaming others, from Democrats to the Chinese to the World Health Organization.

Simultaneously, the pandemic exposed the cruel nature of unregulated capitalism, which exploits everyone and life on Earth for profit. Nurses, doctors and underpaid essential workers showed up with courage to work, but the central government, which had trashed the virus emergency plans left by the previous administration, was useless. Hospitals had little personal protective gear for the emergency, and capitalism had outsourced manufacturing to wherever in the world it could be made more cheaply, and supply chains had collapsed. To avoid responsibility, the government said: "Let the free mar-

ket provide." In coded capitalist language, this means someone should be able to make a profit out of all these people dying. True, I have not been properly trained in polite euphemisms. But under the cover of COVID-19, the government greedily cancelled as many clean air, clean water and clean car regulations it possibly could to encourage corporate polluters to send more money for the reelection of the present Administration. In reality hundreds of thousands will die; but money trumps everything, and the right-wing will not be held responsible for those that perish – an echo of the tobacco companies' playbook.

Meanwhile, the U.S. consumer economy, which was clearly not essential, collapsed in less than a month. The Earth breathed a sigh of relief as air pollution and greenhouse gas emissions plummeted with the reduced burning of fossil fuel. But tens of millions of people have become unemployed. They have received some payments, and economic incentive money has been sent to many citizens, while more than a trillion dollars has flowed to rich corporations to prop up the stock market.

To keep profits high, we have long refused to pay a living wage to all Americans, so few have savings. Minorities, poorly paid and living in polluted areas of

cities, have suffered the most. As minorities, they have been treated as expendable by rich white capitalist society, which clings to its racist roots. As murders by police exposed the truth, the rebellion demanding justice has rightly spread across America. Yet the president, backed by his racist supporters, thinks troops should be sent to gun down protesters, and crush free speech protected by the Constitution. Pathetically, a president who lies every day is furious that Twitter is now fact-checking his lying tweets that endanger and threaten Americans.

The other dark side is that America is the only rich country that refuses to provide health care for all. We have a health care system that is the most expensive in the world. However, for much of it the key unspoken goal is not to optimize the health of the nation, but to maximize profit for hospitals, drug companies and insurance companies. The political right keeps trying to destroy the limited effort to expand health coverage with Obamacare, because providing health-care to the underpaid is not profitable. Unfortunately, their guiding rule that the poor must work to serve us, even if they are sick, is a problem in a pandemic.

When COVID-19 struck, hospitals started losing money when they lost their profitable elective surgery, and they laid off nurses, staff and doctors. What they could not do with their surplus capacity was provide critical healthcare for the hard-working poor, the unemployed and for minorities. Right-wing politicians just continued to insist that the

state should not provide healthcare for 'them'.

Many have died in our nursing homes in this crisis, which were also unprepared. The American Health Care Association opposed 'burdensome regulations' for emergency preparedness for pandemics, for the simple reason that these reduce profits. Again, we see this conflict between profit and people's lives in unregulated capitalism. Capitalism cannot prepare for future emergencies, whether a pandemic or climate change, since it places no value on the future. So, building resilience is viewed as simply reducing current profits. And with deregulation, current profit for shareholders is their prime responsibility, not justice for people or for the Earth itself.

It will take courage to shake and reframe this immoral world, but now is the time. We all deserve better.

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Image: allegrosloman.com

The Task Before Us



Dr. Alan K. Betts

There is a grim set of connected issues shaking the stability of the United States as the federal government crumbles in the face of COVID-19, white racism, capitalist exploitation of the poor and the Earth, political bribery and the denial of science and climate change. Many themes are haunting.

Out in the real world, the hurricane season has hit new records with 25 named storms in 2020. Many storms hit the gulf coast. There have been catastrophic fires across the western U.S. exacerbated by climate change. One Oregon state senator, who opposed climate change legislation, returned to find his home burnt to ashes. For humans, this is poetic justice, but for the climate system, this is just reality. The Siberian forest and peat are burning; the permafrost and Arctic sea-ice are melting and irreversible changes are setting in. Across a vast area of Russia, temperatures in the first six months of 2020 averaged more than ten degrees above the climate of twenty years ago. On the summer solstice, one town within the Arctic reached 100 degrees F.

Globally, 2020 will be one of the warmest years on record, as global climate change is accelerating. As more heat is stored in the oceans, ancient Arctic ice shelves are melting and warmer sea water is undercutting the huge Antarctic glaciers, which will flood our coasts in the coming decades.

The United States, after withdrawing from the 2015 Paris climate-change agreement, is not simply avoiding these issues but heading into a new dark age. Under the cover of COVID-19, President Trump is taking multi-million-dollar bribes from polluting industries to roll back EPA clean air, clean water and cleaner car regulations, because he needs money for re-election. The 1970 establishment by President Nixon of the Environmental Protection Agency, and the Clean Air Act the same year were real achievements, as were the Clean Air Act extensions passed by President George H.W. Bush in 1990, just 30 years ago.

G. H. W. Bush was the last Republican president that really listened to scientists. Following Reagan, he was responsible for extending the Montreal protocol, the global regulation that saved the Earth from an ozone catastrophe. G. H. W. Bush fully understood that society must pay to protect future generations from pollution. In contrast, the shocking actions of the current president and his advisors in rolling back pollution regulations for ready cash are simply despicable; as this condemns hundreds of thousands of children and older people to sickness and death.

The glaring issue is that our society no longer places much value on the future, because capitalism has become increasingly focused on maximizing current profits for corporations and the wealthy. Most capitalist

economies, such as those in Europe, include the future costs of pollution as real costs for doing business. Here in the U.S., rich corporations, the fossil fuel industry and right-wing politicians have conspired to pretend the future of our children and the future of the Earth have no value. In simple terms they are refusing to take any responsibility for the future. Once the U.S. claimed it stood for freedom, responsibility and justice (at least for white racists). Now the U.S. capitalist economy simply prizes the freedom to exploit the poor and the Earth for profit.

For example, we hear that paying fees now for future climate damage is not 'cost-effective'. This is warped logic. We care deeply for our children in the present, so why are we so willing to sacrifice their future lives to increase current profits a little. When will we start asking the honest question: "Is this cost-effective for our children?"

As the COVID-19 pandemic spreads again across the U.S., the political

response has been dismal. We hear the strange rationalization that freedom not to wear masks is more important than the spread of the virus. This is not freedom coupled with responsibility. Where in the U.S. constitution does the freedom to spread diseases that kill people appear? Of course, government denial of the reality and science of COVID-19 has played a large part.

Another haunting group are the right-wing Christians who backed slavery and then white racism for nearly a century after the Civil War. Now they are encouraging the white racist views of the president. Where is their compassion for the suffering of the poor during this pandemic? Are they concerned for women and children as climate change threatens our grandchildren? Contrast the example of the black Baptist minister Samuel Sharpe, who called 60,000 Jamaican slaves out on strike for half-pay on Christmas Day 1831. He was executed for treason, but his clear Christian stance led directly to irrevocable freedom for all the slaves across the British Empire.

Yes, we have much to do. So, take a deep breath and step out into the beauty of early winter. Breathe again and connect with the whole of the Creation, and resolve to preserve it. Encourage schools to hold classes outside on sunny days, so children can learn immersed in the natural world. Resolve to stand together for freedom, responsibility and justice for all. ♻️



Climate Movement. Image: Wikipedia

Floating with the Ice Across the Arctic

Alan Betts

The largest polar expedition in history to study the melting polar ice sheet ended on October 12, 2020. It was called MOSAiC, standing for The Multidisciplinary drifting Observatory for the Study of Arctic Climate. It started in September 2019, when the German research icebreaker Polarstern sailed north from Tromsø

in Norway into the Arctic to drift with the Arctic currents and ice for one year. This expedition started in September when the sea-ice cover is at a minimum and the ice is thin, so the ship could get the farthest north, before it was frozen into the ice for the winter. Instruments were set up a mile or so away from the ship to drift on an ice flow along with the ship, as they took measurements through the Arctic winter close to the North Pole and beyond. Observers had to watch all the time for curious and perhaps hungry polar bears, as they checked instruments and studied the ecosystems beneath the relatively thin ice.

The Arctic is changing rapidly as it warms twice as fast as the Earth as a whole. The Norwegian researcher and explorer Nansen set sail 127



A guard stands watch looking for polar bears in early January. Credits: Alfred Wegener Institute, Lucas Piotrowski. CC-BY-SA 4.0 (<https://bit.ly/38OKcvg>).

years ago on the first ever drift expedition with his specially built wooden sailing ship Fram. His expedition lasted from 1893 to 1896. Last winter's Arctic temperature were 18 degrees warmer than what Nansen measured. The polar ice is much thinner now, heavily fractured and full of holes.

Why is the Arctic changing so fast? As you know the Earth is warming as the burning of the fossil fuels, leaking methane wells and other human sources pour greenhouse gases like CO2 into the atmosphere that slow the cooling of the Earth to space at night. More than 90% of this trapped heat is stored in the oceans. Think of this as the trigger that drives a series of amplifying effects. As the oceans warm, more water evaporates, and water vapor is a very powerful greenhouse gas that triples the warming by

CO2 alone. This happens on a global scale. But in the Arctic, much more happens. The warming melts the polar ice that reflects most of the sunlight, and exposes the ocean which absorbs most of the sunlight. Sea-ice doesn't evaporate, but the ocean does, so water vapor in the air increases, and more clouds form. Both more water vapor and clouds trap more heat. Collectively all these processes -- the loss of ice reflecting sunlight, more heat stored in the oceans, more water vapor and clouds in the air -- double the warming of the Arctic over time. The ice cover is shrinking -- this September the area covered was the second lowest on record -- and the ice is getting thinner and thinner. Ice used to get thicker every winter and last for years. Now most of the Arctic ice is only one year old and only a few feet thick.

The Polarstern expedition measured all this in great detail, so we can better model the shrinking Arctic ice, as we lose a key region that helps keep the Earth cool. It was tough work for the scientists on-board, as resupply was difficult at times with the COVID pandemic and when the supply plane's ice landing-strip

crumpled.

For us on land, our winters are warming twice as fast as summers for similar reasons. As winters warm, there is less snow cover to reflect sunlight, and if the ground is wet rather than frozen, more water vapor evaporates into the air, slowing the cooling to space. The big question for us is whether humanity could control the greenhouse gases and move away from burning 100 million years of fossil fuels in about a century. But driven by greed and the focus on current profits for the wealthy, we condemn



our children and the Earth to the tragedies that lie ahead as the ice-sheets melt.

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