

Living in a time of Climate Chaos Seminar

This is background material for the seminar/discussion scheduled on October 26 from 2:00 to 4:00 PM in the SFUU sanctuary.

Essay #1: Where we are now

Introduction:

This essay is the first in a series of background papers for those who wish to participate in the seminar series “Living in a Time of Climate Chaos.” This first paper is intended to explain the reason for the seminars, and put participants on the same page in terms of the latest climate change science and the political and societal response.

Anthropogenic climate change and its consequences are already visiting parts of the globe and are expected to intensify as the world moves through this century and beyond. There is also an increasing perception that the physical manifestations of climate change are likely to result in extensive social disruptions. Parts of the world are already experiencing droughts, storms, wildfires, and heat waves that are exacerbated by climate change. We are already seeing climate induced migrations in the Middle East, South Asia, Central America, and elsewhere and the world's current 69 million refugees have caused significant political stress in Europe, North America, South Asia. It is terrifying to contemplate the political turmoil when the number of refugees fleeing from ocean and riverine flooding, protracted famine, and other climate change impacts climbs into the hundreds of millions or more.

But it is hard to imagine that the full citizenry of the US and other industrialized countries will simply accept the seemingly draconian measures that are necessary if the world goes beyond gestures and promises, and actually works at arresting the warming. At least in the US, some political factions have already threatened to fight climate-related regulations with physical violence. It is a fair guess that the nation's climate deniers, and even many of the climate avoiders, would actively resist an aggressive program to arrest climate change.

And so, regardless of the direction we take, the world faces the real possibility of increasing climate change induced chaos. But how then should we prepare? How do we respond as individuals – as members of the consumer culture that is caused this situation, what are our personal moral obligations to help minimize the ongoing warming, and to make amends for the damage we have caused? How do we protect our families and communities from impending social chaos? And on a broader scale, how can we bring together the currently divided elements of our society to both mitigate the warming and at the same time adapt to it?

These are just a few of the climate-change related questions that call-out for exploration, and that is the purpose of these seminars. There is little expectation these discussions will “find” solutions. But we need a safe place where we can begin open and honest conversations. It is my hope these seminars can offer that.

The current best information on climate science:

I realize that you all are, to one degree or another, interested in and have followed the climate change issue – otherwise you wouldn't be reading this. Still, I want to start by summarizing the latest and best information I have on climate science just so we're on the same page. In addition to this reading, I encourage you to check my references and other climate science sources listed at the end of the essay.

If major impacts by the turn of the century: the worlds keeps with current trends on climate emissions, we can expect the following

- Average temperatures will rise by as much as 5 degrees Celsius (9 degrees F) or more. Parts of

the globe will become too hot for human habitation, other parts will become either too dry or flooded.ⁱ

- Scientists expect routine Mega-droughts (extreme droughts that last more than 20 years) around the Mediterranean, parts of Africa, South Asia, South and Central America, and across the western US.^{ii iii iv v}
- Around the globe, Climate change has already doubled the area wildfires burn. Studies indicate that for every degree C the temperature increases, wildfire median area burned will increase by 200 to 400%.^{vi}
- If we continue current trends, the sea level could rise 5 feet by 2100 and eventually by 30 feet or more. And there's a chance we're committing to melting all the globe's ice, raising sea level by 220 feet. In any event, our coastal cities will flood, along with our great river deltas and any low lying coastal plains and river valleys. At the same time, the higher temperatures will cause more intense weather, increasing the damage from cyclonic storms and inland flooding.^{vii}
- Because of the warming, what were once tropical diseases are spreading northward, leaving open the possibility that malaria, dengue, yellow fever, hemorrhagic fever, and others will migrate North, and come to us.^{viii ix}
- The world already has 69 million refugees. The drought, flooding, famine, and epidemics we expect will cause hundreds of millions more. The Syrian Civil war and the Central American Drought – in part triggered by a climate change – are small case studies of the political disruptions an influx of refugees can cause as they move into Europe, or North America, or South Asia, or elsewhere.^x
- And finally there's Famine: each degree Celsius rise in seasonal temperature is expected to reduce global yields of rice, wheat, corn and barley by 2.5 to 16%. Considering all the other warming related impacts, the world could face a loss of half its food production by 2100. At the same time, the United Nations is projecting we'll have 45% more people to feed (over 11 billion). Just stop for a moment and think about how those numbers tragically collide.^{xixii xiii}

This is a sampling of the major impacts. A thorough review of climate change research will reveal thousands of local, regional, and global impacts.

The Global and National Response:

How has the world responded to climate change? Scientists have certainly have studied the problem – the points I summarized above are from over 4 decades of intensive research. Our climatologists and biologists and economists have given us more than enough information to justify radical, even fanatical action. So what, then, has the world done?

Internationally, the United Nations has been investigating climate change for 35 years. Because of their program, we have a good idea of where the world needs to go. Last Fall the United Nations climate program told us that, in order to minimize the warming damage to an arbitrary definition of 'acceptable', the world needs to cut greenhouse gas emissions in half by 2030, and to zero by 2050.^{xiv} That means cutting our personal emissions to 3 tones CO₂e per person per year – half the world's current per-capita average and one-sixth the US average.

In addition, the United Nations has spent over 25 years developing a framework for international action. This has resulted in worthy goals, widespread mutual promises, but no enforceable commitments.

Nationally we have a different picture. The Republicans accepted the reality of climate change in the 1990s and early 2000s. But the fossil fuels and companion industries undertook a multi-billion dollar campaign of climate change misinformation, while at the same time they lobbied the federal government to block climate change action.^{xv xvi} As a result, their political clients – some Democrats and almost the entirety of the Republican party – became stalwart climate change deniers. In fact, denial has become one of the litmus tests for Republican party membership.

Other Democrats have offered flashy but inconsequential legislative proposals – the 2009 Senate cap and trade proposal is a good example – then failed to pass most of them. They enacted some minimal administrative programs, but the Republicans recently dismantled most of those, along with blocking any further action. If you've followed this at all, you know the gory details. Today we have a climate denier president and a Republican party dedicated to blocking any climate action. The way we are heading, we will see no meaningful national government climate efforts for 2 years, or 4, or 6, or more. And if the Democrats take the White House in 2020 we may see more of the weak gestures we saw in the Clinton and Obama administrations, but sadly we can't expect meaningful action.

California's government (along with some other state governments) is a brighter spot. The state has a modest cap-and-trade experiment, a program to encourage carbon sequestration, and a scattering of other climate actions. But even here there is a great reluctance to ask citizens to do anything themselves about climate change. And without that, our state will pick the low-hanging fruit, and then what?

What are environmental advocates saying we should do? Ironically, they ask us to turn to government. Some propose a carbon tax, hoping the magic of consumer market forces will convince us to make responsible purchase decisions in light of climate change. Others propose cap-and-trade programs, hoping that the magic of producer economics will make those decisions for us. And still others (recently including the US Chamber of Commerce) would have the government promote technology development – depending on some technologies that are already commercial, and others that are hoped-for miracles.

These proposed solutions have been around for decades. They all have four basic attributes in common: First, they ignore the fact that previous attempts to implement these kinds of policies have failed.

Second, they seek to arrest the warming without having the courage to ask us to change how we live – essentially without really changing anything.

Third, despite acknowledging the spectacular costs shifting to a fossil free society, the proposals ignore what once was a core principle for renewable technology development -- the more we shrink our individual energy footprints, the less money is needed for investment in technology change-over. Unfortunately, they pay only lip service to significantly reducing the energy (and closely related material) demands of the economy.

Fourth, they ask us to trust the power of our government's economic policy, and even more, rely on the very system economic system that brought us climate change, to save us from climate change. Against all basic reason, we are asked to trust this same system with our lives and the lives of our descendants, along with the life of the planet as we know it.

The global youth movement is, in some senses, a breath of fresh air. Leaders like Greta Thunberg are blunt in demanding that our politicians take climate change seriously. They have organized demonstrations and student strikes around the globe in an attempt to raise awareness to some critical threshold. Thunberg in particular is not offering specific proposals on how to fix the problem. Rather, she, a teenager, is asking us to act like the adults we claim to be – calling on the better angels of our nature to well up and respond to the climate crisis. These youth are asking us to take real steps to arrest the warming.

And how have we been responding? Well, I guess we've been trying. If we look at the problem in any depth, we see that it is caused by greenhouse gas emissions, and we surely know that Americans have among the highest emissions in the world. So we must realize that we, personally, are causing the problem. And when we add that to the impacts we know are coming – the ones I described when I started – we, to one degree or another, we certainly feel some moral obligation to do something, don't we?

So we've been trying, some of us anyway. We've taken to heart the widespread advice that we need to start with small steps, because at least they move us in the right direction. Many of us bought hybrid autos; some of us stacked solar panels on our roofs; we've offset our air travel and changed our light bulbs,

recycle our trash, worked to use fewer plastic bags.

Has all this solved the problem, or just diminished our guilt? The naked truth is that national and global greenhouse gas emissions continue to grow. That's because neither government policies nor our collective actions have touched the root of the problem. And it's become clear that small steps are no longer sufficient. But what should we do?

What Should We Do?

We are facing a time unlike the world has ever seen. Anthropogenic climate change shambles along, dragging us toward a ruin that may ultimately threaten our existence as a species. We know our collective culture needs to stop the warming, or it will surely tear itself apart. But is that even possible?

I've studied climate change science and climate action for more than three decades. I've examined my own guilt as one who is a part the problem. And after all that, I've come to the firm conviction that I and many other Americans may have wanted to stop climate change, but we simply didn't know what to do. We as individuals were waiting something monumental on climate change. We were waiting for an inspiration that would speak to our inner morality, We were waiting for a coherent course of action that makes a genuine contribution to stopping the warming, no matter how small. And we as a part of a political body, were waiting for leadership – not more political rhetoric, but true leadership, proven through example, that would give our communities and politicians the courage to support the values we express.

I believe now we have waited too long.

Over the past few months I have had occasion to reexamine the climate change research I've collected over the past 30 years. I've paid particular attention to information that's emerged in the last few years. Putting all this together, I've come to a sad Epiphany.

I now believe that the world is on the brink of a cascading series of climate tipping points. For example, if arctic sea ice significantly shrinks (as it is doing), the change in albedo will increase arctic warming. That increase will, in turn, increase both arctic terrestrial permafrost melting and melting arctic ocean methane hydrates which will release both carbon dioxide, and methane – a greenhouse gas that is 20 to 80 times more potent than carbon dioxide depending on the time scale. When the first set of these positive climate feedbacks is triggered, the resultant increase in global warming is expected induce other feedbacks – more rapid die-off in the boreal and Amazonian forests for example -- which would further add to atmospheric CO₂; and on and on.

Some climate researchers believe we have physically committed to a level of warming that will trigger this cascade of tipping points, others believe we have some time – perhaps a decade or so – to institute a radical program of climate action that could turn us away from the tipping points.

I don't have the qualifications to make scientific judgments. But after 30 years of observing the political and cultural response to climate change, I believe with a high level of certainty that our society will not institute social and political programs sufficient to the need – we will not cut our emissions in half within the next 5 to 10 years, and not cut to zero within the next 20 to 30. And so I believe we have effectively committed to the cascade of tipping points that will inevitably take us to a world 5 degrees Celsius hotter or more.

And so that brings again to the question of what do we do. Despite my years of studying climate change, I don't have an answer. Once I felt the key to arresting climate change was a collective moral uprising of individuals that would force politicians to do the right thing. That hasn't worked out, so now I'm in a quandary.

The best I can offer is that we need to start with a recognition that climate chaos is coming, and then explore what that means. Maybe this will help us discover personal ways of coping with the times we are facing. And maybe, if our collective thinking is powerful enough, we can tease out concepts that reach further – into our communities and beyond.

I hope you will join me in the discussions. I expect within the next few weeks to add to this essay with pieces on: What climate chaos might mean for America and the World, Guilt and Avoidance in a time of Climate Chaos, How to Live in Climate Chaotic World (likely a series of essays on personal economics, ethics, lifestyles, etc), and possibly more. I will post these works on this SFUU social justice web page, and on my website: <https://climateunderground.net>.

Allen Edwards

-
- i “How the World Passed a Carbon Threshold and Why it Matters”, by Nicola Jones, Yale Environment 360, January 26, 2017.
 - ii “Relative impacts of mitigation , temperature, and precipitation on 21st century mega-drought risk in the American Southwest,” Toby R Ault and others, Science Advances, October 5, 2016.
 - iii IPCC AR5 WGI: Climate Change 2013: the physical science basis, by T.F. Stocker and others
 - iv Turn Down the Heat, The World Bank and the Potsdam Institute, June 2013.
 - v “Climate change in Central and South America: Recent trends, Future Projections, and Impacts on Regional Agriculture.” Jose A Marengo and others, Working Paper # 17, CGIAR Research Program on Agriculture, Agriculture and Food security, 2014.
 - vi Climate Stabilization Targets: Emissions, Concentrations, and impacts over Decades to Millennia, National Research Council, 2011.
 - vii Skeptical Scientist website, Center For Migration Studies, March, 2019.
 - viii Climate Change and Infectious Diseases,” JA Patz and others, World health Organization.
 - ix “Climate Change affecting incidence of infectious diseases,” AAP News, Sept 27, 2018.
 - x “Climate Change, Migration, and the Incredibly Complicated Task of Influencing Policy” Elizabeth Ferris, July 2015,
 - xi “Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat,” David Battisti and Rosamond Naylor, Science, 9 January 2009.
 - xii “Temperature increases reduces global yields of global crops in four independent estimates,” Chuang Zhao and others, Proceedings of the National Academy of Sciences of the United States of America, August 29, 2017.
 - xiii “5 ways the world will look dramatically different in 2100”, Ann Swanson, Washington Post, August 17, 2015.
 - xiv “Only 11 Years Left to Prevent Irreversible Damage from Climate Change,” Maria Fernanda, Espinosa Garces – speaker of the UN General Assembly, March 29, 2019.
 - xv “The Climate Denial Machine: How The Fossil Fuels Industry Blocks Climate Action, The Climate Reality Project, September 5, 2019.
 - xvi “Fossil Fuel Interests Have Outspent Environmental Advocates 10:1 on climate lobbying