

Holly Buck

Daniel Falb

Future imagination and technologies to restore the climate

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Dear Holly,

So I want to share with you a couple of ideas I had reading some of your writing on geoengineering. You know that my take on these matters does not emerge from expert-level expertise – I am not a climate or environmental scientist nor an activist in the narrow sense – but from the dilettantism and existential commitments that are baked into my philosophical and literary background!

I am interested in the ways in which climate change and the (potential) responses to it – curbing CO₂ emissions and geoengineering – constitute the very ,scene' in which people's lives (including ours) takes place today; in which this is something that does not just occur ,in' our lives – as something that contingently may or may not present itself to us –, but is in a sense equiprimordial with the very fact of our lives.

I see this being the case on three levels:

(1) The first manifests in a diagram that you show in your book *After Geoengineering* (p. 6) and elsewhere, which in a way functions as a visual source code for the whole geoengineering idea. I believe the diagram originally hails from the UN The Emissions Gap Report 2017. In that diagram, net CO₂ emissions that are compatible with 2 degrees of warming are laid out on a temporal axis counting from 2005 to 2100, requiring *net negative* CO₂ emissions from around 2075 onwards – from that time on, we need to pull more CO₂ out of the atmosphere than we put into it. But even before that, namely starting from the 2030s, the emissions reduction is flanked by already taking CO₂ out of the atmosphere. As a base level of unavoidable emissions will remain into 2100, the absolute amount of negative emissions by then needs to be substantial.

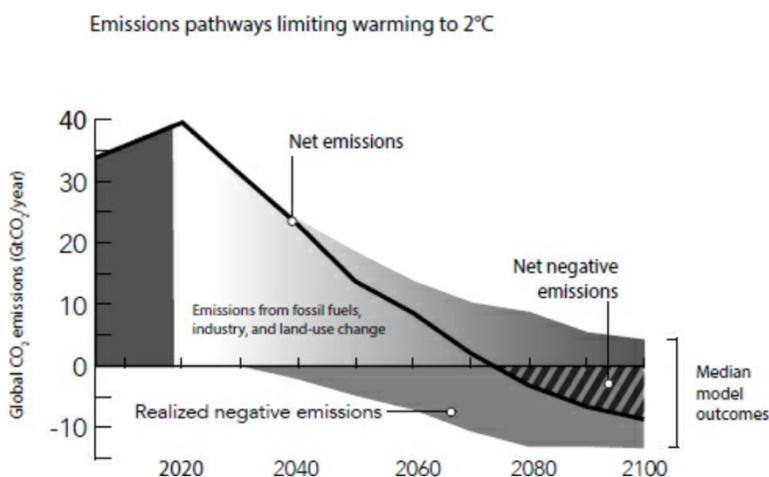


Figure 1. Median values from 18 scenarios evaluated by six models using shared socioeconomic pathways assessed in the next assessment report of the Intergovernmental Panel on Climate Change. Data: Glen Peters / CICERO

Of course ,negative emissions' is the chiffre for Carbon Capture and Storage, which (besides to solar geoengineering) is essentially what is called geoengineering.

At any rate, by 2100 I would be 123 and you would be 119. I am not saying we cannot make it to that date but lets say it's unlikely. So this geoengineering diagram also contains our passing. It maps the entire space of our lives going forward. I interpret this

to the effect that we have *zero existential mobility* vis-à-vis that diagram: Our lives will always – into eternity – have been tucked to it. Given we are not angels, and our souls are not eternal, it is the only image we will ever have been able to see. The acute time-sensitivity of dealing with climate change – the fact that it crucially matters when certain measures are taken, and certain goals are reached or not – even maps every step of the project to a *particular phase in our lives*. (This is also what I took away from your really nice literary intro to *After Geoengineering*.)

(2) The second way climate change is equiprimordial with the raw fact of our lives is again linked to the notion of length of life. For said diagram also contains the cause of the potential shortening of many people's lifespan throughout the 21st century. Given that climate change already accounts for some 300.000 heat-related annual deaths today, the *accomplishment* of the 2 degree goal would likely come with an even higher ongoing death toll. Not to speak of a scenario where climate change rises substantially above 2 degrees ... So not only do we have zero existential mobility vis-à-vis that diagram. What happens in the diagram also effectively modulates people's lifespan – it modulates who is, at a given point in the diagram, *still part of the world in the first place* and who is not. This is where climate change as social justice issue touches its most elementary register. The two of us, as middle class G7 inhabitants, are perhaps rather privileged in terms of our chances of losing years of life due to climate change – which does not ensure old me will survive the 2056 Berlin heat wave.

(3) But there is a third level of implication of our lives into the diagram, which may be captured by saying that most of the people who throughout the 21st century will have suffered and died from global warming would not even have existed without it. This is a crude calculation, but considering that in 1800, at the onset of the fossil fuel driven Industrial Revolution, 1 bn people lived on the planet while today there are almost 8 bn, one can say that 7 out of 8 people in some direct or indirect way owe their existence to the fossil capitalism whose 21st-century emission levels are at stake here. 7 out of 8 people would not even *see* the world in which the problem of emission reduction and geoengineering now has made itself felt. And while nobody should (or even could, in a philosophically consistent way) be thankful for having being brought into existence, this observation deepens the existential charge of our situation and strengthens the above *'zero existential mobility'* claim.

To put this even more broadly:

Climate change is not an arbitrary mess to clean up but is part of an existential *'scene'* intimately linked to fossil fuel use. Fossil fuel use represents a breathtaking *'leakage'* of the present: The stepping-out-of-itself of a present by tapping energy stocks that are not contemporary (like sunshine, water flows etc.) but prehistoric. Our present is fused with deep time. We are breathing prehistoric air, i.e. CO₂ from the Mesozoic that we have freed up, and heading towards recreating a prehistoric climate. Our bodies grow out of that material shortcut with deep time. Our flesh is premised on burnt fossils. And arguably only a planetary *'civilization'* that has created climate change has (in the course of that very process gained) the cognitive means to understand and potentially combat it.

What am I getting at with this?

Climate change mitigation (and in my mind, driving down emissions, removing CO2 and manipulating the Earth's albedo in fact *all equally* qualify as ,geoengineering') is about survival; but a life is about more than survival. It is a state of mind, it has a certain feeling about it, an aesthetic, a spiritual horizon. Given we live in that diagram – our only life is placed inside of it, no matter how things play out –, what does it add to our culture? What is its spiritual outlook?

Not doomsdayism.

Not mastery.

But...

Best regards,

Daniel

Dear Daniel,

Let's talk about that diagram, the "visual source code," as you put it, which is an accurate assessment. This diagram has traveled far enough to reach the point of branding; these curves appear on the logos for the Science Based Targets Initiative and consulting / investment organization Carbon Direct. Actually, the diagram goes back before the 2017 UN Emissions Gap Report, though it perhaps became popularized there. It's based upon hundreds of scenarios from integrated assessment models, with names like IMAGE or MAGICC, which are solving for least-cost solutions, generally. The priests of Potsdam and Laxenburg sit in quiet rooms, stroll in quiet courtyards, running code, a lot of code, a lot of energy, a lot of calculations in that simple curve.

But the curve is such a weak hope. The chances of realizing a future that looks like that curve don't seem very high. We seem poised for "diagram failure." ...

You write, "Climate change is not an arbitrary mess to clean up but is part of an existential 'scene' intimately linked to fossil fuel use" — what I'm wrestling with now is how to teach this. And why is it not taught? Is it taboo? Certainly those of us with activist proclivities might not want to hand more power to the fossil fuel industry, and if you say, without Haber-Bosch and fossil fuels half of you in this room would not be here, that can be construed as handing more power over. The fact that much of what's around us— not just the historical progression, but just the everyday matter— is also made from fossil fuels is now dismissed as an industry talking point. (And it is also an industry talking point: reference, a Clubhouse conversation with oil industry insiders, "The enviros want to cancel fossil fuels. Can't they see that their North Face jackets are made from fossil fuels? That's what keeps you dry in the storm.")

But it's impossible to see the full picture of what's going on without confronting this — as you say in "Sentences on Nature Accelerationism", "environmentalism is an effect of past accelerations". Without grasping the fossil fuel basis of this civilization, that climate change is equiprimordial with the fact of our lives as you put it, we can't understand the enormity of the energy transition and what it will require.

So how do we convey this "existential 'scene'"? This is me in front of forty pandemic-fatigued undergrads, the first week of "Energy, Environment and Society", with one power point slide on Vaclav Smil's *Grand Transitions* —

- Demographic transition; urbanization
- Agriculture and dietary transition (from plants, a few staple crops with low yields) -> 10x yields, more meat, diverse crops
- Energy transition (from limited energy and human labor, and biomass, to fossil fuels)
- Economic transition (from minimal rates of growth to unprecedented growth and income gains)
- Environmental transition (anthropogenic degradation, climate change)
- These are interdependent; you can't understand one without reference to the others

This should be common knowledge that we learn in primary school, not a power point slide to encounter in a still-poorly ventilated, distraction-filled room in your twenties. The understanding of the "material shortcut with deep time," as you put it, needs to come when you're constructing your cosmology, whatever age that comes at.

On the other hand, I wonder if people who haven't learned about the demographic transition and the Haber-Bosch process still have an underlying sense of the material shortcut; a sort of borrowed time. This sense may underlie the anxiety of the moment.

But there's an analgesic, which is the curve. The spiritual outlook of the diagram — net zero is the dream of a world in balance. Positive and negative emissions have come to rest. I do think the diagram has a spiritual tenor — the diagram is the crudest form of a plan. When you have a plan, you feel calm. Even if it's a vague plan, it's a real departure from pure uncertainty or chaos. The plan is something to hold on to; to say, *I am a kind of creature that can make a plan.*

This calm vibe is the opposite of what the platforms are selling, though, which is a problem for ever realizing the diagram. People all around the world are having their dopamine levels hijacked by big tech companies which are optimizing the content put in front of people's eyes and ears for fear and anger. It reads like a conspiracy theory, but it's the bottom line. And so one one hand, this multi-decade plan, this transgenerational effort, requiring a million small things in concert, step by step; on the other hand, ancient fight-or-flight circuitry being exploited for \$TWTR and \$FB. I'm not so into binary thinking, but it seems that one of these can win out.

You know about metaphysics and religion — do you think there is some reticence to the multigenerational Plan (or, "cognitive selectivities that enact hyper-anticipation", does that mean The Plan?) because of this Christian encoding in the West? Like, is it only God who should be doing the planning? I do not know much about religion. I do think there might be something to the arguments and rants of the cancelled here in the US — thinking of Antonio García Martínez and Ian Buruma in particular — who have been observing that the dynamics playing out between opposing political groups online are essentially religious ones, and the US has an even stronger tendency towards public testimonies of faith because of Protestant roots. Essentially, evangelical and Puritan vibes emerging from these online interactions, even without mentioning God. (Which is interesting given that church attendance and religiosity seem to be down — maybe that religion was just a particular form through which to fulfill some basic tendency for drama and division.) At the same time, there's an apocalyptic tenor to a lot of online discourse; both sides seem to think the end of the world is immanent, whether that be from climate change or social breakdown. There is enough apocalypse to both sides.

In other words, is it not just the maximizing-time-on-site & profit via anger & fear algorithms that are the obstacle to The Plan — but this two thousand year old story that people in the West have grown up in, acting as another opposing force? Do we have to just tear down the platforms to get to rational discussion, or move beyond religion too?

Kind regards,

Holly

Dear Holly,

Your letter points to the ‚suboptimal‘ conditions of the public arena in which the geoengineering debate is being had. This resonates with my sense of the ‚suboptimal‘ conditions faced by the environmental and climate movement as a whole, given that its emergence in the late 1970s and 1980s coincided, of all things, with the emergence of neoliberalism – an ideological constellation that made New Deal-type efforts in climate change mitigation and energy transition a priori unlikely and has delayed such efforts for many decades. This delay in some sense has created a case for geoengineering in the first place.

I also see your remarks as picking up on a recent essay of yours entitled “Prospects of Climate Engineering in a Post-truth Era,” where you trace potential consequences of the deterioration of truth-bound discourse, such as geoengineering research leaving the public arena and going underground, or increased likelihood of autocratic modes of geoengineering implementation. There you write:

This distrust of elites has consequences for both pro and counter geoengineering arguments. [...] We can imagine an environmentalist response that argues that renewables can in fact be scaled up to the levels that would avoid climate damages or that soil carbon can save the day. *The authorities of establishment science have simply got it wrong; their assumptions about what is possible and their models are incorrect.*

This seems to suggest that you regard (at least some of the) environmentalist critique of geoengineering itself as a post-truth position and interpret the necessity for some type of geoengineering intervention going forward as being “establishment science.”

Is that so, and is this in fact the “established” (say, IPCC) position?

The cited passage also evokes the conflicts that emerged within the environmental and climate movement in the 2000s (in the face of its relative unsuccess) when the environmentalists Ted Nordhaus and Michael Shellenberger announced the *Death of Environmentalism* in a 2004 paper and subsequent book. Their critique is also grounded in the assumption that, generally speaking, American environmentalists had lost their grip on reality and were fundamentally misunderstanding the societal context they were operative in; that they were “post-truth” in the sense of clinging to certain conceptual preferences rather than being more effective in promoting a wholesale energy transition. I wonder how much you’d locate your own thought on geoengineering in that lineage of ecomodernism, and see current debates as following the lines of these past ones? –

But I am heading elsewhere.

I want to take the wording of environmentalists’ critique of geoengineering as a starting point for placing the energy transition (and the possibility of geoengineering) in the broader context of a philosophy of nature as I see it. One actor in the German context that is vocal in its critique of solar geoengineering is the Heinrich Böll Stiftung.

In the video compilation #SayNo2SolarGeo of a conversation hosted by the Stiftung between Greta Thunberg, Vandana Shiva, Bill McKibben and others, one comes across formulations like these:

“When you're in a hole, stop digging. We cannot move out of this crisis with the same mindset that goes into this.”

“Pollution for a pollution problem, deliberate climate change as a solution to climate change is not just insane but [...] it is repeating the mindset that got you into the crisis in the first place”

“The scientists who are pushing this most aggressively have their own private companies which benefit from the normalization of the idea of a techno fix.”

“Our job is to do the hard work – having hit bottom as a society – of getting ourself off the drug that got us into this problem, instead of just finding some new one to cover it up.”

While I myself (for lack of expertise) do not promote research into, or near term implementation of solar geoengineering here, I'd object against the implications of these phrasings on nature philosophical grounds.

First, the Earth carries large stocks of fossil fuels, and that it does, testifies to the intrinsic non-sustainability of the biosphere (today's fossil fuels is unrecycled biowaste).

Second, any intelligent animal running around on the planet would eventually find those energy stocks and use them (under evolutionary conditions, it's outright impossible that such species could have resisted them).

Third, using fossil fuels in the last couple of centuries *has made nature excel*. How so? Well, understanding nature as the unfolding of the possibility-space of the Earth – which today happens mostly inside human societies –, one can see that fossil-fueled Modernity has unleashed a massive unfolding of new natural phenomena (like genetically modified organisms, particle accelerators, ecologists etc.) that can only be compared with the Cambrian Explosion some 500 Million years ago.

Furthermore, fossil capitalism has simply as matter of fact created unprecedented levels of material affluence for an unprecedented number of people.

Obviously, this is not to say that the current state of affairs is good – it is flawed, cruel and unjust – but the notion that the Earth and humans on it would now somehow find themselves in a 'hole,' and that we'd have 'hit bottom' is comically off.

Finally, we read that the 'mindset' that 'got us into this' – the mindset of techno-scientific civilization, presumably – must be disrupted.

Again, this is very much off, for it is only in techno-scientific civilization that ecosystems and climate science emerged in the first place that now put us into the position of even comprehending the climate problem and do something about it (and I am speaking here of the energy transition, not necessarily solar geoengineering).

The only way out of the “hole” is indeed to dig deeper.

I find the idea of ‘unplugging’ unphilosophical. I see history as a series of technofixes whereby self-created problems trigger solutions that cause new problems, etc. This is how the possibility-space of the planet unfolds and there is no way of ‘getting clean’ from it.

With that in mind I would btw challenge your formulation that having worked through the energy transition, having reached net zero, “is the dream of a world in balance”! To the contrary, protecting the world from the consequences of extreme climate change would only accelerate nature’s unfolding – would accelerate the process by which techno-scientific civilization digs ever deeper into the the Earth’s possibility-space (instead of slowing down that process by way of social unrest, mass climate migration, misery and death).

This notion of a deep open future, from which the energy transition will appear as a significant but finite episode of past natural history, also challenges the religious underpinnings you mentioned of some conceptions that time and again crop up (not only but also) in environmentalist discourse. The idea of (environmental) apocalypse, of living in end times, is such a hoax and indeed so unhelpful for thinking about transgenerational politics – about The Plan, as you put it. I don’t think this is the main thing that stands in its way (this would be neoliberalism and organized corporate interest, in my estimate). But indeed climate change needs to be mitigated *precisely because it would not be the end of the world no matter how bad it gets*: people and nonhuman beings have to live though it.

Sorry this got lengthy...

Kind regards,

Dan

Dear Daniel,

“When you’re in a hole, stop digging” — Your approach on philosophical grounds seems like a better starting point to address these common feelings about using technologies like solar geoengineering to address environmental problems.

The challenge seems to be: you can see a massive unfolding of new phenomena; they see monsters, or “Pandora’s box”.

Why the discrepancy? Part of it is history; part of it is that capitalism hasn’t allowed the full potentials of many new capacities, like genetic modification or carbon capture, to flourish. I’m on board with the “love your monsters” sentiment. I can see the monsters they identify, but they are monsters because of *capitalism*, not because of the *technology involved*. Most technical capacities are not inherently monstrous, though admittedly it’s hard to separate the two.

Moreover, for many environmentalists, this idea that we need to pull back isn’t a well-thought intellectual critique, but a feeling, an emotional response, inflected with language about mental health and substance abuse — “it’s insane”; “getting yourself off the drug”; etc. These people have correctly identified collective mental health problems in our society, and they see technologies like solar geoengineering as an outgrowth of whatever has created the problem.

The insidious thing is that when the pull-back strain of environmentalists indicate the evil inheres in the technologies — and hence we need to retreat from them — it kind of lets capitalism off the hook. Of course that’s not what they say, but it’s what’s implied by the move. In this move, renewable technologies are the good ones and this other set is the bad ones, and it allows us to fail to really critique the social relations behind any of these technologies.

In this way, the pull-back environmentalists and neoliberalism ironically work hand in hand. Neither of them wants The Plan; neither actually wants to see an infrastructure for putting carbon back into the geosphere. It’s actually in the interest of fossil capital and neoliberal policymakers to not have to pay the costs, and deal with the regulation, for geospheric return of carbon. Some fossil fuel companies may be elated by the environmentalist response to carbon removal at scale. Pull-back environmentalists and neoliberalism are playing out a “struggle” which is mutually beneficial — the environmentalists get an adversary that justifies and focuses their activities; the fossil fuel companies don’t have to take seriously the challenge of net zero. Two sides of the same coin.

Meanwhile, actually digging deeper and making this a hole to somewhere — another coin, another future — has few advocates. Your observation that climate science and techno-scientific civilization put us into the position of comprehending the climate problem and need for an energy transition reminds me of Benjamin Bratton’s work, especially with the Terraforming program — that is to say, there are people out there around the world thinking along these lines.

But it hasn’t really become a cultural current with an identifiable lineage, networks, happenings. Ecomodernism, is close, it’s aligned, but the early tone of some

of the thinkers has made it difficult for a broad range of people to identify with it as a philosophy or a movement.

What would it take for this line of thought – the natural philosophy approach – to become a cultural current? (Which, I assume, is necessary for it to become a political force?). The just-pull-backs have a Christian master narrative on their side, which is powerful cultural programming — this idea of original sin and repentance, salvation, being born again into a better relation with the earth. They also have optics — they often are speaking for the Global South. Never mind that the Heinrich Boll Foundation’s “A Societal Transformation Scenario for Staying Below 1.5°C”, their degrowth roadmap for solving the climate crisis, performs their own magical thinking that there will be no change of caloric intake per person in the Global South — that it stays fixed at levels of 2276 kcal per person per year, also holding fixed their levels of meat calorie consumption. Was there a participatory democratic process to determine how people living in the Global South feel about these fixed levels? I assume not. But again, these ideas are not critiqued in a rational way; they are felt in an emotional way that allows a disengagement of the details of what these scenarios genuinely imply.

Furthermore, the just-pull-backs are also post-truth. They hear that Mark Jacobson at Stanford said that we can be 100% renewable, and he’s a scientist at an elite university, so good enough. He’s the elite to believe, against those other elites. They also critique of the IPCC in this regard — for not adequately considering social transformation, but also for even mentioning solar geoengineering. It may be worth noting that the IPCC is incredibly cautious of solar geoengineering; at least in the text in AR5. The IPCC has its own limitations, in that it reports on what scientists have done, which in turn is conditioned by their own culture, priorities, funding landscape, and so on. But the main point here is that we’re in a landscape where people can cherry pick which celebrity scientists on Twitter they want to believe, and not look at the complexity of some of these choices.

So, there are some powerful forces working against the understanding of the nature acceleration that you describe — it’s enough to make one want to give up, except the stakes are too high to do so! I know people who contend with this by retreating into their science or engineering, but then, without the cultural shift, I think the necessary uptake will be limited. How does one make a “deep open future” immediate and felt in the same way the just-pull-back discourse has emotional resonance, when we don’t have these master narratives that help incubate it?

Take care,

Holly

Dear Holly,

Your previous letter elaborated on some of the divergences and rifts within the green and climate movement. Ecomodernists like Shellenberger have now become even more divisive by framing the environmental and climate movement – instead of environmental and climate hazards and the political and economic agents that allow them to run their course – as the thing to fear and fight against, see the subtitle of his book *Apocalypse Never* („Why Environmental Alarmism Hurts Us All“) and a related 2020 opinion piece entitled “On Behalf Of Environmentalists, I Apologize For The Climate Scare” ... Your own approach in *After Geoengineering* is more inclusive across differences – more subversive towards those differences – where e.g. despite degrowth proponents’ resistance against geoengineering, you embrace some of the degrowth ideas and insist that in fact “[m]any of these would enable carbon removal at scale” (p. 161).

You ask how the “natural philosophy” or accelerationist approach I sketched could “become a [more significant] cultural current”. And this is really the question of how the climate movement could gain more momentum, focus on the right things and be more effective.

I don’t know.

What I want to suggest, however, is that the issue of climate mitigation and the energy transition should no longer be misunderstood as an issue of ‘environmentalism’ – of caring for the environment – but should be recognized and framed in some sense as a purely a social and economic justice issue.

There is nothing ‘green’ about any of this.

Green is a color of the past.

This argument would start with the observation that there exists no ‘environment’ to human societies on Earth in the Anthropocene. The Earth System today has become an *intra-societal* thing, first in the sense that it is human societies that determine its path and future (one way or another), but more importantly also in the sense that human-human relations are now no longer mediated just through economic relations and material infrastructures but through the deformations of the Earth System in itself.

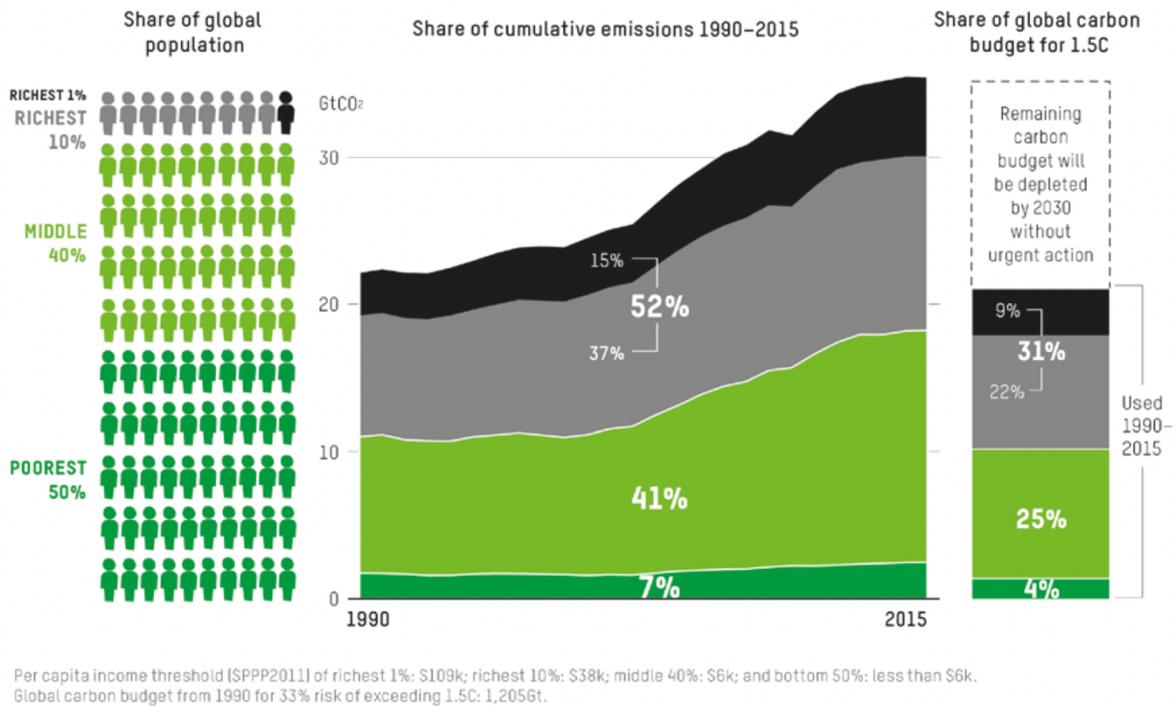
Climate change is a social relation between those who pollute most and those who are most affected, *mediated through* the layer of air that envelops the planet, *through* the oceans, *through* the distributions of climate zones across the continents, etc.

Climate change is a social relation between people who will be affected in vastly differing ways by any given figure of warming – say, the 2,9 degrees by 2100 that (following climateactiontracker.org) reflect current policies – based on the varying degrees of resilience towards climate impacts associated with different positions on the per-capita GDP ladder; which again links back to polluter status.

These hyper-mediated and often hard-to-discern relations, which hold within as much as across societies, represent a new type of power that adds to existing repertoires of how exercising power may look like (elsewhere, and following Michel Foucault’s

notion of ‘biopower,’ I dubbed them relations of ‘geopower’). This is what needs to be sorted out when speaking about ‘solving climate change.’ Neither in its potential degrowth nor in its potential geoengineering components has ‘solving climate change’ anything to do with an ‘environment’ – with restoring a harmonious relation to it or wanting to ‘master’ it. No, it is totally an intrasocietal thing, requires nothing but *the self-mastery of the species* that has become its own sublime.

Figure 1: Share of cumulative emissions from 1990 to 2015 and use of the global carbon budget for 1.5C linked to consumption by different global income groups



Put differently:

If, according to Oxfam, 63 million people (1% of the world population) have emitted *twice the amount of CO2* between 1990 and 2015 as have 3.1 billion people (the poorer bottom half), then ‘cutting emissions’ does not look like generalized ecological austerity (Leigh Phillips) imposed on everyone but more like a very targeted operation that (beyond any particularly ‘environmental’ vibes) simply coincides with removing extreme forms of income and wealth inequality and enabling upward social mobility for all. For most people on the planet (even in OECD societies), mitigating climate change does not and should not imply consuming less or forfeiting trends of leaving poverty and moving towards middle class. What it does imply, however, is income ceilings and inheritance law reform, combatting tax evasion by multinationals, fighting corporate influence on lawmaking, taking proportional responsibility for legacy emissions, and socializing fossil fuel companies to force them to be part of the energy transition at the shortest possible timescale.

This is an inclusive societal task, not a special or ‘green’ interest. Where the environmentalist’s task is seen through the lens of a large-scale social justice operation, I

btw think the question of geoengineering – whether or not to use nationalized oil companies to roll out infrastructure for carbon sequestration or not – pretty much recedes into the background. For amongst all the technological and social tools and innovations required in the energy transition, what sense would it make to leave *just this one* tool in the box? Even solar geoengineering, under just conditions, would become merely a matter of feasibility, not principle.

It's just a tiny tiny detail in the whole image.

Or not?

After all, you've written a (great) book about it! –

Perhaps geoengineering will always remain an issue precisely because “just conditions” will never come to pass?

Kind regards,

Dan

Dear Daniel,

I think the current of the time is with you here — in terms of recognizing climate change as an economic and social justice issue, not an “environmental” one; in terms of declaring green a color of the past. The environmental justice movement is right there. The youth movement is right there, too. Green seems like a boomer color. Now more than ever, people get that climate change is a social relation. They get that climate change is about who gets to breathe and whose house is underwater; they are living it.

Thinking about this as an inclusive societal task seems to leave us back at the tired debate around the efficacy and strategy of the Green New Deal, however. Michael Mann vs Naomi Klein, and so on. Like Mann wrote when reviewing *On Fire: The Burning Case for the Green New Deal* for the journal *Nature*: “Saddling a climate movement with a laundry list of other worthy social programmes risks alienating needed supporters (say, independents and moderate conservatives) who are apprehensive about a broader agenda of progressive social change”.

On one hand, you have the people who say that we can’t get to a safer climate without addressing inequity and racism; on the other hand, you have the people who say that addressing social justice is “putting too much extra stuff in” with tackling climate change and hence it won’t work. I was on a panel last night with a guy from a business council who said exactly that.

I agree that under just conditions, solar geoengineering would be a footnote. If we had the capacity to peacefully and justly plan and govern the rest of the energy transition — to phase out fossil fuels, change land use, scale up carbon removal — well, solar geoengineering would be relatively easy to manage for institutions that had accomplished that. People talk about solar geoengineering to “buy time” for decarbonization. In its most ideal use, it would also be “buying time” for a cultural and spiritual change where we are kinder to each other and to nonhuman kin. Building new infrastructure and creating new methods of decarbonization necessarily takes time. But there’s no set timeline for dismantling racism, empowering the working class, abolishing the patriarchy, and so on — perhaps those social changes can move much more quickly. The nonlinearity of social systems is one source of hope for me.

Kind regards,

Holly