# Terraforming Terrorism

**by Adam P.**

> We shape our tools, and thereafter our tools shape us.
>
> — Marshall McLuhan (attributed)

> [T]he Enlightenment profited largely from the disposition of a very powerful descriptive tool, that of matters of fact, which were excellent for debunking quite a lot of beliefs, powers, and illusions, it found itself totally disarmed once matters of fact, in turn, *w*ere eaten up by the same debunking impetus. After that, the lights of the Enlightenment were slowly turned off, and some sort of darkness appears to have fallen on campuses. My question is thus: Can we devise another powerful descriptive tool that deals this time with matters of concern and whose import then will no longer be to debunk but to protect and to care
>
> — Bruno Latour[1]

Today I want to talk about the weat*h*er.

I would like you to think for a moment about the the ever-changing, ever-surprising form the weather takes and what this means for you and how you understand the unpredictable weather forecast. In this article I would like to address a number of outstanding and on-going concerns and criticisms levelled toward the work of Frontiers *E*ngineering because by extension I would like to think about how our understanding of such new technologies often is out of step with reality, despite being the basis upon which we build the very metaphors that help us understand that reality. This year has seen the rise of attention seeking attacks and inflammatory accusations levelled at that organisation — online and in social news media — and we don't wish to stir fear and discord, it's not beyond the u*n*expected that that there could be a bombing or such of the Frontiers' DAC facility in north California.

Let me clear from the outset: there is a possible risk with regard Frontiers Engineering's advances in DAC (Direct Air Capture) and SRM (Solar Radiation Management) technology — and yet what they are doing is more urgently needed and necessary for the future of humanity and our planet than ever before. The pace at which runaway climate change is happening and impacting in real time global communities, from a baked Australia in the

furnace of 50 degree summers to North America being blanketed in polar vortexes, we have run out of time to avert our impact on changing the weather. Period.

We need to protect ourselves from the coming future by caring about the one planet we have been given.

Since a long time the companies within the New Life Ventures portfolio have shown their willingness to discuss in popular outlets the highly complex and niche area of geo-engineering[2]. In 2018 over 60% of online social media discourse on geo-engineering was conspiratorial, driven by wackos and nutjobs — today we have helped to get that down to just 4%, which is a number that is made up of hardcore conspiracy theorists that'll just never give up[3]. Conspiracy theories in many ways are fuelled by a misuse and mishandling of new technologies or technology in general to account for natural phenomena otherwise hard to grasp or grab hold of in an ontologically accurate way: they are *w*arped and distorted metaphors. Think of flatearthers, people who for one reason or another are isolated in a world they see as being fundamentally at odds with actual reality, fueled by a radical subjective experience and intuition that is given oxygen by the existence of other subjects who share their misguided beliefs.

The layman's capability to describe the world is a product of the tools at her disposal: the Internet has given various sets of instruction manuals for these tools and at Frontiers it would seem that they want to help issue the standard, ur-set, the vulgate version for the emerging technosphere of our times. The Schroter Group has worked tirelessly in making their research av*a*ilable and through their work and their active affiliation with Frontiers they have started to change the wider understanding — and more importantly the capability — of geo-engineering with regard to climate and lowering the levels of greenhouse gases and overall heat trapped in the atmosphere.

In order to give a brief introduction to what this manual might look like, let me begin at the beginning and lay the context for understanding how we can 'affect the weather' through technological means because to do so shows how metaphor — and thus a sharable ability to understand reality — has always been created with the advent of new technology and its relationship to the natural world around us. The history of computation in many ways is a history of trying to predict the weather - and the weather has always been, as often as not, one of the most common points of shared interlocution we have! (As someone who grew up on the sea I can personally attest to having talked about the weather almost everyday of my life!)

But let's start with a Friends' Ambulance Unit in the Western Front of World War One which included the visionary Olaf Stapledon and Lewis Fry Richardson. The former would go on to become one of the most important science fiction writers and philosophers of the 20th century while the latter would create the first modern computation machine. Richardson published in 1922 *Weather Prediction by Numerical Process* in which he out-

lined his complete calculation of atmospheric weather conditions by numerical process. He outlines a vision of a future in which an army of people would perform the necessary processes and arithmetic:

> Perhaps some day in the dim future it will be possible to advance the computation faster than the weather advances and at a cost less than the saving to mankind due to the information gained. But that is a dream.[4]

The 'dim future' arrived not in a dream but rather in the nightmare that was the dark miasma of the Second World War: John von Neumann, consultant and researcher on the Manhattan Project read in 1945 an essay by one Vladimir Zworykin of RCA Laboratoires entitled 'Outline of Weather Proposal' — he found that he agreed with Zworykin that the means to predict the weather was wholly possible with the analysis of data and model construction. Here we can see the first seeding of an idea that weather prediction would not only lead to computational advancement, but also geo-engineering, of fighting the existential threats facing a world riven with war and collapse:

> The eventual goal to be attained is the international organisation of means to study weather phenomena as global phenomena and to channel the world's weather, as far as possible, in such a way as to minimise the damage from catastrophic disturbances, and otherwise benefit the world to the greatest extent by improved climatic conditions where possible. Such an international organization may contribute to world peace by integrating the world interest in a common problem and turning scientific energy to peaceful pursuits. It is conceivable that eventual far-reaching beneficial effects on the world economy may contribute to the cause of peace.[5]

This is a fascinating text to read today because of course we live now within those very *catastrophic disturbances*: the time to act is now. Climate change is the biggest threat to peace and our continued existence as a species. It's not lost on me that the origin of computing today was the very same von Neumann's ENIAC (Electronic Numerical Integrator and Computer) at the University of Pennsylvania, turned on in 1946: it was conceived for military purposes in order to calculate artillery range and calculate the yields of the first thermonuclear bombs. And from this I think of IBM's SSEC, its large electromechanical computer from 1948, installed in the window of a shopfront on East Fifty-Seventh Street in

New York. It was intended to plot the positions of the moon and stars for NASA but ended up being used to run simulations of the first hydrogen bomb. And then think of the first digital computer which had the meteorological name Whirlwind I: it went online at MIT in 1951. It was intended to be a flight simulator but in turn led to the groundwork for the Defense Advanced Research Projects Agency (DARPA) — the earliest prototype of the Internet — and would lay the foundation for the vast computer system Semi-Automatic Ground Environment (SAGE) which powered NORAD and SABRE, the latter still to this day connecting millions of flights to commercial travel outlets (and these flights in turn of course contribute to the heating of the earth's atmosphere). What I'm getting at here is what James Birdle stated some years ago: 'All contemporary computation stems from this nexus: military attempts to predict and control the weather, and thus to control the

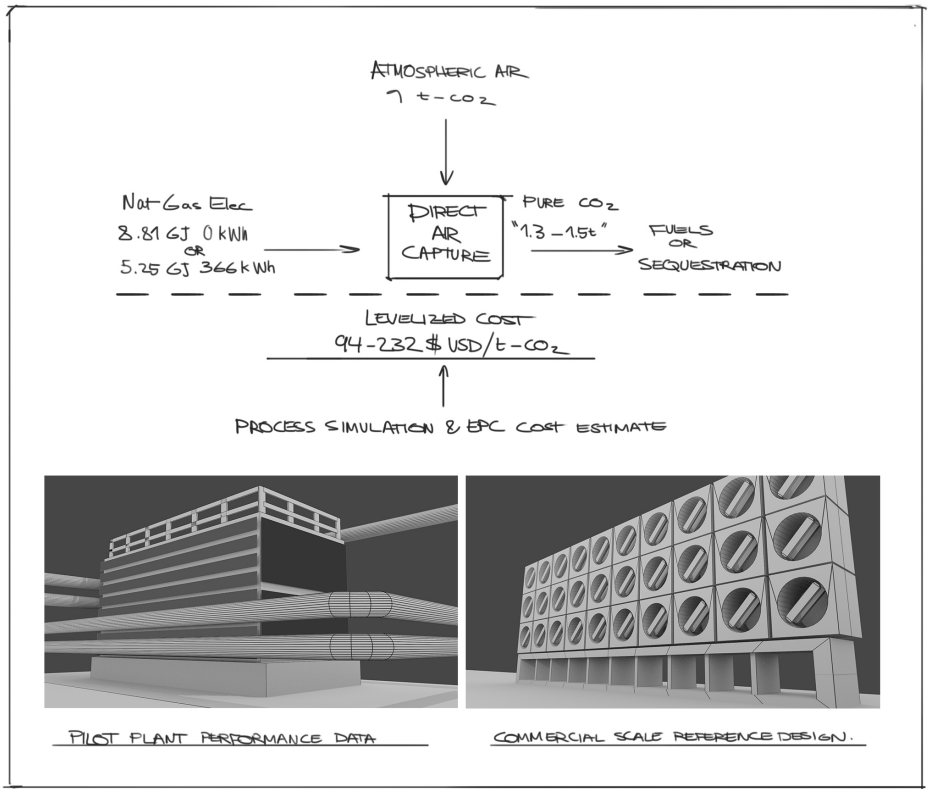


Illustration: Commercial mass production proposal, Modex-DAC. Courtesy: Frontiers Engineering

future.'[6]

Well, the future has now arrived.

The Schroter Group has developed an Earth Science programme that has led to two major developments in not only our ability to predict and compute weather, but to actively control it. This control offers us a greater chance for peace in the face of devastating climate change: like the Habe-Bosch Process a hundred years ago allowed for the fixation of

nitrogen (which creates ammonia and which is central to production of agricultural fertiliser) in turn facilitating the food production capability that led to the population boom of the 20th century, the Direct Air Capture of Frontiers Engineering allows for the prospect of humanity surviving runaway climate change, resulting in a population of 10 billion enjoying clean, breathable air. If their technology works that is.

David Milner and his team at Frontiers has successfully patented over fifty technological devices, instruments and mechanisms that together make up their revolutionary Modex-DAC plant. And this brings me back to my argument that as they proceed the rest of us need to remember that the history of technological advancement has always been peppered with individuals who have developed highly personalised, paranoid beliefs about new and strange devices, and Frontiers' climate change reversing tech is no different. Think of the case of James Tilly Matthews, the first historical case of clinical delusion tethered to a new scientific discovery of the time: he outlined an 'air loom' that used pumps and magnetism to control his mind; this was in 1796 when Joseph Priestley — something of a godfather to Modex-DAC tech — discovered that air was made up of a multitude of elements. The point I'm making is that for every new advance in science, particularly when it comes to communication and observation, there have been cases of the layman coming fast and strong with conspiracy and paranoia as a way to integrate these new developments that aren't properly understood into their worldview and outlook.

The great age of disruption that dawned when the Internet promised to bring us all together has given us various strange groups of people who can be seen to suffer from collective delusion. We have 'Targeted Individuals' who accuse everyone and noone of 'gang stalking' or those who claim to suffer 'Morgellons' (they insist they're afflicted with fiber coming out of their bodies and thus are incapacitated from electrical signals), or people who, as mentioned above, have set back the geo-engineering debate by their insistence in the chemtrail conspiracy. Or flatearthers. Or anti-vaxxers. The list goes on. The internet confirms these people's belief system: they see the same thing as you or I — say an

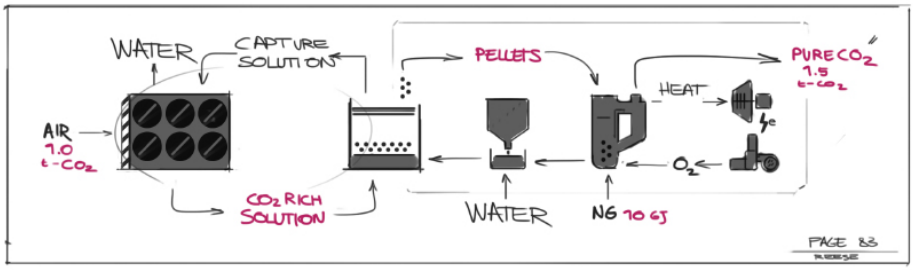


Illustration: Modex-DAC process, patent application 2020-2b. Courtesy: Froniters Engineering

airplane contrail — but consider it to be a fundamentally different thing altogether than it actually is. You could say that their metaphors have collapsed into a vision of reality itself.

Online, they find like minded people to backup and reinforce their paranoid beliefs and build out their metaphors into self sustaining world visions.

Direct Air Capture tech works in a surprisingly straightforward way. It takes atmospheric air, removes CO2 in our patented MX-DAC Closed Loop System: all that goes into it is water and energy and all that comes out is pure, compressed CO2. The first stage is when hydroxide is used to capture the carbon in the air and turns it into carbonate. This is then turned into calcium carbonate in solid forms, before all of this is moved into our Modex Calciner, which heats the solid calcium carbonate until it starts to break down, releasing the CO2 as a gas and leaving lime or calcium oxide behind. This is then hydrated and returned to the first stage to aid the hydroxide process, thus closing the loop.

The Schroter Group rigorously, albeit theoretically, tested this process in the years 2017-2020 and after signing a cooperation deal that sidestepped New Life Ventures, the equity investment was put in place to establish a dedicated division of Frontiers for the research and development of this technology, with ever greater, more commercially viable and indeed extra-planetary applications envisioned.

Today the weather is out of sync: as we all know, a good day of warm sunshine locally is now more often than not a bad omen for growing catastrophe globally. We can reverse this.

## Notes

1. "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern" in *Critical Inquiry 30* (Winter 2004): The University of Chicago, 2004.
2. I can draw your attention to our work in creating discourse in non-traditional outlets such as computer games, popular culture and education outlets. Almost a decade ago we started our collaboration with various entertainment partners, including computer games, proving that we're not adverse or shy in any way to discussing the potentials and ethical implications of geo-engineering. https://seed-project.io/theory/2017/11/3/making-new-homes-liveable-terraforming-for-new-life Last accessed, November 23, 2020
3. "Conspiratorial views have accounted for ~60% of geoengineering discourse on social media over the past decade. Of that, Twitter has accounted for >90%, compared to ~75% of total geoengineering mentions. Further affinity analysis reveals a broad online community of conspiracy. Anonymity of social media appears to help its spread, so does the general ease of spreading unverified or outright false information. Online behavior has important real-world reverberations, with implications for climate science communication and policy." Solar geoengineering and the chemtrails conspiracy on social media, Dustin Tingley & Gernot Wagner, Palgrave Communications, 2017
4. Lewis Fry Richardson, *Weather Prediction by Numerical Process*, Cambridge: Cambridge University Press, 1922.
5. Vladimir K. Zworykin, *Outline of Weather Proposal*, Princeton, NJ: RCA Laboratories, October 1945.
6. James Birdle, *New Dark Age: Technology and the End of the Future*, Verso, 2018