

Iron on Troubled Waters

Climate Change is Here, but Real Debate Lies Ahead

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The climate change argument isn't over; it hasn't even begun. Sure, we have already resolved two questions – is global climate change happening (yes), and is it caused by human activity (yes) – to the satisfaction of all but a handful of fringe naysayers, but this consensus merely sets the stage for the real argument over what to do. And sailing right into the center of this storm is the Weatherbird II, the research flagship of Silicon Valley-based company Planktos.

Planktos proposes to remove climate-damaging carbon dioxide (CO₂) from the atmosphere by dispersing powdered iron magnetite (think rust the texture of talcum powder) into the ocean hundreds of miles from shore. The iron will act as a fertilizer, triggering a massive bloom of phytoplankton that will soak up carbon dioxide and sequester it as sediment formed by the corpses of the dead organisms settling on the deep seabed. Because phytoplankton account for more than half the carbon fixation on the planet, and iron dispersal is so easy compared with other methods of carbon capture such as injection into old oil wells, ocean-based sequestration could be a cheap and effective solution to the planetary carbon problem.

This theory has been tested experimentally, and later this fall, the Weatherbird II will conduct the first of several medium-scale pilot tests in the Tropical Eastern Pacific, dispersing a hundred tons of iron dust over an area of ocean the size of Connecticut. Planktos considers this a benign and conservative process, noting that the iron



dispersal rate will be in the parts per trillion, a level comparable to that dumped by a storm carrying iron-rich dust from the Chinese mainland over the Pacific.

But others disagree, and the Weatherbird II is thus certain to become a lightning rod in the argument forming around how to respond to global warming. On one side are “engineers,” people convinced that we must work our way out of the climate crisis by engaging in planet-scale efforts like sequestering carbon, unfurling orbital sunshades, tossing dust high in the atmosphere to block sunlight, or moving wholesale to nuclear power to eliminate coal-based emissions. On the opposite side are individuals -- call them “druids”-- who are equally convinced that the only sensible

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option is reduce our human planetary footprint, to conserve, preserve and remediate the threatened natural environment.

Judging by the reaction to Planktos' plan so far, the engineer/druid divide is likely to widen into a chasm. Planktos believes it is engaged in modest bioengineering, describing its plan as oceanic ecosystem "restoration" or "remediation," while Druids label it a form of "dumping" no different from any form of waste disposal at sea. Arch-druid organization Friends of the Earth has branded the Planktos proposal as global warming "snake oil," likely to create more problems than it solves.

The difference between the engineers and the druids is profound. Engineers are the ultimate optimists; every problem can be solved given enough money, brainpower and determination. Druids on the other hand are pessimists; technology fixes are at best weak and temporary Band-Aids that will only delay the inevitable. Though I cast the two camps in stark contrast, I mean no offense, for each world view is informed by legitimate professional experience. Professional engineers are solid optimists by nature and share the collective experience of creating myriad wonders, from landing a human on the moon to launching the digital revolution.

In contrast, geologists, oceanographers and environmental scientists tend to be pessimists, a natural reflection of their study of past extinctions, wrenching climate shifts and a knowledge that eventually everything dies out or erodes into the sea.

I have great respect (and sympathy) for both sides, but I despair over the fact that the engineers and the druids are pulling in opposite directions. Engineers want us to flee into the future, while druids enjoin us to retreat to the past. Druids remind the engineers that their industrial innovations created the global warming problem to begin with, while the engineers argue that it is too late for passive footprint-reducing measures alone to succeed. I find myself in the uneasy center.

Take nuclear power. I am certain that conservation is a hard sell to an electricity-addicted public and do not doubt that burning coal will suffocate us all in greenhouse gases, but I also wonder whether we are smart enough to build idiot-proof nuke power plants that won't yield a harvest of unanticipated sorrows.

Planktos' plans may be modest compared to mega-projects like nuclear plant construction, but its business model also makes druids uneasy. Planktos is a for-profit company that believes it can do good while also doing well by selling carbon offset credits created by the CO2-gobbling phytoplankton growing on its iron dust. As if the profit motive alone wasn't enough to stoke druid skepticism, the efficacy of carbon offsets – a quintessentially engineerlike scheme to allow polluters to purchase compensating beneficial greenhouse reductions – is being questioned. Engineers believe ships like the Weatherbird II will save the planet, while druids warn that it is a flashy quick-fix lining speculator's pockets at the cost of false comfort or perhaps even irreparable long-term environmental harm.

Like so many debates of the last decade, including of course the fight over the Iraq War, the tug of extremes is leaving the center as empty as the ocean around the Weatherbird II. Urgency is the enemy of the middle in this debate, for it compels us to either flee forward or retreat back. I eagerly await the results of the Planktos pilot, but I doubt that it will help druids and engineers find common ground. As the old Irish saying goes, "Is this a private fight, or can anyone join?" Let us hope that the middle can at least be heard and perhaps even get in a few punches of its own.

Paul Saffo is a technology forecaster based in Silicon Valley. You can read more of his essays at www.saffo.com.