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Posted April 13, 2009 | 05:30 PM (EST)

Geoengineering: Mankind and Reshaping the World

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If he were a bear, John Holdren would be reaching into a bee's nest. The president's science advisor seems undeterred about stirring up an angry environmental buzz.

Holdren revealed to the Associated Press this week that the administration is actively talking about geoengineering as a tool to blunt global warming. Geoengineering embraces a range of futuristic schemes, ranging from the fantastical to the merely brazen, to try to alter the environment.

It includes ideas like shooting sulfur into the air to create a cooling atmospheric blanket. It includes launching micro-thin disks to create a floating sun shade a million miles out in space. It includes fake trees that would absorb carbon dioxide, fertilizing the ocean to grow huge slimes of algae, or turning the oceans upside-down with thousands of pipes reaching to cooler depths.

The reaction was expectable. Those who take the Holdren at his word--and the Harvard scientist is far too bright to dismiss--find the prospect of geoengineering frightening. Man does not know enough to muck around with earth's systems, they argue; surely these notions are too preposterous to be taken seriously.

But in truth, man has long tried to reshape the world. We have scraped away forests where we wanted fields. We have built dams to create lakes above valleys. We have leveled hills and bored through mountains when they were in our way. We have drained swamps when we wanted to make more dry land. We have carved canals and ditches to make water flow to places it did not.

Much of this was simply digging large, the exaggeration of our childhood urge to carve castles in the sand. We were a little more timid about purposely tinkering with the fundamental systems of nature.

But World War II gave us hubris. The vast scale of that conflict made us think in larger terms. Suddenly, our reach was the whole world. The technology that burst--literally--from the war made us feel we could master larger forces than we had known. The war had seemed such an apocalyptic test by the gods, the winners saw our unequivocal victory as evidence we were the masters of our own fate, and certainly of our world.

The science of trying to change the weather was born in that war. A high school dropout with a self-taught knack for research named Vincent J. Schaefer was trying to figure out how to counteract the ice buildup on the wings of bombers when he accidentally discovered how to create snow from dry ice.

In 1946, flying in a plane over Mount Greylock, Massachusetts, he threw dry ice and silver iodide from the cockpit, and precipitation fell. From that came a generation of airborne cloud seeders who fly today in the American west to squeeze a bit more precipitation onto farms and dams below.

We were emboldened by such successes to dream large. The Russians plotted to turn Siberian Rivers from the Arctic to empty on central Asian farmlands. They proposed damming the Bering Strait, pumping water into the Pacific to make the Arctic Ocean so salty the icepack would melt. They launched Sputnik to defy our earth-bound limits, and America trumped that by sending a man to the moon. Less nobly, the Pentagon secretly worked on plans to alter the climate to use as a weapon in war.

When the public learned, belatedly in 1974, the Pentagon had carried out a broad and failed scheme to alter the climate over the Ho Chi Minh trail in the Vietnam War to make it impassable, and had tried to denude its forest canopy with Agent Orange, sentiment turned against what seemed like Strangelovian schemes. Talk of grand scale geophysical tinkering subsided for a while, though some scientists still made musings on the back of envelopes, doodling with what-if-we-did-this notions.

By the 1980s, though, it was becoming clear that we were already doing something to change our world. We were pumping so much carbon dioxide and other industrial gases into the air that our thin atmosphere was like a scientific beaker already frantic with the results of a rogue experiment.

We were heating our world. The implications were a mystery. The early results did not look good. And so, by a 1991 meeting of a panel of the National Academy of Sciences, the envelopes had come back out, revealing the figures and equations that their authors said just might save us. The geoengineering schemes were rehatched.

The theorists now touting these schemes are hardly mad scientists, bent on playing god. One, Paul Crutzen, is a Nobel prizewinner who helped mend the ozone hole. The National Academy of Sciences, several respectable universities, and NASA all have put up money or support to keep the plans alive.

Many of the ideas are impractical, enormously expensive, and certainly would create a political morass with other countries, not to mention our own. But the supporters of these ideas say it is foolish to blunder ahead toward predictions of climate change chaos without at least a few exit strategies, as desperate as they may seem.

"We don't have the luxury," Holdren said, "of ruling any approach off the table."

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Maybe this is a way to 'subvert' (confuse? derail?) real, practical solutions to and discussion of GW, but maybe it's a way of pressing the issue--showing the urgency of it. When the corporate leaders see that national level political figures are talking HUGE, last-resort fixes, rather than simpler, easy/convenient (but still worthy) fixes like using compact fl. lightbulbs, maybe it'll cut through the GW-denial haze and get them to buy into the need for this.

But I agree it could also be used (a la 'clean coal' propaganda) to give a sense of falsely avoiding the deep changes necessary.

To whoever said that bit about an ecologically based economy, I like that. I'd live simply and do without if it was to achieve that goal. I'm sick of the exploitation/marketing driven muck we live in/breathe in/eat. I know we're caught up in it and depend on it--it pays the bills and so on, but it's tainted and sickening.

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Anyone who advocates pumping sulfuric particles into the air only thinks they are green, in fact they are idiots. Mother Nature does this on her own when a Volcano blows it's top and sometimes that cloud is thrown many, many,many miles up into the air causing a dimming of the Sun and a little cooling.

Same for all the rest of the hair-brained ideas...Great on paper but useless in the real world because we don't know enough about how these things really work.

Remember "Biosphere II", which was an attempt to have a totally enclosed, viable self-sustaining system complete with people...it didn't work out so well.

This is just another attempt by extremists to give us quick solutions to problems that took a long time to get out of hand...150 years or so.

Fake trees that eat up Carbon Dioxide?

Why not plant Real Trees?

All kinds of ways to reflect Sunlight?

Funny, funny ha, ha.

Global Warming isn't caused by The Sun it's because of us.

Why not devise plants that eat the Carbon Dioxide?

Why not suck it up and make rock out of it?

Why not invest money into our "storm sewer infrastructure" so that we can have the ability...

especially in places that flood...so that we can have the ability to pipe the flood water to centralized locations...out of the flood area....pump it out to be cleaned in facilities and pump it back into new lakes?

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They proposed damming the Bering Strait, pumping water into the Pacific to make the Arctic Ocean so salty the icepack would melt

Yup seems they didn't have to do that, global warming did it for them.

I've heard if this were done it would change weather patters in the US west coast putting the wetter Seattle like weather further south into Los

Angeles.....ohboy land developers would just love that -more water to create even more urban sprawl.

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This is typical anti environmentalism: ridicule by subversion.

Claim to want to help, but suggest terrible harebrained schemes to discredit the entire concept.

just replacing Coal with rooftop solar and wind will stop AGW.

Bio Char fertilizer has a huge positive energy output, while having a huge NEGATIVE carbon output.

These are practical solution.

Here's another crazy idea: space solar:

<http://blogs.wsj.com/environmentalcapital/2009/04/14/space-race-are-solar-satellites-the-next-big-thing/>

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Rooftop solar? So, solar panels on every rooftop in America. Lets just say residential, for sake of argument.

EIA's 2005 records indicate 111 million household units.
Average consumption of energy is about 27MW a year, costing an average of about \$1800.

Onward.

Cost of Solar Panels for an average residence: Upwards of \$30,000.
Average time a Solar Panel produces energy per day: 6 hours.
Time it would take to "pay for itself"... ugh... a long time...

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gee, 30,000/1800= 16 years.

Solar panels last at least 20 years, more like 40 years.

that means, in the long run, solar is cheaper.

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These proposals seem to me like an attempt to avoid doing the hard work of changing our lifestyles and abandoning growth economics for ecological economics and a steady-state economy.

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Many of these proposals seem like a cure worse than the disease. Such large scale engineering projects always have unintended consequences particularly since the engineers involved are usually not particularly well versed in the science of ecology.

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