

# Spontaneous Geoengineering

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Like the old lady who swallowed a spider to catch the fly she had swallowed, perhaps government now tries to restrict fossil fuel use because its manifold efforts to restrict many other natural human activities have unwittingly exacerbated the global warming problem. Fossil fuels, as if mistakenly regarded as a gift from a malevolent God, actually fit into a misunderstood package that automatically neutralizes a decisive portion of the negative effects that some of its parts might yield if provided in isolation. Fossil fuels propel the ascent of industrial society and all its benefits. Among its benefits are expanding processes that mitigate any greenhouse effect enough to make it trivial. The expansion of a laissez faire industrial society thus does not bring a global warming crisis; the intervention of a Hobbesian Leviathan brings it. Leviathan disables the natural control mechanisms that providence had provided, thus manufacturing a global warming problem upon which this Beast of restrictions might further feast.

Humans naturally undertake a variety of activities that counteract global warming although the underlying motive is almost entirely unrelated to that benefit. Indeed, various writers speculate on why

the amount of global warming predicted by general circulation models fails to materialize at the beginning of the 21<sup>st</sup> century. Atmospheric carbon dioxide fails to accumulate at rates approaching the rate of anthropogenic carbon dioxide emission to the atmosphere because of a variety of poorly understood carbon sinks. Landfills sequester carbon; houses do too. Expanding forests capture carbon; fertilizer increases the production of carbonaceous agricultural waste and stimulates other natural carbon sinks. Even ocean fertilization tends to increase rates of ocean uptake of carbon dioxide by stimulating plankton growth while faulty government policies discourage this fertilization from taking place. Such carbon dioxide as does accumulate in the atmosphere fails to cause the anticipated warming. Particulate pollution may be adding to the earth's propensity toward cloud formation, as may be sulfate pollution. The reflectivity of the earth's surface may be increasing. Particles suspended in the atmosphere may be creating a measure of shade down at ground level, reducing the heat that carbon dioxide tends to resist radiating back out to space.

## Ocean Farming

Michael Markels (1995), President and CEO of Ocean Farming, Incorporated, asserts that fertilizing an area of ocean about 100 miles by 530 miles, could raise fish production by 50 million tons, an amount roughly equal to half of the mid-1990s total world annual fish catch. Applying an iron-based fertilizer designed to linger above a depth of 100 feet would cost about \$50 to \$100 million per year and result in increased fish production worth about \$40 billion per year. The effect of the fertilizer would be to increase plankton growth enough to have both the above-mentioned dramatic effect on ocean fish production and to sequester an amount of carbon dioxide equal to the 1.34 billion metric tons per year that the United States emitted from all fossil fuel combustion occurring in the mid-1990s. Utilizing an area of ocean about the same size as the Chesapeake Bay would suffice to accomplish all of this. Similar enterprises repeated across the world could likewise easily sequester the remainder of the earth's annual anthropogenic carbon dioxide emissions.

Producing fertilizer is a seemingly easily surmountable obstacle for ocean farming. Markels (1995) explains "many present-day nontoxic waste streams offer possibilities to produce nutrient constituents at low cost, with concurrent benefits to recycling programs." The problem preventing such ocean farming is failure of governments to adequately define and enforce property rights in the oceans. The lion's share of the benefits from ocean fertilizing would go to people other than those who incurred the cost of distributing the fertilizer since the sea is open to fishermen regardless of their investment in

promoting fish harvests. Markels (1995) recommends some sort of legislation effectively privatizing a portion of the sea so that ocean farming corporations might find incentive to engage in the requisite fertilization activities.

Governments not only fail to define property rights to overcome the incentive problems that would enable ocean farming, they prohibit ocean dumping of potentially helpful waste. While former abuses such as Soviet ocean dumping of nuclear reactor waste, and ocean disposal of drums of toxic chemicals, justified some government intervention, prohibitions perhaps tend to go too far. A reexamination of benefits from certain kinds of ocean dumping might reveal additional avenues of spontaneous Geoengineering that government has unwittingly discouraged.

## Landfill Proscriptions

While containment standards increased for landfill design since the early 1970s, the law has banned a number of categories of waste that previously found their way there in abundance. In particular, yard waste constituted a significant source of carbon with grass clippings, leaves, sticks, and other gardening debris averaging roughly half its dry weight in elemental carbon content. Now, the most viable alternative – composting – assures liberation of virtually all such carbon content back into the atmosphere as carbon dioxide and methane. Likewise, vigorous government efforts to promote recycling deprive landfills of much wastepaper that is also roughly half carbon in its elemental content.

Research published by the U.S. Environmental Protection Agency (1998, p. 105) indicates that leaves buried in a

sample landfill ultimately sequester 54% of their dry weight as buried elemental carbon; newspapers sequester 42% of their dry weight; branches 38%; and grass 32%. The world's municipal solid waste stream, in fact, contained a remarkable 0.7 billion metric tons of carbon as of the turn of the last century (Marxsen, 2001, p. 296). Other kinds of waste streams such as agricultural waste, sewer sludge, construction and demolition waste, and other similar forms of trash totaled a carbon content of about 18 billion metric tons per year or several times as much as the amount of carbon added to the atmosphere annually (Marxsen, 2001, p. 296). Simply opening landfills to unrestricted deposition of carbonaceous waste could thus make a meaningful contribution to reducing future levels of anthropogenic atmospheric carbon dioxide.

### House Carbon

In a 2001 article posted by *Realty Times*, Tom DeWeese explained that government had put tremendous amounts of American forestland off-limits for timber harvesting. As a result, the American timber harvest had shrunk from 12 billion board feet in 1990 to barely 2.5 billion board feet per year by 2000. This strangulation of America's timber industry raised the cost of an average new home by \$5000 to \$10000, according to DeWeese. On top of that, the imposition of tariffs on lumber imported from Canada further discouraged the building of new houses.

Allowing people to build new houses encourages spontaneous carbon sequestration. Nate Anderson, in a 2006 SUNY-ESF Environmental Information Series posting, describes the average 2,085 square foot house as containing 13,127 board feet of

framing lumber, in addition to large amounts of plywood, oriented strand board, trusses, doors, flooring, decking, and other wood parts. In harmony with such observations, an anonymous December 15, 2004 Arizona Watch posting under the penname "vonNeuman," contends that an average house contains about 20,000 board feet of lumber, or 1667 cubic feet of wood. With a carbon content of 16.9 pounds per cubic foot, such a house would contain 12.8 metric tons of carbon (or 42.2 metric tons of carbon dioxide if burned). Housing the entire U.S. population of 300 million, at 2.65 persons per house, in such houses, would sequester almost 1.5 billion metric tons of carbon. If a world population of 7 billion people occupied such houses at 2.65 persons per house, this would sequester nearly 34 billion metric tons of carbon from the atmosphere as a result.

The residential housing stock is only a fraction of the total stock of structures. Like houses, other kinds of structures typically contain large amounts of wood. Policies to encourage the use of wood by making it a low cost substitute for alternative building materials increase the amount of carbon sequestered in the world's stock of structures. Richard Houghton, in a 2006 Woods Hole Research Center report, shows that wood products have the potential to sequester 0.5 billion metric tons of carbon from the atmosphere annually, or about one sixth of the amount currently accumulating annually in the earth's atmosphere. Likewise, the increased demand for wood tends to give rise to larger global tree populations that support larger demand driven timber harvests. Ultimately, the demolition of structures and the land filling of resulting construction and demolition debris likewise increase, and the buried wood products ultimately sequester carbon

as earlier mentioned in the context of EPA landfill residue research.

### **More Forests**

Peter Huber and Mark Mills, in a 2005 book called *The Bottomless Well: The Twilight of Fuel, the Virtue of Waste, and Why We Will Never Run Out of Energy*, explain (pp. 160-166) that America is actually a net carbon sink in spite of the large amounts of fossil fuel it burns. They cite an article in *Science* (Fan, et. al., 1998) that reports that the prevailing westerlies leave the eastern shores of the United States carrying about 300 parts per billion less carbon dioxide than they had when they entered the western airspace of the U.S. from the Pacific Ocean. Huber and Mills emphasize that the efficiency of U.S. agriculture, based on fossil fuels and synthetic fertilizers, allows an abundance of plant growth, especially including trees and grasses, sufficient to take up more carbon dioxide than American fossil fuel burning releases. They argue that government efforts to encourage replacement of fossil fuels with farm derived substitutes such as corn based ethanol, by displacing some of America's natural carbon sinking forests and grass lands, actually add to the anthropogenic carbon dioxide problem rather than reducing it.

Government efforts give priority to farm preservation. America's farm support programs pays billions of dollars to keep otherwise bankrupt farms alive. Massive areas that would otherwise be forests or wetlands are kept cleared to preserve the owner's agricultural subsidies. Instead of being called a farm support program, it should be referred to as a forest suppression program.

Sherwood, Keith and Craig Idso (2003) discuss the issue of excessive use of synthetic nitrogen fertilizers that results in oxides of nitrogen increasing in the atmosphere and then precipitating into forests where it has allegedly harmful effects on plants including trees. However, the authors refer to research showing that enhanced CO<sub>2</sub> stimulates rapid tree growth when trees also obtain an abundance of usable nitrogen. Indeed,, Sherwood B. Idso and Keith E. Idso (2002) report studies that "...demonstrate that not only are anthropogenic-induced increases in atmospheric CO<sub>2</sub> concentration and nitrogen deposition positive biosphere-enhancing forces individually, they are even more effective when acting simultaneously, which is exactly what they have done as mankind has progressed through the various stages of technological development that have taken us to - and through - the Industrial Revolution." Government campaigns to regulate and reduce oxides of nitrogen emissions from automobiles and other equipment thus may be stifling natural processes that would slow or halt the increase in atmospheric carbon dioxide levels. The reflectivity of leaves that enhanced CO<sub>2</sub> and nitrogen fertilization of forests, moreover, might significantly cool the planet by reflecting more sunlight back into space.

### **Nuclear Power**

Decades ago, people thought nuclear energy would make electricity too cheap to bother metering it. Unfortunately, the 1979 disaster at Pennsylvania's Three Mile Island nuclear plant marked an abrupt halt to the building of additional reactors to feed the electrical power grid. It became prohibitively costly to overcome all the resulting

regulatory and safety issues. However, Larry Foulke and H. Sterling Burnett (2005) expound subsequent technological progress that has greatly improved safety, reduced cost, and gained embodiment in facilities constructed in other countries. China and South Africa are building state of the art pebble bed reactors that make meltdown impossible even in the worst-case scenarios. John Deutch and Ernest Moniz, in a 2006 article in *Scientific American* (p. 80) state that an MIT study indicated electricity could be produced for 6.7 cents a kilowatt-hour in a newly built light water reactor, accounting for all the costs of building and operating it. By comparison, the price is 4.2 cents per kilowatt-hour from a new coal fired plant and 5.8 cents for a natural gas powered plant at \$7 per million Btus for gas. The cost could be substantially lower, however, Deutch and Moniz reason, if, among other things, regulations governing the plant site were different. They emphasize that waste disposal issues are a substantial obstacle.

### Cloud Making

Owen B. Toon (2000, p. 1763) explains that submicrometer-sized particles possibly affect the Earth's climate as much as does the accumulation of greenhouse gasses added to the atmosphere over the past 100 years. Aerosols both scatter light back into space and cause an increase in the number of water droplets in clouds enough to be possibly canceling out the greenhouse effect entirely (Toon, 2000, p. 1763). Toon shows satellite pictures of ship tracks caused by particles emitted from ships' smokestacks that subsequently cause the formation of new clouds where humidity was high but an absence of aerosols had prevented clouds from forming (Toon, 2000, p. 1765). While ship tracks cover only

a small area, they demonstrate an effect that is massive on a global scale, given all the sources of such air pollution considered in aggregate. Restricting particulate pollution may thus cause global warming since it upsets a natural balance between one kind of pollution and another that cancels out the effect of the first.

Christina Reed reports in *Scientific American* (2006, p. 28) although nighttime contrails from commercial jets fail to provide global cooling benefits, in the daytime they reflect sunlight enough to provide a net cooling effect. After the events of 9/11 grounded commercial U.S. flights for three days, daytime temperatures across the country increased measurably (Reed, 2006, p. 28). Reed suggests that efforts to increase the proportion of flights scheduled for daylight hours significantly reduce global warming especially as global air traffic expands.

Governments are increasingly restricting sulfate and particulate air pollution in many parts of the world. Paul Crutzen (2006) states that global sulfate emissions have been decreasing 2.7% per year causing solar radiation at ground level to be increasing at 0.1% per year from 1983 to 2001. Moreover, fully completing the associated campaign of air quality improvement, according to recent research, may raise temperatures 4K at the poles and 0.8K on most continents, on the average (Crutzen, 2006). Philip K. Verleger (2006) explained that relaxation of sulfur standards for gasoline would permit so much substitution of the cheaper heavy sour crude for sweet light crude ("sweet" means low sulfur) that it could bring world crude oil price down from \$70 per barrel to \$40 per barrel for sweet light crude. It would be especially helpful to refrain from tightening any sulfur restrictions on jet fuel since

sulfates are about 100 times more effective if delivered to the stratosphere, where they remain about 100 times longer than in the troposphere where they precipitate out in just a few days (MacCracken, 2006). Likewise, the case for restraining the imposition of any fuel sulfur restrictions for ocean going vessels seems strong.

Gregory Benford (1997) proposed locating the dirtiest coal burning industries where their smoke would blow out to sea and then feeding them the highest sulfur coal. Benford specifically recommended island locations and one calls to mind that Singapore is a world center of petroleum refining for much this reason. Reflection reveals that corporations in the past found using taller smoke stacks a cost efficient remedy for complaints by nearby residents offended by air pollution. Coastal locations for power generation, steel making and so forth are probably far less costly than scrubbers and the use of low sulfur coal. The earth's population could benefit from letting industry do, more nearly, what it wants to do in this regard.

### **Model Uncertainty**

Suppose increasing the amount of particulate matter suspended in the atmosphere fails to cool the earth. Richard Lindzen (2005) discusses the role of "aerosols" (or suspended particles or droplets of liquid) in the global warming controversy. The actual amount of warming that has occurred by the beginning of the 21<sup>st</sup> century is only between one sixth and one third as much as General Circulation Models predict, according to Lindzen. Proponents of global warming alarmism are frightened because their models predict substantially more warming than the trivial amount that has actually

occurred and must point to mysterious processes that they allege to be delaying the warming. Accordingly, they credit aerosols with providing a counteracting cooling effect, while, Lindzen (2005) emphasizes, "aerosols and their impact are unknown to a factor of ten or more; indeed, even the sign is in doubt." Lindzen favors an alternative hypothesis that the models are greatly overestimating the sensitivity of climate to manmade greenhouse gasses and there is little or no cause for alarm at all. If increased amounts of suspended particulate matter in the atmosphere turn out to have little or no effect on the earth's climate, then maybe this will demonstrate that increased carbon dioxide also has very little effect either and merits little concern therefore.

### **Conclusion**

Global warming alarmists advocate government efforts to circumscribe human liberty to enjoy fossil fuels. One such initiative consisted of a global campaign initiated at Kyoto to roll back carbon dioxide emissions to levels prevailing years ago. In spite of "widespread and rigorous scientific agreement that the Kyoto agreement would have no discernable impact on climate" (Lindzen, 2005), the crescendo of the outcry for carbon control keeps rising from "the thousands of negotiators, diplomats, regulators, general purpose bureaucrats and advocates whose livelihood is tied to climate alarmism." Yet controlling carbon emissions is perhaps not necessary in any case. Far better it would be for government to cease from controlling the host of spontaneous processes that might automatically mitigate the greenhouse effect even if it is a real threat. Carbon fuels and the industrial

revolution they enabled are proving to be of less ambiguous benefit than proponents of a malevolent God hypothesis allow. While they add carbon dioxide to the atmosphere, they naturally tend also to propel a variety of mitigating processes. Without governments' manifold actions that stifle these mitigating processes, global warming might fade from being a trivial problem to being no problem at all.

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