

## **The Ethics of Geoengineering**

*July 25, 2007*

Every morning this past month I've looked longingly at the normal high temperatures for July listed in the paper – particularly on July 7th, when western Montana experienced its hottest day on record. In Missoula it was 107, the normal temperature is 83. It's amazing how comfortable 83 degrees Fahrenheit can sound. The entire West has been experiencing one of the hottest heat waves on record, leading to dead fish, stressed cattle, and tired people.

It has been interesting to overhear many people attribute this abnormal heat to global warming. While no regional weather event can be linked to climate change, there is a documented trend toward longer and more intense heat waves. Global warming has entered the popular consciousness and people are becoming concerned. The question is, will our new found concern cause us to go from doing nothing to doing something extreme?

One of the more extreme and ethically problematic proposals is geoengineering. While managing the earth's climate with technology sounds like science fiction, it's being seriously discussed. Last Fall NASA hosted a conference on "managing solar radiation," a humble phrase for schemes to alter the earth's climate. One prominent physicist at the conference proclaimed that, "the time has come for an intelligent elimination of undesired heat from the biosphere by technical means (Fleming)." One plan being discussed is to use artillery cannons to shoot tons of sulfate aerosols into the stratosphere. These particulates would reflect incoming solar radiation, cooling the planet.

Geoengineering schemes, like the one just mentioned, have been criticized as "technological fixes." Alvin Weinberg promoted the idea of a technological fix in his 1967 book *Reflections on Big Science*, where he characterized a technological fix as "a solution to a social problem resulting from reframing it as a technological one." The benefit of doing this is that it's easier to identify solutions to technological problems. For example, the geoengineers who want to put aerosols in the stratosphere define the technological problem of global warming as too much heat. The fix is to block a fraction of the incoming solar radiation.

Global warming is a tempting candidate for a technological fix: it is a daunting problem. Many of the scientists at the NASA conference expressed little hope that a political solution is possible in time to be effective. One commentator characterized the attitude of several scientists at the conference as "contemptuous of calls for international cooperation and the policy and lifestyle changes needed to curb

greenhouse-gas emissions (Fleming).” The green house gasses that are attributed to causing global warming are the result of long established energy-infrastructure and daily habits of living (Abbasi). Changing these will be very difficult. Further, proposed political solutions call for cooperative action on the international level that is unparalleled. In contrast, blasting sulfate aerosols into the stratosphere sounds pretty simple. Moreover, this technological fix is estimated as costing only tiny fraction of the cost of transitioning the world’s economy off fossil fuels. On a superficial level, this technological fix avoids the complexity and difficulty of dealing with human behavior and politics. It gets right to the problem.

However, a technological fix to climate change raises troubling ethical issues. First, in general technological fixes don’t solve problems – they tend to relocate or delay them. By all accounts, most climate management proposals will simply delay the problem. For instance, it is calculated that the aerosols shot into the upper atmosphere would only stay there about two years. This approach would be a quick, temporary fix that leaves the real difficulties to the future. Merely delaying the problem for others to deal with doesn’t seem morally responsible. Second, the successes of technological fixes depend on how narrowly or broadly the criteria for success are drawn. While these proposals might keep the earth’s average temperature from continuing to rise for a time, they will alter local weather patterns. For example, the effects of putting aerosols in the atmosphere will not be distributed evenly. There is no way to predict how specific locations might be affected by the direct manipulation of the earth’s climate. There will be winners and losers. But who will take responsibility when things go wrong on the local level? This would create a new difficult, social problem: how to deal fairly with people and nations who are negatively affected by climate manipulation. Finally, technological fixes aim at maintaining the status quo. One critic has asserted that, “deliberately attempting to manipulate the climate just to let our old habits prevail is a violation of stewardship and an ethical transgression against the natural world (Schneider).”

As consciousness and concern about climate change grow, it may be tempting to consider a technological fix. In this heat wave, using technology to cool the planet down may start to sound like a good idea, but it is ultimately an approach is fraught with ethical problems.

Works sited:

Abbasi, Daniel, [Americans and Climate Change](#)

Fleming, James, “The Climate Engineers,” [The Wilson Quarterly](#)

Schneider, Stephen, et al, [Climate Change Policy](#)