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## Top-down Planet Hackers Call for Bottom-up Governance

*Geoengineers Bid to Establish Voluntary Testing Regime Must be Opposed*

While most scientists left the Copenhagen Climate Summit feeling gloomy about their influence, a small group of geoengineering advocates came away emboldened by the summit's weak outcome and uncertain road ahead. This group of scientists aims to get on with research and experimentation in controversial geoengineering technologies. Their real excitement is over "solar radiation management" (SRM). This is a way of "cooling down the planet's thermostat" by reflecting a portion of the sun's rays back to outer space, through a variety of techniques ranging from sunshades in space, to aerosol sulphates in the stratosphere, to whitening clouds. These high-risk, planet-altering schemes affect global warming without changing its cause which is excessive greenhouse gases in the atmosphere.

The roll-out of geoengineering as Plan B is being skillfully executed: prominent high-level panels sponsored by prestigious groups, a spate of peer-reviewed articles this January in science journals, and a line-up of panicked politicians in northern countries, nodding nervously in agreement as scientists testify about the "need to research Plan B."<sup>1</sup> "This lobbying offensive has been underway for more than a year now but it has moved into a critical new phase. The world needs to pay attention," said Diana Bronson of ETC Group, a technology watchdog headquartered in Canada. "Geoengineers are now advocating real-world experiments with some of the most high-risk climate changing technologies and many of them have no intention of waiting for an international regulatory agreement. Governments need to tell them they have no right to geoengineer the planet. Industrialized countries, which caused the problem of global warming in the first place, cannot be trusted to unilaterally attempt a techno-fix that will be even remotely equitable in its impact."

David Keith, a Canadian physicist who advises Bill Gates on his geoengineering grants, has shown the most bravado for experimenting with "fast, cheap and imperfect" technologies as "a hedge." In the science journal *Nature*<sup>2</sup> for example, he and his co-authors call for an international programme of SRM research to grow one-hundred-fold (from \$10 million to \$1 billion over ten years). This would include experiments at a scale that is large enough for the climate to notice but small enough to "limit risks." The article, which attracted extensive popular media attention, also addresses the thorny governance question, framing it as an issue of "establishing legitimate collective control" over reckless unilateral action. Yet Keith and his co-authors argue *against* the negotiation of an international treaty – or any kind of international regulation – which could prove "burdensome" on research or even result in a testing ban. Rather they call for a "bottom-up approach," where stakeholders could be "loosely" engaged and where

an “iterative” relation could be established between the scientists and a select group of former politicians and NGO leaders who would study governance options, *while testing actually gets underway*. Keith’s message to politicians is simple: keep the scientists in control of the discussion while inviting others to join; ensure it remains supportive of an ambitious research and testing agenda; and do NOT get the United Nations involved.<sup>3</sup>

Another article published in the last fortnight in *Science*<sup>4</sup> tackles the “Politics of Geoengineering.” The authors, Blackstock and Long, also argue in favour of more SRM research and “subscale” experimentation, but caution against actual “climatic impacts research” (i.e. deployment) until an international framework is in place that can “facilitate this process.” Rather, they politely ask scientists to “forswear climatic impacts testing and carefully restrict subscale field-testing until approved by a broad, legitimate international process.” They endorse a voluntary process whereby scientists establish their own norms, as they plan to do at a meeting in Asilomar, California in late March as a “first step.”<sup>5</sup> The notion of a “voluntary code” to govern geoengineering research and testing has been promoted by private ocean fertilization firms as well as by the UK Royal Society.<sup>6</sup> Civil society groups are concerned that this discussion is pre-empting a more fundamental international debate about whether or not geoengineering should be pursued at all.

In the same issue of *Science*, Alan Robock et al.<sup>7</sup>, provide evidence of how dangerous actual testing of stratospheric aerosols would be, showing that solar radiation management “cannot be tested without full-scale implementation” and that this “could disrupt food production on a large scale.” A large continuous dose of aerosols would be required to be able to distinguish actual climate impacts from regular weather “noise.” Such deployment – the equivalent of one 1991 Mount Pinatubo eruption every 4 years—could indeed lower global average surface air temperature. But it would also affect the water and food supplies of more than 2 billion people!

Anyone who thinks these ideas are still marginal should tune into the joint hearings on geoengineering by the Committees on Science and Technology of the US House of Representatives and the UK House of Commons. Over the past three months, a parade of advocates has been drowning out more cautionary voices. In addition:

- Bill Gates has poured millions of dollars into geoengineering-related research since 2007<sup>8</sup> and Microsoft’s former chief technical officer Nathan Myhrvold has become a champion of SRM. Myhrvold’s firm Intellectual Ventures already has several patents pending on geoengineering technologies.<sup>9</sup>
- Billionaire Richard Branson has created a “Climate War Room”<sup>10</sup> to work with “the right stakeholders” to “create a strategic roadmap for governance and regulation” in the geoengineering “battle area.”
- Several new research funding programmes and think tanks are being set up, mainly in the USA and UK.
- Vladimir Putin’s key science advisor, Yuri Izrael directed a small-scale sulphate aerosol experiment in Russia last year that did not even hit the public radar until it was picked up on a popular blog.<sup>11</sup>

“It is one thing to examine geoengineering through computer modeling and laboratory testing. It is quite another for the richest men and the richest countries in the world to

begin actual experiments that tinker with the planet's complex climate system that we do not fully understand. Suggesting a 'bottom-up,' governance process for such top-down planet-altering technologies is absurd. If they want a real 'bottom-up' process, they need to start with the people at the bottom who have already been affected by industry-induced climate change. Gates, Branson and the elite geoengineers are a long-way from the bottom. I'm sure they will keep their bottoms dry – and make money at the same time – no matter what happens to the planet. The geoengineering lobby has no mandate and no right to 'manage solar radiation' on behalf of anyone," says Silvia Ribeiro of ETC Group's Mexico office.

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#### Information:

Diana Bronson (Montreal, Canada) [diana@etcgroup.org](mailto:diana@etcgroup.org)  
Phone: +1 514 273 6661 Cell: +1 514 629 9236

Pat Mooney (Ottawa, Canada) [etc@etcgroup.org](mailto:etc@etcgroup.org)  
Phone: +1 613 241 2267 Cell: +1 613 240 0045

Silvia Ribeiro (Mexico City) [silvia@etcgroup.org](mailto:silvia@etcgroup.org)  
Phone: + 52 5555 6326 64

Neth Dano (Davao, Philippines) [neth@etcgroup.org](mailto:neth@etcgroup.org)  
Phone: +63 917 532 9369

#### ENDNOTES

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<sup>1</sup> See for example the series of panels on geoengineering organized by the Royal Society and its partners at the Bella Centre in Copenhagen, archived at <http://www.cigionline.org/articles/2009/12/cop-15-side-event-international-governance-geoengineering-research>; Fareed Zakaria's long interview with Nathan Myhrvold on CNN, the day after Copenhagen failed at <http://www.cnn.com/video/#/video/podcasts/fareedzakaria/site/2009/12/20/gps.podcast.12.20.cnn?iref=allsearch>; David Keith's article in *Nature*, "Research on Global Sunblock Needed now" (see below) registers 112 news hits in a Google news search; Joint hearings on geoengineering governance are underway in the USA and the UK and most of the people invited to testify so far are actively involved in research and development of the field. See Press release, "Sub-Committee Examines Geoengineering Strategies and Hazards" at <http://science.house.gov/press/PRArticle.aspx?NewsID=2741> and Press release, "New Enquiry: The Regulation of Geoengineering" at [http://www.parliament.uk/parliamentary\\_committees/science\\_technology/s\\_t\\_pn10\\_091105.cfm](http://www.parliament.uk/parliamentary_committees/science_technology/s_t_pn10_091105.cfm).

<sup>2</sup> David Keith, Ed Parsons and Granger Morgan, "Research on Global Sun Block Needed Now," *Nature*, Vol. 463, 28 Jan 2010 available (to subscribers) at <http://www.nature.com/nature/journal/v463/n7280/full/463426a.html>

<sup>3</sup> See also David Keith's testimony before the UK Parliamentary Committee on Science and Technology at <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/uc221-i/uc22102.htm>.

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<sup>4</sup> Jason J. Blackstock and Jane C. S. Long, "The Politics of Geoengineering," *Science*, 29 January 2010, Vol. 327. no. 5965, p.527.

<sup>5</sup> See the conference announcement on the Geoengineering Google Group:  
[http://groups.google.com/group/geoengineering/browse\\_thread/thread/a573142a46029eb8/56b306ddb7c3498?lnk=gst&q=Asilomar#56b306ddb7c3498](http://groups.google.com/group/geoengineering/browse_thread/thread/a573142a46029eb8/56b306ddb7c3498?lnk=gst&q=Asilomar#56b306ddb7c3498) .

<sup>6</sup> See UK Royal Society, *Geoengineering the Climate: Science, Governance and Uncertainty*, 2009, Recommendation 7, page 61. The California start-up Climos also promotes a voluntary code for ocean fertilization at <http://www.climos.com/standards/codeofconduct.pdf>.

<sup>7</sup> Alan Robock, Martin Bunzl, Ben Kravitz, Georgiy L. Stenchikov, "A Test for Geoengineering?" *Science*, 29 January 2010, Vol. 327. no. 5965, pp. 530-31.

<sup>8</sup> Eli Kintisch, "Bill Gates Funding Geoengineering Research," *Science Insider*, 26 January 2010 available at <http://blogs.sciencemag.org/scienceinsider/2010/01/bill-gates-fund.html>

<sup>9</sup> See ETC Group, *Retooling the Planet? Climate Chaos in a Geoengineering Age*, Swedish Society for Nature Conservation, 2009, p. 30.

<sup>10</sup> See [www.carbonwarroom.com](http://www.carbonwarroom.com) .

<sup>11</sup> See Chris Mooney, "Copenhagen: Geoengineering's Big Break?" <http://motherjones.com/environment/2009/12/copenhagen-geoengineerings-big-break>. See also Yu A. Izrael et al., "Field Experiment on Studying Solar Radiation Passing Through Aerosol Layers", *Russian Meteorology and Hydrology*, 2009, vol 34, no. 5, pp. 265-273.