

**Interview with Clive Hamilton**  
**By Verena Flues and Monica Lafon**  
**Sciences Po Paris, 2014**  
**Date: February 10, 2014.**

**1. Mr Hamilton, can explain to us, why you, as an Ethics professor, have become so interested in geo-engineering ? Is this not rather a scientific and technological debate?**

I became interested in the topic doing research for my last book "A Requiem for a species". Because it seemed to me that the world would not respond adequately, reducing GHG emissions, that we would probably face climate emergency and that there are people working on geoengineering technologies. I think there is a high probability, so emergency technological solutions are likely to become prominent: it seemed to me that the debate was being dominated by a few scientists and we needed to broaden it out and alert the broader public about geoengineering and what is going on.

**2. Please specify the moral objections you have; in your book you mention moral corruption and moral hazard and even talk of human playing God...**

Moral corruption refers to the fact that with GE, if it was implemented, people who have failed morally to perform their duties to protect the world from CC were at a sense being rewarded through GE because their moral failure produced results or was covered over by GE.

Moral hazard is the Problem of Plan B: GE technologies give political leaders an apparently easy way out of the hard decisions of reducing GHG emissions.

**3. Pragmatist would say, however, that geoengineering might be undesirable but necessary to achieve the 2 degrees scenario? Is time not come to be pragmatic? (Buying time argument)**

My principal concern is that GE research and advocacy is confined to a very small group of scientists and a few conservative economists and political activists, and that the question of what kind of GE technology is developed, how it is developed, who funds it and who owns it and who makes the decision about its deployment. All of this should be debated and decided by the international community, rather than being in the hand of a few scientists and a few companies that are taking out patents. So the question for me is not so much if you are for or against it but the question is under what circumstances, under what institutional, regulatory circumstances should GE research proceed.

**4. Is geoengineering an inherently political technology?**

Absolutely. There are all sorts of political implications. I explained in my book that conservative politicians are drawn to it because it promises to protect the economic and political system from the kind of changes that GHG emission reductions will require. In particular GE protects the power and the profits of the fossil fuel industries. And it seems to provide an alternative, GE seems to preserve the dominant ideology of technological control of the natural world and protects the interests of fossil fuel corporations. So it is a kind of

**Interview with Clive Hamilton**  
**By Verena Flues and Monica Lafon**  
**Sciences Po Paris, 2014**  
**Date: February 10, 2014.**

system preserving technology, the one that avoids to make the social and political changes that CC demands.

**5. How do you position yourself within this controversy?**

Well I am clearly sceptical about GE and worried about the domination of a small group of north american scientists and political actors, and I am keen to draw other actors into the GE debate particularly the main environmental groups and to spread discussion and decision making especially to the countries of the South.

**6. Are deontologists' voices being heard or is the debate completely dominated by consequentialists?**

As economists move into the GE debate, it comes down cost and benefit analysis. For something that is as important as the climate regulatory system of our planet, that kind of consequentialist, narrow instrumentalism is only a small part of the picture. It is a very profound decision to be made by humankind.

**7. How is the public debate evolving?**

A couple of politicians started talking publicly about GE and I think we will see a rush of people into talking about and advocating GE, but at the moment no politician is willing to advocate GE as a solution to GW as he or she would be acknowledging his or her responsibility.

**8. Geoengineering is divided into two groups of techniques, Carbon Dioxide Removal and Solar Radiation Management, would you make a difference between these two techniques (not from a technological point of view but from a political and ethical implications)?**

I think the the division between the two techniques makes sense from a scientific point of view because they do quite different things but I think in terms of governance a better division is between those GE techniques which are local in their operation and impact and those that are really global in scale and that come to influence the major processes that govern our Earth system and we find those techniques among Solar Radiation Management and Carbon Dioxide Removal. OF is among those broad planet influencing technologies.

**9. More than 20 years ago, John Martin claimed "Give me half a tanker of iron and I'll give you an ice age" , what is your comment on this claim after 20 years of research?**

Well I think it was one of those essentially a dramatic statement that doesn't stand up to any kind of scrutiny, particularly now that we better understand the impacts of spreading iron in oceans doesn't have the kind of carbon dioxide removal effects that earlier advocates thought it would. So that is really an entertaining exaggeration.

**Interview with Clive Hamilton**  
**By Verena Flues and Monica Lafon**  
**Sciences Po Paris, 2014**  
**Date: February 10, 2014.**

**10. Several scientific reports mention that the efficiency of OF is uncertain and side effects can hardly be predicted. What is in your opinion the importance of scientific uncertainty, unpredictability and possibly irreversibility in shaping the debate on OF?**

Well I think a lot of the enthusiasm on OIF has been dampened by the results of some important careful studies, there are still some enthusiastic advocates out there who want to make money out of it and there are some who aren't interested in money but who think from a scientific point of view that OIF can make a big difference, but I think with all of these kind of interventions, once you look closely at it, you realize you are playing with and extremely complex system, in this case the oceans. The chemistry, the currents, the radical differences in each part of the oceans and OIF turns out to be vastly more complicated than initial advocates imagined. So how long before we learned this lesson of ecology, that when you do something it always has unintended effects that sometimes overwhelm the original intention.

**11. Are these aspects not covered by the precautionary principle?**

That's a hard question because the precautionary concept is an infinitely elastic one. Small scale experiments no problem. Do large scale experiments go against the precautionary principle? No I don't think so either. As possible, you might find in a local environment that a large spread of iron has severe effects on the local ecology but I don't think it has severe effects on an ocean as a whole.

**12. We read the two arguments, the argument in the counter-arguments both using the precautionary principle. Some say that in the face of scientific uncertainty we should not engage in OIF, others say that looking at the irreversibility and grave effects of CC, every scientific way of mitigating it is almost justified.**

There is something in both of these arguments there is something. This is a wicked problem. I think always prudence is called for. Clearly, the world is not being prudent in its response to rising greenhouse gases. There are some scientists who are seriously anxious about the path down that we are hiding. I don't think it's going to help to do reckless experiments on GE.

**13. Chisholm and Cullen stated in their report from 2009, OIF: Science, Policy and Commerce that *"the histories of the scientific and commercial interests in ocean iron fertilization (OIF) are intimately connected—co-evolving and transforming over time."***

**Do you agree with this description about the relationship of science and commerce? How are science and commercial interwoven in geo-engineering in general and in ocean fertilization in particular?**

There is a convergence in commercial and scientific interests when it comes to GE in general. When it comes to OIF I think the case is less strong. You have responsible experiments done by respectable scientists, such as the Lohafex experiments which are closely regulated, and then you have the so-called rogue geoengineer Russ George who is out there doing things,

**Interview with Clive Hamilton**  
**By Verena Flues and Monica Lafon**  
**Sciences Po Paris, 2014**  
**Date: February 10, 2014.**

which don't have very much scientific merit and are motivated by making money. Some of the respectable scientists involved in GE research are horrified at Russ George because it brings them into disrepute. Said this, some of them are quite happy to have relationships with fossil fuel companies. David Keith for example, the most prominent advocate of GE owns Carbon Engineering Limited which is devoted to develop air capture, and Russ George is one of the investors of David Keith's company. This is a crossover between GE research and commercial interest, which is very worrying.

**14. What are the implications for research then? Are you in favour of further research?**

I am not completely opposed to it. But if it is to be done, it has to be done by responsible scientists operating in an international regulatory environment so that it can be closely monitored and so that we can be sure that the results meet high scientific standards. However, the credible research programs that have been conducted into OF have produced results that are very disappointing, so questions have to ask as to how and whether new experiments would produce different kinds of results.

**15. There have been intensive debates/controversies (in the past and still today) on "green" technologies and strategies to reduce GHG emissions such as Agrofuels and CCS, do you see any parallel between these developments and OF?**

Yes, because CCS was like OIF a technology that promised a continued burning of fossil fuels. And so therefore it was set by a serious moral hazard problem. I don't count CCS as a green technology at all, a green technology is something that avoids the creation of an environmental problem, rather than covers it over, which is what CCS and OIF do.

**16. In your book you describe the constituencies of commercial and political interests that form around and subsequently defend new technologies such as CCS. Do you see such a constituency emerging around OF?**

I think that the various parties engaged in OIF are much more fractured and don't form a coherent constituency, but that might change. And certainly the woman who played a central role in *[doesn't remember the name of the person and the conference]* clearly passes the boundary between commercial and scientific interest. So, there are people, who are clever enough, to see that the various forces have to be brought together to put forward a respectable case for OIF. But so far that has not happened. And that's why those people can't stand Russ George because he is creating trouble for them, because he is a maverick, who is not recognized for any kind of respect for scientific process.

**17. There have been commercial trials on the oceans at the same time, regulation and monitoring has drastically increased. Do you see a winner emerging in this controversy? Who?**

The momentum of the debate was with the ETC group and its ability to organize coalitions of nations in the CBD and the London Protocol to pass resolutions which restricted experiments in OIF. They have been very successful in their campaign to put a lid on unregulated experimentation in this area.

**Interview with Clive Hamilton**  
**By Verena Flues and Monica Lafon**  
**Sciences Po Paris, 2014**  
**Date: February 10, 2014.**

**18. So regulation today is quite severe about OIF?**

There are questions of enforceability of course. The CBD ( Convention on Biodiversity) is more an expression of intent than a regulation that can be enforced. The CBD has not a navy on its disposal. The London Convention has more legal force. But we have got to see these major international treaties tested, and look if t if a major power decided to back major experimentation on OIF, they could just ignore the CBD and the London Protocol. The USA is not of the member of the CBD, for example.

**19. Will we still discuss ocean fertilization in 20 years?**

OIF is becoming less prominent in the GE debate because of the disappointing results of the experiments carried out. So at this stage it seems to me that more likely that OIF will fade in its importance and the space will be filled by sulfate aerosol spraying, liming the oceans, air capture etc.

**20. The OF controversy seems to be somehow premature. It took place from the 1990's on. What (lessons) can we learn from OF controversy for future (geo)-engineering or other scientific-technological debates?**

That is a really interesting set of questions that is forcing me to think through it more carefully. I think the lesson is, and this lesson came eventually from CCS, and is that these technologies can be talked up and be promoted only so long as the scientific results show some promise, but when there is a series of scientific studies that show that the original optimism of the technology was misplaced, that they might be much more complicated, risky and complex than what they thought, then it becomes increasingly difficult for the proponents to make an argument for further work in this area.

**21. What did we forget to ask you?**

Ah this is the typical question that they taught you to ask in the end. Well I don't think so. It was pretty complete and very interesting, because you made me think more through OIF. Good work.