

**The Politics and Science of Climate Change: The Wrong Stuff**  
**2008 Harold Clough Lecture**  
**Professor Aynsley Kellow**

I am pleased to present this lecture today in Perth.

I am particularly pleased to find that Perth is still here. I last visited here in 2005 — the year that Professor Tim Flannery suggested that Perth could become the first ‘ghost metropolis’ due to reductions in rainfall because of climate change.

I must confess that I was somewhat bemused by this statement, because my visit to Perth was to present a paper on water policy under climate uncertainty. I knew from my research for that paper that Perth was in fact better adapted to uncertainty in its water supply than any other capital city.

Perth and the south-west of the state have suffered a decline in rainfall, which appears to have shifted to the north-east. The cause appears to be not the gradual accumulation of greenhouse gases, but a sudden shift in ocean currents. This decline in rainfall has translated into a marked decline in catchment yields thanks to changed catchment management, and an increased yield can be obtained by thinning catchments.

Regardless, Perth has adapted to its natural environment with a number of responses: demand management; use of aquifers; the construction of the Kwinana industrial recycling plant; and now a desalination plant.

Professor Flannery was, of course, talking nonsense — but, as sales of his book *The Weathermakers* and his subsequent selection as ‘Australian of the Year’ showed, this is popular nonsense.

As Arthur Herman has shown in his book *The Idea of Decline in Western History*, the proposition that we are all going to hell in a handcart is a recurrent and persistent idea. From the neo-Malthusianism of the Club of Rome to Y2K to bird flu pandemics, modern society has demonstrated that, despite the triumph of reason over belief in the Enlightenment (and the enormous improvements in human welfare it brought) it has more in common with the apocalypticism of numerous millenarian movements than it would readily admit.

Malthusian sentiment still abounds. Paul Watson, Founder of the Sea Shepherd Conservation Society thinks mankind is ‘acting like a virus’ and called for the human population to drop to less than 1 billion.

The head of the Science Museum in London and former head of the British Antarctic Survey, Chris Rapley, also thought we should get rid of a few billion people – in the future in his case: ‘I’m not advocating genocide,’ said Rapley, reassuringly. He simply wanted to use ‘contraception, education and healthcare’ to stop the world’s population from reaching its current projected peak of 8-10 billion.

Aspects of Christianity (especially the Book of Revelation), Marxism and National Socialism (with its promise of a ‘Thousand Year Reich’) all contain elements of millenarianism. But just as we can be Christians or Marxists without signing up as millenarians, so can we be concerned about the environment without signing up for the Apocalypse.

I know of only one book-length study of environmentalism describing it as a middle-class millenarian movement. This probably reflects the fact that most of us support the cause of environmental protection, and we tend to be less prepared to submit our own beliefs to critical scrutiny than we are those of others. I have to confess to being a recovering neo-Malthusian, having once stood for elected office for an ecological political party.

I mention all of this because it reminds us that non-rational beliefs continue to hold us in their sway even when we think we have left them well behind. And those non-rational beliefs can affect both the conduct of science and the risk assessments we collectively make on the basis of science.

The point I want to develop in this lecture is that environmental protection does not require that we adhere to millenarian beliefs, or ecocentric political philosophies, or biodynamic agriculture, or any of the other 'New Age' or other non-rational elements we can find in contemporary environmentalism.

Rather, good environmental policy requires that we reject such beliefs and uphold the Enlightenment commitment to sceptical, rational humanism. This also requires open contestation of science and the rejection of the idea that science can be too closely embedded within the affairs of the state. In other words, it requires the political liberalism that also emerged from the Enlightenment.

This is because the conduct of both science and politics require openness and contestation. Government, as Bernard Crick once observed, is not synonymous with politics, and governments do not always celebrate the playing out of political debate. They seek to impose authoritative decisions, rather than celebrate alternative points of view, and this makes official endorsement of science particularly dangerous.

Yet officially endorsed science is what we have with climate change. Governments have not only endorsed a particular point of view with respect to an area of science that is inherently uncertain, but they have gone the extra step of attempting both to marginalise competing points of view and convince their own citizens of the correctness of their interpretation in paid advertisements aimed at convincing the public of the seriousness of the situation.

These are dangerous moves. I feel a little uncomfortable when a government spends my money to tell me whether and when I should be concerned. I'm old-fashioned enough to think I should be telling *them*.

The attempt to marginalise dissenting views is best exemplified by the use of the term 'Denier'. It has been used not just by Climate Change Minister Penny Wong and Prime Minister Kevin Rudd, but by their adviser Professor Ross Garnaut. They all should know better.

To question the attribution of the current state of the Murray-Darling Basin to 'climate change', rather than (more correctly) to mismanagement and over-allocation is not to deny anything, but — rightly — to speak truth to power. (Senator Wong needs look no further than the Bureau of Meteorology rainfall records in the Basin to see that the current drought is not unprecedented).

Fortunately, we have some curmudgeonly types who are prepared to subject official science to critical scrutiny. For example, Ian Castles, the former Australian Statistician, drew our attention recently to an inconsistency between the dire projections of increased drought frequency in a (non-peer reviewed) CSIRO/Bureau

of Meteorology report for the government, and a couple of peer reviewed papers produced by some of the same authors.

It is instructive to ask where the use of the expression ‘Denier’ came from. It was first used, as far as I can tell, in an attempt to attack Bjorn Lomborg for his apostasy in suggesting the global environment was getting better, not worse according to most accepted statistical indicators.

Having misused the expression ‘sceptic’ — a badge of honour for any scientist worth their salt — as a term of criticism, environmental activists and activist scientists quite deliberately sought to liken those who questioned the prevailing consensus on climate change to Holocaust deniers. This was quite shameful spin – but they have succeeded in having ministers and even prime ministers repeat the calumny.

Lomborg was excoriated because, among other things, he was not a ‘climate scientist’. This is an interesting charge, because it is not clear what counts as ‘climate science’. But it is a charge that is frequently levelled against dissenters, but rarely levelled against those supporting the prevailing consensus.

Understanding the global climate system is beyond any individual or individual scientific discipline. It involves not just specialisations such as meteorology and atmospheric physics, but oceanography and glaciology. It also requires a good knowledge of statistics — Lomborg’s discipline. It is necessarily, as the historian of science Spencer Weart pointed out, a collective undertaking. Collective decisions must be made about simplifications, adjustments to data, and so on. This means, of course, that it is inevitably socially constructed — though (as Weart was quick to add) this does not mean it is *only* a social construction.

An interesting question these days is what actually qualifies a scientist as a ‘climate scientist’. One’s qualifications as a climate scientist appear to depend not upon one’s formal qualifications, but upon the soundness of one’s views, whether one says ‘The Right Stuff.’ Lomborg’s credentials were questioned in a way that Professor Flannery’s have not been. Yet Professor Flannery, as a palaeontologist, would appear to be no better qualified than Professor Lomborg to pass comment on climate change matters.

Lomborg, it should be noted, largely confines himself to policy matters, such as priority setting; Flannery’s expertise seems to know no bounds — he has commented not only on the causes of climate change and its impacts, but policy matters and even international negotiation processes.

Professor Flannery receives a free pass because he says The Right Stuff.

Many climate scientists turn out to have degrees in disciplines like biology and chemistry. As with Flannery, few have questioned their right to speak on climate science – even on issues where they would seem to lack expertise. They say The Right Stuff.

NASA was once described by Tom Wolfe as having ‘The Right Stuff’, but there is evidence that it now has The Wrong Stuff.

Interestingly, of the main datasets that track ‘mean global temperature’ at the surface, the one that is an outlier (in that it tends to show the most warming in the recent past) is the so-called GISTEMP series maintained by NASA’s Goddard Institute for Space Studies, run by James Hansen.

Let's leave aside for a moment the scope for social construction to affect the business of constructing highly complex models of the coupled atmosphere-ocean system, having them duplicate to a reasonable extent the recent climate history, inputting emissions scenarios based upon some economic scenarios and projecting the future climate 100 years hence. Let's just focus on the business of producing this global mean surface air temperature (or SAT).

Note that, ironically, NASA's Goddard Institute for Space Studies prefers surface temperatures manually recorded to satellite data — the only true global record.

The Goddard Institute website (responsible official James E. Hansen) tells us that this is a measure that depends enormously upon the assumptions made. Whether we measure temperature 5ft, 10ft or 50ft above the ground makes a difference. As Hansen states: 'To measure SAT we have to agree on what it is and as far as I know, no such standard has been suggested or generally adopted.'

Then there is the problem of constructing a mean — which is problematic, even on a daily basis for one location, let alone for a global annual mean. Again, in Hansen's words:

'Again, there is no universally accepted correct answer. Should we note the temperature every 6 hours and report the mean, should we do it every 2 hours, hourly, have a machine record it every second, or simply take the average of the highest and lowest temperature of the day? On some days the various methods may lead to drastically different results.'

This means that, even at the most fundamental level, climate science requires that assumptions and manipulations must be made — to an extent that is considerable. Data ain't data. They must be prepared for inputting into computer models.

Novelist Michael Crichton once remarked (in the US context) that data is not Democrat or Republican, it's data. But climate science provides considerable scope for data to acquire values as it is prepared for models.

This makes the GISTEMP data series interesting.

Steve McIntyre is the amateur scientist who exposed the folly of Michael Mann's 'Hockey Stick' research that attempted to use proxies from tree rings to rewrite the climate history of the past millennium. (Mann should have known better than to mix environmentalism with tree rings: Henry David Thoreau, in a supreme irony, died in 1862 of complications of a cold caught while counting tree rings on a winter's day).

McIntyre has also audited the GISTEMP record, and showed that Hansen had been manipulating his raw data by adjusting the pre-1970 data *downwards* by as much as 0.5°, and his post-1970 figures *upwards*. This, of course, has had the effect of amplifying the apparent recent warming.

McIntyre also found an error in the manipulation (essentially a Y2K error) that shifted the warmest year in the US data record from the 1990s to the 1930s.

Hansen endorsed Kerry against Bush in the 2004 presidential election, and has claimed that the Bush administration has attempted to muzzle him on climate change. The Republicans were quick to point out that, since he had made approximately 1,400 media interviews, the muzzle was not particularly effective. You might suspect, therefore, that his data (after adjustment) might be a little more Democrat than Republican.

Hansen, of course, has form. It was his testimony before a Congressional committee in 1988 — 20 years ago — that got the contemporary concern over climate change going. As Jonathon Lash, president of the World Resources Institute, put it in a story in the *Washington Post* to mark the 20<sup>th</sup> anniversary of his testimony: ‘Before Jim Hansen’s testimony, global climate change was not on the political agenda. . . . Hansen was clear, explicit and unequivocal.’ It is instructive to look at how that political effect was achieved.

The power of Hansen’s testimony before the Senate Energy and Natural Resources Committee was enhanced by the imagery — relayed on television — of the participants sweating and in shirt sleeves, as the cloying humidity of a hot June day in Washington ‘leaked in through the three big windows in [Room] Dirksen 366 [and] overpowered the air conditioner. . . .’ as *Post* reporter David A. Farenthold put it. Sitting on the committee that day was a young Senator from Tennessee, Al Gore. In the chair was Senator Tim Wirth from Colorado, later to serve in the Clinton-Gore administration as Under-Secretary of State for Global Affairs, with carriage of climate change negotiations.

Farenthold reported that Hansen had hoped for a sweltering day to underscore his message. He quoted Hansen as saying: ‘We were just lucky.’

There is a saying that you make your own luck, and that turned out to be the case with Hansen.

Hansen’s testimony was largely orchestrated by Hansen and Friends of the Earth for maximum political impact. Rafe Pomerance, then President of Friends of the Earth, arranged for Hansen to testify, which he did as a private citizen to avoid the risk of censorship by his government employer. He was originally to appear before the committee in November 1987, but he convinced Friends of the Earth that his testimony would not have maximum impact in the cold of autumn, and instead appeared on 23 June 1988, when Washington was sweltering in a hundred degree summer day.

The leaking of the windows that overwhelmed the air conditioning system was apparently given a helping hand by a Democrat staffer, who left the windows open overnight. The air conditioning system didn’t stand a chance. The windows were framed.

As Andrew Revkin reported in the *New York Times* in 1997, ‘To get the point across at the time, staffers called the National Weather Service to be sure the hearing date would be a hot one. “We had it on that day, and opened all the windows,” Mr Wirth recalled.’

This is not a practice that appears to be limited to Dr Hansen. NASA itself posted on its website a satellite image of the minimum Arctic ice extent in 1979, which I used on the cover of my recent book. As sceptical climate scientist Pat Michaels pointed out, this was the beginning of a series of animated images that came at the end of a cool period, and told a story of shrinking ice cover. But NASA did not have any data for the immediate polar region for the first five years or so, so it simply made it up.

It placed a solid white disk over the North Pole, but did so ineptly, so that the sharp edges of the disk can be clearly seen in several places.

If that is worrying enough, even more disconcerting is the fact that, once discovered, NASA has not owned up to its deceit, but simply improved the quality of its

retouching, so that the falsification of the image is now much better. This is not The Right Stuff.

It is a clear example of what Harry Frankfurt has called bullshit: the deliberate creation of the impression that you know more than you do. Laura Penny took this up in a book with a title that will resonate with anyone who has been kept on hold on the telephone (does that exclude anyone?): *Your Call Is Important to Us: The Truth About Bullshit*.

The fact that NASA would photoshop an image to enhance its persuasive power is worrying. Even more worrying is the fact that it failed to notice for seven years an error that inflated recent warming in the United States.

NASA, like any organization can develop ‘groupthink’ — as the O-ring problem with Challenger showed us, and as the null corrector problem with the Hubble telescope showed us. There’s an old joke among engineers about the stages of any project, where ‘Praise for the Uninvolved’ is followed by the ‘Search for the Guilty.’ As shown by the searches for the guilty in the Challenger and Hubble cases — the Rogers Commission and the Allen Commission — NASA had problems with its organisational culture. Their science was good but the sceptical culture needed for good quality assurance was lacking. The Right Stuff had become The Wrong Stuff.

The problem is an example of what I call virtuous corruption, or what in policing circles is known as ‘noble cause’ corruption. It is sometimes defended because it is all in a good cause. But it is always wrong.

The problem is many climate scientists have strong beliefs, but beliefs are not scientific. One erroneous belief many have is that they adhere to what Roger Pielke Jr has called a linear relationship between science and policy — that science will compel a preferred set of actions. The virtual science using computer models so common in climate science is seen as particularly valuable in this quest, because it gives the appearance of objectivity. It is an example of a political strategy the late Aaron Wildavsky called ‘Look! No hands!’ We must do as the science compels us! But we know, of course, that computers are only as good as the assumptions and data fed to them: Garbage In produces Garbage Out.

Without healthy scepticism and open disclosure of data and contestation of ideas science can get it wrong. Even getting it wrong by a matter of degree makes for bad policy. It leads to wrong priorities and poor choices and has created a wasteful sense of urgency in international negotiations.

Everything we know about the development of effective international regimes tells us that they are best built from the ground up, with the evolution of shared understandings of causes and solutions, and respect for differences between parties.

As Gwyn Prins and Steve Rayner put it in the journal *Nature* last year, by rushing to targets and timetables too soon, pushed by blaming and shaming tactics, we have so far wasted 15 years during which a more successful climate change agreement could have been developed more slowly.

I will predict here and now that we are highly unlikely to get an effective agreement in Copenhagen next year, and we will continue to waste time and money making more haste but less speed, and thinking — wrongly — that misconstrued and exaggerated science can ever serve as the basis for good policy.

The climate change problem is inherently one of making decisions over the very long term, under conditions of considerable uncertainty. Misrepresenting the problem as one where we can (with any degree of accuracy) set the global thermostat by limiting atmospheric CO<sub>2</sub> to any particular level is not productive in the long run.

Neither is defining the problem as one where we should necessarily focus on mitigating CO<sub>2</sub> to the neglect of adaptation or other mitigation efforts.

For all my criticism of James Hansen, I am a strong supporter of what became known as the Hansen Alternative Scenario, which involved pursuing ‘no regrets’ options to mitigate CO<sub>2</sub> but a focus on other climate forcing factors that could be mitigated more readily, in a technical sense, more cheaply, or with greater co-benefits.

One such forcing factor was black carbon soot from inefficient combustion of diesel or of biofuels in places like India, where indoor air pollution kills an estimated 150,000 (mostly women and children) each year. Such options offer opportunities for investment that might actually improve the chances of securing international agreement from developing countries.

But, in putting this scenario forward, Hansen was offering The Wrong Stuff. He was misrepresented by the journal *Nature*, which then refused to print his corrective correspondence. And he was excoriated by the Union of Concerned Scientists for providing President Bush with a possible alternative to Kyoto. (Actually, what we need is a Union of Disinterested Scientists!)

This is a state of affairs that should be of concern to us no matter what our political allegiances. In a recent essay, Rudd Government Minister Craig Emerson reminded us all that the great improvements in human welfare have stemmed from the advances of the Enlightenment and its emphasis on science, rationality, and humanism and their triumph over mere belief.

Where scepticism is at the heart of science, belief is its enemy. Psychologist Leon Festinger developed his theory of cognitive dissonance to explain our ability to deflect information that might challenge our dearly held beliefs. Festinger was also the co-author (with Riecken and Schachter) of a study into the response of a modern millenarian movement when confronted by evidence that their forecasts of apocalypse have not been met. Their observations are worth quoting:

A man with a conviction is a hard man to change. Tell him you disagree and he turns away. Show him facts or figures and he questions your sources. Appeal to logic and he fails to see your point. But man's resourcefulness goes beyond simply protecting a belief. Suppose an individual believes something with his whole heart; suppose further that he has a commitment to this belief, that he has taken irrevocable actions because of it; finally, suppose that he is presented with evidence, unequivocal and undeniable evidence, that his belief is wrong: what will happen? The individual will frequently emerge, not only unshaken, but even more convinced of the truth of his beliefs than ever before. Indeed, he may even show a new fervor about convincing and converting other people to his view.

*When Prophecy Fails*, 1956

If climate science is not to fit this description, it must celebrate scepticism and the challenging of beliefs, not marginalise dissent with terms like ‘denier.’ And the

institutions of government, be they NASA or the Australian government, must foster the dissident culture upon which the Enlightenment was based, not the culture of conformity that currently pervades climate science and climate policy.

At present, I believe we have The Wrong Stuff, and that means — to use a line from Apollo 13 — ‘Houston, we have a problem.’