

Al Gore versus Mr Justice Barton: A personal evaluation.

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Press reports have mostly presented the High Court judgementⁱⁱⁱ of 10 October 2007 as a defeat for Al Gore. However, the judge stated that (in his opinion) the film was "broadly accurate", and decided that the film could continue to be shown in schools "in the context of... discussions facilitated by the guidance note" provided by the Department for Children, Schools and Families (of which an updated version is already available^{iv}). He also identifies a number of deficiencies which he refers to as "nine scientific errors", and which have been seized on by the media: these are discussed below^v. In fact the judgement systematically refers to "errors" (using inverted commas, which the media have generally ignored), and has some wise words to say on the distinction between presenting and promoting partisan views, and the balanced presentation of controversial issues (which he decides does not require equal "air-time" for views which are held only by small minorities). However, in his analysis of the "errors" the judge has also expressed unwarranted confidence on several issues which are still the subject of considerable uncertainty among the scientific community. It would be fair to say that Al Gore presents the more extreme (concerned) end of the range of scientific opinion on several issues, and implies stronger evidence than is fair on several others. However, overall the film still achieves an exceptionally high standard of scientific accuracy, and it is regrettable that the judge has triggered a media storm by the injudicious use of the term "errors". Lawyers know not to rely on ordinary commas to make their meaning clear; now judges must learn not to rely on inverted commas either.

'Error' one²

Al Gore: A sea-level rise of up to 20 feet would be caused by melting of either West Antarctica or Greenland "in the near future".

The judge's finding: "This is distinctly alarmist and part of Mr Gore's "wake-up call". It was common ground that if Greenland melted it would release this amount of water - "but only after, and over, millennia."

Comment from John Shepherd: We simply do not know how long this melting will take. The judge presents the conventional view, but overstates the case, because there is now rapidly accumulating evidence that the melting is happening much faster than was expected. Respected senior scientists such as Jim Hansen^{vi} believe that there will be substantial melting during the lifetime of children already born: whether or not that is "in the near future" is debatable. The geological record shows that rates of sea-level rise of up to 5 meters per century have happened in the past. The big uncertainty is whether or not we are in the process of doing enough to trigger another such rise.

'Error' two

Gore: Low-lying inhabited Pacific atolls are already "being inundated because of anthropogenic global warming."

Judge: There was no evidence of any evacuation having yet happened.

Comment from John Shepherd: There is no doubt that sea-level is rising. At present it is rising quite slowly, at about 3mm per year, but this is expected to accelerate during this century (maybe by quite a lot). “Being inundated” is an exaggeration, and “about to be inundated” would be more accurate. The judge’s comment is therefore true but not at all helpful, in deciding the matter. Gore’s primary point, that people who live on these islands should be deeply concerned, is perfectly correct.

‘Error’ three

Gore: *The documentary described global warming potentially “shutting down the Ocean Conveyor” - the process by which the Gulf Stream is carried over the North Atlantic to Western Europe.*

Judge: *According to the Intergovernmental Panel on Climate Change (IPCC), it was “very unlikely” it would be shut down, though it might slow down.*

Comment from John Shepherd: The judge reports the IPCC correctly, but this does not prove Gore’s position to be wrong. The potential to shut down the Atlantic overturning circulation exists, and it has happened in the past. The IPCC view is based on conventional models and estimates of sea-level rise. We now know that the models used have previously under-estimated the changes that have already occurred, and more rapid rates of sea-level rise (as discussed above) would increase the probability of shutdown. Gore’s position is nearer to the extreme end of the range of uncertainty, but is tenable, and not an error.

‘Error’ four

Gore: *He asserted - by ridiculing the opposite view - that two graphs, one plotting a rise in CO₂ and the other the rise in temperature over a period of 650,000 years, showed “an exact fit”.*

Judge: *Although there was general scientific agreement that there was a connection, “the two graphs do not establish what Mr Gore asserts”.*

Comment from John Shepherd: The judge is correct insofar as correlation does not imply causation, and so the two graphs **alone** do not establish a causal link. However, the correlation between CO₂ levels and temperature over the last 650 000 years (at least) has been extraordinarily close. We also know of mechanisms by which each increases the other, but we do not yet fully understand precisely how they interact. It seems that they reinforce each other in a natural positive feedback cycle, in which changes of temperature both cause, and are then also reinforced by, changes of the CO₂ level. However, the present **un-natural** increase of CO₂ due to human activity is interfering with this natural relationship, and will cause the temperature to increase, closely following the CO₂ rise. This is therefore not an error, simply an over-simplification of a complex issue.

‘Error’ five

Gore: *The disappearance of snow on Mt Kilimanjaro was expressly attributable to global warming.*

Judge: *This “specifically impressed” David Milliband, the Environment Secretary, but the scientific consensus was that it cannot be established that the recession of snows on Mt Kilimanjaro is mainly attributable to human-induced climate change.*

Comment from John Shepherd: Scientific opinion remains divided on this issue. Gore’s position derives from that of respected scientists such as Lonnie Thompson^{vii} who have personally worked on

the icecaps of many high mountains, including Kilimanjaro. The judge is correct that “it cannot be established” with confidence that the recession is due to global warming, but this does not mean that it is wrong.

‘Error’ six

Gore: *The drying up of Lake Chad was used in the film as a prime example of a catastrophic result of global warming, said the judge.*

Judge: *“It is generally accepted that the evidence remains insufficient to establish such an attribution. It is apparently considered to be far more likely to result from other factors, such as population increase and over-grazing, and regional climate variability.”*

Comment from John Shepherd: The judge is correct that “the evidence remains insufficient to establish such an attribution” and in this case the criticism that Gore overstates the role of climate change is probably fair.

‘Error’ seven

Gore: *Hurricane Katrina and the consequent devastation in New Orleans to global warming.*

Judge: *There is “insufficient evidence to show that”.*

Comment from John Shepherd: The judge is correct that there is “insufficient evidence to show that”, and the likely effect of global warming on hurricanes is still very uncertain. In this case also the criticism that Gore probably overstates the role of climate change is fair.

‘Error’ eight

Gore: *Referred to a new scientific study showing that, for the first time, polar bears were being found that had actually drowned “swimming long distances - up to 60 miles - to find the ice”.*

Judge: *“The only scientific study that either side before me can find is one which indicates that four polar bears have recently been found drowned because of a storm.” That was not to say there might not in future be drowning-related deaths of bears if the trend of regression of pack ice continued - “but it plainly does not support Mr Gore’s description”.*

Comment from John Shepherd: Agreed that this appears to have been a misrepresentation or over-interpretation of the information available. Nevertheless it is clear that the massive reduction in the extent of sea-ice which is now occurring is very bad news for polar bears.

‘Error’ nine

Gore: *Coral reefs all over the world were bleaching because of global warming and other factors.*

Judge: *The IPCC had reported that, if temperatures were to rise by 1-3 degrees centigrade, there would be increased coral bleaching and mortality, unless the coral could adapt. But separating the impacts of stresses due to climate change from other stresses, such as over-fishing, and pollution was difficult.*

Comment from John Shepherd: It is true that the precise contribution of the impacts of these various factors cannot be unambiguously separated. Nevertheless bleaching of corals as a result of increased temperatures is well established, and there is no reason to suppose that it is not a major factor. This was a fair general statement, and certainly not an error.

Overall evaluation from John Shepherd: In only three cases (numbers 6, 7 and 8) can it realistically be argued that the film presents an overstated or unreasonable argument, and in only one case (hurricanes) is that in relation to a major issue. In no case is there a scientific “error” as such. In three cases (1, 3 and 5) Gore presents a view which represents the more extreme end of the range of scientific uncertainty. In the remaining three cases the Gore presentation is essentially correct. To refer to “nine scientific errors” is therefore itself a very considerable misrepresentation of the facts.

Endorsement by Chris Rapley: The view of climate scientists with whom I have spoken (and my view also) is that Al Gore's grasp of the climate change issue is remarkable, and his ability to communicate it quite exceptional. Having said this, there are some points Al makes in Inconvenient Truth which a scientist would generally hedge with caveats or avoid, because they are scientifically controversial, uncertain, or too complicated to explain accurately and succinctly. The snows of Kilimanjaro are a good example. As is the case for almost all localised or regional climatic changes, the loss of the ice cap has not formally be attributed to human actions. That does not mean that it is not - simply that convincing evidence for the link has not been presented. Even so, expert scientists working on the issue have their views, and it seems that in this case Al's comments may have been influenced by these. The other issues raised in the court case are to a greater or lesser degree of the same nature. The bottom line, as the judge noted, is that the message delivered by Al, that climate change is real, now, and driven mainly by humans, is "broadly correct". John Shepherd's excellent detailed analysis of the issues addressed by the judgement comes to the same conclusion. I am pleased to endorse and recommend John's evaluation.

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ⁱⁱ Professor Chris Rapley CBE is the Director of the Science Museum, London. Chris has recently moved into the position and was formerly the Director of the British Antarctic Survey. Chris was the science advisor to Al Gore during the Climate Project Training Programme in March 2007.

ⁱⁱⁱ [2007] EWHC 2288 (Admin): available at <http://www.bailii.org/ew/cases/EWHC/Admin/2007/2288.html>

^{iv} The guidance notes are downloadable from http://www.teachernet.gov.uk/sustainableschools/library/resources/library_resource_detail.cfm?id=140

^v The text concerning the “errors” has been taken from the Times Online website at <http://www.timesonline.co.uk/tol/news/uk/science/article2632660.ece> , with the inverted commas re-instated

^{vi} See Hansen's website at <http://www.columbia.edu/~jeh1/>, and for a fuller discussion of this issue, my own commentary at <http://www.climatechangecorp.com/content.asp?ContentID=4898>

^{vii} see http://en.wikipedia.org/wiki/Lonnie_Thompson, and also (for a stirring popular account of his work) Mark Bowen's book “Thin Ice” (Henry Holt, New York, 2005)