

INTELLECTUAL FREEDOM AND THE SCIENCE OF CLIMATE CHANGE

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INTRODUCTION

Climate change and, more specifically, the idea that there is a process of global warming well advanced, features frequently in broadcast and published news. Images, such as those of polar bears trapped on ice floes drifting away from the safety of land, make this an issue that is not merely a concern of scientists, but something that disturbs the public mind. At its heart the issue is a matter of the enormous bodies of current and historical meteorological data available, the computer systems that can be used to organise them, and the interpretations that emerge from informed examination of the data. There is, however, the personal observation of the ordinary person to take into account. It is not only that, for instance, in the UK meteorologists note that the 10 warmest years on record have occurred during the last 12 years. It is also observable fact that there has been little or no snow in lowland England during the lifetimes of the younger part of the population. And, of course, people from the Nordic countries have noted equally disturbing changes. Scientifically measurable patterns, personal observation and the suggestion that there is a broad, long-term trend in process fit together persuasively. Add to that the suggestion that this all is caused by damage to the ozone layer resulting from the high levels of carbon emissions produced by modern industrial society and you have a potent mix of scientific concern and public anxiety.

For the non-scientific observer this is difficult issue to think through. In a lifetime one becomes aware of short term climatic fluctuations, groups of colder and warmer years, dry seasons and wet ones. That such patterns stretch back further in time is obvious. The writer often talked with an old farmer whose highly-tuned memory held verifiable weather data stretching back over almost all of the twentieth century. As his livelihood depended on it, he could identify the changing pattern of favourable and unfavourable seasons throughout this whole time. In what we might call the medium term, anyone with some historical knowledge will be aware that Britain was much, much colder during parts of the seventeenth and eighteenth centuries: fairs with oxen roasted on the frozen Thames are well recorded. These sharp variations in 'normal'

weather patterns initially raise questions against the idea that there is a man-made pattern of global warming in process. Furthermore, opinions on the implications of such change are not all of one kind. The deep concerns of environmentalists are not entirely universal. For instance, the improved vine harvests in South England and the success of English sparkling wines in blind tastings have led to visions of a more comfortable 'Mediterranean' England with a wine industry to match that of France in the near future. At the very least, the issue of global warming is open to scientific and general debate.

This is actually the position of a majority of the British public. An opinion poll in July 2007 found that 56% of respondents believed that there was a genuine scientific debate in progress. This is interesting and, in one way, encouraging. That the public shows an awareness of scientific debate is surely a good thing. In another way, it is perhaps worrying. If one looks at the content of scientific communication on the issue, it is overwhelmingly in favour of the argument that global warming, driven by carbon emissions is in process. This is the authoritative view put forward by the [UK] Royal Society (2005) in a lengthy essay based on the findings of the Intergovernmental Panel on Climate Change (IPCC). It states that 'This document examines twelve misleading arguments put forward by the opponents of urgent action on climate change and highlights the scientific evidence that exposes their flaws.' Many, many similarly powerful statements from the scientific establishment could be cited. Governments have, albeit tentatively and usually ineffectively, signed up to international agreements to reduce emissions. Some major corporations, joined in May 2007 by Rupert Murdoch's News Corporation, have pledged to reduce their 'carbon footprint'. It is not actually very fashionable to go against this trend of opinion, yet a few scientists and many other corporations, noticeably those with interests in the manufacturing and energy industries, do argue against the global warming orthodoxy. It is actually because of their contributions to the debate that this has become a matter of intellectual freedom.

'THE GREAT GLOBAL WARMING SWINDLE'

The broadcasting of a very contentious TV documentary called *The Great Global Warming Swindle* on the UK Channel 4 in March 2007 brought public debate to a new level of intensity. The message of the documentary can be expressed in a few phrases from its publicity: 'You are being told lies', 'We can't say CO₂ will drive climate: it certainly never did in the past', 'Global warming is dressed up as science, but it's not science: it's propaganda'. It set out to present an alternative scientific case in which increased CO₂ emissions did not precede and cause warming, but merely followed it. On the evidence of the writer's conversations with friends and acquaintances, many found the documentary convincing. One or two journalists also praised it and supported its methods and content. More commonly, it was attacked in the press and in the websites of environmentalist organisations. These quoted scientists who argued that: it contained bad science (factual errors and manipulation of data); was selective and ignored the weight of scientific literature; and misrepresented the views of some scientists that it quoted. The outrage that the programme caused did not stop at open debate. There were calls for the DVD of the documentary to be withheld by Channel 4, or for it to be heavily edited before release. Those who made these calls were not merely attempting to suppress the intellectual

freedom of the programme makers, but they were raising questions that go back to the nature of science itself.

To understand the full significance of this controversy in Britain in 2007, we need to look at science and what it seeks to do. Science's claim to be true is not absolute, in contrast with the claims of religion. What science does is to provide the best explanation of phenomena available at the time. This is of course in the context of a search for absolute truth, but the characterisation of science as a rival religion, as oppose to a rival to religion, is not valid. Science works through the agency of scientific method: the rigorous testing and re-testing of hypotheses and their identification as false if the evidence shows that to be the case. The effectiveness of this process is subject to peer review, in which panels of experts from the field assess research proposals, findings offered for publication, and the qualifications of individual scientists and scientific institutions. All of this operates in conditions of intellectual freedom, guaranteed by the constitutions and laws of nations and by international agreements such as the United Nations Universal Declaration of Human Rights, which effectively open any subject to enquiry and permit any findings and theories to be offered to the public. It is this idea that the scientific process and results should be open and public that was affronted by some of the responses to The Great Global Warming Swindle. Even arguably bad and dishonest science deserves an airing, if we accept the importance of intellectual freedom.

SCIENCE AND INTELLECTUAL FREEDOM

The problem is that the system isn't perfect. Governments are not always neutral guarantors of a sphere of freedom in which science can operate. Business corporations want new science that helps their search for profit and protects their existing activities from interference on grounds such as public health and safety, or protection of the natural environment. There are other vested interests, the environmental movement for instance, which engage with science and dispute the validity of some of its findings. But more than this, science itself can be flawed in practice. The existence of a scientific establishment, including university professors and faculty members, presidents and committees of scientific societies, and members of official and corporate scientific advisory boards, is the source of the problem. The reputations, livelihoods, and indeed the belief systems, of members of the establishment are so closely associated with accepted findings and theories that they tend to suspect and, sometimes, marginalise science that challenges the orthodoxy. In these cases, the whole peer review system can look like a conspiracy to suppress challenges, rather than a means of guaranteeing scientific quality. Then there are the external pressures on science that can make it less of a quest for the holy grail' and more of a worldly business of influence, deals and compromises. These are worth some exploration.

First of all there is the role of government. As suggested earlier, government through its control of all or much of university finance, its own research institutes and laboratories, its funding councils and regulatory bodies, its purchasing power for innovative goods and services, has a dominant position. It can set national priorities and reasonably expect scientists to follow them with little question. Furthermore, if they consider it necessary, governments have the capacity to marginalise scientific

findings in the interests of what they consider policy imperatives. The Chinese government, for instance, is certainly aware of the science of global warming, but the profits of the fast-growing Chinese economy are not seen as likely to benefit from pollution controls. This points unavoidably to the continuation, at least in the medium term, of extremely high levels of carbon emissions and other forms of pollution from Chinese sources. In economies where the private sector is much more distinct from the sphere of direct government, business still has enormous influence of the content of 'public' science. This is through project finance to universities and other 'neutral' institutions for research topics it sees as worthwhile. Finally there is the role of other pressure groups, ideologically or ethically inspired, some of which can influence the votes of very high numbers of people. Governments and political parties seeking office are sometimes prepared to negotiate political arrangements with them that may have implications for what will be treated as acceptable science.

The influence of business over science is partially through business's direct employment of researchers in its own laboratories and research centres. Not much easier to quantify is the indirect influence of business on public science. Government science policy is generally planned by scientific civil servants in association with outside experts and representatives of the professions, industry, business and other relevant sectors of the wider community. The British journalist George Monbiot alleges that this has permitted an extension of what he calls the 'corporate takeover' of the country (Monbiot, 2000). Since 1993 Britain has sought 'a better match between strategic research and the needs of industry' which has taken the form of allowing direct government finance of research to decline, with industry taking up the slack. At the same time, he suggests that industrial representatives on research councils and the 'Foresight Panels' that advise government and the research councils have increased in numbers and influence. Business funded research chairs and institutes within universities (like Loughborough University's Ford College) have also been encouraged.

The influence of pressure groups on science is much less a part of public policy and more an alliance for political advantage (Moran, 1998). Take for instance the case of bovine tuberculosis. Each year the destruction of cattle suffering from TB in the UK involves great cost to farmers and high levels of public subsidy. The farmers argue that the TB is transmitted by badgers, which should therefore be culled. But animal rights activists say it is cattle movements (to and from markets and between farms) that spread the disease. Until recently the 'scientific' view has favoured the activists, whose close links to the Labour government are a matter of record. However, listening to a group of farmers apply their intense observation of cases and their pointed critique of statistics to this position will test anyone's faith in its validity. More recent statements by government scientists seem to support the farmers' logic, but it has been a hard struggle to win the argument and alter the science. Although the general public may know little of these inner workings, scientific debate can leave them confused on what, or who, to trust. A slickly edited and confidently argued presentation, such as *The Great Global Warming Swindle*, can thus affect opinion very strongly

INTERPRETING SCIENCE

For a scientist to interpret science is comparatively straightforward, if that scientist is prepared to factor in the social dimensions of science as well as the scientific findings and arguments. For the ordinary member of the public, very probably struggling with the actual science, the added dimension of the intellectual climate surrounding science can be too much. This is where the role of the popular scientific writers and journalists becomes crucial. A fine example of the craft is the (UK) Guardian newspaper's Bad Science column. Ben Goldacre, the writer responsible, takes claims of charlatans, based on alleged research, and destroys them with wit and a direct use of the English language. The column also exposes some of the pressures exerted by those to whom science is a means to an, often questionable, end rather than an end in itself. Thus, for instance, he records (Goldacre, 2007) the activities of a herbal medicine practitioner to deflect criticisms of the science, or lack of science, of her claims for the 'blood cleansing' properties (whatever that may mean) of red clover. The same herbalist is also identified as making claims in a journal article for the effectiveness of vitamin supplements, without disclosing her position as spokesperson for the Health Supplements Information Service, a lobbying body for the supplements industry. The column's account of the activities of bloggers in exposing both the pseudo science and the social manipulation is a delight to read. Yet the ordinary citizen shouldn't need to be wholly dependent on the scientific populariser to deconstruct scientific claims.

One way to form judgements is to ask 'Who do I trust?' The answer may not necessarily be the member of the scientific establishment, possibly defending privilege built up through years as an academic and political insider. Taking the example of The Great Global Warming Swindle again, some of the argument around it concerns the personalities involved and their credibility. For instance, on the one hand there is Professor Carl Wunsch, quoted in the documentary to support its arguments, who said afterwards that he was 'completely misrepresented' with his comments on the difficulty of understanding the issues presented as endorsement of the producers' thesis. On the other hand, there is Professor Fred Singer, who appeared in the programme as an enthusiastic critic of global warming theory. It maybe helps to know that Wunsch is attached to the PAOC, an institute at Massachusetts Institute of Technology dedicated to studying the chemistry of the ozone hole, the physics of hurricanes and the dynamics of ice ages. The fact that Singer is attached to the Independent Institute, a libertarian think tank, and that he has done climate change research on behalf of companies including Exxon, Texaco, Arco, Shell and the American Gas Association, possibly also helps. But if this is insufficiently informative the internet offers easy routes to much more information. Who to trust is something that we can establish for ourselves, if we take the trouble to do it. It is merely a way of using our intellectual freedom to begin forming independent judgements.

CONCLUSION

Establishing where trust should lie is not, however, the only way, and not really the best way, to interpret science. The real responsibility on all of us is to understand science as well as we can, and form opinions based on this understanding. This, in turn, places heavy responsibilities on the education system, on scientific popularisers and journalists, and on the libraries which can give access to scientific information in

print or electronic form at all levels of difficulty and complexity. This article began by drawing attention to calls for the suppression of the controversial, and probably deceptive, documentary *The Great Global Warming Swindle*. Such calls are a betrayal of the principles of intellectual freedom. Certainly, they are understandable in the context of what seem to be clear abuses of intellectual freedom. But just because they are understandable does not mean they are acceptable. True intellectual freedom permits partisan, and even dishonest, communication. It relies on members of a well-informed society to recognise and reject dishonesty and self-serving arguments. This is a big responsibility and the purpose of this article has been to indicate some of the reasons why the responsibility can be very hard to meet in the context of complex and demanding scientific content. Despite the difficulty, the responsibility remains. The science of climate change can only really be interpreted effectively in a climate of intellectual freedom.

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