

Opinion Page

Climate Change and Philosophy

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Introducing the Precautionary Principle

Debate about climate change – its documentation, causes, consequences and best policies for mitigation and management – is rightly consuming the international attention of politicians, economists, scientists and industrialists. It has recently been suggested that the debate has not until now been investigated by philosophers of science or epistemologists. While this may be true on a strict interpretation of ‘philosophers of science’ and ‘epistemologists’, it is scarcely true if the precautionary principle, which bestrides ethics, epistemology and philosophy of science, is taken into account, and epistemology and philosophy of science are interpreted broadly enough to include it and its implications.

This principle maintains that to prevent serious or irretrievable harm, where there is good reason to believe that such harm is at risk of happening, action (including action by public bodies) should be taken, even if there is an absence of scientific consensus. (This formulation has been reworded to overcome some problems mentioned below.) Now in the matter of climate change, although there is near-consensus among scientists that it is happening and that it is



partly caused by human agency, there remains some disagreement, because a sceptical minority deny one or both of these claims. However, the precautionary principle can still kick in, since even the sceptics have to admit that there is good reason to believe that global warming is anthropogenic (caused by human action) and that serious or irretrievable harm is resulting or will result from global warming (even if they dispute that these good reasons are conclusive ones). So, if they accept the precautionary principle, as most of the nations on earth do (an early form of it was included in the United Nations Framework Convention on Climate Change, adopted at the Rio Summit of 1992), they cannot avoid accepting that preventative action should be taken.

I can remember debating this matter in a conference in Milan in 2008. A climate sceptic had managed, with the vocal assistance of some members of the audience, to be allowed to ventilate from the podium his scepticism about climate change being either significant or anthropogenic. When it came to my turn to speak, I was able to comment that even if there are grounds for doubt about these matters, acceptance of the precautionary principle still obliges us, sceptics and non-sceptics alike, to support the taking of preventative action. This principle is a valuable one partly because it bestrides epistemology and ethics, concerning, as it does, what should be done when scientific consensus is incomplete or unavailable. By the same token, this same principle bestrides philosophy of science and ethics, as it concerns what attitude rational people should take, and what actions they should favour, when scientific fellow-workers, committed to the same or similar methods of scientific investigation, are unable to achieve full agreement.

Earlier Debates at the Borderlines of Epistemology and Ethics

Besides, I am far from alone in appealing to the precautionary principle, or in discussing the interface between science and ethics in matters of climate change. The proceedings volume of a conference held a few months earlier at Padua, *Ethics and Climate Change*, edited by Matteo Mascia and Lucia Mariani (Padova: CLEUP SC/Fondazione Lanza, 2010) includes a section entitled 'Science, Ethics and Politics Facing Climate Change: An Overview', of which the first chapter, authored by Antonio Navarra and Sergio Castellari, is entitled 'Climate Change and Science',

and includes several diagrams showing concentrations of greenhouse gases, global average temperatures, global average sea level, northern hemisphere snow cover, and projected global average surface warming and sea level rise at the end of the 21st century. The following section is entitled 'Ethics, Equity and Sustainability in Climate Change', and includes chapters from Simon Caney ('Equity and Greenhouse Gas Emissions'), and from myself ('Climate Change: the Ethical Dimension'), together with chapters from (among others) Thomas Heyd from Canada and Carmen Velayos Castelo from Spain.

Another book, also published in 2010, was Ruth Irwin's *Climate Change and Philosophy: Transformatinal Possibilities* (London and New York: Continuum). Chapters include Heila Lote-Sisitha and Lesley le Grange, 'Climate Change Education in a Context of Risk and Vulnerability'; Trish Glazebrook, 'Myths of Climate Change', and my own 'Mediated Responsibilities, Global Warming and the Scope of Ethics' (an expanded version of a paper that had appeared in *Journal of Social Philosophy* in 2009).

Yet earlier, James Garvey published in 2008 *The Ethics of Climate Change: Right and Wrong in a Changing World*, also with Continuum of London and New York. Some of the section headings of this book included 'Uncertainty' and 'Costs'. Thus, while the emphasis was on ethics, considerations of epistemology and economics were not forgotten.

Back to the Precautionary Principle

To revert more precisely to the Precautionary Principle, this Precautionary Principle had entered European law in the closing decades of the last century, and, as a result of the Rio Summit (1992), now forms part of international law. And as well as applying to issues such as climate change, it applies to matters like the release into the environment of genetically modified organisms capable of subverting native ecosystems. So it was disconcerting to discover that genetics students of my own University, who were being trained in genetic modification, had never been taught anything about it, and had in fact never heard of it; I did my best to rectify this omission for the last few years of my teaching of applied ethics to the students

of this course.

Besides, many other philosophers have written about the ethics of climate change. One is Stephen Gardiner, the author of *A Perfect Moral Storm* (2011), who applies philosophical techniques to issues of climate change. (I return to Gardiner's book below.) In another, jointly edited by Stephen Gardiner, Simon Caney, Dale Jamieson and Henry Shue, and entitled *Climate Ethics: Essential Readings* (Oxford: Oxford University Press, 2010), a whole plethora of ethicists discuss aspects of climate change issues, including issues of risk and of scientific disagreement. The issues under discussion include research into climate engineering, and whether the pursuit of this research strengthens or weakens the motivation of society and of governments to take strenuous action to reach agreements on mitigation and adaptation. While this research was originally envisaged as ancillary to proposals for mitigation (etc.), climate engineering has also been proposed as a technological fix, whereby a single nation could unilaterally seek to find a 'solution' to the problem of climate change.

Here we have another issue where reflection is needed at the interface of philosophy of science and ethics, this time about the ethics of undertaking certain kinds of research. There are in fact varieties of climate engineering, some of them relatively benign, such as the planting of forests, and others much more controversial, such as emitting reflective aerosols into the stratosphere to reduce the quantity of incoming solar radiation, or depositing massive quantities of iron filings in the oceans to foster the growth of blue-green algae capable of removing carbon dioxide. Given the range of kinds of climate engineering, and the possibilities that some of them would lead to large-scale subversion of ecosystems, it is possible that different attitudes should be adopted to the various different kinds.

Gardiner's Treatment of the Precautionary Principle

One of the strands of Gardiner's 2011 book concerns scientific uncertainty, and the debate surrounding the Precautionary Principle. As Gardiner relates, a moderate version of the Precautionary Principle was included in the UNFCCC at the Rio Conference of 1992, which had the effect of ruling out certain kinds of appeal to

uncertainty as justifications for inaction. Subsequently attempts have been made to present a form of this principle that is more general while remaining acceptable. Thus one standard statement, the Wingspread statement, asserts that ‘When an activity raises threats of harm to human health of the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically’ (Gardiner 2011, 412).

Gardiner proceeds to consider objections to such principles, as liable to halt any activity, however beneficial, on the basis of any worry, however fanciful, but replies to the objections in a convincing manner (Gardiner 2011, 412-4). It does, however, seem wise to include that there must be good reason to credit the threats envisaged, as in the version of the precautionary principle presented above. Potentially beneficial actions and policies may need to be put on hold, but precaution is warranted only when there is good reason to credit the relevant threats. The Principle still makes a significant difference, but with this or parallel clauses included can be defended against charges that it would inhibit most or even all initiatives. Thus it should not be construed as appealing to the worst outcomes of actions or policies that are theoretically possible, but rather to outcomes which there is good reason to consider significantly likely.

Recent Books

Two books of mine have discussed some of these issues, including the relevance of the precautionary principle. I have in mind here the second edition of *Environmental Ethics: An Overview for the Twenty-First Century* (Cambridge: Polity, 2014) and the second edition of *The Ethics of the Global Environment* (Edinburgh University Press, 2015). These matters have also been discussed in *Environmental Ethics: A Very Short Introduction*, forthcoming from Oxford University Press.

Each of these books has a chapter on the ethics of climate change, including discussions of the precautionary principle and of attitudes that should be taken to research into climate engineering. A distinction is drawn there between tree-planting, likely to benefit both humanity and the environment without significant harm being done, and more radical forms of climate engineering, which (in the case of

stratospheric aerosols) have been held to threaten the continuation of monsoons, and (in the case of depositing iron filings in oceans) pose threats to ocean ecosystems, contrary to the Sustainable Development Goals of 2015. It would be far better if international agreement about greenhouse gas mitigation can be not only agreed but also implemented as a matter of urgency.

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