

Alan Robock

# Beware delay



Victor de Schwanberg/Science Photo Library

## Time to act

Climate change and the future of the planet.

## Coming Climate Crisis? Consider the Past, Beware the Big Fix

Claire L Parkinson  
2010 Rowan &  
Littlefield Publishers  
£15.95/\$24.95hb  
411pp

What should we do about the dangers posed by global warming? Judging by the collective actions of society, so far the answer has been “nothing”. Frustrated by this lack of progress and deeply worried about the future, several prominent climate scientists have written books in the past year describing their views of the problem, in which they try to tell their personal stories, educate the public and stimulate action by governments. Stephen Schneider, who died suddenly (and far too early) in July, told his part of the story in *Science as a Contact Sport* (see September p46). James Hansen warned of the dangers of global warming in *Storms of My Grandchildren*. And in *Merchants of Doubt*, Naomi Oreskes and Erik M Conway described how fossil-fuel companies are using the same tactics and “scientists” that cigarette and chemical manufacturers once used to obscure and deny the dangers posed by tobacco, acid rain and ozone depletion in an attempt to confuse the public about the science of global warming and delay regulation of greenhouse-gas emissions.

In this crowded field, *Coming Climate Crisis? Consider the Past, Beware the Big Fix* stands out. Written

by Claire L Parkinson, a distinguished NASA sea-ice researcher and a member of the US National Academy of Engineering, it differs from the others in its attitude towards those who deny the reality of global warming, or humanity’s role in causing it. Although Parkinson does not share the sceptics’ views on climate change, one of the messages in her book is that global-warming deniers are legitimate scientists who need to be taken seriously.

At this point, I should probably mention that Parkinson is a friend of mine. In fact, the copy of the book I used in preparing this review is a personal, signed gift from her. But friends are allowed to disagree sometimes, and in this case I definitely do. To be blunt, Parkinson’s interpretation of the action of global-warming deniers strikes me as subjective and wrong, and it conflicts with the scholarship of Oreskes and Conway, who document the organized campaign to confuse the public about climate science so as to delay action. I agree with Lonnie Thompson, the Ohio State University palaeoclimatologist who has written the book’s unusually critical foreword: “the major issue I [Thompson] have with the book is that [Parkinson] ascribes nearly equivalent validity of the contributions of those in the climate-change community who rely on the peer-review system to disseminate ideas and the smaller group of ‘climate sceptics’ or contrarians. Many in the latter group are not climate scientists, and their ideas and work are often disseminated in white papers, editorials, privately funded foundation documents, blogs and other attention-getting media outlets.”

That said, most of the book is not controversial, and it makes some excellent points. For example, its first four chapters describe the climate system in a way that is easily accessible for non-specialists, going through the history of climate change on Earth for the past 4.6 billion years and describing how the carbon dioxide, methane and other greenhouse gases we are now spewing into the atmosphere at an unprecedented rate will produce rapid global warming in the future. Parkinson also gives many examples of how humans have inflicted significant environmental damage on local and regional scales.

Towards the end of the book, the sections on geoengineering – the “big fix” referred to in the title – are likewise spot-on. The term “geoengineering” refers to a number of proposed techniques for managing solar radiation, such as deliberately introducing light-scattering aerosols into the stratosphere. Parkinson rightly points out that there are many potential risks associated with such schemes, and gives multiple examples of smaller-scale efforts of environmental modification that have gone wrong. She is far from alone in these views. I have personally published 20 reasons why geoengineering may be a bad idea, and the Royal Society, the American Meteorological Society and the American Geophysical Union have all advised that much more research is needed on the benefits, risks and costs involved before society can make an informed decision about whether to even consider it in the event of a planetary emergency. Whatever its merits, geoengineering is certainly no substitute for reducing greenhouse-gas emissions.

However, in the middle part of the book, Parkinson devotes a lot of effort to raising doubt about the consensus of scientists on global warming by criticizing the validity of “scientific consensus” in general. To support the latter argument, she gives a number of examples from the past – from the heliocentric model of the universe to the supposedly unsinkable *Titanic* – in which a prevailing viewpoint was later overturned. However, I think there are probably many more examples of a consensus – like the fact that volcanic aerosols cool the planet – being correct and only modified in rather minor ways as knowledge has progressed. The global-warming community consists of thousands of people who have been working for decades on this problem, and the consensus only gets stronger. There is no scientific analysis of that process in this book.

Parkinson also goes along with Richard Lindzen, a prominent denier (and atmospheric scientist), whom she quotes as complaining about “alarmists”. She then uses the term herself. However, this is confusing advocacy with science. Scientists whose results support global warming are not being alarmists – they are merely presenting the results of their scientific investigations. Advocates of particular actions who use science in a dishonest way are the real alarmists, and there are those on both sides of the issue. Those who honestly present

their results are doing their duty to society by warning others about the dangers that they find. It would be irresponsible to do otherwise. If people find those results alarming, Occam's razor tells me that this is because the science itself is alarming, not because of some vast conspiracy of scientists to exaggerate their results. In fact, an individual scientist would be much more strongly motivated to find a fundamental flaw in the theory of global warming. That is what

would make them famous and bring in grants and money – not yet another paper that supports the consensus.

In the book, Parkinson writes that she is afraid she will anger a number of her professional colleagues in publicizing her views. In my case her fears were partially justified: I was indeed a little angry and frustrated after I read her book, although I felt better after I had communicated my thoughts (many of which are reproduced here) to her. But the fact is that

when “sceptical” scientists misrepresent the science on purpose, they are doing a disservice to our profession and to the planet, and they should be condemned – not have their specious arguments accepted uncritically, as in this book.

**Alan Robock** is a climatologist at Rutgers University, New Jersey, US, and a lead author in the upcoming Intergovernmental Panel on Climate Change's “Fifth Assessment Report”, e-mail [robock@envsci.rutgers.edu](mailto:robock@envsci.rutgers.edu)

## Between the lines



**An ear for a tune**  
Getting the inside track on the science of music.

### A guide to music physics

Authors of books on “the physics of  $x$ ” have some tough choices to make. If their physics explanations are too technical, they risk alienating experts on  $x$ . Assume too much foreknowledge of  $x$ , though, and physicist readers will stay away in droves. The safest approach is probably that taken by John Powell, a classically trained composer and Nottingham University laser physicist whose book *How Music Works* is aimed squarely at people who are neither musicians nor physicists. Aside from an appendix entitled “Fiddly details”, there are no equations. Instead, the physical aspects of vibrations and harmonics are explained using simple diagrams and thought experiments. Powell also claims that readers need no musical talent beyond an ability to hum the first four notes of “Baa Baa Black Sheep”. However, he wisely suggests reading the book in close proximity to a music library (*YouTube* will do in a pinch), as he frequently mentions specific songs as examples of one principle or another. Writing with plenty of self-deprecatory humour, Powell is refreshingly unfussy about such music-geek minutiae as the purported difference in sound quality produced by vinyl records and CDs. Better still, his taste in music is remarkably catholic: there cannot be many books that reference Beethoven's Fifth Symphony and Wheatus' indie-pop song “Teenage Dirtbag” in consecutive paragraphs. About the only thing Powell does not like about music, it seems, is the decibel system, which he blames on “a committee of drunken electrical engineers who wanted to take revenge on the world for their total lack of dancing partners”. Touché.

● 2010 Particular Books £12.99pb 272pp

### New horizons for Pluto research

We don't know much about Pluto. However, we know more than we used to, and we will learn still more when NASA's New Horizons spacecraft flies past it and its medium-sized moon Charon in 2015. Such is the message of *Pluto: Sentinel of the Outer Solar System*, in which Open University astronomer Barrie Jones describes how everybody's favourite not-quite-planet fits into our picture of the solar system. Despite the relative paucity of information available about Pluto, there is still quite a bit to discuss. Studies of light reflected off Pluto's surface, for example, have told us that this distant body is reddish in colour, while the discovery of Charon in 1978 helped refine our estimates of its mass. Quite often, the “how” of such findings is more interesting than the finding itself. Clyde Tombaugh's use of a “blink comparator” to discover Pluto in the 1930s was amazing enough, but even in an era of giant space telescopes, it seems that imaging an icy rock from a vantage point almost 40 astronomical units away is actually rather difficult. Unfortunately, despite being written for an audience with a very basic level of physics knowledge (there are separate boxes intended “for those comfortable with algebra”), *Pluto* is not always an easy read. It is repetitive in places – the term “albedo”, meaning reflection, is defined at least three times – and an uneven chronological structure makes it hard to keep track of who discovered what and when. Still, for those with the patience to follow it, Jones' slim primer offers a useful distillation of eight decades of research into Pluto, and an intriguing preview of more findings to come.

● 2010 Cambridge University Press £25.00/\$35.99hb 244pp

### A noble story

William Ramsey, who won the 1904 Nobel Prize for Chemistry for his work on the noble gases, is almost certainly the only laureate to thank his own thumb in his acceptance speech. Yet his unusual tribute was at least partially justified. As author David Fisher notes in *Much Ado About (Practically) Nothing: The History of the Noble Gases*, Ramsey's large, flat thumb made an excellent impromptu vacuum-tube seal, and this “equipment” proved invaluable in his efforts to isolate the noble gases. Anecdotes such as this are ten a penny in Fisher's irreverent book, which also features a balloon-borne dust collector known as the “vacuum monster” and a practical joke that involved swapping a priceless meteorite for some rusty iron filings. Yet to call the book a history is a misnomer. Although it contains some information about applications of noble gases – describing how argon is used in neutrino detectors, and how radioactive xenon helps diagnose pulmonary embolisms – it is really more like a memoir, since it draws half of its material from the author's own career. The combination does not always work, especially when Fisher gives in to the memoirist's penchant for settling scores and rehashing old gossip. Yet conflicting personalities and dead ends are also part of science, and to be fair to the author, he would be the first to admit as much. At one point, Fisher even describes a particular chapter as “a tale of things gone wrong and ideas that didn't pan out”, and advises readers to skip it if they just want to learn about the universe. As a history, this book is uneven, but as an account of one scientist's stormy love affair with noble-gas research, it is worth a second look.

● 2010 Oxford University Press £15.99/\$24.95hb 288pp