

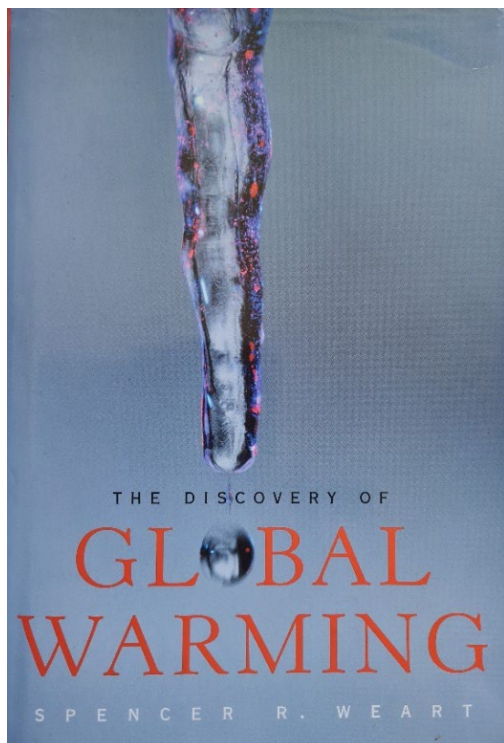
My 2003 'Climate Book of the Year'

Weart, S. (2003) *The Discovery of Global Warming*. Cambridge, MA: Harvard University Press. 228pp.

This essay continues my series of monthly posts in which I select one 'climate' book to highlight and review from one of the 44 years of my professional career in climate research (starting with 1984, my first year of academic employment). The series will end in September 2027, the month in which I shall retire. [See here for more information](#) about the rationale for this series, and the criteria I have used in selecting my highlighted books.

This '2003 essay' can be [download as a pdf](#).

In 2001, the IPCC published its [Third Assessment Report](#) on climate change and it reflected the growing confidence of climate scientists about both the range and the strength of



evidence that was revealing human influence on the climate system. The Report's headline statement concerning detection and attribution was that, "In the light of new evidence, and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is 'likely'¹ to have been due to the increase in greenhouse gas concentrations." Alongside the IPCC's 2001 Report was the impending entry into force of the Kyoto Protocol, negotiated in 1997 and, by 2003, awaiting just one or two more countries to formally ratify the treaty for it to gain legal force.

So, by the early years of the new century it seemed that 'global warming' was an established fact about which increasing numbers of people around the world were now aware. It seemed appropriate, then, that in 2003 a historian of science—[Spencer](#)

[Weart](#)—published a new accessible account of how scientists had 'discovered' this fact. I have therefore selected Weart's 'The Discovery of Global Warming' [referred to henceforth as 'Discovery'] as my **2003 Climate Book of the Year**.

¹ In its Third Assessment Report, the IPCC had adopted formal linguistic terminology to reflect different levels of certainty—'likely' implied a "more than 66 per cent chance" of being correct.

Weart was 61 years old when ‘Discovery’ was published, the Director of the [Center for History of Physics](#), and its Niels Bohr Library, at the American Institute of Physics (AIP) in College Park, Maryland. Weart had held this position since 1974 and he was to continue to do so until his retirement in 2009. AIP’s Center for History of Physics seeks to preserve and make known the history of physics, astronomy, geophysics, and related fields—which includes the science of climate. Weart’s tasks as Director included the following: conducting, supervising and curating oral history interviews of prominent scientists—for example, he interviewed climate scientists Wally Broecker and Jim Hansen; preserving historical scientific documentation in appropriate archives; and offering assistance to scholars to locate and use such materials.

Weart’s project to develop a ‘history of climate change science’ had started in the mid-1990s. Given the above remit as Director, he had become interested in the possibilities afforded by the new technologies of the internet for archiving information and for sharing knowledge. ‘Discovery’ therefore started out as a [web-site designed and maintained by Weart](#) and hosted by the AIP. (Weart has maintained this web-site to the present-day, although it still has the feel of one dating from the early 2000s.) His web-site went live in 2001, offering what he called ‘A Hyperlinked History of Climate Change Science’, the original justification of which [he explains in his own words](#):

Our knowledge of how complex type[s] of science work is primitive. Not only the public, but even most scientists, only see particular strings of incidents. Few have mentally organized an overall picture. We need a way to display the many lines of research and how they intertwined ... At each point, dozens of recent results influence the [general trend of scientific] opinion, and it influences in turn the direction of future research. Scientific opinion also interacts with public concerns, and public concerns interact with funding, and funding takes us back to the start by influencing which lines of research scientists can pursue. The World-Wide Web gives us a new way to display complex information of this nature.

‘Discovery’, published by Harvard University Press in 2003, is therefore derived from this dynamic on-line hyperlinked history. Whereas Weart’s web-site comprises about 30 on-line essays—amounting to nearly half a million words—and [a bibliography](#) comprising over 3,000 items, his published book came in at a succinct 55,000 words.

When published in 2003, Weart’s history of climate science was—and in many ways still is—very different from anything that had come before. Most previous books that had drawn attention to the historical efforts of scientists to understand climate change had been written by journalists, for example those by John Gribbin, [Ross Gelbspan](#), William Stevens,

and Fred Pearce.² Other books had described the Earth's climatic history (for example, those by Mikhail Budyko and Steve Schneider) or else had tried to describe the role of climatic change and variability in human history (such as by Emmanuel Le Roy Ladurie and Hubert Lamb).³ Perhaps the closest to Weart's 'Discovery' had been Jim Fleming's 'Historical Perspectives on Climate Change', published five years earlier, but Fleming's was a broader "intellectual history" of the *idea* of climate change, from late Enlightenment thought in the eighteenth century through to the 1960s.⁴

Weart was offering something different: a concise and non-technical introduction to the efforts of scientists over the previous century, although mostly focused after 1950, which had, among other things, enabled the IPCC in 2001 to pronounce on the "likely" causes of the recent global warming. (I discuss below whether these efforts should rightly be called "a discovery"). The book was reviewed widely in both the scholarly and popular scientific press, and gained a favourable reception from climate scientists such as Steve Schneider, Thomas Crowley, Mike Oppenheimer and Rob Wilby.⁵ Schneider's praise even led him to announce that "I intend to use it instead of my own book '[Coevolution of Climate and Life](#)' ... for my climate class." 'The Discovery of Global Warming', said Schneider, "is more up-to-date, better balanced historically, beautifully written and, not least important, short and to the point."

A number of historians of science and environmental historians were rather more critical than the climate scientists. Several pointed out that Weart said very little about the early foundations for later climate science that were laid down in the period before the Second World War—"Weart cares little for the period before the late 1950s" [Cushman]. Others criticised Weart's 'America first' perspective on his rendering of climate science's history—"Weart weaves the socio-political narrative as if it were really an American one" [Maurellis]. Environmental historian Greg Cushman went so far as to suggest the book would have better been titled, 'The Discovery of Global Warming by America' and that "I cannot recommend [this book] as a history of climate science". Jim Fleming was also critical; in his subsequent biography of British engineer Guy Callendar, Fleming issued harsh criticism of Weart's

² Gribbin, J.R. (1990) *Hothouse Earth: The Greenhouse Effect and Gaia*. London: Bantam Press; Gelbspan, R. (1997) *The Heat Is On: The High Stakes Battle Over Earth's Threatened Climate*. New York: Addison-Wesley Publishing Company Inc.; Stevens, W.K. (1999) *The Change in the Weather: People, Weather and the Science of Climate*. New York: Delacorte Press; Pearce, F. (2002) *Global Warming: A Beginners Guide to our Changing Climate*. New York: Penguin.

³ Budyko, M.I. (1982) *The Earth's Climate, Past and Future*. New York: Academic Press; Schneider, S.H. and Londer, R. (1984) *Co-evolution of Climate and Life*. San Francisco CA: Sierra Club Books; Ladurie, E.L. (1971) *Times of Feast, Times of Famine: A History of Climate Since the Year 1000*. London: Allen & Unwin; Lamb, H.H. (1982) *Climate, History and the Modern World*. London: Methuen.

⁴ Fleming, J.R. (1998) *Historical Perspectives on Climate Change*. Oxford: Oxford University Press. 194pp.

⁵ Schneider, S.H. (2004) Warning of warming. *Nature*. 427: 197-198 (January 15); Crowley, T.J. (2004) Something warm, something new. *Science*. 304: 685-686. (30 April); Oppenheimer, M. (2004) *Environmental History*. 9: 327-328; Wilby, R.L. (2006) *Progress in Physical Geography*. 30: 141-142.

haughty dismissal of Callendar's lack of technical competence in climate science, another sign perhaps of Weart's 'American exceptionalism'.⁶

My own criticism of Weart's history would identify his failure to fully dissect and explain what sort of discovery the 'discovery' of global warming was. By framing his account in terms of discovery, Weart leans on a familiar trope in the writing of popular science history, namely of science as a series of eureka moments—such as Marie and Pierre Curie's discovery of polonium and radium in 1898; Alexander Fleming's discovery of penicillin in 1928; Crick and Watson's discovery of the structure of DNA in 1953. Gaining scientific understanding of human influence on the climate system was not at all like this.

Weart is alert to the collective and socialised nature of scientific discovery; thus, "The discovery of global warming was patently a social product, a consensus of judgments arising in countless discussions among thousands of experts." [p.196]. But this perspective, offered only at the very end of the book, is missing from much of what comes before and his account of climate science's history would have benefitted from a more explicit discussion about the relationship between social epistemology and scientific discovery. Discovery is a collective achievement, and the task of the historian is to explore how assorted social-epistemic activities and practices impacted the knowledge generated by the groups in question, and how this subsequently gained the status of *public* knowledge.

There *were* no eureka moments in climate science when global warming was "discovered". Rather, there was a dispersed assortment of scientists, working in different scientific disciplines, trying to answer different questions, with different methods, often disagreeing with each other and vying for political, media and public attention. What was unique in the case of climate science was the invention in 1988 of the IPCC and its subsequent design, operation and delivery of a series of knowledge assessments. If there *were* any 'eureka' moments then they took place in the meeting halls of IPCC plenary sessions, when fraught political negotiations led to statements such as the IPCC's Fourth Assessment Report (AR4) climate change detection statement in 2007: "Most of the observed increase in global average temperatures since the mid-20th century is 'very likely' due to the observed increase in anthropogenic greenhouse gas concentrations".⁷ Note the difference in wording—from 'likely' to 'very likely'—compared with the Third Assessment Report cited earlier.

⁶ Cushman, G. (2005) *Technology and Culture*. 46: 456-458. (April); Maurellis, A. (2004) Warming to the story of climate change. *Physics World*. 17(5): 46. (May); p.95 in: Fleming, J.R. (2007) *The Callendar Effect: The Life and Work of Guy Stewart Callendar (1898-1964)*. Boston, MA: American Meteorological Society. 155pp.

⁷ p. 10 in: IPCC (2007) *Climate Change 2007: The Physical Science Basis*. Solomon, S., Qin, D., Manning, M., et al. (eds.) WGI Contribution to the Fourth Assessment Report of the IPCC. Cambridge: Cambridge University Press.

Weart's 'Discovery' may have played some small part in prompting the IPCC AR4 in 2007 to include a chapter titled 'Historical Overview of Climate Change Science'.⁸ Such historicization of climate science had not appeared in the previous three IPCC Reports and this new IPCC chapter cited Weart's book as one of only two books that offered "a view of the emerging science." (The other was Fleming's from 1998.) Following the release of AR4 in 2007, Harvard University Press issued a second, slightly expanded, edition of 'Discovery'. In this new edition, Chapter 8, 'The Discovery Confirmed' was replaced by two chapters: 'Speaking Science to Power' and 'The Work Completed and Begun' which extended Weart's story to include the main findings of the IPCC's Fourth Assessment. The concluding 'Reflections' chapter in this new edition was also revised by Weart and his 'global warming discovery timeline' extended beyond 1988—where the first edition's timeline had ended—to 2007.

As well as a second edition, 'Discovery' was translated into several languages, including Spanish, Chinese, Korean and Japanese, furthering its worldwide readership and influence. 'Discovery' continues to be widely cited in today's academic literature on climate change, almost certainly aided by Weart's carefully maintained web-site which underlay his 2003 and 2008 editions of the book. (Indeed, Weart continues to maintain his web-site and bibliography to the present-day—which in itself is an admirable achievement and a useful resource for those interested in developments in climate science.) According to Google Scholar, the book has received around 2,300 citations and in the 2020s is still gathering the order of 100 per year.

On the other hand, there are now several other books competing for the space that, in the early 2000s, only Weart was occupying.⁹ And two other books have since been published which sought to establish a 'canon' of scientific papers about the history of climate science. One of these was edited by David Archer and Ray Pierrehumbert in 2011, '[The Warming Papers: The Scientific Foundation for the Climate Change Forecast](#)' and the other by Josh Howe in 2017, '[Making Climate Change History: Documents from Global Warming's Past](#)'. Nevertheless, and even with its limitations, Weart's synoptic history of the science behind the recognition of human influence on the climate system was ground-breaking when published in 2003.

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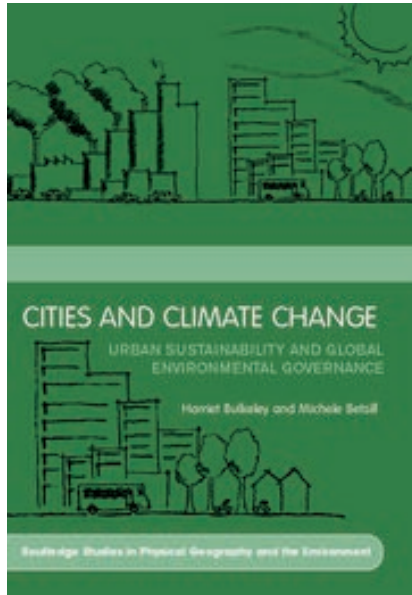
⁸ Le Treut, H., Somerville, R., Cubasch, U. et al. (2007) Historical Overview of Climate Change. Chapter 1 in: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

⁹ The best of these more recent accessible histories are: Dry, S. (2019) *Waters of the World: The Story of the Scientists Who Unravelled the Mysteries of our Seas, Glaciers and Atmosphere – and Made the Planet Whole*. Chicago: University of Chicago Press; Bell, A. (2021) *Our Biggest Experiment: A History of the Climate Crisis*. London: Bloomsbury Sigma; and Fressoz, J.-B. & Locher, F. (2024) *Chaos in the Heavens: The Forgotten History of Climate Change*. London: Verso.

Other significant books published in 2003

Bulkeley, H. and Betsill, M. (2003) *Cities and Climate Change: Urban Sustainability and Global Environmental Governance*. Abingdon: Routledge. 256pp.

It was estimated that around 2007, for the first time in human history, more than 50 per cent of the world's population lived in cities, a figure that has now risen to around 56 per



cent. It was therefore appropriate that earlier in the decade, in 2003, the first book in the English language dedicated to explaining the role of cities in both mitigating climate change and adapting to the residual changes in climate was published. '*Cities and Climate Change: Urban Sustainability and Global Environmental Governance*' was co-written by two young academics, the British geographer [Harriet Bulkeley](#) and the American political scientist [Michelle Betsill](#).

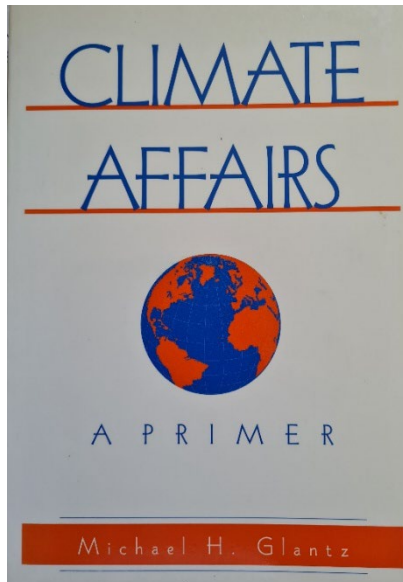
The book provides a comparative analysis of six cities—drawn from the UK, the United States and Australia—cities which were participating in the '[Cities for Climate Protection](#)' (CCP) programme. The CCP programme was created by the International Council for Local

Environmental Initiatives in 1993, the year following the Rio Earth Summit, and now houses more than 650 municipal governments representing over 30 participating countries. The Programme's aims include the sharing of best practice in the ambitions of municipal authorities to reduce their greenhouse gas emissions. One of the important reasons advanced by Bulkeley and Betsill in their 2003 book for focusing on urban governance was that, by the turn of the millennium, cities were fast becoming an important site of transnational climate governance. Such governance operated both above and below the level of the nation state; this role for cities has become even more important in the subsequent two decades.

'Cities and Climate Change' was re-issued by Routledge in 2005 as a paperback, and was the first of a growing number of climate change books which had their focus on the city environment. The list includes several further books written by Bulkeley, including her own textbook—under the same title—published in 2013. And the important role of cities in grappling with the challenges of climate change has been recognized in the IPCC's Seventh Assessment cycle, with its commissioning of a '[Special Report on Climate Change and Cities](#)', due to be published in March 2027. Not surprisingly, Harriet Bulkeley is one of the Lead Authors of the Report.

Glantz, M.H. (2003) *Climate Affairs: A Primer*. Washington DC: Island Press. 290pp.

At the beginning of his book '*Climate Affairs: A Primer*', the American climate social scientist Mickey Glantz makes the argument that the newly minted twenty-first century may well end up being known as the "climate century". By this he means that climatic factors affecting the



affairs of humanity "are likely to dominate the attention of policy makers" in the years ahead [p.2]. It is from this premise that Glantz writes his subsequent guide to those "climate affairs" that he believes will become ever more important for decision-making, whether by individuals, by societies and with respect to relations between nations. Writing this review in 2025 it is still too early to pass judgement on the aptness of Glantz's claim about the twenty-first century as a whole, but he was surely right to demonstrate the variety of ways in which "climate as resource, hazard and constraint" is vitally important for human living [p.247].

The importance of this book lies in its focus on climate and its changes *in relation* to the range of activities with which humans are engaged. '*Climate Affairs*' was not another guide to 'the greenhouse effect' or to 'the science of climate change', of which by 2004 there were beginning to be an increasing number. Glantz's reach is much broader than this, as befits someone who led the Environmental and Societal Impacts Group at the United States' National Centre for Atmospheric Research for over three decades. Unlike some other American writers, Glantz manages to escape American parochialism and the examples he cites of the interactions between climate and society are drawn from all five continents. Although trained first as an engineer and then as a political scientist, the instincts Glantz displays in this compact and yet illuminating book are the instincts of a geographer—even down to his deployment of Glenn Trewartha's classic, if now somewhat unfashionable, 1961 [classification of the world's regional climates](#).

Earlier in this series, [I reviewed Glantz's 1996 book](#) on El Niño, which in some ways could be seen as a precursor to this one. In both books, Glantz provides an important corrective to the 'science first' view of climate and climate change which around these early years of the new century was (too) heavily dominated by Earth System science.