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The Stories We Tell

BY JOSHUA P. HOWE*

NAOMI ORESKES and ERIK M. CONWAY. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury, 2010. 368 pp. ISBN 978-1-596-91610-4 \$27.00 (hardcover).

On the last page of their best-selling 2010 exposé on the tactics of contrarian science in America, *Merchants of Doubt*, Naomi Oreskes and Eric Conway take a brief and curious literary detour intended to drive home their point about the dangers of a “foolish cynicism” regarding scientific expertise. Quoting Shakespeare’s revered Scottish tragedy, the authors contend that without reliable experts, “life is reduced to ‘a tale told by an idiot, full of sound and fury, signifying nothing’” (274). It is an odd diversion, sandwiched between Alexis de Tocqueville and C. P. Snow in a triumvirate of references meant to set up a finale of damning quotations pulled from the files of two of the book’s contrarian protagonists, tobacco company scientist S. J. Green and conservative science advisor William Nierenberg. The reference makes sense within the context of Macbeth’s musings about “th’equivocation of the fiend/That lies like the truth,” and to the extent that it allows Oreskes and Conway to transition from qualifications about the value of a healthy scientific skepticism to a final dig at contrarians’ invidious manipulation of the scientific process, it works well.¹ But the reference to *Macbeth* also provides a subtle cue that *Merchants of Doubt* should be understood in terms of a familiar plotline: a tragedy. It is a story in which a laudable characteristic of good science—a healthy skepticism—taken to its extreme and employed in the service of political power, leads to the corruption of science at the expense of society. Perhaps not the image of a classic Aristotelian tragedy, the story’s recognizable form nevertheless complements

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1. See Stephen Greenblatt’s introduction to *Macbeth* in Stephen Greenblatt, Walter Cohen, Jean E. Howard, and Katharine Eisaman Maus, eds., *The Norton Shakespeare* (New York: W. W. Norton, 1997), 2555–63, on 2562.

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the authors' overt contention that a small group of scientists repeatedly and intentionally capitalized on scientific uncertainty to manufacture public doubt about controversial issues "from tobacco smoke to global warming."

To environmental historians, this self-conscious nod toward emplotment may seem unsurprising, even familiar. We tend to wear our attention to narrative on our sleeves, attuned as we are to the stories we and others tell about nature, and to our own struggle with a predilection for tales of environmental decline.² Many of our foundational articles and essays revolve around narrative, and our best-selling books often deal self-consciously with stories and storytypes.³ As William Cronon has argued, environmental historians strive to emphasize the "network of relationships, processes, and systems" of history that are "as much ecological as historical," but we struggle to balance that focus against our commitment as historians to the power of the narrative form.⁴

Historians of science rely no less on the power of narrative. For well over half a century, the field has grappled with how to tell the story of scientific advancement without falling victim to the traps of a romantic and often positivistic progressivism.⁵ Unlike in environmental history, historians of

2. Richard White uses his own previous work to point out the ironic "whiggishness" of declension narratives in "Environmental History: Watching a Historical Field Mature," *Pacific Historical Review* 70 (2001): 103–11, on 105. Environmental historians have made a living telling stories of tragic environmental destruction, but they make sense of these stories through a modern, enlightened narrative perspective—from a present that has supposedly attained superior knowledge, and is "sorrrier but wiser."

3. Recent successful examples of environmental historians' commitment to narrative—and a critical analysis of it—include Gregg Mitman's *Reel Nature: America's Romance with Wildlife on Film* (Cambridge, MA: Harvard University Press, 1999, reprinted as a Weyerhaeuser Environmental Classic, Seattle: University of Washington Press, 2009), which focuses very closely on emplotment in nature films, and Brett Walker's beautifully written *Toxic Archipelago: A History of Industrial Disease in Japan* (Seattle: University of Washington Press, 2010), which self-consciously uses the tropes of Japanese storytelling to make its point about modernity and pain.

4. William Cronon, "A Place for Stories: Nature, History, and Narrative," *Journal of American History* 78 (1992): 1347–76, on 1349.

5. The continued focus on the nature of scientific change—and especially scientific "revolutions"—underscores a set of concerns about the story of progress that has its roots in the works of Karl Popper and Thomas Kuhn. Even so, neither Popper nor Kuhn tackled narrative itself directly; rather, like other historians and philosophers of science, their chief concern was with reshaping an analytical framework. The modern field has inherited this primary concern with analytical tools, drawing not only on the philosophy of science but also upon postmodern social-science methodologies that help us deconstruct the social and cultural processes of knowledge production. In this light, perhaps it is ironic that we tend to ignore our own particular engagement with cultural tropes through narrative, placing ourselves outside of or above the very social and cultural processes that we work hard to deconstruct. One refreshing exception (and I'm sure

science rarely discuss stories *qua* stories—we tend to narrate without much meta-narrative.

This is especially true of the small but increasing number of works on the history of climate science. Climate-change historians focus closely on how scientists tell stories about atmospheric and environmental change. *Merchants of Doubt*, for example, is very much about how scientists have fought, mostly on the battlefield of the popular press, to control the stories we tell about controversial public health and environmental issues, including global warming. And yet it is easy to miss the extent to which Oreskes and Conway's mode of telling this story in their chapter, "The Denial of Global Warming," is in fact a part of the struggle to control the telling of stories itself (169–215).

And that is a problem, because emplotment and story-types are not just matters of narration; they are matters of argument. That is, the way we tell stories about global warming's history matters, sometimes as much as the content of those stories and the arguments they explicitly support.

Hayden White's distinction between plot, story, and argument provides a useful tool for understanding how narrative works in the history of global warming. To simplify White for the purposes of this essay, the term "emplotment" describes a broad and fuzzy-edged set of categories of dramatic trajectory—romance, tragedy, comedy, farce, and (sometimes) epic—that provide access to a cursory moral judgment of events based on their telling. By "story-type," I mean a more diverse and flexible set of culturally familiar narrative cues that allow us to understand a new story in terms of categories of particular stories we have already encountered. Story-types range from the seemingly universal and timeless—the coming-of-age story, for example—to the historically and culturally specific—the uniquely late twentieth and early twenty-first century American screwball college comedy, among others. Both emplotment and story-type place the overt contention of a work—the argument—in a culturally relevant context, but as White argues, they also function separately from explicit argument, sometimes serving as implicit forms of argument themselves.⁶

there are many) is cultural anthropologist Christopher Toumey's short and engaging *Conjuring Science: Scientific Symbols and Cultural Meanings in American Life* (New Brunswick, NJ: Rutgers University Press, 1996). See Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962). On Popper, see Stefano Gattei, *Karl Popper's Philosophy of Science* (New York: Routledge, 2008). See also Herbert Keuth, *The Philosophy of Karl Popper* (Cambridge: Cambridge University Press, 2004).

6. A good start to Hayden White is Robert Doran, ed., *The Fiction of Narrative: Essays on History, Literature, and Theory, 1957–2007* (Baltimore, MD: Johns Hopkins University Press, 2010).

Historians typically tell the story of global warming in three related parts.⁷ The first, exemplified by Gale Christianson's *Greenhouse: The 200-Year History of Global Warming* and, more critically, by James Rodger Fleming's *Historical Perspectives on Climate Change*, describes the obscure and sometimes exotic scientific "pre-history" of global warming, usually from its genesis in the early nineteenth century through its most recent incarnation as an interdisciplinary global science.⁸ Like other "biography of an idea" approaches, the story has an episodic, *Tristram Shandy* character to it, with quirky, loosely connected protagonists contributing to the destiny of an idea that they themselves do not yet fully know exists.⁹ Jean-Baptiste Jacques Fourier, the scientific polymath renowned for the famous Fourier series in mathematics and a sort of Forrest Gump of post-revolutionary France who first applied the term "greenhouse" to the atmosphere, looms large in this story.¹⁰ So too do John Tyndall, the vocally secular drug- and adrenaline-addicted Irish physical scientist/mountaineer who determined the absorption spectra of CO₂ and water vapor, and Svante Arrhenius, the depressed Swedish divorcé Nobel laureate who did the first pencil-and-paper model of the doubling of atmospheric CO₂.¹¹ It is a shaggy-dog epic,

7. For a brief overview of humanistic perspectives more generally on climate change, see Joshua P. Howe, "History and Climate: A Road Map to Humanistic Perspectives on Climate Change," *Climatic Change* 105 (2011): 357–63.

8. James Rodger Fleming, *Historical Perspectives on Climate Change* (Oxford: Oxford University Press, 1998); Gale E. Christianson, *Greenhouse: The 200-Year Story of Global Warming* (New York: Penguin Books, 1999). See also early chapters in William K. Stevens, *The Change in the Weather: People, Weather, and the Science of Climate* (New York: Dell Publishing, 1999); Elizabeth Kolbert, *Field Notes from a Catastrophe: Man, Nature, and Climate Change* (New York: Bloomsbury, 2006).

9. It is an odd conceit, perhaps best exemplified by Peter Bowler, *Evolution: The History of an Idea* (Berkeley: University of California Press, 1989), wherein the central character of a narrative is not a person but a concept, as if that concept somehow has a life—an infancy, childhood, adolescence, and adulthood—beyond the minds that create it. The book has recently been released in a twenty-fifth anniversary edition (Berkeley: University of California Press, 2009).

10. Fleming challenges Fourier's priority here, noting, rightly, that his *Théorie analytique de la chaleur* (*Analytical Theory of Heat*) of 1822 focuses primarily on the sun, celestial radiation, and the heat of the interior of the Earth as the driving forces of terrestrial temperature, and only tangentially refers to the influence of the atmosphere. Fleming, "Joseph Fourier's Theory of Terrestrial Temperatures," in *Historical Perspectives* (ref. 8), 55–64. For detailed biographies of Fourier, see I. Grattan-Guinness, *Joseph Fourier, 1768–1830: A Survey of His Life and Work* (Cambridge, MA: MIT Press, 1972); John Herivel, *Joseph Fourier: The Man and the Physicist* (Oxford: Clarendon Press, 1975).

11. Until very recently, with the transcription of his correspondences by the National Science Foundation's John Tyndall Correspondence Project, Tyndall has remained somewhat understudied considering his prominence as a scientist in the late nineteenth century. Fleming provides the

told in as many as a few hundred pages and in as brief a space as a few sentences. Historians, journalists, and scientists themselves have primarily used this pre-history to validate modern ideas about global warming, and to undercut more contemporary charges of political motivation in climate science by demonstrating the remarkably long history of scientific work that supports it.

The second part of this story, a romantic history of twentieth-century climate science, flows cleanly out of this historical prelude. It is a romance of scientific discovery, intellectual persistence, institutional acumen, and political courage. Since the 1950s—building upon a scientific lineage that goes back to the early nineteenth century—a relatively small community of scientists and environmentalists transformed a scientific curiosity at the fringes of the Cold War research system into the centerpiece of both American and international environmentalism. Atmospheric scientists studying climate and climatic change built new institutions, established new disciplines, launched unprecedented cooperative international research initiatives, and ultimately created a new way of understanding the global atmosphere and humans' relationship to it. There is perhaps no work that articulates this scientific romance more clearly than Spencer Weart's seminal *The Discovery of Global Warming*.¹²

Weart's well-told story of scientific success on climate change unfolds alongside a third story, however, and that is a story of failure, a tragedy. Despite scientists' and environmentalists' remarkable efforts to study, popularize, and

best discussion of his climatic work in Fleming, "John Tyndall, Svante Arrhenius, and Early Research on Carbon Dioxide and Climate," in *Historical Perspectives* (ref. 8), 65–68; John Rodger Fleming, "Global Warming and Anthropogenic CO₂," in *The Callendar Effect: The Life and Times of Guy Stewart Callendar (1898–1964), the Scientist Who Established the Carbon Dioxide Theory of Climate Change* (Boston, MA: American Meteorological Society, 2007), 65–87; and Fleming, "Native Son," in *Greenhouse* (ref. 8), 105–15.

12. Spencer Weart, *The Discovery of Global Warming* (Cambridge, MA: Harvard University Press, 2003). The accompanying website, *The Discovery of Global Warming: A Hypertext History of How Scientists Came to (Partly) Understand What People Are Doing to Cause Climate Change* (<http://www.aip.org/history/climate/index.htm>), also provides a wealth of resources and discussions on interactions within the scientific community and among science and politics, the media, the environmental movement, the international community, and the public. Before *Merchants of Doubt*, Erik Conway tackled the history of atmospheric science from the perspective of a single but extremely important government agency in *Atmospheric Science at NASA: A History* (Baltimore, MD: Johns Hopkins Press, 2008). Paul Edwards picks up the complicated romance of systems science modeling—including climate modeling—first in his essay, "The World in a Machine," in *Systems, Experts, and Computers: The Systems Approach in Management and Engineering, World War II and After*, ed. Agatha and Thomas Hughes (Cambridge, MA: MIT Press, 2000), 221–53, and more recently in his *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge, MA: MIT Press, 2010).

advocate for action on global warming in the twentieth and twenty-first centuries, these groups have after more than fifty years almost categorically failed to prevent the type of environmental change they have warned against for so long.¹³ Fossil fuel energy continues to support an expanding global economy, and greenhouse gas emissions consequently continue to expand as well. Concentrated at about 315ppm in 1959, as of April 2012, global CO₂ sat at 394.45ppm. The rate of increase has risen from around 1ppm per year to closer to 2ppm per year.¹⁴ The problem itself is not getting better; it is getting worse.

So far, historians of global warming have tended to reconcile these two stories by separating scientific success from political failure, and here *Merchants of Doubt* is no exception. The separation is in part an artifact of chronology. Climate scientists found their greatest successes—individual, institutional, and political—between 1957 and 1988, and most of these successes occur before Oreskes and Conway take up their narrative on global warming. Since the mid-1980s, scientists' efforts to create political solutions to the problem of global warming have found strong opposition, and the tactics of that opposition have often undercut the authority of science itself. Whereas Weart lauds scientists for their discovery, investigation, and advocacy in the 1960s, 1970s, and 1980s, Oreskes and Conway counterpose Weart's work by exploring the tragic villainy of the scientists, corporations, and government officials who have stood in the way of action on global warming in the 1980s, 1990s, and 2000s.¹⁵

The narrative distinction between scientific success and political failure goes beyond simple chronology, however; it is also implicitly a matter of argument. Few serious scholars maintain the naïve assumption that science exists as an

13. James Gustave Speth takes the failure to produce action on global environmental problems as a jumping-off point for an insider's analysis of the global environmental politics in the last quarter of the twentieth century in *Red Sky at Morning: America and the Crisis of the Global Environment* (New Haven, CT: Yale University Press, 2004).

14. For information on current CO₂ concentrations, see the organization "CO₂ Now," <http://co2now.org/>; see also "Carbon Dioxide, Methane Rise Sharply in 2007," *NOAA*, 23 Apr 2008, http://www.noaa.gov/stories2008/20080423_methane.html (last accessed on 26 Apr 2012).

15. See also Naomi Oreskes, Erik Conway, and Matthew Shindell, "From Chicken Little to Dr. Pangloss: William Nierenberg, Global Warming, and the Social Deconstruction of Scientific Knowledge," *HSNS* 38, no. 1 (2008): 109–52; Mark Bowen, *Censoring Science: Inside the Political Attack on Dr. James Hansen and the Truth of Global Warming* (New York: Plume, 2008). Perhaps the most engaging history of the politics of global warming in the 1990s is Jeremy Leggett, *The Carbon War: Global Warming and the End of the Oil Era* (New York: Routledge, 2001). Much more nuanced is Michael Hulme, *Why We Disagree about Climate Change: Understanding Controversy, Inaction, and Opportunity* (Cambridge: Cambridge University Press, 2009).

independent entity detached from politics—in fact, historians and sociologists of science strive to understand the complex relationships between these two human endeavors. Still, Weart, Oreskes and Conway, and others lament what they frame as the destructive politicization of climate science of the past three decades.¹⁶ Separating the story of scientists’ successes in studying global warming from their failed efforts to enact meaningful political change reinforces this lament. The romance and the tragedy emerge from the same epic stem, but the two plotments carry different implicit arguments about culpability, and require different story-types—a progressive odyssey of discovery on one hand, a triumph of political corruption and scientific villainy on the other. Taken together as two related but distinct narratives, these stories allow both historians and their living protagonists to lay the blame for the collective failure to take action on global warming solely at the feet of the opponents of good scientists.

That is not to say that contrarian scientists and their industry allies don’t deserve the lion’s share of the blame; they do. Oreskes and Conway convincingly chronicle the ways in which skeptical and contrarian scientists, supported by conservative politicians, institutions committed to free-market principles, and officials from self-interested, energy-dependent governments, have in the last twenty-five years consistently and actively stood in the way of real progress on global warming by invidiously misrepresenting scientific evidence and capitalizing on the public’s misunderstanding of uncertainty. Oreskes and Conway have worked hard to unmask the villains that complement Weart’s romantic scientific heroes. *Merchants of Doubt* is a form of comeuppance, and it is well deserved.

The tragic side of this dual plotment carries hidden dangers, however. Oreskes and Conway argue that a small cadre of conservative scientists have repeatedly used a strategy of scientific deceit centered upon uncertainty—the “tobacco strategy”—to manufacture the public perception of scientific debate where true scientific disagreement persists in only the most limited way (6). On global warming, they contend, there is no real scientific debate. And yet, as Mike Hulme discusses at length in *Why We Disagree About Climate Change*,

16. See, for example, Ross Gelbspan, *Boiling Point: How Politicians, Big Oil and Coal, Journalists, and Activists Have Fueled a Climate Crisis—And What We Can Do to Avert Disaster* (New York: Basic Books, 2004), and Gelbspan, *The Heat is On: The Climate Crisis, the Cover-up, the Prescription* (New York: Basic Books, 1998). For an insider’s account of how scientists watched their work take on a political life of its own, see Stephen H. Schneider, *Science as a Contact Sport: Inside the Battle to Save Earth’s Climate* (Washington, DC: National Geographic, 2009).

in the broader world there is in fact still heated debate about the issue, and lots of it.¹⁷ Hulme argues that the debate is at once cultural, political, and economic, and it is rooted deeply in the way people understand both the technical science of climate and the role of science in comprehending, mitigating, and adjudicating disputes about climatic change. *Merchants of Doubt*, with its polemical tone, its demonization of characters such as Fred Seitz, S. Fred Singer, and William Nierenberg, and its very specific convictions about the ways in which science works and the role it ought to assume in making policy on global warming, plays into the literary tropes of this debate in ways that Oreskes and Conway may not have intended. Their tell-all style subtitle alone speaks to a class of literature fixated upon establishing an authoritative claim to “the real story” on global warming—a class that includes not only works such as Stephen Schneider’s *Science as a Contact Sport* and Ross Gelbspan’s, *Boiling Point: How Politicians, Big Oil and Coal, Journalists, and Activists Have Fueled a Climate Crisis—and What We Can Do to Avert Disaster*, but also books like Christopher Horner’s *Red Hot Lies: How Global Warming Alarmists Use Threats, Fraud, and Deception to Keep You Misinformed* and Bjørn Lomborg’s *The Skeptical Environmentalist*, to which Oreskes and Conway openly object.¹⁸

The danger here is not merely the political liability of finding oneself on the same Amazon.com page as Bjørn Lomborg; there is also an intellectual trap. The polemical tragedy about the corruption of science in *Merchants of Doubt* plays out against the flat background of a largely static, ahistorical ideal of the scientific process. In describing the writing of National Academy of Sciences reports, the execution of the Intergovernmental Panel on Climate Change (IPCC) process, and the place of peer review in scientific advancement, Oreskes and Conway offer a fixed vision of the ways in which science “works”—that is, the processes that allow scientists to mediate disagreements and test hypotheses in the creation of reliable knowledge (see, for example, pp. 77, 98, and 268–69). Their protagonists—villains, all—undermine these processes by variously manipulating them internally, challenging them publicly, and circumventing them by publishing their criticisms in the popular press.

These processes are not at all fixed, however—they are flexible and contextually contingent, even in cases where the Fred Singers and William Nierenbergs

17. Hulme, *Why We Disagree* (ref. 15).

18. Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001); Christopher Horner, *Red Hot Lies: How Global Warming Alarmists Use Threats, Fraud, and Deception to Keep You Misinformed* (Washington, DC: Regnery Press, 2008).

of the world *aren't* out to sabotage the results. Inventive and politically active scientists have historically pushed the boundaries of the community-defined standards of “good science” on a regular basis, and those standards have grown and changed in response to these challenges.¹⁹ When Oreskes and Conway claim that the Office of Science and Technology Policy “interfere[d] with the scientific process” when they altered recommendations on acid rain in 1983, they also imply the existence of an operative scientific ideal separate from the realm of politics or culture (98). The invocation serves their narrative well, but is hardly true to life. In reality, though the National Academy of Sciences has devised a system of panels and committees intended to insulate scientific assessment from political pressure, the framework for Academy studies is broad enough to account for the vagaries of interdisciplinary work and the specific challenges of what are often nontraditional, politically relevant scientific questions. The IPCC, meanwhile, has been even more of a dynamic affair; in 1990 the institution represented a historically unprecedented hybrid between science and politics designed to give governments and other interested parties a place at the table in the construction of scientific consensus—that is, designed to collapse the distinction between pure science and politics.²⁰ In *Merchants of Doubt*, the “good science” conducted within these institutions serves as a narrative foil for the invidious “tobacco strategy,” but in a fuller account, the foil is not so simple.²¹

19. Silvio Funtowicz and Jerome Ravetz have noted that this is particularly true for what they call “post-normal” science, or the application of science to public issues where “facts are uncertain, values in dispute, stakes high and decisions urgent.” S. O. Funtowicz and J. R. Ravetz, “Science for a Post-Normal Age,” *Futures* 25 (2003): 739–55. Climate science has become what Hulme calls a “classic case study” of this. Hulme, *Why We Disagree* (ref. 15), 78. See also S. O. Funtowicz and J. R. Ravetz, “Three Types of Risk Assessment and the Emergence of Post-Normal Science,” in *Social Theories of Risk*, ed. S. Krimsky and D. Golden (Westport, CT: Greenwood, 1993), 251–73.

20. Shardul Agrawala, “Context and Early Origins of the Intergovernmental Panel on Climate Change,” *Climatic Change* 39 (1998): 605–20; Alan D. Hecht and Dennis Tirpak, “Framework Agreement on Climate Change: A Scientific and Policy History,” *Climatic Change* 29 (1995): 371–402. For an excellent discussion of the flexible interactions between scientific expertise and environmental policy, including a discussion of the IPCC, see Stephen Bocking, *Nature's Experts: Science, Politics, and the Environment* (Brunswick, NJ: Rutgers University Press, 2006).

21. The dynamic and contextually dependent nature of the scientific processes in question makes Nierenberg's manipulation of the 1983 National Academy of Sciences report or N. Douglas Pewitt's meddling in the IPCC no less nefarious. In fact, the contrast between contrarian scientists' cynical approach to the new and changing institutions of consensus-making and those of these institutions' primary creators only reinforces the dichotomy between what Roger Pielke, Jr. has called “issue advocates”—in this case the Marshall Institute and its affiliates (not, to be clear, who

So, too, does the simplification and separation of the scientific and political processes involved in the history of global warming flatten that story's "good guys," stripping them of their political agency. In Weart's romance they are scientific heroes; in Oreskes and Conway's tragedy they become dupes to political chicanery. But they are in fact neither apolitical scientists nor unwitting dupes; they are complicated characters in a complex story. Bert Bolin, Stephen Schneider, James Hansen, and Ben Santer (among others) not only built models and chaired committees that contrarians went out of their way to undercut, they also fought hard to create institutions of consensus-making, to publicize cutting-edge science, and to insulate themselves from politically motivated attacks. Their efforts have, so far, largely failed to overcome the political obstacles standing in the way of effective climate policy. And yet, beyond Gus Speth's remarkably honest and self-aware *Red Sky at Morning*—a book whose best chapter, "Anatomy of a Failure," reads for all the world like a modern farce—few scholars have investigated this failure with an eye toward the liabilities inherent to the structures of science and advocacy developed in the second half of the twentieth century by scientists and environmentalists themselves.²² To return to our messy Shakespearean analogy, with the focus squarely on Macbeth and Lady Macbeth, few storytellers have asked us to think about what these Duncans or Banquos might have done differently.

Investigating the narrative structures of global warming history raises discomfiting questions—questions that neither reinforce an easily recognizable narrative of deceit and manipulation nor fit cleanly into the "tobacco strategy" framework that carries that narrative throughout *Merchants of Doubt*. They are also questions that do not fit into a short, popular book that is only partially about global warming. It may thus be unfair to overstate the narrative shortcomings of a risky, pioneering book with a clearly defined political purpose and a broad public audience. It is, to be clear, an excellent and important book.

Still, as tragedy is supposed to, *Macbeth* gives me pause. The structures of narrative—plot, story-type, character development, and others—provide us with a framework with which to make sense and meaning out of the chronicle

Pielke originally had in mind)—and the "honest brokers" of the IPCC who sought to create a valid consensus to inform policy. Hulme, *Why We Disagree* (ref. 15), 99. See Roger Pielke, Jr., *The Honest Broker: Making Sense of Science in Policy and Politics* (Cambridge: Cambridge University Press, 2007).

22. Speth, *Red Sky at Morning* (ref. 13). Farce can be hard to come by in historical writing, but as Richard White's new *Railroaded: The Transcontinentals and the Making of Modern America* (New York: W. W. Norton, 2011) demonstrates, when done right it can be devastatingly effective.

of human experience. But making a story culturally familiar necessitates a certain simplification, and in shoe-horning specific stories into established emplotments and story-types, storytellers make implicit arguments about the contents of the story itself. *Macbeth*, for example, is a self-conscious retelling of Scottish history that leaves out Banquo's complicity in Duncan's death—a wise narrative decision in a play put on by the newly named “King's Men” that paid homage to a newly crowned Scottish king with familial ties to the same historical Banquo.²³ Oreskes and Conway have no modern-day king in mind, of course, and there is certainly no need for an eco-critical *Bedford Companion* to *Merchants of Doubt*.²⁴ But as we move forward in addressing the issues that this book raises, both about the history of global warming and about the history of science more broadly, perhaps we ought to begin to pay closer attention to the choices we make in telling stories about science—to what those choices enable us to reveal, and to what they allow us to overlook.

23. Greenblatt et al., *Norton Shakespeare* (ref. 1), 2562.

24. Russ McDonald, *The Bedford Companion to Shakespeare: An Introduction with Documents* (New York: Bedford/St. Martin's, 2001).