

Jan Golinski. *British Weather and the Climate of Enlightenment.* Chicago: University of Chicago Press, 2011. 272 pp. \$30.00, paper, ISBN 978-0-226-30203-4.



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The 2011 paperback edition of Jan Golinski's *British Weather and the Climate of Enlightenment* (2007) cemented the place of his body of work as central to the literature of the field in the history of meteorology and climate as well as transatlantic environmental history. Along with Vladimir Janković's *Reading the Skies* (2001), this book and the series of book and journal articles written in parallel to this project represent the recent, much-needed reevaluation of meteorology and the cultural meanings of weather and climate in the early modern Anglophone world.

The fundamental problem with the history of early modern meteorology is the perceived failure of Restoration and eighteenth-century natural philosophers, despite the best of intentions and thousands of hours of thankless empirical work, to come up with anything resembling what we now expect of a successful scientific program or body of theory. Regarding applied meteorology, forecasts were no better than those found in almanacs or *The Shepherd of Banbury's Rules* (1827). Why was early modern meteorology a fail-

ure? The received historiography of early modern meteorology consisted of whiggish narratives of the inventions of instruments; heroic, short-lived attempts at observational network building (central to modern meteorology); and celebrations of the lingering deaths of astrometeorology and scholastic Aristotelian meteorology. However, these same narratives depict meteorology haltingly chugging along without the benefit of maps, telegraphs, thermodynamics, and institutional support, all products of the nineteenth century, and therefore not being a great science (yet), but rather a brilliant archipelago of anticipations. This main line of historiography of Baconian meteorological practice had appeared moribund, and did not bear close examination. Both Golinski and Janković responded to this seeming dead end by bracketing early modern meteorology, instead examining its context, cultural and intellectual, focusing on popular attitudes toward weather and climate, the survival of the Aristotelian meteorology of earthly exhalations as it transformed into chemical and electrical theories, the adoption of

instruments in the minds of the public and the houses of the powerful, and the political interpretations of weather and climate in Great Britain and the colonies. For Golinski, in particular, one of the overarching themes is the relationship of the English to their weather and climate, and how this was formative of their own assessment of their individual and national character(s), and how this evolved as modernism itself unfolded.

The other central theme is Golinski's exploration of the relationships between natural science and its intellectual context. This context is structured around the "long" Enlightenment. Throughout Golinski's career, he has avoided reliance on the construct known as the "Scientific Revolution," which at the time he was formulating his first book, *Science as Public Culture: Chemistry and Enlightenment in Britain, 1760-1820* (1992), had fallen very out of favor, and was just starting to be recuperated as a more multivalent and diffuse historical feature, as in David C. Lindberg and Robert S. Westman's *Reappraisals of the Scientific Revolution* (1990). Two decades later, Golinski, after writing a textbook for constructivist science studies (*Making Natural Knowledge: Constructivism and the History of Science*, 1998) and releasing his first printing of *British Weather* (2007), in a professional environment where yet another reappraisal of the Scientific Revolution(s) challenged the remainder of the old guard on the one hand, and Science and Technology Studies microhistories on the other, Golinski has continued to examine the Enlightenment while pondering how long we should even be talking about something called "singular science," which itself is an outmoded construct in a post-Latourian world (to oversimplify his argument).[1] Meteorology, being the ugly stepchild of the Scientific Revolution, presents an interesting field as a contrast to the "successes" of the period, such as physics and astronomy. Ian Hacking would explain away meteorology's low status in the early modern period and in modern historiography as having to do with its "mixed" nature. Craig Martin, in his re-

cent *Renaissance Meteorology* (2011), proposes that meteorology's image problem is an artifact of the Scientific Revolution being constructed by Alexandre Koyré, and his generation, who favored physics and astronomy, these being high sciences with rigorous mathematics at their hearts. Meteorological activities, be they the refinements of scholastic meteorology by several Scientific Revolution figures (notably Descartes), or the new experimental (instrumental) philosophy modeled after Baconianism, did not fit the same characteristics of the high sciences, and were thus bracketed. (This gives some historians of meteorology great consternation because "everyone" was doing "meteorology.") It is notable that Golinski's original interest was in chemistry, his theoretical approach developing as the revisionism of the 1970s-90s reassessed the "Chemical Revolution." The "Chemical Revolution" as an historiographic concept is nearly as old as the Scientific Revolution, and is somewhat a response to an exclusion similar to that suffered by meteorology as well as by the nonphysical sciences. In answer to Koyré, there was a move towards inclusiveness. Rather than joining that movement, Golinski sought, and continues to seek, to explain the techno-scientific activity and cultural attitudes embedded in the intellectual froth of the long eighteenth century without recourse to revolution.[2] Clearly, whatever terminological side one takes concerning this "birth of modernism" (also a troubled construct), something was going on. For Golinski, that aforementioned froth is best captured by the term "enlightenment."

Golinski's introduction lays out his general purpose in the work, to show eighteenth-century British responses to weather as symptomatic of enlightenment. At this point he has to define and defend his understanding of *enlightenment*, which is a long one, coterminous with the "long eighteenth century," and which is not limited to traditional Enlightenment thinkers but is rather a form of deep ideology that is intertwined with economic, intellectual, and cultural modernism.

As stated above, this enlightenment might be seen as a hermeneutic replacement or counterstrategy to the historiography of the Scientific Revolution, or, more likely, as something that subsumes it. Golinski defends his multivalent long enlightenment through the example of its local British face, in terms of Enlightenment Britain understanding its national character as something embedded in its natural environment (and as such, foreshadowing Romantic reaction). Eighteenth-century meteorology (broadly construed) is symptomatic, then, of modernism, even as it failed.

Most of Golinski's chapters are refinements of a series of articles, book chapters, and seminar papers that started in the late 1990s. These articles stood on their own, and should be seen as forming a body of work along with the present volume, as it draws the originally heterogeneous threads together into a difficult (and not necessarily unified) but cogent argument. The book's first chapter returns to an anonymous diary started by an educated country gentleman, featuring intellectual and emotional responses to nature in the form of ordinary weather and the extraordinary destructive storm of 1703. The diary/diarist is a sort of microcosm of the rest of the book, and of eighteenth-century Britain. Interest in divine providence manifest in nature; embracing the new empiricism while still entertaining the exhalation theories of the ancients, or local weather lore; understanding weather instruments as just that, but also as analogous to the human body in the elements; the emotional impact of weather and climate on the individual and on the nation—all are embodied in the diary, providing a locus or frame for the rather varied topics of the subsequent chapters.

Chapters 2 and 3 look back to "Time, Talk, and the Weather in Eighteenth-Century Britain," the arguments of which he expands in the book, touching upon places where public weather, popular weather, and learned weather, the development of the modern idea of climate, and older

ideas of prognostication intersected in various ways, concerning individual, local, and national character.[3] In chapter 2 we see how the Great Storm was picked up by texts about divine providence. In 1703, the question was not of providence, which was certain, but whether the divine acted through general laws and climatic regularities, or the older notion of supernatural punishment. Over the course of the eighteenth century, a notion of British climate emerged in which its great moderation (in general) contributed to the superiority of the British civilization, whereas calamities and spots of variability and nastiness sharpened the intellect of the Englishman. At the same time, the conversations about weather gravitated to the folkloric, an older and non-urban notion of a providential world in which variability was softened by the power of prognosis. In the polite imagination, the forces of enlightenment faced a powerful opponent in local and ancient lore. On the other hand, figures like Luke Howard would come to incorporate premodern lore into their investigations.

In chapter 3, the exploration of the local relationship with the weather brings us to the ubiquitous weather diarists, from the personal diary described in chapter 1, to the correspondents of the Royal Society of London from the main line history of meteorology, to the local clergymen whose chorographic natural histories had been discussed at length in Janković's book. A modern construction of time and weather come together in the form of the calendar, which informs the discipline and method of the diary, along with religious discipline and Baconian ideals noted by others. This intersects with temporal folklore and georgic understanding of the seasons. The relation of weather and the new civic time, also elaborated in the 2003 essay, manifests a new temporal rhythm of day-to-day life. This also intertwines with the variable career of astrometeorology, at the center of the almanac business, but alternately explored and condemned by the virtuosi and the clerics. Although astrology was already dying

in the 1690s, its lingering presence--to the point of showing up in the works of Howard in the nineteenth century--and its association with forecasting even cast a shadow on other meteorological work. The continued popular interest in forecasting and in these alternate traditions of prognostication showed "the limits of enlightenment" (p. 107) as they continued both contending and comingling, equally sharing in the conventions of the new public time of modernity.

Golinski's fourth chapter, "Barometers of Enlightenment," returns to an essay he wrote for a collection he co-edited with William Clark and Simon Schaeffer, concerning that great oddity of eighteenth-century material culture in which scientific instruments invade wealthy homes and the public sphere, taking on lives of their own.[4] He restates his definition of scientific instruments as experiments that have been black-boxed, and are then *socially* accepted *as* instruments, an idea that guided his work on thermometry (2000), and has fuller explication in *The Making of Natural Knowledge* (1998). After reviewing the early scientific uses and debates surrounding the barometer, Golinski reassesses the historiography of the instrument trade and the rise of popular "instrumental furniture," the often gendered household role that they played, as prognostic "oraculous glasses" (p. 127ff) and/or as emblems of social status. The popular instrument, with its prognostic rubric, the words on the dial from "LONG FAIR" to "TEMPEST," also has a metaphoric aspect, particularly as an analog of the human body (more of this is discussed in chapter 5) and a microcosm of the earth. That, and its superstitious reading, consciously combined by educated eighteenth-century informants with astrometeorology and rustic weather signs, undercut enlightened science, leaving the barometer an ambiguous or contested object.

Having segued from the scale of national weather to that of local weather, then to household weather in the previous chapters, Golinski in

chapter 5 concentrates on the perceived impact of weather and climate on the English body (also continuing the arguments from "Barometers of Change"). A revival of Hippocratic medicine in the early eighteenth century drew attention to the effects of the environment on the human body even as it revived environmental determinism. This, in conjunction with the study of the atmosphere, mostly by chemical and instrumental means, culminated in pneumatic medicine. In an increasingly urban society, air quality becomes a political topic as well as medical. Golinski examines how politicized medical meteorology became a significant issue for reformers of both the Right and the Left. Meanwhile, a popular understanding of the sensitivity of the human body, a modernized separation of indoors and outdoors, and the rise of the culture of sensibility brought about interest in these medical ideas and the idea of healthful or natural air as public and individual goods and climatic gifts of divine providence. The reception (and success) of pneumatic theory and therapy was not unproblematic, occasionally inspiring satire, and the whole political and scientific complex around climate (and its possible ruination) remain unresolved at the end of the period.

The sixth chapter takes us from the neo-Hippocratic climatic determinism of the Old World to the colonial experience Golinski also explored in detail in James Delbourgo and Nicholas Dew's *Science and Empire in the Atlantic World* (2007). In the eighteenth century, ancient notions of climatic zones as determinate of national character were under revival even as geographic preconceptions of what was to be found in the Americas were frequently disappointed. This politically wrong-headed and racially tinged determinism was actually a central thread of Enlightenment thought. Golinski's informants on the European side of the transatlantic adventure were concerned with the effects of colonial climates on the bodies of Englishmen, engendering a colonial medical meteorology which adds global nuances to the relations of the British with the weather. Understanding

this was central to the colonial project. And as the settlers became more “American,” controversies around climatic ideas pitted Old and New World thinkers against each other, leaving the enlightened understanding of “climate” also contested.

It is in Golinski’s conclusion that he takes on the main line of the history of the new meteorology, summarizing various points of failure, often agreeing with Irish meteorologist Richard Kirwan’s 1780s critique of the field: that there was a lack of precision amongst the amateurs who made up the field; the failure to sustain time series of data because of the isolation and mortality of these same dilettantes; there was no spatial sense, no developed theory beyond knowing one’s local climate—in other words, the work was still a collection of histories of the weather, ultimately just natural histories. On the other hand, chemical, electrical and other bodies of atmospheric theory failed to connect with these histories, or with the elusive goal of successful forecasting. Once again, they lacked the tools that would be developed in the nineteenth century, and, he explains, “the field fell short of its greatest ambitions, because they seem symptomatic of enlightened science encountering the limits of its capabilities” (p. 206). And the specter of superstition still gripped the public imagination, despite the best efforts of enlightened thought. Golinski also dovetails this with the work of Katharine Anderson on the equally rocky career of nineteenth-century meteorology, positioning his work in a succession leading ultimately to our current controversies around a still developing dialectic about climate.[5]

This book can be considered a case study for Golinski’s reappraisal of what I would call “deep enlightenment,” a movement so sub-structural as to be almost epistemic, perhaps coterminous with the entire semantic field of the eighteenth century. That it does not fade into a mere periodization rests on the conscious battle of the actors with a perceived darkness, as it were, and the fact that

many very fundamental things remain unresolved at the end of the century. The Enlightenment gives way to enlightenment. No longer is the big “E” a synonym for, or a rhetorical counter-strategy to, the Scientific Revolution. Rather it is a problematic movement, and meteorology writ large is emblematic of these problems. As the modern emerges in the nineteenth century, both enlightenment and its discontents endeavor to move beyond this history of perceived failures. Even as a strategically whiggish genealogist of meteorology, I find his collection of analyses of this unresolved conflict of the modern with its past not only engaging, but extraordinarily useful for understanding the science in context, as well as achieving an almost ethnographic answer to the perennial question, “Why do the British always talk about the weather?” Golinski answers this in his 2003 essay, which echoes clearly in the conclusion of *British Weather*: “In relation to the weather, we have never been completely enlightened” (p. 32).

Notes

- [1]. Jan Golinski, “Is it Time to Forget Science? Reflections on Singular Science and Its History,” *Osiris* 27 (2012): 19-36.
- [2]. Jan Golinski, “Science in the Enlightenment, Revisited,” *History of Science* 49 (2011): 217-231.
- [3]. Jan Golinski, “Time, Talk, and the Weather in Eighteenth-Century Britain,” in *Weather, Climate, Culture*, ed. Sarah Strauss and Benjamin S. Orlove (Oxford: Berg Publishers, 2003), 17-38.
- [4]. Jan Golinski, “Barometers of Change: Meteorological Instruments as Machines of Enlightenment,” in *The Sciences in Enlightened Europe*, ed. William Clark, Jan Golinski, and Simon Schaffer (Chicago: University of Chicago Press, 1999), 69-93.
- [5]. Katharine Anderson, *Predicting the Weather: Victorians and the Science of Meteorology* (Chicago: University of Chicago Press, 2005).

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