

[Review of the book *Art and Science in America: Issues of Representation*]

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Farber, Paul Lawrence

*Reviewing Author

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locates the origins of critical history, with Leopold Ranke and the nineteenth-century school of earnest archive-hounds he founded. But Grafton quickly demolishes Ranke's claims to precedence in the matter of the footnote (and, for that matter, archival research), while at the same time portraying Ranke in vivid, sympathetic colors. Far from being the bloodless positivist of recent caricature, Ranke worried that footnotes would cramp his literary style and distract readers from the headlong pace of the historical narrative. No historian can read Ranke's description of the delights of the Roman archives (one of Grafton's many splendidly chosen quotations) without sighing in deepest collegial empathy.

But if Ranke is not the hero of the footnote saga, then who is? Grafton leads us steadily backward: first to Edward Gibbon's copious, sardonic, and sometimes ribald footnotes to the *Decline and Fall of the Roman Empire*, then to Jacques-Auguste de Thou's brave and fair-minded attempt to document the rights and wrongs of the French wars of religion, then to the ecclesiastical historians and antiquaries such as Athanasius Kircher, and finally to Pierre Bayle's *Dictionnaire historique et critique* (1696), which Bayle himself had originally conceived as a dictionary of other historians' errors until wiser heads (including Leibniz) persuaded him to undertake something more positive. It is one of the sly charms of this book that Grafton tells his story not forward, in the manner of almost all historical narrative, but rather backward, from nineteenth century to seventeenth century, in the manner of actual historical research, in which we are always tugged further and further back into the past in search of origins.

Although part of Grafton's point is to show that the history of the footnote is a "palimpsest," layering "research techniques framed in the Renaissance, critical rules first stated during the Scientific Revolution, the irony of Gibbon, the empathy of Ranke, and the savagery of [Heinrich] Leo" (p. 229), he does single out Bayle's thick substratum of notes to the *Dictionnaire* as a turning point. Bayle insisted on full and accurate citations, checked sources against one another, weighed arguments on all sides of scholarly controversies, carefully distinguished among multiple editions of the same work, and in short established standards of historical proof, despite his latter-day reputation as a pyrrhonist. His medium of proof was the footnote, and sometimes even footnotes to footnotes (footnotettes, perhaps, on the analogy of epicyclettes?). Grafton suggests that Bayle and the historians who followed in his footnote-steps

were responding to the Cartesian contempt for history and other forms of erudition expressed in the *Discours de la méthode* (1637) with a page borrowed from Descartes's own book: enlist extreme skepticism in the service of granite-firm proof. More generally, Bayle's fortress of footnotes was part of the seventeenth-century preoccupation with new foundations and standards of evidence and proof in a wide range of sciences.

Grafton believes that evidence and eloquence in history need not be immiscible, and his book epitomizes this lesson: exemplary footnotes combined with a lively, colorful narrative. He makes a very serious point with humor and verve, namely, that there is a vast historical territory between the nihilism of those who meld fact and fiction and the dour positivism of those who want only facts—and that the view from the middle ground is delightful.

LORRAINE DASTON

Amy R. W. Meyers (Editor). *Art and Science in America: Issues of Representation*. viii + 208 pp., frontis., illus. San Marino, Calif.: Huntington Library, 1998. \$15 (paper).

Natural history as a scientific discipline is making a comeback after having been in eclipse for a good part of this century. Concern over the decline of biodiversity and the degradation of the environment is responsible for much of the renewed interest, but so is a nostalgia for a time when life scientists considered more than animal parts (usually in solution). Contemporary naturalists, such as E. O. Wilson, proudly affirm their affiliation with a tradition that has its modern origins in the monumental works of Linnaeus and Buffon, and so it should be no surprise that scholars are turning their gaze to the dusty annals of natural history and discovering its rich legacy. Symposia are good barometers of intellectual activity, and "Art and Science in America: Issues of Representation," held at the Huntington Library in March 1994 and now incarnated in a book of the same title (edited by the curator of American art at the Huntington Library, Art Collections, and Botanical Gardens), reflects the revival of interest in the history of natural history as well as one facet of its diverse range of subjects.

The organizers of the symposium wanted to highlight the relationship of the Huntington's impressive collection to the history of science by focusing on ways in which two-dimensional representations of the natural world contributed to

the development of science. To give the symposium coherence the participants concentrated on the first decades of the American republic. The result is an interesting volume of six essays that explore the ways in which representations of nature served broader purposes than just recording empirical information.

In his essay on Charles Willson Peale, David Brigham demonstrates how Peale presented nature as a harmonious and hierarchical model for human emulation. Therese O'Malley examines early plans for botanic gardens and discusses how they reflect shifting cultural concerns. Laura Rigal uses Alexander Wilson's *American Ornithology* as an example of Jeffersonian science that reveals its underlying American federalism. Linda Dugan Partridge's essay stays closer to texts and debunks the myth of Audubon as a self-taught woodsman who merely capitalized on his native talent in painting nature. By careful scholarship Partridge cleverly reconstructs the debt Audubon owed to other illustrators and naturalists. Kenneth Haltman, describing how Samuel Seymour's paintings of the Rocky Mountains reflect both a concern for realistic depiction and a desire to capture the geologist's conceptualization of the landscape, shows that painters employed in scientific expeditions had to reconcile opposing objectives. Finally, Rebecca Bedell, in an essay on Thomas Cole, considers the place of geology in the broader cultural vision of the leading American landscape painter of the second quarter of the nineteenth century.

It is a shame that this collection does not include the commentaries delivered at the symposium, for they might have given the volume greater coherence. Nonetheless, by covering issues from museum display to the significance of figures in a landscape painting, *Art and Science in America* effectively illustrates the historical value of examining issues stemming from the representation of nature.

PAUL LAWRENCE FARBER

Hervé Barreau. *Le temps.* (Que sais-je? 3,180.) 127 pp., bibl. Paris: Presses Universitaires de France, 1996. (Paper.)

To survey the philosophy of time in 120 brief pages of a book in the popular series "Que sais-je?" (What do I know?) is a real challenge. The French publisher assigned this task to Hervé Barreau, philosopher, historian of science, and moralist.

Barreau's work is divided into two parts ("Time in Everyday Life" and "Time in Scien-

tific Knowledge") and six chapters. The first three chapters are devoted successively to time of action, time of communication, and time for the representation of the world. This primacy given to the psychological and social aspects of time is a sign of the recent trend refocusing the philosophy of time on its human significance.

But the scientific realm is not neglected. Barreau discusses the measurements and topology of time, providing as well a short account of the status of time in general relativity and quantum mechanics. A long familiarity with science has taught Barreau that, in physics, the geometrical properties of time are separated, if not divorced, from its orientation from past to future. Barreau notes that whereas determinism seems rather natural in a universe completely laid out in space-time, without past or future, probability, as it has been introduced in quantum mechanics, calls for a time-oriented world.

The last chapter is devoted to the science of the arrow ("la flèche") of time, in the face of the reversibility of the fundamental laws of physics. Barreau briefly summarizes works by Ludwig Boltzmann, Henri Poincaré, and their followers, but he is more interested in the modern developments in cosmology, which have opened up new approaches to interpreting the arrow of time as related to the expansion of the universe: "Whatever the scenario, still largely speculative, that is offered to explain the birth of our universe, we must recognize that [the universe] is there, within reach of our telescopes, and that it manifests a tendency to nonequilibrium and complexity, although it could have been otherwise" (p. 116).

But the most personal and original parts of Barreau's examination of time are his comments on the moral aspects of time, his discussion of the moral value of "le temps vécu"—that is, the lived duration—in which his ideas often coincide with those of his former master Paul Ricoeur. In Chapter 1 Barreau explores the relationship between time and the feeling of aging. He notes with a touch of melancholy that the psychological feeling of aging seems to be related to the realization that we have diminishing capabilities to undertake new tasks and that our passions are restrained by the obligations created by our past achievements—a remark that sheds new light on the relationship between time and liberty, does it not? But most important is Barreau's conclusion. Here Barreau reviews again his principles as philosopher and moralist, designating, together with respect for life, respect for the lived duration of our human brothers and