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Stefano Miniati. *Nicholas Steno's Challenge for Truth*.

Nicholas Steno's Challenge for Truth by Stefano Miniati

Review by: By John Henry

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seau's early vocal critique of science gives way to an escapist attempt to return to nature; on the contrary, he argues, the late botanically infused life writing finally succeeds in bringing together "primitive man and modern man" (p. 46).

Though well grounded in Goethe's massive scientific output, the argument is weaker in this case, partly because the scientific content remains unspecified. Goethe's central principles of "polarity" and "intensification" seem applicable to life writing at times only because they are such broad categories. Both Goethe chapters also lack the kind of concrete contextualization offered by the Rousseau chapters, which situate Rousseau's arguments about botanical taxonomy (for example) in relation to Linnaeus and other contemporary botanists (pp. 30–31, 52–54). The transition from Rousseau to Goethe, though all too brief (pp. 60–61), provides one of Kuhn's strongest treatments of Goethe because of its intertextual approach to the organicism espoused by both authors and its use in life writing. The emphasis on organicism is less surprising here, and in noticing the importance of the "attached observer" in Goethe's science (p. 84) Kuhn is rehearsing an argument familiar from ecocriticism. The Goethe–Thoreau connection, too, is familiar ground, and the "holistic" idea of nature that joins life writing and nature writing has often been put forward as a precursor of ecology. Kuhn gives a very thorough account of debates in literary scholarship concerning the two writers and specific works, but he does not engage with histories of science or conceptual studies that might frame his arguments about the authors. They stand out in sharp relief against a hazy background.

Kuhn's broad-ranging introduction helps to correct this imbalance and comes closest to articulating the necessary connection between science and self-expression that underlies the argument of the book. Drawing persuasively on Kant's "Copernican," inward reorientation of epistemology, Kuhn argues here that in the Romantic age the "subjectivity of the naturalist" becomes the "center" of natural knowledge (p. 14). In a brief but beautifully detailed treatment of Alexander von Humboldt, Kuhn points out that Romantic natural history typically carried the "meticulously empirical" side by side with "self-expression" (p. 16) or involuntary reflection on "the affective dimension of the encounter with nature" (p. 13). This introduction effectively pursues the work of synthesis and contextualization that is lacking in some of the chapters. Kuhn situates Romanticism and modern science themselves as forms of "disciplinary imperialism" that finally escalate into "open warfare" in the mid-

twentieth century (pp. 19–20). This is a reflective account of a vexed issue, and a balanced one, though Kuhn ultimately sides with the "diplomats" such as Stephen Jay Gould and Isabelle Stengers against "epistemological smugness" (p. 20). In its best moments his book contributes meaningfully to this diplomatic work of negotiating the "difficult peace" between art and science.

NOAH HERINGMAN

Stefano Miniati. *Nicholas Steno's Challenge for Truth.* 332 pp., illus., bibl., index. Milan: Franco Angeli, 2009. €30 (paper).

It is important at the outset of this review to say that interested readers should not be deterred by the rather poor English of Stefano Miniati's text. Although somewhat short of fluency, it is generally easy to understand what the author intends (especially after the introduction [pp. 17–39], which seems even less fluent than the rest: perhaps it was written last, when the author had no time to run it past other readers?). Certainly, the well-researched and detailed content of what is the first book-length study of the relations between science and religion in the thought of the Danish anatomist and speculative geologist Nicholas Steno (1638–1686) will more than compensate for the minor inconveniences presented by its prose. Those interested in Steno will read it, of course, but the book is to be recommended to all those interested in the relations between science and religion. As a Lutheran natural philosopher, who collaborated with Jan Swammerdam before becoming an active member of the Accademia del Cimento, and who subsequently converted to Catholicism before abandoning his research into the natural world as he rose to a bishopric, Steno has much to tell us. Miniati's study of his life and work superbly guides us through the complexities, showing us how to see Steno in his context and how to understand the development of his thought and of his career.

Although not a biography, *Nicholas Steno's Challenge for Truth* is arranged chronologically; but each of its chapters focuses on major issues relating to Steno's work in natural philosophy or to his changing religious beliefs. Inevitably, therefore, there is some repetition—Steno's attitude to Cartesianism, for example, is discussed as part of the assessment of his early work in Copenhagen (Ch. 1) and again during the consideration of his "French Period," especially when he encounters the "Deformer" of Cartesianism, Spinoza (Ch. 5). Generally speaking, the focus on different themes or issues makes perfect sense in the context of Steno's development, and

any repetition is useful in reinforcing the reader's understanding. As well as considering Steno's development as an anatomist and its relationship to his Providentialism (Ch. 2), there are chapters on his relationship with Jan Swammerdam (which is also an invaluable source on Swammerdam himself), his response to Jansenism (both as a Lutheran [Ch. 4] and after his conversion to Catholicism [Ch. 8]), his membership in the Accademia del Cimento and his conversion and ordination (Ch. 6), his gradual abandonment of natural philosophy and natural theology (Ch. 7), and his crucially important relationship with Cosimo III, which led Steno to call himself a "Spiritual son of Florence" (Ch. 8). Miniati thereby takes us up to 1678, omitting the final years of Steno's life (he died in 1686) on the grounds that there is nothing here of interest to the main theme of the relations between science and religion.

The level of detail throughout, and the author's careful scholarly assessments, result in a richly textured study of Steno and his times, although readers of this journal may be disappointed to note that the focus is more on Steno's theology than on his science—the author evidently assumes that readers will already know of Steno's scientific achievements (his geological work is mentioned only in passing) and therefore concentrates on his religious attitudes and how they related to his natural philosophy. Miniati also provides an invaluable service to Anglophone readers by incorporating historiographic discussion of German and Italian scholarship. One of the book's most impressive aspects is that it shows how someone like Steno, or like Swammerdam, could almost instinctively feel that his naturalistic work and his personal theology perfectly complemented one another, though taking care to maintain the distinctions between them and always repudiating inappropriate ways of using natural philosophy to determine a supposedly correct theology (as the Paracelsians, and Athanasius Kircher, were seen to do). When Steno finally abandoned natural philosophy to concentrate on his newfound Roman Catholicism, it was more to do with his pressing obligations as a bishop and an advisor to Cosimo III than to any disaffection with naturalistic studies. Steno was a remarkable figure, worthy of close attention in his own right, so Miniati is to be congratulated for his choice of subject and for the way he has used Steno to enhance our understanding of the relations between science and religion.

JOHN HENRY

William Poole. *The World Makers: Scientists of the Restoration and the Search for the Origins of the Earth.* (The Past in the Present.) x + 234 pp., illus., bibl., index. Oxford: Peter Lang Publishing, 2010. \$51.95 (cloth).

In the second half of the seventeenth century, natural philosophers began to craft ambitious new accounts of the origins, history, and possible fate of Planet Earth. William Poole's *The World Makers* offers a brief and lucid account of the origins and history (and, on the very last page, possible fate) of the sciences of the earth. Cutting this very big topic down to size, Poole focuses on developments in England between 1660 and 1700. The "world makers" of the book's title, then, refer primarily to the British savants who offered theories of the earth in these formative decades—such as Thomas Burnet, John Woodward, William Whiston, John Ray, and Robert Hooke—though Continental savants make frequent guest appearances as the authors of works from earlier in the century that proved inspirational for British thinkers.

The short, readable chapters are organized by topics of inquiry, which correspond roughly to successive periods in the earth's imagined history, from Creation to Conflagration. Accordingly, the first two chapters discuss competing ideas about the creation of the planet and of its peoples—"the origins of the earth" promised in the book's subtitle. *The World Makers* makes good on that promise and then goes on to deliver much more. Subsequent chapters survey ideas regarding Noah's Flood and the dimensions of the Ark; the fossils that many argued were products and proof of the Flood; the scattering of peoples after the Flood and the changing surface of the earth since that time; and, finally, the cataclysms that might be in store for the earth and its inhabitants in the not-so-distant future. Some of the chapters depart from the chronological conceit in order to discuss related efforts to date the earth, map its surface, chart its weather, and quantify its magnetism.

Although *The World Makers* is intended as an introductory and "semi-general work" (p. 201), it does have two stated interpretive goals: to demonstrate the centrality of the Bible and of natural history in all of these conversations about the earth and, by extension, in the Scientific Revolution. Both of these laudable goals are well in line with recent scholarship on early modern science. Drawing on Mordechai Feingold's recent findings that naturalists far outnumbered Newtonians in the early Royal Society, Poole demonstrates the importance of natural history to the Restoration-era study of