



Miranda

Revue pluridisciplinaire du monde anglophone /
Multidisciplinary peer-reviewed journal on the English-
speaking world

2 | 2010

Voicing Conflict : Women and 20th Century Warfare

Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802–1856*

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Electronic version

URL: <http://journals.openedition.org/miranda/1452>

DOI: 10.4000/miranda.1452

ISSN: 2108-6559

Publisher

Université Toulouse - Jean Jaurès

Electronic reference

Laurence Talairach-Vielmas, « Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802–1856* », *Miranda* [Online], 2 | 2010, Online since 03 July 2010, connection on 22 September 2020. URL : <http://journals.openedition.org/miranda/1452> ; DOI : <https://doi.org/10.4000/miranda.1452>

This text was automatically generated on 22 September 2020.



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Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802–1856* (Chicago and London: The University of Chicago Press, 2007), 541 p, ISBN 978-0-226-61668-1

- 1 The 19th century certainly knew how to appeal to the sensibilities of the British public, marketing sensation and making the audience's hair stand on end and their flesh creep. At the time when geology and paleontology emerged as new scientific disciplines, scientists particularly took pains to popularise their theories and finds through dramatic *mises-en-scènes*. Though 19th-century geologists contributed to the popularisation of their discipline through public platforms (whether in the shape of amateur theatricals, such as those of William Buckland, or speeches, such as Adam Sedgwick's), it was "in their literary productions—in books, journals, magazines, and newspapers—that these geologists and their followers reached most of their increasingly variegated public" (2). As O'Connor suggests, indeed, geology was as much—if not more—sensational than the popular romances and sensation novels of the time, offering its readers "a new world of intellectual stimulation" (253). It was their capacity to stir the readers' imagination while remaining within a scientific frame which ensured the success of such works of popularisation—"eliciting wonder without compromising the 'factuality' of their claims" (325–6). This is the reason why Ralph O'Connor's *The Earth on Show: Fossils and the Poetics of Popular Science, 1802–1856* addresses the literary aspects of the popularisation of geology and paleontology. O'Connor's study of early Victorian scientists as veritable showmen aims to bridge the divide between science and literature and to look at science as partaking of literary culture. As

O'Connor believes, the geological imagination implied a traffic between fact and fancy which his book examines. O'Connor's study is divided into two parts. The first part looks at the "rhetoric of spectacular display" (26) before the 1830s developed by geological writers (James Parkinson, John Playfair, William Buckland, Gideon Mantell, Robert Bakewell), "borrowing techniques from the less exalted world of commercial exhibition" (27). The second part analyses the golden age of geological writing and the way in which the publications combined text and image to conjure up the past.

- 2 As O'Connor makes explicit throughout his study, geology hovered between science and fiction as 19th-century geologists showed readers the wonders of the past, offering them tantalizing "bursts of vision"[s] [that] drew on a range of literary and iconographic traditions (3). Through visual tropes, they conjured up vivid images in the readers' minds, their coded descriptions of the antediluvian world matching the visual culture of the time, demanding that viewers read pictures as they would texts. Moreover, the visions of the past that the popular narratives brought to the public "sparked off a cacophony of competing versions of earth history" (6). O'Connor's close look at the rhetoric of geologists and paleontologists, such as William Buckland's comparison of pterodactyls to "monstrous Miltonic fiends" and "beautiful exemplars of the Creator's wisdom and benevolence", is but one example of the conflicting romantic metaphors which could be found in the scientific narratives. O'Connor focuses on the way in which imaginative restorations were constructed so as to convey impressions of verisimilitude, and analyses the dramatic techniques and poetic images that popularisers used to give shape to extinct monsters in order to enthrall their readership. The original point that O'Connor makes, therefore, is to show that "the truth-claims of public science have been supported by (and expressed within) structures which we are used to thinking of as fundamentally opposed to scientific procedure" (15).
- 3 Going back to the 1802 exhibition of the first Mastodon exhibited in London's Pall Mall, O'Connor explains in Chapter 1 how showmanship ruled geology and ensured its popularity and public appeal in the first decades of the 19th century. Throughout the Victorian period, the comparison of extinct animals to elves, goblins, dragons or demons even led them to be represented as such creatures. Chapter 2, on William Buckland, moves away from previous biographies of Buckland which generally have presented the churchman trying to reconcile science and religion. O'Connor examines the tropes of Buckland's lectures, underlining how Buckland was "feeding on the vogue for pictorial and textual representations of the Deluge and other apocalypses" (73), or how his "buffoonery" (81) attracted the audience.
- 4 The discipline's play with words and images opened up "windows in a brave new world richer than romance" (4): Buckland's geological "romances" were taken further by other geologists eager to sensationalize their discoveries, as exemplified by James Rennie's *Conversations on Geology* (1828). Moreover, O'Connor's allusion to Aldous Huxley's 1932 futuristic novel encapsulates the way in which geology and paleontology brought about tension between the past and the present: the more science advanced, the more scientists were believed to have almost supernatural power to control the past, seeing both into the past and into the future—foretelling new discoveries and voyaging into the past. Whether the creatures were made to travel forward in time into the present day or the geologist travelled back in time, geological discoveries gave rise to time-travel fantasies. **William Conybeare's** cartoon of Buckland entering the den of

extinct hyenas in Kirkdale Cave is a case in point. The discovery of Kirkdale Cave in December 1821 where fossils of hyena bones were discovered along with other species (elephant, mouse, hippopotamus) led Buckland to posit that the exotic animals had not drifted northwards from tropical climes during the Deluge but had lived in England until the Deluge brought extinction upon them. For the first time, Buckland restored an antediluvian habitat, and O'Connor shows how Buckland's theory pioneered in fact a new way of thinking about earth history far more unbiblical than generally assumed. Thus, the year 1822 was significant as Buckland's hyena den theory gave a glimpse of the world before the Flood. O'Connor's study focuses on texts and images alike, moving from analyses of pictorial restorations of extinct species and the staging techniques of the conjuror-like geologists to explorations of Lord Byron's *Cain*, published in December 1822, which drew on Georges Cuvier's geology and was seen as a form of geological popularisation. Indeed, as Lucifer teaches Cain that the earth is insignificant and merely part of a cycle of divine destruction, extinction and replenishment, Byron highlighted the "demoniz[ation]"(104) of the new science of geology, his play evidencing the threat that its advocates represented to biblical literalism. In addition, O'Connor also studies Conybeare's poems and their subversion of biblical language

- 5 Chapter 3, on Gideon Mantell, Robert Bakewell and several biblical literalist writers in the late 1820s looks at the way these writers tried to make science entertaining, often using identical rhetorical tropes. Mantell's rhetoric of display emphasized the strangeness of the Iguanodon and its companions. The sensational potential of a new repertoire of fossils opened up multiple imaginative possibilities: Andrew Ure, George Young, John Bird and James Rennie capitalized on the newly discovered "dragons", often offering martinian representations of the antediluvian world. Revealingly, though the writers targeted upper-class readers, they also attracted an increasing middle-class readership who, however, looked suspiciously at sensational stories associated with cheap print romances destined to the working classes. Further, O'Connor shows in Chapter 4 how Charles Lyell's work managed to present his scientific work "within an elegant, rhetorically compelling work of literature" (163), referring, for instance, to Lord Byron's *Childe Harold's Pilgrimage* (1812-18) and using picturesque similes, his prose almost verging on poetry. O'Connor also looks at the political context in which Lyell wrote the first volume of the *Principles of Geology* (1830-33) (during the period leading up to the Reform Bill of 1832) and at how Lyell's reformation of geology could become a force for Reform.
- 6 The second part of O'Connor's study deals with the staging of the new science and the way in which geology became a market in its own right, in particular with the explosion of cheaper forms of printed science. Indeed, earth history became more and more prominent not only in scientific periodicals but also in cheap miscellanies and fictional miscellanies, with geological romances, poetry quotations or folkloric tropes pervading all kinds of literature, "leading to a considerable degree of conservatism in the imagery of the ancient earth" (196). By 1846 the geological romances were often reminiscent of the narrative strategies found in the *Arabian Nights* (in works of popularisation destined for children, such as John Mill's *The Fossil Spirit: A Boy's Dream of Geology* (1854), or for adults, such as Gideon Mantell's *Wonders of Geology* [1838]). In fact, women and children were especially targeted, and the London educational publisher John Darton and the bookseller Samuel Clark contributed to the development of the market for geology (such as with *The Little Geologist* (c. 1840), *The Little Mineralogist* (c. 1838) or *Peter Parley's Wonders of the Earth, Sea, and Sky* (1837). Interestingly, this

literature is indicative of the fact that fossils were deemed more appropriate for women and children than anatomy or zoology, worlds marked by blood and entrails. O'Connor also gives examples of sensational *mises-en-scène*. When William Buckland christened the Megatherium "Old Scratch" in his speech before the newly-founded BAAS (British Association for the Advancement of Science) audience on 23 June 1832, his performance turned science into spectacle. Likewise, in *Wonders of Geology* Mantell borrowed techniques from the *Arabian Nights* and punctuated his text as well with quotations from modern poetry. Such tropes and aesthetic forms, O'Connor contends, actually constituted geology, becoming means of familiarizing amateur audiences with the new science. Formats varied, from Natural-theology treatises and Biblical exegeses and cosmological narratives to travel guides, narratives, dialogues and prose fiction.

- 7 O'Connor then turns to visual entertainment, from early phantasmagorias to more modern panoramas and dioramas, used to represent the environment of the extinct creatures. He pays particular attention to the work of Hugh Miller as the populariser who best embodied the Victorian union of science and literature. O'Connor looks at the sites of geological display, highlighting the work of John Martin as a "shared reference-point" (265) and studies the dialogue between poetic texts and geological displays to produce the illusion of verisimilitude (Chapter 7). Geological display benefited from the interest in the sciences of the mind and new moving-picture technologies such as the phantasmagoria as well as new theories of visual education such as that of Johann Henrich Pestalozzi's. The use of pictures, aptly woven within the text and the dreamlike qualities of certain illustrations and the abundant poetry quotations ensured the successful exploitation of texts and images. The buried past surged onto the reader's "mental retina" through descriptions, visionary apparitions or scenes tied together into theatrical sequences. O'Connor underlines the effects of dramatization found in descriptions (such as shifts in time) or the turning of descriptions into anecdotes, diptychs and sequences, and even the lyrical tone of the prose and the use of ekphrasis. Hugh Miller's geological prose and dramaturgical skills, which O'Connor examines more thoroughly in Chapter 10, offers pieces of time travel, encapsulating the ways in which popularisers brought large-scale visions of earth history to the mind's eye. O'Connor contrasts Miller's work, in particular his demonization of the saurian world, with Thomas Hawkins's "geo-demonology" (417), and shows how Miller's geological prose, though sometimes verging on science fiction, was actually close to Miltonic dramaturgy—a literary connection which could already be traced in Buckland's essays on the Pterodactyle—since Miller used geological evidence to typify humanity's fallen state.
- 8 O'Connor's argument that science writers may have played a more central role in canonical literary movements and that literature was central to the business of science popularisation in the 19th century is an excellent approach to 19th-century culture. As O'Connor argues, the distinction between literary and scientific texts hardly does justice to the 19th-century reading public. His close study of the rhetoric of the period's science writing and the way in which scientists, as showmen, transported their audiences into fantastic realms peopled with monsters cannot fail to fascinate readers interested both in the history of science and in the relationships between science and literature. It is no wonder that O'Connor's book won the 2007 British Society for Literature and Science Best Book Award.

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Keywords: fossil, geology, paleontology, popularisation

Quoted persons: James Parkinson, John Playfair, William Buckland, Gideon Mantell, Robert Bakewell, Andrew Ure, George Young, John Bird, James Rennie, Johann Henrich Pestalozzi, Thomas Hawkins, Adam Sedgwick, Aldous Huxley, William Conybeare, Lord Byron, Georges Cuvier, Charles Lyell, John Stuart Mill, John Darton, Samuel Clark, Hugh Miller, John Martin

Mots-clés: fossil, géologie, paléontologie, vulgarisation

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