

# INTERPRETER

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A JOURNAL OF MORMON SCRIPTURE

Volume 10 · 2014 · Pages 123-131

## **A Scientist Looks at Book of Mormon Anachronisms**

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Offprint Series

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ISSN 2372-1227 (print)

ISSN 2372-126X (online)

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# A SCIENTIST LOOKS AT BOOK OF MORMON ANACHRONISMS

*Neal Rappleye*

Review of Wade E. Miller, *Science and the Book of Mormon: Cureloms, Cumoms, Horses & More* (Laguna Niguel, California: KCT & Associates, 2010). 106 pages + viii, including two appendices and references cited, no index.

*Abstract: Anachronisms, or out of place items, have long been a subject of controversy with the Book of Mormon. Several Latter-day Saints over the years have attempted to examine them. Dr. Wade E. Miller, as a paleontologist and geologist, offers a some new insights on this old question, especially regarding animals mentioned in the Book of Mormon, including a report on some preliminary research which might completely change the pre-Columbian picture for horses in America. Overall, this is an indispensable resource on Book of Mormon anachronisms.*

Ever since the Book of Mormon came off the press in 1830, anachronisms have been some of the most common reasons given for dismissing the Book of Mormon as an authentic ancient text (*anachronisms* are items that are chronologically out of place). This remains true despite the evidence that has turned up for many items once thought to be anachronisms in the text.<sup>1</sup> While some alleged Book of Mormon anachronisms are conceptual (e.g., the seemingly overt Christian concepts in

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<sup>1</sup> For some examples, see “Howler’s Index,” at *Ether’s Cave: A Place for Book of Mormon Research*, at [http://etherscave.blogspot.com/p/blog-page\\_20.html](http://etherscave.blogspot.com/p/blog-page_20.html) (accessed March 21, 2014).

1 Nephi),<sup>2</sup> the ones most frequently brought to bear against the text are scientific. Archaeologist John E. Clark explains, “The most frequently mentioned deficiencies of the book concern the lack of hard evidence in the New World for the right time periods of precious metals, Old World animals and plants, and Book of Mormon place names and personal names.”<sup>3</sup> Aside from the absence of proper names, each of these deficiencies is, at least in part, a question of science. Were there—or at least could there have been—the right kinds of animals, plants, and materials (such as metal, glass, and certain textiles) in the Americas when the Book of Mormon took place? Dr. Wade E. Miller is certainly not the first Latter-day Saint to explore this question.<sup>4</sup> Given his particular expertise, however, his contribution is both unique and welcome, particularly when it comes to animals in the Book of Mormon.

Miller begins by mentioning the Smithsonian Institute’s history with the Book of Mormon (pp. 2–4). The Smithsonian has long gotten letters from folks asking about the Book of Mormon. The Institute used to send out a long response listing several perceived inaccuracies in the Book of Mormon but has

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2 For some brief discussion of these types of anachronisms, see Stephen David Ricks, “Anachronisms, alleged” in *Book of Mormon Reference Companion*, ed. Dennis L. Largey (Salt Lake City, Utah: Deseret Book, 2003), 55–57.

3 John E. Clark, “Archaeological Trends and the Book of Mormon Origins,” in *The Worlds of Joseph Smith: A Bicentennial Conference at the Library of Congress*, ed. John W. Welch (Provo, Utah: BYU Press, 2006), 95.

4 For previous treatments of anachronisms in the Book of Mormon, see John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City, Utah: Deseret Book and FARMS, 1985), 184–187, 232–238, 278–299; Daniel C. Peterson and Matthew Roper, “Ein Heldenleben? On Thomas Stuart Ferguson as an Elias for Cultural Mormons,” *FARMS Review* 16/1 (2004): 189–215. Also see the following entries in *Book of Mormon Reference Companion*: Daniel Justin Fairbanks, “Agriculture in the Book of Mormon,” 31–32; Brian Michael Hauglid, “Animals,” 61–62; William Revel Phillips, “Metals of the Book of Mormon,” 539–540. A more recent discussion, which incorporates some of Miller’s work, is John L. Sorenson, *Mormon’s Codex: An Ancient American Book* (Salt Lake City, Utah: Deseret Book and the Neal A. Maxwell Institute, 2013), 302–361.

since tempered its response.<sup>5</sup> Nonetheless, the impulse to test the Book of Mormon against science continues, and Miller seeks to contribute to the discussion. “The intent of this book is to add to the body of knowledge relating to science and the Book of Mormon using my paleontological and geological background” (p. 3). Miller also takes time to clarify that he follows John L. Sorenson in associating Book of Mormon lands with Mesoamerica (pp. 6–8).<sup>6</sup> Miller then discusses with considerable brevity matters such as steel and glass (pp. 10–13), linen and silk (pp. 16–18), and food plants (pp. 20–22). Then the remainder of the book discusses animals (pp. 24–84), save a brief summary at the end (p. 86). Miller explains, “I will discuss the animals mentioned in the Book of Mormon in greater depth than other scientific aspects because of my own research specialization” (p. 4).

Before launching into his discussion on animals in the Book of Mormon, Miller offers a couple of cautions. The first is that, “We can’t be positive that each animal with its translated name corresponds exactly to our present understanding of that animal” (p. 24).<sup>7</sup> This important point has long been derided by critics of Mormonism on the Internet, but I’ve yet to see anyone else explain just what Nephi, with his Hebrew or Egyptian language, was supposed to call a tapir or any other species discovered in his new environment for which his native language had no words. Both loan-shifting and translator’s

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5 For further information, see “Smithsonian Statement on the Book of Mormon Revisited,” *Journal of Book of Mormon Studies* 7/1 (1998): 77; “FairMormon Answers: Book of Mormon/Archaeology/Smithsonian Statement,” [http://en.fairmormon.org/Smithsonian\\_statement\\_on\\_Book\\_of\\_Mormon\\_archaeology](http://en.fairmormon.org/Smithsonian_statement_on_Book_of_Mormon_archaeology) (accessed April 6, 2014). For a response to the original Smithsonian letter, see John L. Sorenson, “A New Evaluation of the Smithsonian Institution ‘Statement regarding the Book of Mormon,’” (FARMS Paper, 1995), online at <http://publications.maxwellinstitute.byu.edu/fullscreen/?pub=964&index=1> (accessed April 6, 2014).

6 See Sorenson, *Ancient American Setting*; Sorenson, *Mormon’s Codex*.

7 See discussion in Sorenson, *Ancient American Setting*, 293–294.

anachronisms are common enough phenomena that they should not be quickly discounted, given the legitimacy of the Book of Mormon as a *translation* of a document written by Old World peoples migrating to the New. In fact, such practices are arguably *expected* in such a text.<sup>8</sup>

Some protest that the Book of Mormon is the “most correct book,” “translated by the gift and power of God,” and hence should not manifest such “incorrect” labeling. Matters of translation are complicated, however, and very often fuzzy notions of “literal” translation hinge more on unexplored assumptions than actual data.<sup>9</sup> What’s more, if the Nephites applied Old World terms meaning *horse*, *sheep*, *cattle*, or *pig* to New World species, then those were the “correct” labels within Nephite taxonomy. As such, translation using those terms is no more “incorrect” than continued American usage of terms like “robin,” “elk,” and “buffalo,” all of which originally referred to completely different Old World species before being borrowed and applied to unfamiliar animals in the New World by European settlers. In light of this, Miller’s advice that, “Care needs to be taken in the interpretation of stated animals in the Book of Mormon,” that, “It’s best to allow some flexibility in thinking” (p. 24 n. 4) seems appropriately prudent.

Miller also mentions the challenge of bone preservation. “Then, as now, the vast majority of bones left after death would disintegrate upon exposure to the elements, turning to dust” (p. 28). He points out that in Mesoamerica, “Climatic conditions

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8 For my attempt at making such an argument, see Neal Rappleye, “Anachronisms and Expectations: Assessing the Role of Anachronisms in the Debate over Book of Mormon Authenticity,” at *Studio et Quoque Fide: A Blog on Latter-day Saint Apologetics, Scholarship, and Commentary*, August 19, 2013, at <http://www.studioetquoquefide.com/2013/08/anachronisms-and-expectations-assessing.html> (accessed March 18, 2014).

9 For the most detailed study of translation and the Book of Mormon, see Brant A. Gardner, *The Gift and Power: Translating the Book of Mormon* (Salt Lake City, Utah: Greg Kofford Books, 2011).

would have been unfavorable for preserving evidences of life” (p. 29). While critics tend to see such caveats as subterfuge, recognizing the limitations and challenges of certain kinds of evidence is absolutely essential to any attempt to determine just what the evidence can and cannot tell us. Miller concludes, “Considering all the circumstances, I’m not surprised by so little evidence being available to support the animals reported in the Book of Mormon. However, some evidences do exist. These should leave open the probability of more being found” (pp. 29–30).

Miller first discusses cattle (pp. 32–37) then swine (pp. 40–42) followed by sheep and goats (pp. 44–48). Throughout his discussion, Miller draws on evidence that hints at the presence, in pre-Columbian Mesoamerica, of Old World species called by these labels but also points to possible candidate species for which Old World labels may have been applied by either the Jaredites or the Nephites. In doing so, Miller shows no hesitation in drawing on species thought to be extinct by Book of Mormon times (though, in most cases, he also points to animals that still have living populations today). While this may be seen as a weakness to some, it seems sensible to ask, before quickly discounting the possibility, what Miller—an internationally recognized geologist and paleontologist—might know or understand about both the limitations and capabilities his disciplines that gives him confidence that at least *some* of these extinct species survived longer than generally believed? Perhaps there is something he has learned though decades of training and experience that is not obvious to the untrained, lay reader—especially when that untrained reader is anxious to score points against the Book of Mormon.

Miller’s discussion of elephants (pp. 50–55) is extremely informative because I had previously read on a critical website that, “All scientists agree that elephants did not exist in the Americas; however Mastodons, *which are not elephants*, did

exist in stone-age times.”<sup>10</sup> What goes unmentioned by these critics is that mammoths were also known in the Americas, and that mammoths *are* elephants. “For many years,” Miller reports, “paleontologists called mammoths elephants, as they wrote about them. Some still do.” (p. 50). Miller cites an example as recent as 1993 (p. 50 n. 7)! What’s more, Miller explains, “The Columbian mammoth of North America, based on studies of its fossils, is more closely related to the Indian (or Asian) elephant than the Indian elephant is to the African one!” (p. 50). Miller has personally been involved in excavating mammoth remains in Mexico (p. 51). He explains, “The Columbian mammoth (actually a true elephant) ... was a common animal from Alaska through Central America in the Pleistocene epoch. It apparently survived beyond this time.” (p. 54). In light of this, it seems that insisting that there *never* were any true “elephants” in the Americas, as indicated in the critic’s quote above, is entirely untenable. If mammoths can be called “elephants” by scientists in the late 20th and early 21st century, then what objection remains for Joseph Smith using the label for an American species in 1830?

There is still the issue of when the mammoth went extinct. Miller explains, “Until the last few decades, almost all scientists were convinced that mammoths did not survive the Pleistocene (Ice age) epoch. This was 10,000 to 12,000 years ago.... However, more and more datings on these fossils show that they lived much longer. How long did they survive? That question is still being debated by paleontologists.” (p. 55). Miller goes on to cite some of the late dates given, including one from Alaska that dates to approximately 3,700 years ago (1700 BC), which gets us into Jaredite times; and another from Florida that dates to

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10 “Elephants,” a sub-section of the online article, “Anachronisms,” at MormonThink, <http://mormonthink.com/book-of-mormon-problems.htm#didntexist> (accessed March 18, 2014), screenshot in my possession. Emphasis mine.

2,040 years ago, or about the time of Christ, though this date is considered questionable by most scientists, Miller adds (p. 55). While the question is not yet settled, it does not require a huge leap of faith to accept that elephants (mammoths) could have been present in Mesoamerica in Jaredite times.

Miller includes a comparably long discussion of possible candidates for the *cureloms* and *cumoms* (pp. 58–73). Part of the reason is because so little is known about these animals, there exists a broad range of possibilities. Miller wisely does not come to any firm conclusions but amply demonstrates that the single, vague mention of these animals is not problematic, since plenty of species could fit the bill. Miller simply concludes, “Unfortunately the Jaredite record keepers did not include drawings of *cureloms* and *cumoms*” (p. 73).

Perhaps the most important chapter in this book is the one on horses and asses (pp. 76–83). This is so for a couple of reasons. The first is that while several animals (such those mentioned above) are considered anachronous, the horse nonetheless tends to draw the most attention from the critics. Miller himself recognizes this, explaining, “I think that more than any other animal mentioned in the Book of Mormon, the horse has generated the most debate” (p. 78). But this chapter is also important because it presents some preliminary findings that *could*, if further testing confirms them, completely change present scientific understanding.

Like mammoths and several other animals, it is widely accepted that horses were in the Americas up until the end of the last Ice Age (p. 80). “A number of Carbon-14 dates on horse fossils,” however, “show ages extending well past the close of the Pleistocene” (p. 80). Miller cites several examples from the scientific literature on this subject before reporting on the unpublished dates of several bone specimen which he has collected and sent out for independent testing. The range of dates on these specimens goes from ca. 6,000 BC to AD 1,400

(see dates given on p. 82). Hence, Miller concludes that “small scattered populations” of horses “probably survived in North America until shortly before they were reintroduced by the Spaniards” (p. 82).

The range of dates clearly includes the Book of Mormon time period. However, we should remain cautious. First, none of the specific dates given actually falls within the Nephite period (a couple appear to be of Jaredite age), though one would assume that since there are dates from both before and after this timeframe (ca. 600 BC–AD 400), horses were in the Americas during that time. Second, none of these bone specimen come from Mesoamerica, the area widely believed to be the region where the Book of Mormon took place.<sup>11</sup> This could feasibly be chalked up to the issues of climate and bone preservation mentioned earlier, but it still provides good reason not to hang too much on this evidence just yet. Finally, this work is still *preliminary* and needs to undergo further testing, and, according to Miller, will need to be corroborated by additional finds dating to the same time period. While Miller is optimistic that this “eventually will come” (p. 82), these current limitations should be kept in mind. While caution is warranted, however, these results are promising, perhaps justifying a cautious optimism that the horse in the Book of Mormon was, in fact, what we today would call a “horse.”

Miller concludes that his mind is “satisfied” by the available evidence (p. 86). I too am satisfied, though I acknowledge that problems remain. Further work needs to be done to flesh out the picture, but the chasm one must cross with a “leap of faith” has been made much smaller by Miller’s careful treatment of these issues. This book is an indispensable resource on the topic of

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11 The locations offer no more direct support to the “heartland” model either, since none of the specimens mentioned by Miller were collected within the eastern United States.

anachronisms in the Book of Mormon. In my opinion, it ought to have much wider circulation than it has thus far enjoyed.

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