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## Paleontology at the “high table”? Popularization and disciplinary status in recent paleontology



David Sepkoski

Max Planck Institute for the History of Science, Boltzmannstrasse 22, 14195 Berlin, Germany

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### ABSTRACT

This paper examines the way in which paleontologists used “popular books” to call for a broader “expanded synthesis” of evolutionary biology. Beginning in the 1970s, a group of influential paleontologists, including Stephen Jay Gould, Niles Eldredge, David Raup, Steven Stanley, and others, aggressively promoted a new theoretical, evolutionary approach to the fossil record as an important revision of the existing synthetic view of Darwinism. This work had a transformative effect within the discipline of paleontology. However, by the 1980s, paleontologists began making their case to a wider audience, both within evolutionary biology, and to the general public. Many of their books—for example, Eldredge’s provocatively-titled *Unfinished Synthesis*—explicitly argued that the received synthetic view of Darwinian evolution was incomplete, and that paleontological contributions such as punctuated equilibria, the hierarchical model of macroevolution, and the study of mass extinction dynamics offered a substantial corrective to evolutionary theory. This paper argues that books—far from being “mere popularizations” of scientific ideas—played an important role in disciplinary debates surrounding evolutionary theory during the 1980s, and in particular that paleontologists like Gould and Eldredge self-consciously adopted the book format because of the importance of that genre in the history of evolutionary biology.

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Scientists write popular accounts of their subjects for many reasons. Sometimes they do so to appeal to the public on behalf of particular projects or initiatives—as for example physicist Stephen Weinberg’s *Dreams of a Final Theory*, which endorsed the building of the Superconducting Supercollider (Weinberg, 1992), or Carl Sagan’s many books championing the SETI program and space exploration (Sagan, 1978, 1980, 1994). In other cases, the aim has been to weigh in on a particular social issue—such as creationism or global warming or the biodiversity crisis—as scientists such as Ken Miller, E. O. Wilson, and others have done (Miller, 1999; Wilson, 1992). Then there are what might be called “semi-popular” accounts, which, although published by trade publishers or marketed broadly by university presses, are really targeted at an educated lay audience who want a more in-depth exposure to a particular topic, or towards other scientists looking for a non-specialist introduction to a related field. Books such as

Stephen Jay Gould’s *The Structure of Evolutionary Theory* or Richard Dawkins’ *The Selfish Gene* might be classified in this group (Dawkins, 1976; Gould, 2002).

But although many scientists may claim that they write books as a kind of public service, I think we can recognize that every popular book has an agenda behind it. And one of the most common agendas scientists have for writing books is to advance some kind of theoretical or disciplinary program that cannot be easily formulated on the pages of technical, specialist journals. In this sense, the term “popular” is perhaps a red herring: many books that are ostensibly written for the “public” are, in fact, written for an audience of peers, especially for younger scientists or scientists in related disciplines who might be receptive to new concepts or disciplinary configurations. In addition, there is often a very fuzzy line between truly “popular” writing and writing that falls into the semi-popular category. Nonetheless, books are an important and

E-mail address: [dsepkoski@mpiwg-berlin.mpg.de](mailto:dsepkoski@mpiwg-berlin.mpg.de)

sometimes underappreciated genre of scientific communication: not only do they permit longer, more sustained discussion of topics than journal articles, but they also allow scientists to creatively mix narrative modes—alternating, say, between reporting empirical results and engaging in historical or autobiographical reflection—in a way that is not possible in the technical literature. Books are thus both ideal vehicles for reflective, synthetic conversations, and also (falling usually outside of the normal peer-review process) venues for greater risk-taking and narrative creativity.

This was, as I will argue, very much the case during the 1980s in the context of evolutionary biology, when a large number of books appeared that offered meditations on, or revisions to, the existing program of the modern evolutionary synthesis. A large number of these books were written by paleontologists seeking to promote a place for the fledgling discipline of paleobiology at the “high table” of evolutionary theory, and they reflected many of the empirical and theoretical currents that were being discussed in the pages of professional journals, such as *Paleobiology*, *Evolution*, *Science*, and *Nature*. Books by paleobiologists like Gould, Niles Eldredge, Steven Stanley, David Raup, and others were part of a very public debate with representatives of the “establishment” in evolutionary biology: Ernst Mayr, Richard Dawkins, John Maynard Smith, and other supporters of the more traditional, synthetic viewpoint. The public nature of this debate was vital in establishing paleobiology within evolutionary biology, and those paleobiologists who contributed to it were very self-conscious about their use of the genre—the “popular” book—to accomplish their goals.

Books were seized upon by paleobiologists for two important reasons. In the first place, they permitted longer, more sustained and synthetic arguments drawing on a wider variety of empirical examples and theoretical concepts. Secondly, as many paleobiologists were well aware, books were part of an important historical tradition in evolutionary biology, and paleobiologists self-consciously saw their own books as fitting into this tradition. This historical awareness of the synthesis was an important component in paleontologists’ campaign for a seat at the high table, both as a framing device and as source of arguments about conceptual and disciplinary issues. While books by paleobiologists make up only a small percentage of popular science literature published during the 1980s and 1990s, thanks to the prominence of particular authors (Gould) and topics (dinosaur extinction), they achieved disproportionate public and professional visibility. Because these books were closely and explicitly aligned with a fairly clear and circumscribed disciplinary agenda (the promotion of paleobiology) they also offer a focused case study for exploring how books contribute to the resolution of disciplinary debates. In the remainder of this paper, I will examine a few prominent examples of “popular” paleobiological literature from the 1980s, with an eye to both considering its significance in debates in evolutionary at the time, and also toward reflecting on the role of popular or semi-popular books in the history of evolutionary biology more broadly.

## 1. Paleobiology and the high table

Perhaps no event signaled paleobiology’s entry to the mainstream of evolutionary biology more than the short essay, published by population geneticist John Maynard Smith in *Nature* in May of 1984, titled “Palaeontology at the High Table” (Maynard Smith, 1984). The occasion for Maynard Smith’s piece was Stephen Jay Gould’s presentation of the 1984 Tanner Lectures at Claire Hall, Cambridge, on the subject “Challenges to Neo-Darwinism and Their Meaning for a Revised View of Human Consciousness” (Gould, 1985). In his lecture, Gould offered a summary of

paleobiological challenges to “the hegemony of Neo-Darwinism,” which included critiques of evolutionary determinism, reductionism, and adaptationism. Surprisingly, Maynard Smith—one of the staunchest defenders of the Modern Synthesis—responded was quite positively to Gould. Beginning his essay by lamenting the relative lack of evolutionary contribution from paleontologists from the 1940s onward, he characterized the typical response of his colleagues in evolutionary biology archly and succinctly: “the attitude of population geneticists to any palaeontologist rash enough to offer a contribution to evolutionary theory has been to tell him to go away and find another fossil, and not to bother the grownups” (Maynard Smith, 1984, p. 401). However, Maynard Smith reported that over the last ten years that attitude had changed, thanks in large part to the work being done by paleobiologists like Gould. He concluded the essay with a statement that has become legendary among paleobiologists, observing “the palaeontologists have too long been missing from the high table. Welcome back.”

To many paleontologists Maynard Smith’s acknowledgement felt like a vindication for more than a decade’s worth of campaigning for the evolutionary significance of paleontology. Indeed, since the early 1970s (and even as far back as the 1940s, depending on how one reckons) paleontologists like Gould, Eldredge, Stanley, Raup, Thomas J. M. Schopf, and others had aggressively promoted a new, theoretical and quantitative approach to analyzing and interpreted the fossil record that they labeled “paleobiology.”<sup>1</sup> Over the previous decade, this movement had made a number of important new empirical and conceptual contributions to evolutionary biology—such as the theory of Punctuated Equilibria, species selection/sorting and the hierarchical account of macroevolution, the study of global historical diversity patterns, and awareness of the evolutionary significance of mass extinctions. It also found disciplinary and institutional traction, establishing centers of paleobiological research at Harvard, the University of Chicago, the American Museum of Natural History, and elsewhere, and even launching its own journal, titled simply *Paleobiology*, in 1975 (Sepkoski, 2009). By the early 1980s, Gould and other paleobiologists were well-known figures on the evolutionary biology scene, and their ideas were being hotly—and sometimes heatedly—debated in journal articles, scientific meetings, and even in the popular press (Adler & Carey, 1980; Futuyma, Lewontin, Mayer, Seger, & Stubblefield, 1981; Lewin, 1980; Stebbins & Ayala, 1981).

But for all the success this movement had achieved, there was lingering concern among some paleobiologists that their movement had failed to genuinely establish paleontology on equal footing with genetics in the evolutionary community. Even statements such as Maynard Smith’s, though welcome, were viewed with some suspicion as being perhaps only partially sincere, or even worse, patronizing. The early 1980s, then, saw an aggressive campaign by Gould and others to interpret the innovations of paleobiology as more than just a contribution to the existing theoretical framework of the modern synthesis, but as a substantive revision or expansion—and even a “new synthesis.”

One tactic in this campaign was to make the case for an expanded synthesis in journals read by other paleontologists and by evolutionary biologists. In articles with titles like “The Promise of Paleobiology as a Nomothetic, Evolutionary Discipline,” “Is a New and General Theory of Evolution Emerging?,” “Individuals, Hierarchies, and Processes: Towards a More Complete Evolutionary Theory,” and “Darwinism and the Expansion of Evolutionary Theory,” Gould and his colleagues presented arguments in favor of an “expanded” Darwinism which took account of different kinds of selection operating on a hierarchy from the gene to the higher

<sup>1</sup> For a history of the paleobiology movement, see Sepkoski & Ruse (2009) and Sepkoski (2012).

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