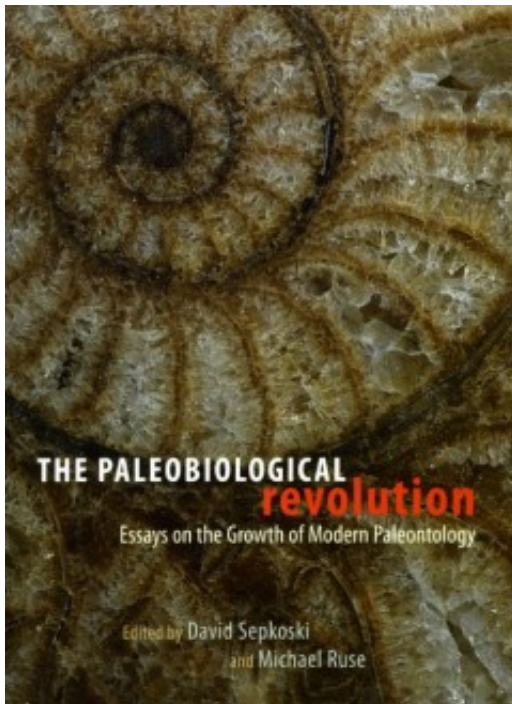


The High Table: When Metaphor Becomes History – a review of "The Paleobiological Revolution" (Sepkoski and Ruse, eds.)

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By Lydia Pyne



[The Paleobiological Revolution](#)

Essays on the Growth of Modern Paleontology

Edited by [David Sepkoski](#) and [Michael Ruse](#)

University of Chicago Press, 2009

To show that the facts of paleontology were consistent with the mechanisms of natural selection and geographical speciation...rather than to propose novel mechanisms...the attitude of population geneticists to any paleontologists rash enough to offer a contribution to evolutionary theory has been tell them to go away and find another fossil, and not to bother the grownups...the paleontologists have too long been missing from the high table. Welcome back. [1]

In the latter half of the twentieth century, paleontology occupied an interesting niche. No longer did its research only focus on the materiality of fossils, but paleontology was intellectually situated to engage with big questions fronting evolutionary biology. Paleontology's fossil record was able to offer the perspective of deep geological time missing in other evolutionary science.

In a 1984 essay in *Nature*, geneticist and evolutionary biologist, John Maynard Smith, issued a now-famous invitation for paleontologists to join the "high table" of evolutionary biology. In Maynard Smith's perspective, no longer would evolutionary biology sniff and snip and tell paleontology to go find another fossil bone to occupy itself. Rather, there's a recognition that paleontology and paleontologists have something to bring to the table of evolutionary studies with them. Maynard Smith's overture shows both the growth of paleontology as a field and the changing attitudes about paleontology within other evolutionary disciplines. Interestingly, it also shows a familiar synecdoche within history of science and how history of science is written. As an emerging science – a new discipline or a new direction of an older discipline – strives to make its intellectual place, it will need to settle, intellectually, with its predecessors. This story is a familiar of epistemes and paradigms – of revolutions and "normal" science. This type of history situates a discipline's identity to the subject's own biography – the struggle for intellectual space and acceptance within the broader communities of science, indeed, becomes part of that disciplinary memory.

In *The Paleobiological Revolution: Essays on the Growth of Modern Paleontology*, editors David Sepkoski and Michael Ruse demonstrate that modern paleobiology is no exception to this trope in the history of science, as paleontology and evolutionary biology meet over the fossil record. In *The Paleobiological Revolution*, there is a need to make sense of "coming to the high table" as such a notion drives the discipline. Where the metaphor might have been absent, the sentiment that it expressed long underscored paleo research throughout the twentieth century. Maynard Smith's commentary on the coming of age of paleontology shows the push-pull factors in the development of modern paleontology – paleobiology needs to make its bones with its intellectual predecessors. "Nonetheless it is widely acknowledged that *something* important happened to paleontology in the last few decades, and that the chapters that make up this value will tell versions of the story from a variety of perspectives."^[ii] John Maynard Smith's remarks capture the tectonic shift in evolutionary biology to consider paleontologists as more than collectors of curios and keepers of collections. Indeed, in the introduction, Sepkoski and Ruse argue that, "Paleontology has long had a troubled relationship

with evolution biology.”^[iii] Making sense of this troubled history – the fracturing and fictioning of disciplines against each other – underlies many of the book’s essays.

The Paleobiological Revolution explores trends and approaches in paleontology post-1970. In other words, what did it mean for paleontology to be “invited” to the table and after they were invited, what dynamic did that set, what happened, and how did its history affect its identity and research motivations? The editors claim that the goal of *The Paleobiological Revolution* is to explore the major transformation in paleontologists’ approach toward the theory and mechanisms of evolutionary processes, post-1970. A brilliant mix of scholarship and perspectives, the collection of essays pulls together a variety of perspectives and themes. To those ends, *The Paleobiological Revolution* is a fantastically nuanced example of a pluralism implicit in paleo research.

The essay collection begins with Major Innovation in Paleobiology, broadly focused on ongoing debates situated within their historical contexts. Major Innovations examines the growth of central themes in modern paleobiology – patterns in evolution, biodiversity, mechanism of extinction, ever-growing datasets, and questions of fossil collections. For example, J. William Schopf’s describes the research of Precambrian paleontology – his own work contributing to what Sepkoski and Ruse call, “one of the greatest mysteries in the history of science, the absence of Precambrian fossils.”^[iv] Tim White’s hominid paleobiology, “Ladders, Bushes, Punctuations, and Clades: Hominid Paleobiology in the late Twentieth Century,” describes questions within the field of paleoanthropology and the effects of a fossil lineage that is, inexorably, tied to its researchers. One of the most interesting chapters is Jack Horner’s “Dinosaurs at the Table.” The notion of famous fossils and how famous, iconic material objects focus and shape research is a subject rather unique to the paleo-communities; specifically, the public elevation of an extinct organism as dinosaurs are an archetype for engagement with paleo-topics. “In this day and age, dinosaurs are media superstars, arguably the most familiar of extinct organisms. They are icons of popular science, and many of their collectors and examines have been publically elevated to among the most well know of scientists.”^[v]

The second part, The Historical and Conceptual Significance of Recent Paleontology, engages with ongoing problems that confront paleobiology. From a philosophical view, Derek Turner (“Beyond Detective Work: Empirical Testing in Paleontology”) questions the role of experiment in a historical science. David Fastovsky examines the sociology of the popular and political appeal of dinosaurs in a broader cultural context as the “public persona” of a fossil species or a specific dinosaur can function as

an icon. Manfred Laubichler and Karl Niklas describe the traditions of then-contemporaneous German paleontology – what does paleobiology without the underlying “high table” driving metaphor look like? One of the most interesting essays, however, is Joe Cain’s examination of Stephen Jay Gould’s famous attack on legendary paleontologist G.G. Simpson – committing, what Cain describes, in no uncertain terms, as “ritual patricide.” Cain argues that Gould saw this patricide as necessary to establish a new disciplinary identity for paleobiology – specifically, a disciplinary identity that favored a macroevolutionary emphasis. (In this patricide of intellectual predecessors, it would seem that the seat at the high table functions more like a game of musical chairs...)

The final section, Reflections on Recent Paleobiology, offers the audience reflections of researchers currently engaged with paleobiological research. Many of these researchers – like Rebecca German – have lived through and experienced this change in the academic and intellectual landscapes of their discipline. David Jablonsky “Paleontology in the Twenty-first Century” and Michael Ruse “Punctuations and Paradigms: Has Paleobiology Been through a Paradigm Shift?” Jablonsky argues that the fossil record has much more to offer evo-devo and that the “revolution” of paleobiology is, in fact, far from over. “If paleontology only provided insights into the morphology, developments, and ecological contest of transitional forms in the origin of novel phenotypes, this would guarantee it a key role in evolutionary developmental biology. But it can provide a much wider range of macroevolutionary insights, although this potential has yet to be fully tapped.”[\[vi\]](#)

In “Punctuations and Paradigms” Ruse engages with the question of potentiality and direction of paleobiology. “Science processes more by the introduction of new world-views or ‘pictures’ than by the steady accumulation of information.”[\[vii\]](#) Ruse argues that paleo researchers like Gould thought about changes in science in Kuhnian terms — change to the status quo was best understood as a paradigm shift. Ruse notes that Gould (and Nils Elegridge) were using Kuhnian paradigm shifting as a guide, rather than a “straightjacket” for talking about change in their discipline. Ruse’s final chapter is a good note for the collection to end on – a bit of reflection, a bit of continuity, and a sense that, like the fossil record, paleontology is ever-additive.

Perhaps most interesting – and understated for both the discipline and its history – is the role and use of metaphor as an organizing device. If one were to step back, there’s almost a sense that writing the history of modern paleontology through paleobiology reflects – through metaphor – the very scientific process that it describes. If the history is told through short bursts – breakthroughs that radiate new research traditions, it parallels punctuated equilibrium. If the history builds, laying one event

down after another strata-like, it is a gradualist theme. Where one argues for punctuated episodes in the deep time of the fossil record, it would be a consistent step to mirror those processes in the language that one writes the science's history – the metaphor and history coalesce. The approach to writing the history illuminates just as much about how we think about the paleo-processes as much as it speaks to the processes in the scientific communities. The ubiquity of the “high table,” the reticent toward gradualism, and even grouping the essays clade-like demonstrates an interesting sense of paleobiology's history and identity.

The history of fossils is full of metaphors – the Book of Nature, missing links, and even phylogenetic tree. (To say nothing of the actual metaphors used in evolutionary studies: trellises and ladders, braided rivers, and Banyan trees to name a few.) As the fossil record is an incomplete archive of evolution over the *longue durée* of deep geological time, the use of metaphor in writing about it is inescapable. And in writing the history, the use of metaphor repeats itself. The high table becomes the metaphor around which the history of organized – Sepkoski and Ruse acknowledge this approach.

For the discipline to come of age, it must reconcile its precursor, but also assume a directionality and identity. *The Paleobiological Revolution* does an excellent job of articulating the modern state of questions and research for current paleobiology. Published in 2009, there is yet a timeliness even now to the themes and questions within Sepkoski and Ruse's collection. The essays truly reflect the pluralism of perspectives that underlies paleo research. Balancing history and concepts, methods and reflections, *The Paleobiological Revolution* is an excellent profile of the state of the paleo-communities, their research questions, and conceptual frameworks.

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[i] John Maynard Smith, "Evolution: Palaeontology at the High Table," *Nature* 309, no. 5967 (May 31, 1984): 401–2,
doi:10.1038/309401a0.

[ii] David Sepkoski and Michael Ruse, *The Paleobiological Revolution: Essays on the Growth of Modern Paleontology* (Chicago: University Of Chicago Press, 2009), pp. 5.

[iii] *Ibid.*, pp. 4.

[iv] *Ibid.*, pp. 7.

[v] *Ibid.*, pp. 111.

[vi] *Ibid.*, pp. 477.

[vii] Niles Eldredge and Stephen Jay Gould, "Punctuated Equilibria: An Alternative to Phyletic Gradualism," in *Models in Paleobiology* (San Francisco, 1972), pp. 86.

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