

As a practitioner of experimental EDB, I found Love's book to be a helpful synopsis of both where our field has been and of the messiness intrinsic to its multidisciplinary practice. With regard to the former, in the first chapter he rightly notes that the historical moment frequently cited as "the beginning" of modern evo-devo (the discovery of the conservation across animals of the axis-patterning *Hox* genes) came years after a highly visible movement had begun to interrogate how development and evolution relate. Indeed, for a field driven by the dream of connecting anatomical diversity to changes in developmental processes, the idea that clams and blue whales share a common system for patterning their body axis was at first more baffling than helpful.

The first chapter also considers how EDB relates to other theoretical frameworks of evolutionary biology. We come away with the sense that, although there have been many attempts to "tie it all together," somehow we are left with a rather unkempt collection of suggestions. As Love notes, this likely stems from the fact that both evolutionary theorists and EDB researchers do not all share the same goals or methods. For example, is evolution "about" changes in allele frequencies or a more organismal- and trait-focused view of biodiversity? Within EDB, is our goal connecting phenotypic change to describable shifts in developmental processes or documenting how development evolves, even in cases where it produces a constant trait? It is both, of course, but our biases here lead to very different choices with regard to organisms and experimental methods.

In considering model organisms in the second chapter, the importance of "model clades" of related organisms is especially welcome. Indeed, after an early wave of interphylum comparisons that were fundamentally descriptive, the rigorous experimental comparison of sister species (or even interspecies polymorphisms and polyphenisms) has become the dominant approach in experimental EDB. With the advent of cheap sequencing and CRISPR-Cas9 gene targeting, cause-effect experiments historically only possible in top-tier model organisms (e.g., *Drosophila*, *Caenorhabditis*, *Arabidopsis*) are now available for a vast array of taxa, allowing many more to become such model clades. These are truly exciting times.

The last three chapters tackle the epistemology of EDB. These will be of primary interest to philosophers of science, but they are nevertheless of general importance. Terms bandied about frequently by experimentalists—such as "mechanisms" and "functions"—are often used without sufficient precision, and Love demonstrates their fundamental squishiness. We would be wise to take seriously the harm that this can do to our field.

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INHERITANCE: THE EVOLUTIONARY ORIGINS OF THE MODERN WORLD.

By Harvey Whitehouse. Belknap Press. Cambridge (Massachusetts): Harvard University Press. \$35.00. ix + 358 p.; ill.; index. ISBN: 9780674291621 (hc); 9780674298064 (eb). [Originally published by Hutchinson Heinemann, Penguin Random House, United Kingdom, 2024.] 2024.

Oxford anthropology professor Harvey Whitehouse describes three biases as human universals that together explain much of our sociality: a compulsion to imitate, even—and in fact especially—the most obscure actions of others (conformism); a passion for the spiritual (religiosity); and loyalty to groups (tribalism). *Inheritance* explores how these biases arose in our remote past, were elaborated as societies became sedentary, and eventually took on their modern expressions, shaping our societies at every step. Conformism has been essential to our expression of affiliation with others and the accumulation of cultural traditions over time. Religiosity was crucial in the formation of durable power structures with leaders whose oversight kept complex societies intact. Tribalism has promoted cohesion within societies while sometimes spurring heinous acts between them.

The author pioneered the study of extreme forms of cohesion brought on when the identities of small numbers of people become fused because of blood ties or shared transformative experiences such as undergoing intense rituals together. As rituals increasingly became a matter of routine (as with the rites of modern religions), they forged "tribalistic" bonds pivotal in keeping expanding societies intact without the need for coercion.

Whitehouse offers numerous cogent insights, although there are grounds for disagreement on some of his conclusions—no surprise in a text this ambitious. For example, in characterizing early human communities as small enough for everyone to have known one another, the author overlooks that nomadic hunter-gatherers already lived in "imagined communities" in that their dispersed societies were held together by markers of identity that potentially—and often actually—made it possible for strangers to coexist (M. W. Moffett. 2025. *Behavioral and Brain Sciences* 48:e51, p. 6), even if those identifying markers that Whitehouse spotlights have an inordinate influence on human behavior. Indeed, humans are billboards for all kinds of markers, displaying our societal membership and a myriad of other identities, among them commonalities forged between societies that ease the emergence of intergroup alliances of the sort the author has studied for tribes in New Guinea.

The science in *Inheritance* is nonetheless impressive and brought to life by accounts from Whitehouse's astonishing range of firsthand experiences.

We read of his time observing the copycat tendencies of children in Texas; documenting New Guinea tribal rituals; conferring with archeologists at a Neolithic excavation; being shown the traditions of criminal justice on Vanuatu; joining the throng at a megachurch in Singapore; meeting revolutionary insurgents in Libya; and witnessing the murders of two loyalist paramilitary leaders in Belfast.

The author draws on his studies of our three natural inclinations to propose how we can handle social difficulties. His advice is compelling, although occasionally optimistic given the thorniness of the issues. It might indeed be best if news venues prioritized intelligent solutions to problems rather than magnifying what are shocking but rare and relatively inconsequential events, yet stories must get views and clicks for media outlets to survive. And while it would be terrific if policy decisions could be made at the grassroot level, the local assemblies that Whitehouse champions could act wisely, as he points out, only by turning to the advice of experts—the trouble being that who we consider reliable is now a matter of unrelenting debate. Addressing these and other social troubles will clearly also require us to markedly improve the general public's proficiency at focusing on, and evaluating, the science.

Even a review twice this length could touch on only a few of the many arguments in *Inheritance*, which is, in short, a remarkable book.

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## PALEONTOLOGY

### FOSSILS: AN ESSENTIAL GUIDE.

By Paul D. Taylor. *Chicago (Illinois): University of Chicago Press.* \$26.00. 256 p.; ill.; index. ISBN: 9780226839394 (hc); 9780226839400 (eb). 2025. Any book on fossils piques my interest, but one with a conulariid front and center on the cover is sure to catch my attention. "This will not be just any book," I say to myself. *Fossils: An Essential Guide* is written for interested readers with little to no formal training. It is beautifully produced and richly illustrated, with a satisfying heft for its size. Any bibliophile would be proud to have this volume on their shelf.

Taylor begins with a concise but thorough overview of how fossils form, how they are collected, how they are named, and the geologic context in which they are found. The common question of, "How do you know how old this is?" is handled particularly well, although alas, the geologic timescale

graphic suffers from the common distortion of making the Cenozoic look to encompass more time than either of the earlier two eras, much less the oft-short-changed Precambrian. Ensuing chapters move from the very earliest evidence for life through the major fossil groups in an animated and engaging way, with sometimes eclectic but lovely choices of the taxa to highlight. Fossil enthusiasts from, or traveling to, the United Kingdom will find it especially valuable, as many of the examples are drawn from the fabulous collections of the Natural History Museum in London.

Although a text for the uninitiated, the author does not shrink from using technical terms that will be unfamiliar to many readers (e.g., avicularia, cardinal fossula, hypostome), but those truly inspired by fossils will appreciate the richness of the vocabulary. Biologists will find the book somewhat oddly subdivided: among the invertebrate phyla, mollusks are grouped together with brachiopods in a chapter titled Superabundant Shells, but cephalopods have their own chapter; echinoderms merit their own chapter as well, but all of the remaining invertebrate groups fall under the puzzlingly inclusive heading of simply "invertebrates"—including everything colonial, everything tube-shaped, the intoxicatingly enigmatic conulariids, as well as the chordate cousins the graptolites. Vertebrate groups receive brief but spectacular treatment in three chapters on fish and amphibians, archosaurs, and hominins and "other" mammals. And microfossils and trace fossils are each allotted a chapter at the back, along with a short chapter on the other macroscopic kingdom on the planet—the plants. Throughout, Taylor imbues his text with interesting historical and cultural tidbits that will keep readers engaged (who knew that gryphaeid bivalves were ground up and touted as a cure for arthritis or that belemnites were once thought to be the product of thunderbolts?). Although the book does not include citations to the primary literature, it will offer a wonderful accompaniment for students in an introductory course on fossils and the history of life. It is packed with information delivered in a lively and unimposing way. I found it to be a delightfully fun read.

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### BALANCING A SAUROPOD: THE PHYSIOLOGY OF A DINOSAUR.

By Brant E. Isakson. *Academic Press. Amsterdam (The Netherlands) and New York: Elsevier.* \$106.25 (paper). xv + 144 p.; ill.; index. ISBN: 978-0-12-823303-0. 2025.

I never thought I would read anything about sauropods that started and ended with a quote from former U.S. Secretary of Defense Donald Rumsfeld.