

The volume comprises nine chapters. The first three chaperone readers through theories and scientific history of organic evolution as it applies to humans, the next two do the same for social and cultural evolution, and two additional chapters trundle through a broad history of urbanization, industrialization, and digitization. The concluding chapters review some of the perils facing humans as niche constructors who construct shortsightedly and increasingly rapidly, and the authors suggest we do something about those perils.

The book is written for a general audience, and those who might most benefit from reading it are undergraduates interested to see how evolutionary biology can connect to broader concerns such as health and policy. The volume relies on rhetorical techniques that provide good objects on which to hone critical thinking skills. These include the use of human nature gone amok, broad historical claims about the unique danger of our current age, and gloomy forecasts. Historians of science will recognize that these techniques place the book in a tradition that uses science to inspire foreboding in nonspecialists. Perhaps today these techniques and their effects are warranted, but they are nonetheless familiar.

The book usefully critiques the unchecked faith—common in developed nations—in our abilities to create technologies that will save us from any potential harm. It also shows how to use the concepts and theories of evolutionary biology to frame and understand many of our most pressing issues. Although the prose is clear, often less so is the argument, the thread of which is faint in the first half of the book. Readers might usefully supplement the volume with the authors' recent, concise, and still broadly readable pieces on the same topics in scientific journals.

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EVOLUTION AND CONSCIOUSNESS: FROM A BARREN ROCKY EARTH TO ARTISTS, PHILOSOPHERS, MEDITATORS AND PSYCHOTHERAPISTS. *Contemporary Psychoanalytic Studies, Volume 28*.

By Michael (Michelo) DelMonte and Maeve Halpin. Leiden (The Netherlands) and Boston (Massachusetts): Brill. \$126.00. xiv + 155 p.; name and subject index, and author index. ISBN: 978-90-04-40757-2 (hc); 978-90-04-40875-3 (eb). 2019.

This book by two psychoanalytic psychotherapists will be appreciated mostly by other psychoanalysts. Biologists will stop reading when the authors emphasize “the limitations of the purely materialist view of life” (p. 11) and their belief that “random change[s] in DNA (genetic mutations) cannot alone explain evolution by natural selection as there has not been anything near enough time” (p. 23). The authors find many adaptations too wonderful to be products of

natural selection. Instead they attribute adaptations, organismal complexity, and social cooperation to “consciousness” that they view as “an inherent property of all matter and energy in the universe” (p. 41). They suggest that quantum entanglement offers an explanation.

Chapter 2 focuses on the views of George Kelly's book on personal constructs (1955. *The Psychology of Personal Constructs*. New York: W. W. Norton) and how they skew our views of underlying reality. The authors compare his views to those of Freud, Lacan, and Buddhist perspectives. The following chapter makes interesting points about how talking therapies and meditation both enhance awareness, perhaps by similar mechanisms. It reflects extensive reading of Perls, Bion, and Jung, and about Eastern religious traditions that preceded current attention to the practice of mindfulness. Chapter 4 explores the origins of human capacities for “symbolization” and the interesting idea that the mental defense mechanism of projective identification might be a means of communication and a cause of hysterical symptoms and somatization.

This volume illustrates the wide gap between biology and psychoanalysis, and the persistence of creationist ideas in new guises. Like many others since 1859, the authors fear a materialistic view on the assumption that it makes life meaningless. But they cite only a smattering of references on evolutionary psychology and evolutionary psychiatry, most from the previous millennium. They hardly mention cultural group selection and recent attempts to understand the evolutionary origins of language, cognition, emotions, and consciousness. They make no mention of attempts to understand the evolutionary origins and functions of the psychodynamic unconscious and its defenses. What a pity.

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EVOLUTION IN ISOLATION: THE SEARCH FOR AN ISLAND SYNDROME IN PLANTS.

By Kevin C. Burns. Cambridge and New York: Cambridge University Press. \$79.99. xi + 226 p.; ill.; index. ISBN: 978-1-108-42201-7. 2019.

Everyone loves islands. And what is not to like?

Paradise in the middle  
of a deep blue ocean  
Bordered by beautiful  
golden sandy beaches  
Rows of coconut trees  
sway on the coastline  
Swing gently to the rhythm  
of refreshing breezes  
(Hemakumar Nanayakkara, “Island of Paradise”).

Charles Darwin used plant traits on oceanic islands to inform his theory of evolution by natural selection, including dispersal traits permitting plants such as palms to reach islands in the first place, and adaptations thereafter, such as woodiness evolving from herbaceousness. The great naturalist Sherwin Carlquist followed in this tradition, drawing on vast field experience to identify signals of island life in plant traits.

In this slender, captivating volume, Kevin Burns surveys hypotheses about island syndromes—"repeated patterns in plant form and function on islands" (p. ix). Chapter I examines (at first glance oddly in a book devoted to plants) iconic island animals—flightlessness and naiveté in the face of predation, which endangers takahē and other island birds, and gigantism in island tortoises. The bird examples, Burns concludes, are truly an island syndrome. By contrast, island tortoise gigantism seems extreme only because giant tortoises have been exterminated on continents. This cautionary tale sets up the agenda for the book: to evaluate with rigor plant traits on oceanic islands hypothesized to be island syndromes. These well-known animal examples help draw in readers unfamiliar with the plant tales that comprise most of the volume. The chapter crisply sketches key features of island biology: disharmony due to dispersal constraints, the distinctiveness of island environments (including a paucity of fires), and the evolution of body size.

The next five chapters provide well-wrought natural history (in the spirit of Carlquist) examples for: shifts or losses of defenses against herbivory; changes in dispersal; reproductive systems; morphological traits (size, woodiness, leaf area); and loss of adaptations to fire. The author does not utilize formal meta-analyses (the data is too scant for that), but instead systematically reviews evidence, as available, across case studies in a narrative style. In the future, it would be valuable to see such case studies embedded in formal phylogenetic comparisons, but the approach Burns takes I find reasonably convincing, nonetheless. For defenses, the story is more complex than simple loss; some shifts in traits on islands have plausible alternative explanations. Surprisingly, loss of dispersal potential is less prevalent than traditionally believed. There are systematic changes in some reproductive traits on islands, e.g., self-compatibility, but the jury is out on others, such as dioecy. Leaf and seed gigantism are well supported, but evidence for disproportionate evolution of woodiness on islands is equivocal. Finally, a novel contribution of the book, plants lose fire-adapted traits (e.g., thick bark, serotiny) on islands. The volume ends with fascinating case studies (e.g., the cucumber tree of Socotra), and summarizes traits hypothesized as island syndromes. Out of 16 traits hypothesized to be island syndromes, two are dubious, four are well supported, and 10 require more work. This should give biolo-

gists excellent grounds to dig deeper into the fascinating biology of island plants—as if they need an excuse, because as the poet Rachel Lyman Field says in lines that apply to the many examples of evolution in island plant taxa surveyed in this book:

If once you have slept on an island  
You'll never be quite the same  
(Rachel Lyman Field, "If Once You Slept on an Island").

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#### TAXONOMY, SYSTEMATICS, AND PHYLOGENETICS

##### THE INVERTEBRATE TREE OF LIFE.

*By Gonzalo Giribet and Gregory D. Edgecombe. Princeton (New Jersey): Princeton University Press. \$85.00. xvii + 589 p.; ill.; index. ISBN: 978-0-691-17025-1. 2020.*

As a young faculty member at Michigan State University in the late 1980s I brokered merging the invertebrate paleontology course in the Department of Geological Sciences with the invertebrate zoology course in the Department of Zoology. The departments shared a building, and the new course seemed on the way to approval when I decamped for the Smithsonian Institution. Even before the revolution in phylogenetic approaches, the remarkable insights from comparative studies of development and from genomics, and the constant emergence of spectacular new invertebrate fossils (particularly from the Cambrian), the biggest challenge to such a course would have been cobbling together resources for students. No publication of the time was remotely adequate. But this new textbook is spectacularly suited for such a course, or indeed for any evolutionarily or phylogenetically based approach to invertebrate zoology.

Following two introductory chapters on Before Animals and metazoan phylogeny, the volume is organized into 53 chapters each addressing a critical node in the animal tree. Chapters on major nodes (Bilateria, Protostomia) may only be two-to-three pages long, identifying critical characters and the clades included. Chapters on the larger clades follow a consistent format, introducing the clade, discussing higher-level systematics and phylogenetic relationships, and providing a synopsis of the principal characters of the clade and the major subclades before discussing their main features such as the nervous system, feeding and digestion, life cycle and development