EVOLUTION: A Subaltern View of Eusociality

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EVOLUTION

A Subaltern View of Eusociality

Raghavendra Gadagkar

In the early 1980s, a group of scholars consisting largely of Indian historians set up the Subaltern Studies Group and persuaded Oxford University Press, New Delhi, to launch a new publication series, *Subaltern Studies: Writings of South Asian History and Society*. Inspired and led by their chief mentor, Ranajit Guha, many, now well-known, historians (among them Gyan Prakash, Gayatri Chakravorty Spivak, Partha Chaterjee, Shahid Amin, and Gyanendra Pandey) pursued a relatively new brand of historiography (*1*). The principal novelty of their approach was to focus on ordinary people—the masses, the peasants, and other marginalized groups. They created a history from "below" rather than the usual narrative of the kings, leaders, and other elites. Two decades and ten volumes later, it is clear that the subaltern studies have yielded a valuable new perspective on history, one perhaps especially useful for understanding and managing present-day social and cultural problems.

In his 1971 book *The Insect Societies*, Edward O. Wilson (*2*) picked "eusociality"—a term coined by Suzanne Batra (*3*) and given a second lease on life by Charles Michener (*4*)—to describe the most organized of animal societies, those in which group members share a composite nest and exhibit cooperative brood care, overlap of generations, and reproductive castes. Wilson vested eusociality with such an elite status that, overnight, students of ants, bees, wasps, and termites felt they belonged to a privileged new community of entomologists ideally poised to solve the Darwinian paradox of altruism. They (I should say, we) have done well: Hundreds of species of eusocial insects have been studied in depth, and we now have a reasonably sophisticated understanding of the forces that mold the evolution of insect societies. Nevertheless, no one would claim that the problems concerning the evolution of sociality and altruism are entirely solved.

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What should we do next? It often helps to start from a new perspective. To this end, some are offering bold new theoretical approaches (*5*–*8*). But perhaps we also need fresh data from previously neglected kinds of insect societies. This is the approach James T. Costa offers in *The Other Insect Societies*. Costa (the director of the Highlands Biological Station, North Carolina, and a professor at Western Carolina University) launches the entomological equivalent of subaltern studies, focusing deliberately on species that have failed to make it to Wilson's elite grade of eusociality.

The Other Insect Societies

by James T. Costa

Harvard University Press, Cambridge, MA, 2006. 811 pp. $59.95, £38.95, €55.30. ISBN 0-674-02163-0.

Readers will find in the book a fascinating wealth of information about the obscure social lives of earwigs, grasshoppers, crickets, mantids, cockroaches, aphids, treehoppers, bugs, thrips, beetles, caterpillars, sawflies, and even some non-insect arthropods (spiders, centipedes, millipedes, and crustaceans). Costa's book will inevitably be compared with *The Evolution of Social Behavior in Insects and Arachnids*, edited by Jae C. Choe and Bernard Crespi (*9*)—Wilson and Burt Hölldobler both mention that work in their introductory comments on the book. In my review of the Choe and Crespi volume, I likened it to Aladdin's magic lamp and the index to a genie who can "take you to wonderful, unheard-of and even amorous worlds" (*10*). *The Other Insect Societies* is a new avatar of the magic lamp, complete with a high-power genie. It provides over 1000 entries in its subject index and over 2000 in both the taxonomic and author indices. And in contrast to the contributors to the Choe and Crespi volume, Costa tells readers a great deal about the source of his facts—who did what, when, why, where, and how.

I doubt that many people would read the book from cover to cover or benefit from doing so. It is more likely that readers who are already wedded to specific taxa will devour the chapters on their favorites with pleasure and profit. I am rather optimistic that, paralleling the effects of the subaltern studies of Indian historians, a focus on other insect societies will provide valuable fresh perspectives useful even for understanding present-day eusocial species.

Although I found much to praise in the book, if I were to write a 100-page review—and one could envision such a review; after all, it's a 700-page book—I would probably devote 90 pages to extol its virtues and some 10 pages to criticize and disagree with the author. I would dispute some of his interpretations, regret his failure to cite certain papers, question some of his assignments of priority, and reject his calls to abandon less entrenched terms (e.g., subsocial, communal) while retaining eusociality. Costa proceeds at an unduly leisurely pace, which is made more problematic by the absence of summaries at the end of individual chapters. A thematic, rather than taxonomic, treatment of the subject matter probably would have been more enticing and easier to follow; it might also have allowed Costa to weave the

Gathering together to gather. In mud puddling, males gather from wet soil supplementary nutrients needed by the females to produce more eggs. This aggregation of common albatross butterfly (*Appias albina*) was photographed at the Chinnar Wildlife Sanctuary, Kerala, India.

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chapters together into a more unified account. I would not endorse the claim that the "hope for a universal ecological explanation of cooperative breeding may be doomed." Although I have now used my quota of 100 words of criticism and disagreement proportionate with the length of this review, I cannot ignore the author's most remarkable statement. After criticizing S. Mukerji, for not knowing in 1927 that the position of the spinning apparatus and the mechanism of spinning in embiids (webspinners) had already been discovered and published by M. Rimsky-Korsakov in 1910, Costa incredibly goes on to say that "Perhaps we should not be surprised at such errors; after all, these inconspicuous insects long remained out of reach for most temperate-zone entomologists." It seems mind-boggling that such an invidious statement was written in the first place, let alone that it passed the scrutiny of referees and editors.

I would not claim that what is already known about the non-eusocial insect societies, as painstakingly and thoroughly detailed in Costa's book, makes us substantially wiser about the evolution of insect social behavior. Instead, I suspect that the book will draw attention to these other insect societies and make their study fashionable and feasible. A few hours with Costa's book will bring any beginner up to date with a century's worth of scattered literature on almost everything that is known about any of the many obscure groups of insects discussed. One could reasonably expect a new graduate student to read the appropriate chapter in the book and embark on a study of the corresponding group for her dissertation.

There is also an altogether different reason why I am delighted to see *The Other Insect Societies* in print. If an early-career academic like James Costa can write a 700-page account that covers relatively little of his own research, there is still some hope that we can bring the reading and writing of books back into fashion among younger biologists.

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ENVIRONMENT AND RELIGION

Hoping to Establish Common Ground for Saving Biodiversity

Steven Bouma-Prediger

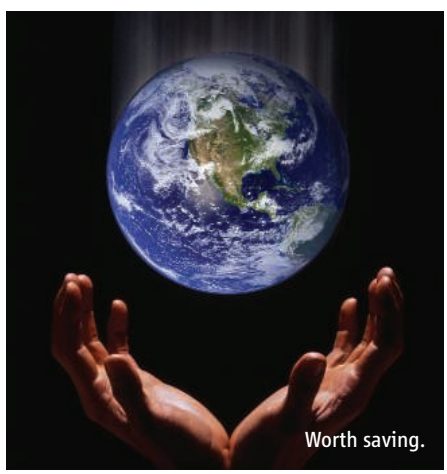
Edward O. Wilson is no stranger to readers of *Science* or the general public. One of the most famous scientists living today, Wilson is the author of more than 20 books, two of which have won the Pulitzer Prize for nonfiction. In his 40 years as a faculty member at Harvard University, he has put forward important scientific theories (including island biogeography and sociobiology) and coined novel terms (such as biophilia). Through it all, Wilson has been an articulate and passionate advocate for the conservation of the natural world.

Though now retired, Wilson's influence is still considerable. So any book from him is noteworthy. But his *The Creation: An Appeal to Save Life on Earth* is certain to draw added attention, not least because the book is written as a personal letter to a hypothetical Baptist pastor. Although raised in Alabama as a Southern Baptist, Wilson long ago gave up that faith; he is now and has long been a self-proclaimed "secular humanist." Nonetheless, given the scope and pace of ecological degradation, Wilson suggests that Christians and secularists "set aside our differences in order to save the Creation." His new book is, as it were, an olive branch extended to Christians, especially conservative Christians in North America, to make common cause in the effort to preserve biodiversity.

The Creation
An Appeal to Save Life on Earth
by Edward O. Wilson
Norton, New York, 2006. 185 pp. $21.95, C$27.50. ISBN 0-393-06217-1.

Wilson's argument, in essence, is this. His first premise is that "the Creation—living Nature—is in deep trouble"; indeed, we are facing a "biological catastrophe." Evidence for this claim runs throughout the book, from a discussion of alien species in 16th-century Hispaniola to the current "pauperization of Earth" evident in tropical rainforests. We face a stark choice: either "conserve Earth's natural heritage, or let future generations adjust to a biologically impoverished world."

The second premise, and the reason for this particular book, is Wilson's belief that "religion and science are the two most powerful forces in the world today," and thus "if religion and science could be united on the common ground of biological conservation, the problem [of biological catastrophe] would soon be solved." So writing to his imagined Baptist pastor, Wilson acknowledges that "you have the power to help solve a great problem about which I care deeply."


Worth saving.

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Wilson devotes most of the book to an attempt to persuade his reader to care for the planet and its biota. For example, he argues that because we humans are inextricably dependent on a plethora of other species for our very survival, "even the most recalcitrant people must come to view conservation as simple prudence in the management of Earth's natural economy." In addition to self-interest, however, Wilson insists that each species is "a masterpiece of biology, and well worth saving." He further argues that many organisms, such as the pitchfork ant, evoke wonder and that such wonder motivates care. Moving still farther beyond prudence, Wilson

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