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The Lives of Ants

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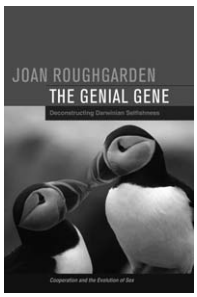
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occurred through conflict among individuals producing gametes. But Roughgarden summarizes other models for the evolution of sperm and egg that do not rely on conflict.



Part III is "The Social System for Sex," in which the author examines behavioral systems and asks whether theoretical questions are better tackled by a competition-based approach (e.g., considering evolutionarily stable strategies) or by a cooperation-based approach (e.g., Nash bargaining solutions). There are many game theoretic approaches to behavioral questions, and biologists should indeed consider all possible models. This part concludes with a chapter summarizing how Roughgarden's view affects a wide range of evolutionary questions.

The book ends with a section on evolutionary psychology and human sexual behavior that I consider a mistake. Roughgarden takes on subjects as wide ranging as secondary sexual characters, gender multiplicity, homosexuality, human attractiveness, the human brain, and rape without adequately introducing them and incorporating them into her main theme. It seems almost as though the author didn't have the time or space to deal with these issues but felt they needed to be mentioned. I left this section thinking that the author was as guilty of assuming that cooperation explains everything as are proponents of sexual selection when they assume that competition explains everything.

What is the bottom line? Even though I disagree with the author on some points, and though in some cases Roughgarden does her ideas a disservice by discounting well-documented observations of sexual conflict, I applaud her for shaking things up. I believe she is correct in some of her criticisms, and we should remember that competition in sexual interactions is an assumption that should be tested, rather than a factual starting point. We all need to be more careful in our thinking.

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AN ANT CORNUCOPIA, TRANSLATED

The Lives of Ants. Laurent Keller and Élisabeth Gordon. Oxford University Press, 2009. 256 pp., illus. $27.95 (ISBN 9780199541867 cloth).

The Lives of Ants is an eclectic, personal book aimed at introducing ant biology to the masses. It is the collaboration of Laurent Keller, a leading sociobiologist and myrmecologist at the University of Lausanne, and the science journalist Élisabeth Gordon. As Keller and Gordon acknowledge early in the book: "Ants are a trendy thing nowadays." Unlike other books on the market with more sweeping ambitions, it is clear that they aim for a breezy discourse on all things ants (with entries on film, ecosystems, the tree of life, and electrical engineering along the way). To that end, this collection of 31 short essays is better read in a hammock on an autumn afternoon than in a library carrel. It wanders broadly and lightly. It does not dwell in controversy; instead, it is content to describe Keller's take on a wide variety of subjects having to do with ants, with a particular focus on his favorite question: Just what holds these superorganisms together and makes them tick?

The Lives of Ants is at its best when it describes scientists—often Keller and his colleagues—devising experiments and testing hypotheses. One such essay describes the many studies detailing precisely how *Cataglyphis* ants find their way home in featureless desert. Along the way one encounters researchers digging up nests to tag young ants with paint, later following them as they learn their territory. Other researchers construct mazes with symbols as signposts to test ants' visual memory (which, it turns out, is amazingly good). Still others test for solar compasses by pasting ultraviolet-blocking contact lenses on ant heads. Such accounts convey how enjoyable and tractable (close equivalents in field biology) insects can be. In chapters like these, one is reminded of Niko Tinbergen or Jean Fabré.

Likewise, Keller enjoys discussing his various collaborations. When he does, there is a detectable uptick in the spryness of his prose (e.g., at one point referring to Gregor Mendel as "the pea plant man"). My favorite chapter is an account of his work with Ken Ross, detailing the genetics explaining why some invasive fire ants have large, diffuse colonies with many queens, while others fit the more usual notion of a colony ruled by a single queen to whom her workers are fiercely, and territorially, protective. I won't give away the ending, but it involves a single gene, one allele that is classically "selfish," a smelly protein coded by the gene, and regicide.

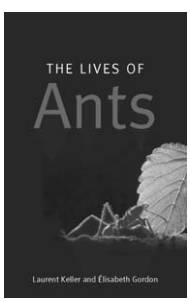
The Lives of Ants is less successful (and this happens frequently) when it reverts to simple descriptions of what is currently known, absent the real work of myrmecologists or the milieu in which they struggle (there is often a tell in such chapters: frequent and lengthy quotations). Given the intellectual breadth of myrmecology—as a subject for evolutionary biologists, community ecologists, artificial intelligence engineers, as well as sociobiologists—maintaining a grasp of each field's puzzles and protocols is a tall order. That said, chapters on the origins of ants, the ecology of invasive species, and the organization of supercolonies like the army ants and leafcutters (pretty juicy stuff and the subject of much ongoing research) don't have much oomph.

The book's other failing is in the readability of its prose. For every essay that

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flows, another stumbles out of the gate and never hits its stride. Sentences are often longer and more convoluted than necessary. Researchers are often scrupulously identified by name, institution, city, and nation. In short, *The Lives of Ants* can be a clunky read. This must reflect, to some degree, the book's ontogeny from the mind of Keller, as interpreted by Gordon, and, finally, translated from the French by James Grieve. But that is little comfort to a reader who, in the midst of what should be a gripping research story, finds himself grasping for the editorial pen. At one point while reading, I grabbed Bert Hölldobler and E. O. Wilson's *The Superorganism* (2008, W. W. Norton) to compare their take on the origins of eusociality. It was a palpable relief to read one well-crafted sentence after another.



Both *The Superorganism* and *The Lives of Ants* came out within months of the other. Both are written by myrmecological heavyweights. Both are pitched to scientifically literate readers. Each has somewhat different foci, however. *The Superorganism* is a bigger commitment, and, at the same time, narrower: It's a thorough review and synthesis on the evolution and diversification of eusociality in the social insects. It is also lavishly illustrated, a positive boon to a readership which couldn't tell a gaster from a hole in the ground. In contrast, *The Lives of Ants* can slip into a briefcase or reside tidily on the nightstand for a short, self-contained account on a variety of ant-related topics.

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