

voices of Stanford and Bearzi work well enough. Stanford, an established primatologist, knows the arguments of his field quite well. Bearzi, with considerably less experience in scientific publishing, was far less critical of the delphinid literature than she should have been. I would recommend this volume to interested high school students or someone with a casual interest in wildlife, but its glossing of scientific concepts and literature would keep it out of my university classroom. I would hesitate to recommend it to someone with a serious interest in dolphins or apes. Although none are fatal, significant errors and omissions pepper the book. For example, Japanese primatologists are given short shrift compared to Leakey's disciples. Some of the references to monkeys and apes are confused, even though the authors highlight the sin of such taxonomic errors. Similarly, references to dolphin species are vague. Some terms are ill-defined. Speculations or hypotheses regarding cooperative hunting and "aunting" or babysitting in dolphins are treated as fact. Female bottlenose dolphin bands *might* protect against harassing males or predators, but this has not been tested. In several places (pp. 140, 164), the large neocortex and frontal lobes of dolphins are regaled. But, dolphins have a thin neocortex (missing Layer IV) and their frontal lobes are small, not large! Also, Lefevbre et al.'s paper on brain size and life-history relationships in delphinids was retracted because of a data error that undermined their original findings. Bearzi and Stanford need to check their facts more closely and approach the literature with a more critical eye. This would not detract from the dolphin or ape stories, and would make for a far better book.

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GENES AND BEHAVIOR: NATURE-NURTURE INTERPLAY EXPLAINED.

By Michael Rutter. Malden (Massachusetts): Blackwell Publishing. \$26.95 (paper). ix + 280 p.; ill.; index. ISBN: 978-1-4051-1061-7. 2006.

Almost everyone recognizes that behavioral differences reflect the environments in which individuals were raised and the particular sets of genes they inherited. It was not always so. When Michael Rutter (an eminent child psychiatrist) learned his trade in the 1960s, the troublesome behavioral patterns of his patients were all blamed on bad parenting and social injustice, and the mere suggestion that genes played a part was dismissed as reactionary nonsense. But Rutter had an open mind. As genetics took center stage in medical research, he became increasingly interested in applying it to his own field. He also recognized that

genetic differences were only part of the story, and that upbringing and social circumstances should not be overlooked.

This book sums up Rutter's views about the interplay between genes and environment in the development of behavioral differences. Being a child psychiatrist, he is mainly interested in troublesome patterns such as autism and attention deficit hyperactivity disorder (ADHD), both of which are highly heritable. But they and the other mental disorders he considers are only examples. The author's main aim is to explain how genes and environment interact in the development of characteristic patterns of behavior, and he is just as concerned with the tactics of research and the interpretation of data as with the results themselves.

By carefully considering basic principles and illustrating them with cutting-edge examples, Rutter has written an excellent introduction to behavioral genetics. Although the precise interplay between genes, environment, and behavior is inherently complex, the fundamental ideas are not hard to understand. This book will prepare readers to thoughtfully evaluate the continuing flood of discoveries in this flourishing field.

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EXPLORING ANIMAL SOCIAL NETWORKS.

By Darren P. Croft, Richard James, and Jens Krause. Princeton (New Jersey): Princeton University Press. \$75.00 (hardcover); \$35.00 (paper). ix + 192 p.; ill.; index. ISBN: 978-0-691-12751-4 (hc); 978-0-691-12752-1 (pb). 2008.

In recent years, network theory has been adopted by animal behavior researchers to formally represent the social ties among animals. Network theory has been widely used in the social sciences for decades, but recent computational developments and high-profile publications (mostly by mathematicians, computer scientists, and physicists) have now brought network theory into the spotlight. *Exploring Animal Social Networks* provides one of the first introductory textbooks on the topic of social network theory in the context of animal behavior. It targets advanced undergraduate and graduate students who have little or no experience analyzing the social behavior of animals.

This book provides a technical overview of some network theory analysis methods and explains how they can be applied to the study of social behavior. Following a brief introduction to animal social networks, the authors discuss issues of data collection, explain simple network measures, and conclude with advanced statistical methods for analyzing social networks. The writing is clear and flows

well, with helpful examples, illuminating figures, and occasional humorous remarks that render more engaging the otherwise dry methodological information.

For some basic network analyses, the volume provides detailed instructions for using the software tool UCINET, which is often used in animal social network studies. This will allow novices to jump right into an exploratory analysis of their data, but showcasing only one specific program may deter researchers from examining new software that are constantly being developed in this dynamic field.

Despite detailed instructions for some methods, readers are left to explore certain topics more in depth on their own. The authors state this explicitly: "our intention is to be exploratory and suggestive, rather than exhaustive" (p. 118). Thus, using this book alone, it would be difficult to go beyond a basic examination of network measures. To make up for this, relevant references to the primary literature are provided throughout the more advanced chapters for further reading on appropriate statistical methods.

Overall, this volume provides an engaging, accessible, and timely introduction to the use of network theory methods for examining the social behavior of animals.

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THE ORIGIN OF SPEECH. *Studies in the Evolution of Language, Volume 10.*

By Peter F. MacNeilage. Oxford and New York: Oxford University Press. \$50.00. xi + 389 p.; ill.; index. ISBN: 978-0-19-923650-3. 2008.

The study of the evolution of language and speech has flourished over the last decade, after over a century of silence. This book is the tenth in a series published by Oxford University Press since only 2001. The greatest obstacle facing all such research is the lack of fossil evidence, rendering much of the work quite speculative. Some progress has been made, however, by extrapolating from various types of linguistic behavior, which is what MacNeilage does here, using the babbling of infants, a fairly well-studied phenomenon over the last quarter century, as his empirical base.

Given the nature of the data, the author's argument must be ontogenetic, extrapolating to language evolution from the quite fascinating path that human infants take from babbling to articulate speech. The onset of babbling in normal infants is quite sudden, at about seven months, and the behavior lasts until about 18 months, overlapping with a child's first words. Babbling is repetitive, with a fairly clear open-mouth closed-mouth repetitive alterna-

tion of the stereotypical "babababa" form, which MacNeilage calls mandibular oscillation. He paints a picture of evolutionary exaptation of this pattern over the course of human evolution from chewing through lipsmacks, common among higher primates in the context of one-on-one social interactions, through speech. He argues that a general purpose human capacity for mimesis together with this rhythmic mandibular oscillation provided a frame for speech, whose contents eventually were filled in by articulate speech sounds.

The author shows convincingly that the sounds produced in babbling, even early in ontogeny, are quite limited and well-defined, with strong correlations within a given mandibular cycle or frame (syllable) between closed-mouth (consonant) sounds and open-mouth (vowel) sounds. Of these, the most common is a "ba"-like sequence consisting of a labial stop consonant followed by a central vowel, which is also the most frequently occurring syllable type across languages. MacNeilage hypothesizes from this evidence that "ba" is "the single most fundamental pattern in speech—indeed, perhaps the proto-syllabic pattern" (p. 119).

Of the book's seven parts, two, comprising about one-third of the total page count and the heart of the work, are devoted to this central idea of the mandibular cycle as the evolutionary basis for speech; one part connects the central idea to brain organization; and one contains an outsider's critique of the standard linguistic approach to sound systems, with a shorter section devoted to sign language. Overall, these peripheral sections are less well supported empirically than the central argument, which I find quite compelling.

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NEUROBIOLOGY

THE NEUROSCIENCE OF FAIR PLAY: WHY WE (USUALLY) FOLLOW THE GOLDEN RULE.

By Donald W. Pfaff; foreword by Edward O. Wilson. New York: Dana Press. \$20.95. xiii + 234 p.; ill.; index. ISBN: 978-1-932594-27-0. 2007.

This volume is a comprehensive discussion of the neurobehavioral underpinnings of the "Golden Rule" (Chapter 2), i.e., the altruistic motives that compel us to act toward others with no expectation of retribution and even assuming the risk of sacrificing our physical integrity (Chapter 1). In view of the evil that haunts our ordinary lives—