

ter 1), the role of demography in those fields (Chapter 2), and evolutionary and population genetics (Chapter 3). Next, he takes up a series of topics that illustrate the power of evolutionary medicine: cystic fibrosis; life history tradeoffs and aging; cancer; coevolution of hosts and pathogens; sexually transmitted diseases; malaria; evolution of lactase persistence in humans; and diseases of civilization. These chapters take up the discovery of the diseases and their physiological causes, the environmental context, and evolutionary mechanisms responsible for disease. However, the life-history chapter also provides a brilliant conceptual framework to understand why natural selection does not optimize health, and his exposition of life history tradeoffs and their consequences for human health is brilliant.

There are a few minor errors, but they are far and few between and do not detract from the thrust of the book. Although Perlman (personal communication, 2013) did not write this as a textbook, and I agree that it omits some important topics, his choice of subject is so astute, and his writing is so engaging and lucid that I plan to use it as a textbook for my course in Darwinian medicine. This volume should find a broad audience among evolutionary biologists, physicians, biomedical researchers, students who plan to enter these fields, and biologically literate readers who just want to know why they get sick. I recommend it enthusiastically to them all.

MICHAEL A. BELL, *Ecology & Evolution, Stony Brook University, Stony Brook, New York*

EVOLUTION AND RATIONALITY: DECISIONS, COOPERATION AND STRATEGIC BEHAVIOUR.

Edited by Samir Okasha and Ken Binmore. Cambridge and New York: Cambridge University Press. \$99.00. x + 281 p.; ill.; index. ISBN: 978-1-107-00499-3. 2012.

The intersection of rational choice/decision theory and evolutionary game theory is one of the most active areas of interdisciplinary research in the behavioral sciences. This comes as little surprise considering the ramifications for understanding puzzling phenomena such as the maintenance of genuinely altruistic behavior in human populations. Okasha and Binmore's collection brings together the once-estranged work of philosophers, economists, biologists, and cognitive scientists in an attempt to assess the state of play and prospects for progress.

Hammerstein presents a condensed history of decision theory and the influence of evolutionary game theory upon earlier decision-theoretic models of behavior, describing how the interpretation of Nash equilibria as evolutionary stable states

(ESS) promises a way of predicting the outcomes of unconscious dynamic processes. However, as Huttegger and Zollman make clear, the problem is that natural selection will not always carry a population to an ESS. Some Nash equilibria are "subgame imperfect" and arguably much more important to the outcome of evolutionary phenomena than previously imagined.

Particularly important is the piece by philosopher Kim Sterelny, who makes a strong case for human behavioral ecology as the proper framework of understanding. He stresses that changing social environments since the Pleistocene have enabled a decoupling of fitness and utility. Small heterogeneous tribes have given way to large stratified societies. These diachronic changes have placed very different demands upon human decision-makers. As group size increases, a rational economic agent is less likely to cooperate to secure the benefits of repeated direct reciprocation since interaction between any two agents will, *ceteris paribus*, be less likely and information typically more unreliable. When the culling power of group selection goes down, as it does when there are fewer and larger human groupings, ideas other than those acquired "vertically" can flourish. Moreover, these "horizontally learned" ideas need not necessarily be beneficial to group fitness.

Okasha and Binmore's collection encapsulates some of the most incisive and innovative work in an area of burgeoning interest to both the life sciences and humanities. It will reward determined readers.

PETER TAKACS, *Philosophy and History & Philosophy of Science Program, Florida State University, Tallahassee, Florida*



BEHAVIOR

EVOLUTION AND HUMAN SEXUAL BEHAVIOR.

By Peter B. Gray and Justin R. Garcia. Cambridge (Massachusetts): Harvard University Press. \$39.95. xxi + 354 p.; index. ISBN: 978-0-674-07273-2. 2013.

This is a well-researched, well-written, and engaging volume. Gray and Garcia navigate cross-cultural, cross-species, and diachronic data on sexuality and reproduction to illuminate human sexual behavior. The book's 12 chapters cover such topics as sexual differentiation, the development of sociosexual behavior, puberty and adolescence, reproductive anatomy and physiology, and fertility. The authors

understandably focus on their areas of expertise, such as parental care, pair bonding, and the demographic and life-historical factors influencing sexual behavior—for example, the effects of pregnancy, lactation, and menstruation on people's sex lives. These discussions are peppered with vivid examples culled from the literature or the authors' personal experiences.

Despite what the title might suggest, however, this is not a volume about human sexual selection. Gray and Garcia review some basic concepts from sexual selection theory in the introduction, but the large body of evolutionary psychological research on sexual selection and human mating strategies is only touched upon. Overall, about 5-10% of the book is dedicated to human sexual selection, and some topics perhaps deserve fuller coverage. For example, male contest competition is characteristic of the great apes, and while the authors rightly stress the mitigating influences of human pair bonding and biparental care, this comes at a cost of sparse consideration of intrasexual selection, and how this might shed light on physical aggression in boys and men. Similarly, they sweep aside as "difficult to test" the hypothesis that male mate choice shaped female body fat distribution, rather than distinguishing between the selective pressures favoring copious body fat (the exigencies of gestating and nursing highly encephalized offspring) and the pressures that distributed this fat on the breasts and hips. Sexual coercion and rape are also surely important topics within the domain of human sexual behavior, and of relevance to human sexual selection, yet these receive little attention.

Curiously, while the authors extol the virtues of adaptive thinking, their text includes no review of natural selection theory, and kin selection is described only parenthetically as "altruism between relatives" (p. 93). Moreover, they sometimes seem to shy away from adaptive explanations and prefer by-product explanations, as when discussing women's orgasms and menopause, both of which have plausible adaptive explanations with at least moderate supporting evidence.

Some readers are thus likely to find Gray and Garcia overly cautious in applying adaptive reasoning, and some will prefer a fuller coverage of human sexual selection. But even these readers will find this volume stimulating, useful, and well reasoned. The authors set out to "cover the breadth of evolutionary theory, comparative animal research, cross-cultural sexuality, sexual behavior across the life course, and mechanisms of sexual behavior" (p. xvi), and they do so admirably. *Evolution and Human Sexual Behavior* is appropriate for graduate and upper-level undergraduate courses in anthropology,

biology, psychology, and related fields, and it should be included in the library of any student of evolution and human sexuality.

DAVID A. PUTS, *Anthropology, Pennsylvania State University, University Park, Pennsylvania*

CAUSES AND CONSEQUENCES OF HUMAN MIGRATION: AN EVOLUTIONARY PERSPECTIVE.

By Michael H. Crawford and Benjamin C. Campbell.
Cambridge and New York: Cambridge University Press.
\$99.00. xv + 550 p.; ill.; index. ISBN: 978-1-107-01286-8. 2012.

Migration is one of the major issues in the political world today. Over much of Europe, nations are divided in their response to population shifts between European Union countries (the U.K., for example, with concerns about a high rate of migration from Eastern Europe) and to influx from outside Europe (in 2011 nearly 50,000 Africans landed on the tiny island of Lampedusa). The numbers can drive important political trends and movements, and the pictures regularly seen on television can move people to tears. And it is not only negative. The U.S. is full of tales of migrants arriving with just their clothes and rising to be millionaires. This pattern, both horrific and heartwarming, can be extended back through the trans-Atlantic slave trade and the optimistic migrant ships to the wandering of barbarian tribes in the death throes of the Roman Empire to the major migrations that went with farming and pastoralism. Like it or not, migration is a major factor in human life—and evolution.

Crawford and Campbell have brought together a multidisciplinary collection of papers exploring all aspects of migration—as they say, causes and consequences, loosely evolutionary in orientation. The papers are concerned with both the underlying mechanisms that prompt and promote migration, and the patterns that have shaped the human world. The book starts with a series of chapters that cover the theoretical or mechanistic aspects of migration—for example, Campbell and Barone explore how there are strong personality associations shared by migrants, and that these may have genetic bases that link to novelty seeking, but would also map on to particular sociocultural factors. Similarly, Fix discusses how migration is not random in relation to kin structures. This has important implications for both how genetic diversity is generated and how source and migrant populations are strongly affected.

The second and largest part of the book presents a number of papers on each of the major continents or regions—Africa, Europe, Asia, Oceania, Americas, and Caribbean (18 papers in all). The topics involved are diverse. This represents