

modulated by genetics. Chapter 6 (by Baker et al.) adopts an evolutionary perspective to pharmacogenomics and infectious diseases in Africa. Importantly, substantial variation in African allele frequencies exists for many disease-associated and pharmacogenetic loci, and some of these allele frequency differences are due to natural selection. Chapter 7 (by Dandara and Matimba) highlights the potential of pharmacogenomics to improve health in Africa. Genetic variation affects the absorption, distribution, metabolism, and excretion (ADME) of pharmaceuticals. One recurring theme in this chapter is the importance of cytochrome P450s in both African and non-African populations. Chapters 6 and 7 also contain numerous citations that will serve as jumping-off points for readers in search of additional information.

JOSEPH LACHANCE, *School of Biological Sciences, Georgia Institute of Technology, Atlanta, Georgia*



BEHAVIOR

THE HUMAN SWARM: HOW OUR SOCIETIES ARISE, THRIVE, AND FALL.

By Mark W. Moffett. New York: Basic Books (Hachette Book Group). \$32.00. viii + 468 p.; index. ISBN: 978-0-465-05568-5 (hc); 978-1-5416-1729-2 (eb). 2019.

The rise and fall of societies has traditionally been subject matter for history and sociology, but with *The Human Swarm*, the author establishes the human society as a legitimate object of study for evolutionary biologists. Societies are different from groups of co-operating individuals in that they have a *social identity* that sets the terms for group membership. In ant colonies, identity is manifested by a unique scent; in whale pods, by unique sounds; and in human groups, by a wide range of signals, including visual markers, accents, and subtle behavioral cues. Identity is what allows the size of societies to increase without all members having to know each other. Strangers can expect to cooperate relatively easily each other, as long as they share a social identity.

Moffett argues that swarms are human-like: ant colonies are also defined by identities (signaled by unique scents), and here he takes the view that colony boundaries are not determined by kin selection and genetic relatedness alone. However, this volume is at its most compelling when it shows how swarm-like humans are. The author's analyses of historical examples of the rise and fall of societies through conquest (addition of social identities) and ethnic tensions between overlapping identities, or how social identity has become more complex as societies have grown in size, are masterful.

Given the centrality of identity, with its rich philosophical and sociological overtones, the book unsurprisingly has interesting ethical and political implications. In particular, Moffett's approach puts pressure on the common idea in political theory that individual identity is the only type of identity that matters in liberal Western democracies. Given how individual actions are regulated by robust legal and institutional frameworks, social identities are seen as atavistic relics of the past. Yet according to this thinking, multiculturalism should never have been the challenge it obviously is in Western countries today. The author's framework helps us understand how social identity is not optional for humans. It also helps to understand how, even though social identities very often conflict, many historical societies have nonetheless successfully housed many disparate, partially overlapping identities.

The Human Swarm is a remarkable intellectual achievement of sustained intensity, to be commended for navigating an important yet difficult area in between biology, psychology, sociology, economics, history, and philosophy. Fruitfully, it also raises many questions for future research. One particularly important question: What is the relation between social identity and status? One of the take-home messages is how humans tend to rank outside groups as being of different (generally lower) status, and thus how human xenophobic tendencies come all too easily. However, Moffett acknowledges in passing that when outsiders are viewed as "competent," humans may envy them or crave interaction with them, thus assigning them a higher status (p. 188). Although the author has mainly perceptions of groups in mind, it does suggest that perceptions of competence and benevolence may be fundamental for social interactions. It also suggests, on a positive note, that the prospect of trust in and cooperation with an outsider may ultimately trump conflicts difference in social identity.

HUGH DESMOND, *Center for Biomedical Ethics & Law, Katholieke Universiteit, Leuven, Belgium*

HUMAN LANGUAGE: FROM GENES AND BRAINS TO BEHAVIOR.

Editor-in-Chief: Peter Hagoort; Section Editors: Christian F. Beckmann et al. Cambridge (Massachusetts): MIT Press. \$150.00. viii + 741 p.; ill.; index. ISBN: 978-0-262-04263-5. 2019.

This volume is motivated by the view that one cannot gain insight into human language without taking into account the multiple "levels" of the language faculty. These levels encompass genetic, neuroanatomical, and high-level cognitive structures, among others. Thus, the editor has chosen to organize the book into eight sections corresponding roughly to