Noise Matters: The Evolution of Communication.

By R. Haven Wiley. Cambridge (Massachusetts): Harvard University Press. $45.00. xiii + 502 p.; ill.; index. ISBN: 978-0-674-74412-7. 2015.

Communication is everywhere and occurs at the molecular, cellular, and organismal levels. Thus, books about animal communication have a lot of ground to cover and tend to be on the long side. R. Haven Wiley does not disappoint us with this comprehensive and refreshingly novel reappraisal of the evolution of communication. His main thesis is that communication systems must be studied simultaneously from the perspective of the signaler and the receiver, and their study must be based the logic and tools of signal detection and game theory. This deceptively simple premise has profound consequences. The volume is organized into four main parts.

The first part includes the most clearly written, logically presented description of sound, and its production, transmission, reception, and noise that I have read. Part Two introduces signal detection theory and justifies the underlying focus of the book on noise and uncertainty. The explicit signal detection focus ensures that we consider the problem that actors must make decisions under uncertainty (noise is everywhere) and this creates a set of constraints that both signalers and receivers must solve. He defines a signal in a nontraditional way that emphasizes, among other things, that signals typically evoke responses from receivers but do not contain all of the energy required to power that response. His definition combines what others traditionally refer to as cues into a more inclusive view of signals, but it is a logically cohesive definition that follows his focus on signal detection. He then explains why communication must be simultaneously viewed from the perspective of both the signaler and the receiver, and that evolution leads to equilibrium solutions for signaling systems whereby signals are costly, honest, and cooperative in the sense that both signalers and receivers could not be doing any better with other combinations of signal structure or decision thresholds. I found the key chapter that integrates this (Chapter 10) tough going.

In Parts Three and Four, Wiley first applies his model to reevaluate honesty, the importance, and role of sexual selection to explain the evolution of extravagant displays, cooperation, and complex sociality, and how the model also works at the molecular and cellular levels. These chapters will provide guidance for anyone who wishes to test his model; something he has worked hard to ensure by pointing out needed work and the underlying logic. Then he speculates more broadly about human language evolution, meaning, and free will.

Although the volume is biased toward acoustic communication, and many examples come from studies of birds (he is a bioacoustician and ornithologist), his thesis is much broader and illustrated with examples from other modalities and taxa. The book was written with a limited, but annotated bibliography; I wished for a more comprehensive set of references in the text. Despite this minor quibble, this provocative and extremely well-written volume will stimulate discussion and hopefully more research that seeks to parameterize his models. I completely agree that noise matters and I hope this book serves its purpose by introducing this powerful way of thinking about signal evolution to a broader audience.

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Among Chimpanzees: Field Notes from the Race to Save Our Endangered Relatives.

By Nancy J. Merrick. Boston (Massachusetts): Beacon Press. $18.00 (paper). xv + 254 p.; index. ISBN: 978-0-8070-8490-8 (pb); 978-0-070-8491-5 (eb). 2014.

The Social Dog: Behaviour and Cognition.

Edited by Juliane Kaminski and Sarah Marshall-Pescini. Academic Press. Amsterdam (The Netherlands) and Boston (Massachusetts): Elsevier. $59.95 (paper). xiv + 404 p. + 6 pl.; ill.; index. ISBN: 978-0-12-407818-5. 2014.

Research on the behavior and cognition of dogs has exploded in recent years. This is likely because dogs are abundant, enthusiastic about working with people (and often with owners who are enthusiastic about letting them be studied), easy to work with, and due to their close association with humans, they offer the tantalizing promise of telling us something fundamental about ourselves. Despite the abundance of new research, however, research on dogs has to some extent remained a niche, rarely cited in studies of behavior and cognition in other species. This is a shame, given the high quality of much of this new research. *The Social Dog* provides a much-needed overview of this work, and in particular the role that research on dogs is playing in increasing our understanding of behavior and cognition more broadly.

The book consists of 13 chapters organized into three sections: Theoretical Aspects, Social Behavior (separated into Dog-Dog and Dog-Human), and Social Cognition. I appreciated the first few chapters for their taxonomic breadth, particularly Virányi and Range's chapter, which provided a critical assessment of the research comparing dogs and wolves. Unfortunately, the remaining chapters