THE QUEST FOR A GENERAL ACCOUNT OF COMMUNICATION


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The explicit mission statement of *Sociobiology of Communication* is to “identify the underlying general principles of communication” (p.v). This is a laudable and fascinating goal. As is illustrated by the diversity of chapters of this new book, communication occurs in a more-or-less unlimited range of contexts, a consequence of which is that any two instances of communication can look radically different from one another. Compare, for example, human language, quorum sensing in bacteria, and chemical interactions amongst rodents, all of which feature. On first appearances, these phenomena have little in common. Yet they must presumably share something, if we are happy to identify them all as instances of communication.

The editors are therefore correct to recognise that a general framework for communication would be of value. However, such an ambitious goal is practically impossible to achieve in an edited collection. Each author inevitably focuses on his/her area of expertise, yet the book’s larger objective requires a broader view that encompasses each and all of the individual cases. The final chapter, by the philosopher Ronald de Sousa, is the only one to take up the challenge directly. This should not be taken as a criticism of the other chapters. The various contributors have been asked to comment on their own areas, and all do so in a manner that makes their topics accessible to outsiders, although some more fluently than others. Neither need this be a problem for the book itself. There is much of interest here, and for the reader motivated by the book’s general objectives, most chapters (in particular nos. 2, 4–7, 9, and 12–14) can be read as case studies of particular instances of communication, even if they are not presented as such. Rather, the observation is that while the approach by which contributors comment only on their area of expertise may

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produce several interesting chapters, it is not wholly conducive to the book’s wider and more lofty target.

If general principles are to be established, clear agreement on terminology is a critical prerequisite. However, this book illustrates that with respect to biological communication there is much disagreement on fundamental terms, like signal, which is used in several quite different ways by the book’s various contributors (see SCOTT-PHILLIPS 2008 for extensive discussion of the terminology of communication). Alarming, the book’s preface speculates on whether this is “an authentic problem for progress of science...” or instead a sign of “...intellectual richness, which is enhancing the advancement of science” (p.vii). It is without doubt the former. Variable terminology is one of the most significant barriers to scientific progress. It gives the appearance of disagreement where there is none, and of consensus where there is difference. Examples abound, not least in sociobiology, where it has led to mass confusion about important concepts like group selection and altruism (WEST et al. 2007). The editors implicitly recognise this, as they include a glossary of terms at the end of the book – a fact that makes their initial speculation all the more puzzling. However, the glossary is missing some important terms, not least communication – the book’s central topic.

These are general comments. What of the individual chapters? Unfortunately, a review of this length cannot possibly offer substantial comment on all 16 chapters. I will therefore limit my detailed comments to five chapters only – those that deal directly with humans (by Craig Roberts, on attraction; and by Bernard Crespi and James Hurford, each of whom authors a chapter on language), or those that discuss issues of broad theoretical interest (those by Amotz Zahavi, on the handicap principle; and de Sousa’s already mentioned contribution). Of those that remain, the chapters by Stephen Diggle and colleagues, on quorum sensing in bacteria, and by David Haig, on genomic imprinting and internal communication, are recommended as particularly insightful.

Chapter 1, by Amotz Zahavi, reasserts the importance of handicaps, which offer a solution to the central sociobiology problem of communication, that of honesty. The issue is that signalers who signal dishonestly may gain relative to those that signal honestly, and hence there is a pressure for such deception, which in turn produces a pressure for receivers not to attend to the signal, since there is nothing to be gained from a signal that cannot be trusted. The system is thus expected to collapse in an evolutionary retelling of Aesop’s fable of the boy that cried wolf. However, if there is a cost incurred in the production of the signal, and that cost is associated with the signal’s meaning, then only those signalers who can afford the cost will produce the signal – a fact that makes the signal reliable and hence evolutionarily stable. Think of conspicuous consumption in humans – expensive jewellery is a reliable indicator of wealth precisely because only the wealthiest can afford such wastage. Such costs are termed handicaps (another term that is, incidentally, missing from the book’s glossary). Zahavi takes a small but diverse range of natural phenomena, from sentinel behaviour in Arabian babblers to mating pheromones in
yeast cells, and argues that each of these can and should be understood in terms of handicaps. Zahavi is correct to point to the diversity of handicaps, but his claim that “the handicap principle is a basic component of all signalling” (p.2, italics added) overstates the case. Several papers (e.g. LACHMANN et al. 2001) have now shown, unambiguously, that while they are sufficient, handicaps are not necessary for evolutionary stability (see MAYNARD SMITH & HARPER 2003 for a review). This fact is now well established, yet Zahavi does not acknowledge it, and in doing so under-mines an otherwise interesting chapter.

Furthermore, his assertions are uncritically adopted by others in this book, most explicitly in chapter 5, by Patrizia d’Ettorre and Allen Moore, but also in chapter 9, by the evolutionary psychologist Craig Roberts. As many readers will be aware, attraction and attractiveness are arguably the most studied topics in evolutionary psychology. Roberts begins with an overview of work on how mate quality is communicated via the face, the body, the voice and even by body odour. Historically, however, much of this work has been conducted with static stimuli, with participants asked to judge, say, the attractiveness of a face based on a single photo. A recent development has therefore been the use of more dynamic stimuli. This has been used both to extend research in traditional modalities, such as the face, but also to broaden the scope of attractiveness research by moving into new areas, for example dance (e.g. BROWN et al. 2005). The chapter reviews this work too, and comments on the relationship between static and dynamic stimuli, all in an accessible and engaging style. Overall, it offers an excellent basic review of this large and burgeoning literature. The chapter finishes with a summary of a number of general predictions that could be used to extend attraction and attractiveness research from purely physical traits to non-physical (e.g. behavioural) traits; for example that trait preference should be condition-dependent, and that trait expression should be temporally consistent. These are, presumably, just the sort of abstract principles that the book’s editors hoped its contributors would produce. The one minor criticism I have is that in the final discussion Roberts makes an unnecessary digression into the problem of reliability (discussed above in the context of handicaps), only to conclude that solutions like the handicap principle (as I suggested above, the existence of alternative solutions is not mentioned) are “not especially useful for defining behavioural patterns that can be used reliably in mate choice decisions...” and that his own predictions are therefore “...more productive and accessible” (p.165). This is true, but it is a straw man. The handicap principle (and its alternatives) do not seek to identify what traits do and do not communicate mate quality (or indeed any other type of information); they instead explain why traits should be reliable. This is an unfortunate slip in an otherwise useful chapter.

As is often the case with language evolution research, the two chapters on language have quite different agendas. James Hurford is a linguist who has arguably done more than any other individual to establish the origins of language as a viable research question in contemporary intellectual life. His chapter mostly contrasts human language with other forms of communication in the natural world, emphasis-
ing the differences, for example compositionality (the meaning of an utterance is a function not just of the meaning of its constituent parts, but also of the way that they are linked together) and double articulation (the existence of two levels of linguistic organisation: phonological, in which individually meaningless phonemes combine to make meaningful words; and morphosyntactical, in which meaningful words are combined into utterances with composite meaning). The chapter also touches on some points of contact with non-linguistic communication systems, for example referentiality (the fact that we can use language to refer to objects elsewhere in the world), but the main thrust is to emphasise the “wide gap between human language and non-human communication” (p.261). Bernard Crespi’s chapter, in contrast, highlights the biological realities that must be acknowledged in the study of the evolution of language (or indeed in the evolution of anything), including the central role of inclusive fitness theory, and the need to find genes underlying language and language acquisition. The chapter also emphasises the utility of the comparative method. Crespi is not the first to make this point in the context of language evolution research, but others who have done so (e.g. HAUSER and FITCH 2003) have in general turned to non-human species as their points of comparison, whereas Crespi looks to developmental disorders, in particular autism and psychosis, both of which have significant social dimensions. This novel comparison, and the insistence on biological rigour, makes the chapter a useful addition to the language evolution literature, and complements Hurford’s Linguistics-eye-view.

Probably the book’s most incisive contribution is its final one. More than any other, de Sousa’s chapter acknowledges the complexities that come with the fact that communication is a fundamentally interactive phenomenon. Signalling behaviour simply cannot be studied in isolation, since it is entirely dependent on the existence of receptive behaviour, and vice versa (SCOTT-PHILLIPS 2008). As de Sousa shows, to properly address this fact an account of meaning predicated on teleology must be developed, and de Sousa offers some useful thoughts on how this might be done. In doing so he demonstrates why the Shannon-Weaver model, which takes communication to be more-or-less fully described by the twin acts of encoding and decoding, is insufficient; and also why game theory is integral to the study of communication. De Sousa apologises for the abstract nature of the chapter, but abstraction is precisely what is required if we wish to generate a general formulation of biological communication. He can, I think, be more bullish: his chapter lays a tentative foundation for a fuller investigation of this rich and fertile territory. That is a project whose time may have come, but which both demands and deserves a far more in depth treatment than can be offered by a single edited collection.

REFERENCES


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