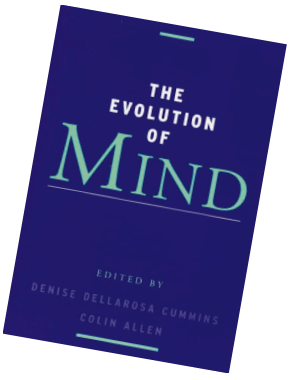
The Evolution of Mind

edited by Denise Dellarosa Cummins and Colin Allen, Oxford University Press, 1998. £25.00 (vii + 264 pages) ISBN 0 19 511053 6



If Bayes' theorem is as elegant and beautiful as mathematicians claim, why can't highly paid professionals remember and use it appropriately in the course of doing their jobs? If an African gray parrot can learn rudimentary maths, why is it so hard to teach kids to count? Why do English-speaking parents expect their children to learn that the uttered word 'dog' refers to the biological species *Canis familiaris*, whereas the uttered word 'bird' refers to the biological class *Aves*? Why do children readily meet these expectations? In the final chapter of *The Evolution of Mind*, Lawrence Shapiro suggests that 'answers to questions like these – questions that a mature psychology should pursue – demand that we attend to human evolutionary history' (p. 253).

Throughout the previous nine chapters of the book, leading thinkers at the boundaries between evolutionary thought and cognitive science raise and address a series of such questions, attesting that, in Shapiro's words, 'not only does evolutionary theory help the psychologist to figure out what the functions of psychological traits are, but it also is essential for a complete understanding of why our psychological traits have the characteristics that they do' (p. 253). The authors take a broad comparative perspective throughout, tackling phenomena ranging from reasoning and mathematical abilities, through language use and theory of mind, to play behaviour. The book thus augments a growing literature dealing with the evolution of cognitive mechanisms[1–3].

What makes this book distinct from contemporary volumes is its strong emphasis on human development. One of our species' most striking qualities is the extended period of dependence that characterizes our early years. It is during this period that the sophisticated psychological capacities that distinguish us from other animals emerge, thus it makes sense for evolutionary psychologists to attend to developmental research. Consequently, many of the contributors to this book have no time for the adage 'never work with children or animals', believing that research into infant numeracy, the deceitful behaviour of primates, or, one might add, the impairments of clinical populations, can help inform theories of intact adult human cognition. Indeed, these writers are urging behavioural researchers to work with both children *and* animals – to use the same methodological tools to explore what are ostensibly similar cognitive phenomena, in order that comparative questions can be answered germanely.

For example, Marc Hauser and Susan Carey present the results of preferential-looking-time studies (used routinely to assess the cognition of pre-verbal human infants) that employed populations of captive and free-ranging rhesus monkeys as subjects. Their success in exploring primate numeracy opens up a cornucopia of experimental manipulations that could be performed on both human infants and non-human primates. Through this kind of methodological cross-fertilization, the authors hope to move beyond anthropomorphic primatology (treating animals like children) and 'knee-jerk behaviourism' (treating animals like robots) in order to overcome 'criticism that interspecific differences are driven by method differences and interspecific similarities may sometimes be spurious' (p. 54).

As one might expect, several unifying conceptual and methodological concerns percolate the book, trickling down from the largely empirical early chapters to solidify in the final, more philosophical ones. Biological conceptual tools, such as the distinction between homoplasy and homology (the resemblance of traits due either to convergent evolution or common descent, respectively), or the methodology of systematics (deriving evolutionary family trees), jostle with anthropological and ethological concerns, such as the difficulties involved in attributing certain cognitive capacities to species on the basis of their behaviour (and also, as Sober points out, on the basis of the behaviour that they *fail* to display), or the problems associated with rigorous study of behavioural phenotypes, such as play.

Although an evolutionary approach to cognitive science is clearly worthwhile, the features that distinguish us from other animals have arisen over too short a timespan to be readily explained by changes in our physiology alone. To account for human behavioural flexibility, the role of cultural change in addition to and in interaction with genetic change must be entertained. The lack of attention to this aspect of human development is the greatest weakness of the book, and perhaps the field it represents, as it underlies a mistrust of the evolutionary approach to psychology. In the same way that Haeckel's maxim that 'ontogeny recapitulates phylogeny' allowed developmental psychology to fuel a 'lazy man's palaeontology' (Ref. 4, p. 35), evolutionary theory is seen by some as supporting a lazy man's social science, muddying genuine research with damaging evolutionary speculation.

The material presented in *The Evolution of Mind* remains valid and groundbreaking, and should be read by any developmental or cognitive scientists keen to keep abreast of the growing significance of evolutionary theory to their research. However, until theoretical and empirical approaches to the interaction between culture and evolution (for example, Ref. 5) can be shown to be sound and made to bear fruit, the comparative approach epitomized here will leave some psychologists feeling short changed, and important chunks of human psychology in the dark.

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