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Book Review

Evolution and the Psychology of Thinking: the Debate edited by D. E. Over. Hove and New York: Psychology Press ISBN 1-84169-285-9

Reviewed by

Bruce Bridgeman

Evolution is revolutionizing psychology. The movement to take advantage of evolutionary theory in understanding behavior and mind begins by considering psychology as a branch of biology, the study of living things. If we admit that the mind is part of a living thing, the connection seems inevitable. So psychology should look to Darwinian evolution as its most basic level of theory, like any other part of biology, requiring that all other theories be consistent with evolution, and ideally that they be informed by evolution as well. The application of evolution to psychology has proved to be controversial, however, partly because of a tradition in some branches of psychology that emphasizes environmental influences over biological ones, and partly because a collection of specific ideas and approaches has become associated with the movement for evolutionary psychology. This is unfortunate, because applying evolutionary ideas to psychology does not require many of the assumptions that have been made so far.

Two streams of critique of evolutionary psychology dominate Over's book: first is a questioning of assertions that some problem-solving behaviors and strategies are optimal, as asserted for instance by Gigerenzer & Hoffrage (1995), and second is a critique of the modular-mind hypothesis, as championed by Cosmides & Tooby (1992) and others.

The evolution-inspired interpretation of the ways in which people solve logic problems became compelling when it was discovered that most people could solve some kinds of problems if they were couched in terms of social exchange, though they failed with logically identical problems in a more abstract format. The evolutionary explanation was that human logic capabilities evolved to solve problems related to social exchanges, and work best in those contexts. Other explanations such as familiarity with the domain turned out not to explain the

striking discrepancy. The advantage of social-exchange formats first appeared in tasks that require the observer to determine whether a rule has been broken, given several kinds of evidence for different cases. Subsequent research showed that analogous discrepancies occur in reasoning with probabilities; a problem that almost everyone fails in a probability format seems easy when the same information is presented in a frequency format. Evolutionary psychologists assert that our distant ancestors faced frequencies of events, but that probability is a recent mathematical invention that matches poorly our adapted problem-solving machinery.

How do the critics in Over's book evaluate these discoveries? Laurence Fiddick (Ch. 2) replicates the problem-solving discrepancy, but finds that different task formats arouse different emotions, regardless of the logical relationships of the problems. He concludes that the social contract theory remains viable, but that the field has concentrated too much on a particular example of reasoning tasks. In a clever manipulation, Keith Stanovich & Richard West (Ch. 7) find that more intelligent people are more likely to solve reasoning problems than the less intelligent, damaging the argument of some evolutionary psychologists that the false solutions might have some adaptive advantages – that they are faster, and close enough to correct for most purposes. Stanovich & West use SAT scores as a foil for intelligence testing, which has become politically incorrect in some circles despite being one of the most informative predictive concepts that we have – it's a classic case of shooting the messenger, and an example of what happens when the assumptions of social scientists stray too far from the realities of biology. The conclusion is that people are doing their best, but that those with more mental horsepower better are more likely to come up with the logically correct solutions to problems.

Later in their chapter, however, in a section ironically titled "Where evolutionary psychology goes wrong", Stanovich & West trip over a misinterpretation of evolutionary theory, failing to push it through to its logical conclusions. A bee is considered a 'Darwinian creature' because everything it does is in the service of its genes, the immortal replicators that are evolution's bottom line. Humans, though, are said to partly escape the evolutionary imperative because we have motives and goals that allow us to act in the interest of the organism rather than the genes, if those two interests come into conflict. For example, we have sex because it's fun, or we live beyond reproductive age. We can be sure, though, that people who don't enjoy sex, or who don't live as long, will find their genes underrepresented in the next generation. Perhaps we are allowed the luxury of imagining that we do things for ourselves despite our genetic interests, but the genetic interests will always win out in the end. We want to do what made our ancestors successful. In the long run, those whose genes allow them to go running off chasing their own organismic interest, to the

determent of the genes, will be less successful in getting their genes into the next generation, and the tendency to go running off will be selected out of the population. The modern world may create conflicts where our motivations drive us in disadvantageous directions, but we can be sure that if such a drive lasts long, it will be winnowed out by the inexorable mathematics of natural selection.

The second thread in the book, the modular-mind hypothesis, is also treated in several chapters. According to many evolutionary psychologists, evolutionary theory can immediately establish some principles the design of the mind. Because environmental challenges are specific rather than general, a popular conclusion among evolutionary psychologists is that the mind must consist of a myriad of specialized modules, each evolved to serve a specific purpose, and as far as possible to stay out of the way of the other modules. The theory evokes the metaphor of a Swiss army knife, with lots of specialized blades designed for specific tasks. David Over (Ch. 5) points out, though, that the Swiss army knife also has a general-purpose blade, perhaps the most useful of all the blades. By analogy, the human mind would also find useful a general-purpose blade, a flexible intelligence that can be applied in a wide variety of circumstances, including novel ones.

Championing such an idea goes against the theories of some evolutionary psychologists, but it should not be seen as hostile to evolutionary psychology itself, which is a way of approaching problems rather than a set of doctrines. The idea that specialized modules would evolve to solve specialized problems that arise in the 'environment of evolutionary adaptedness' (EEA) assumes that the EEA had static properties over a very long time, allowing evolution to do its work. Some properties, such as limited numbers of people to interact with, certainly met this criterion, but many others did not. We imagine a 'noble savage' perfectly adapted to his environment, but no one has ever lived in such an environment (Bridgeman, 2003, pp. 65-66). Human environments vary greatly, and change more rapidly than biological evolution can accommodate. A generalist set of adaptations, then, would have enabled humans to survive while more specialized relatives perished (*Australopithecus robustus* and Neanderthals are examples). In a word, humans are specialized to generalize. The issue of modularity, then, can offer not a critique of evolutionary psychology but a broadening of it, emphasizing a biologically informed approach to psychology rather than a fixed set of theories.

Author

Bruce Bridgeman, Professor of Psychology and Psychobiology, Social Sciences 2 UCSC, Santa Cruz, Ca. 95060, USA.