Evolution of the evolutionarily minded

July 19 2011

In the century and a half since Charles Darwin's publication of The Origin of Species, evolutionary theory has become the bedrock of modern biology, yet its application to the understanding of the human mind remains controversial. For the past 30 years, evolutionary interpretation of human cognition has been dominated by the field of evolutionary psychology. One view of this field is that human minds are composed of a list of dedicated programmes, each fashioned by natural selection to solve specific problems faced by our Stone Age ancestors, with all humans possessing the same universal architecture irrespective of geography or upbringing. However, this characterization of the human mind has been subject to criticism, in particular that some interpretations were so speculative they amounted to 'evolutionary stories'.

In an article published July 19 in the online, open access journal PLoS Biology, a team of biologists, psychologists and philosophers from the University of Utrecht in the Netherlands, the University of Cincinnati in America, and the University of St Andrews in Scotland, suggest a new framework for the evolutionary analysis of the mind that draws on recent work from a variety of related subjects.

Professor Johan Bolhuis and colleagues describe how the field of evolutionary psychology had been dominated by a set of widely held assumptions — e.g., that human behavior is unlikely to be adaptive in modern environments, that human cognition is task-specific, and that there is a universal human nature. However, new findings and approaches from genetics, neuroscience and evolutionary biology now question these assumptions. For example, many human genes have been

subject to recent selection in the past few thousand years, which means that humans cannot accurately be portrayed as being adapted only to a Stone Age environment. Experimental and theoretical findings also suggest that humans play an active, constructive role in co-directing their own development and evolution. How humans think and behave varies from individual to individual and place to place. Moreover, experimental evidence suggests that human minds frequently utilize very general learning rules rather than a more modular account of cognition.

Senior author Professor Kevin Laland, former president of the European Human Behaviour and Evolution Association, states: "The current evolutionary psychology paradigm made sense in the 1980s, when modularity of mind was all the rage and everyone thought that evolution was slow. However, with the benefit of hindsight we can see that these assumptions were questionable, and [it] is now clear that the field needs a broader, theoretical framework. Recent developments in evolutionary & developmental biology and cognitive science provide some very exciting new avenues for research. We enter a new phase in the discipline."

More information: Bolhuis JJ, Brown GR, Richardson RC, Laland KN (2011) Darwin in Mind: New Opportunities for Evolutionary Psychology. PLoS Biol 9(7): e1001109. doi:10.1371/journal.pbio.1001109

Provided by Public Library of Science