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Putting evolutionary psychology to the test.

BOOK REVIEWED - Adapting Minds: Evolutionary Psychology and the Persistent Quest for Human Nature
by David J. Buller
Bradford Books: 2005. 552 pp. $34.95, £22.95

Evolutionary psychology argues that the human mind is a collection of special-purpose circuits designed by natural selection to solve the problems of survival and reproduction that were recurrent in the lives of our ancestors — problems such as finding food, picking habitats, attracting mates and navigating the social world.

In Adapting Minds, the philosopher David Buller aims to show that evolutionary psychology is "wrong in almost every detail". He argues that it is based on a mistaken view of neural development, that its reconstructions of the environment in which humans evolved are "pure guesswork", and that its major empirical findings are better explained by alternative theories. However, despite this barrage of criticism, Buller's attempted demolition ultimately fails.

First, Buller relies on the theory of 'neural darwinism' to argue that the functional organization of the brain is the product not of genetic instructions, but of a process analogous to natural selection that occurs during the lifetime of an individual. Buller claims that genes merely provide an initial over-supply of neurons and connections — a formless "mass of clay". These neurons then engage in a darwinian fight to the death, from which "circuits will develop that are specialized in dealing with whatever environmental inputs are most salient". Thus the mind is not adapted to ancestral conditions; it is capable of adapting to whatever the immediate environment demands.

However, the notion that development resembles a darwinian struggle is spurious. To produce adaptations, natural selection requires numerous iterations of random variation and differential replication among competing entities. There is no equivalent process in development: neurons are not generated at random, 'successful' neurons are not reproduced, and the process is not repeated. As a result, there is no prospect of cumulative, adaptive evolution. Indeed, far from being in competition, from a genetic point of view, neurons are on the same team. Development is better seen as the successful solution to a vast coordination problem involving an elaborate division of labour.

The deeper problem with this account of development is that it supposes that neurons 'respond' to the environment in some general way. But, as Buller recognizes, such brains "would face the insoluble problem of learning which of the world's features are worth learning about before they set about learning about them". Later, Buller concedes that development must be guided by specific "innate hypotheses" about what to attend and respond to in the world. But the hypotheses that he proposes are woefully inadequate for the task. He suggests, for example, that the ability to recognize faces and facial expressions could begin in infants with nothing more than the hypothesis: "Triangulated high-contrast blobs are very important." This might direct the child to look in the right direction. But then what? Without further innate guidelines, development would stall for exactly the reason that Buller suggests. The development of each ability must be guided by its own rich battery of innate hypotheses. But with that, we arrive back at what evolutionary psychology had in mind all along.

So the question is not whether the brain exhibits innate structure, but of what that structure consists. This brings us to the second problem with Buller's analysis. He is fiercely critical of the methods that evolutionary psychologists use to investigate the selection pressures at work during human evolution. But he undermines these criticisms by using these same methods himself — and to good effect. For example, he argues that male sexual jealousy is a function of squandered "mating effort" rather than "uncertainty of paternity", and that much of the abuse of stepchildren is best viewed as a form of maternal infanticide. However, in doing so, Buller demonstrates — despite his earlier scepticism — how the careful use of logic, game theory, comparative psychology, primatology and studies of hunter-gatherers can be used to construct plausible scenarios of ancestral conditions, and to generate testable predictions about human psychology and behaviour.

Finally, Buller's empirical criticisms tend to promise more than they deliver. He states, for example, that there is "no convincing evidence" that men have an evolved preference for mating with young women. But what he actually argues is that some men find young women attractive all the time, and that all men find young women attractive some of the time, but that not all men find young women attractive all of the time. This is perfectly consistent with the standard view from evolutionary psychology, in which a preference for youth is only one among many aspects of evolved male sexual psychology.

Adapting Minds is destined to become required reading among evolutionary psychology's detractors. But, despite its flaws, it will be read with interest by evolutionary psychologists too. Buller provides a useful overview of the field and of the current debates. He challenges evolutionary psychologists to re-examine which of their theoretical commitments are important and why. He advances alternative evolutionary hypotheses, which, far from replacing evolutionary psychology, could contribute to its ongoing refinement. And, above all, by eschewing the personal and political mudslinging that characterized earlier debates over sociobiology, Buller enables evolutionary psychologists to get back to arguing about the science.