

PSYCHOLOGY NEEDS EVOLUTIONARY THEORY

Book review

Bridgeman, B (2003) **Psychology and evolution: The origins of mind**. Thousand Oaks, CA: Sage Publications. ISBN 0-7619-2479-5.

Plotkin, H (2003) **The imagined world made real: Towards a natural science of culture**. London: Allen Lane, The Penguin Press. ISBN 0-71-399408-8.

Louise Barrett

*School of Biological Sciences,
University of Liverpool,
Liverpool L69 7ZB
E-mail: louiseb@liv.ac.uk*

"Evolutionary Psychology" has been something of a growth industry in the last few years. Attempting to understand the evolutionary roots of human behaviour obviously has great appeal – we all want to know where we came from, so to speak – and, as well as an expanding range of popular science books and textbooks covering this area, evolutionary psychology is making inroads into the self-help market, with diet plans (are you a gatherer, a hunter or a farmer?) and managerial practice (ditto!) both attempting to tie our evolved psychologies to our modern concerns. One striking thing about this project is the manner in which "Evolutionary Psychology" (EP) is often viewed as a distinct sub-discipline within psychology, akin to industrial, health or child psychology, rather than as an organising theoretical framework that embraces the whole of psychology. In this light, Bruce Bridgeman's textbook is very encouraging in that he expressly regards evolution as "an overarching theory in psychology" and an approach that can provide a "new foundation" for psychology.

With this in mind, Bridgeman not only covers many of the areas where evolutionary biology and psychology have combined to great effect – studies of cooperation, mate choice, parental investment, language evolution and the like – but also introduces topics which have so far been somewhat under-represented, like perception, memory, consciousness, abnormal psychology and aspects of human reasoning abilities. All of this is preceded by two introductory chapters on evolutionary theory and human evolution which provide both background and justification for what follows. This attempt to provide a coherent and unified picture of psychology within an evolutionary framework is obviously extremely welcome, and Bridgeman has an engaging and friendly writing style that does a good job of drawing in the reader. As an accessible but comprehensive introduction to an evolutionarily-informed psychology, then, **Psychology and evolution** does its job admirably. However, I did feel rather uncomfortable on occasion, largely because of the uncritical approach taken to much of

the material and a lack of subtlety in the arguments presented. A case in point is the "aquatic ape" theory – a favourite of practically all biology, psychology and anthropology undergraduates. Bridgeman states that, although lacking archaeological evidence, there is "some circumstantial evidence in our own bodies" to support this theory: we have a layer of subcutaneous fat, chubby babies and near hairlessness, all of which are shared with marine mammals. None of the counter-arguments against this evidence are given (e.g., that the distribution of fat in the human body is quite unlike that of marine mammals) and one is left with the impression that this theory is at least as well supported as any other theory of human evolutionary history, which it isn't. The "landscape" theory (that humans are geared to prefer the savannah-like landscapes in which we evolved) is also presented as a well established fact, rather than as an intuitively appealing, but ultimately not well supported, hypothesis. Perhaps I was expecting too much and an introductory book on such a vast discipline doesn't have the luxury of critical debate. On the other hand, the book is designed for advanced undergraduates and beginning graduates, and I would have thought that such students would like a bit more to get their teeth into.

I also felt that the sections on evolution and natural selection could have been broadened out, reducing their focus on genes and gene function. The theory of natural selection is not actually tied to genes in any fundamental way: variation between individuals can be generated by learning processes just as easily as genetic mutation, and purely cultural processes can lead to natural selection of some variants over others. This is an important point with obvious applicability to culture-dependent humans (see below for more on this), and a wider perspective on the nature of evolutionary processes would have been beneficial for the book as a whole. The book is also rather narrowly focussed in terms of its adherence to "massive modularity" (the notion that the human mind is divided up into a series of specialized "modules" designed to cope with the recurring problems encountered by humans during the course of our evolutionary history); a position that has come in for increasing criticism, and which has generated a lot of debate, none of which is presented here. On the positive side, however, Bridgeman does manage to convey the *ad hoc* manner by which evolution operates and the resulting imperfection of both morphological and psychological adaptations, and his great enthusiasm for an evolutionary approach shines through, even if this does occasionally obscure or fudge some of the very real problems involved in testing evolutionary hypotheses.

Indeed, this unbounded and uncritical enthusiasm on the part of some of its practitioners, as well as its media popularity, has led evolutionary psychology to be viewed with scepticism by psychologists and evolutionary biologists alike. For many psychologists and other social scientists, evolutionary explanations are seen as reductionist and full of implicit (if no longer explicit) genetic determinism. For the biologists, evolutionary explanations of human behaviour are often viewed as naïve and simplistic – "just-so stories" lacking the standards of evidence routinely applied in work on non-human animals. For both these parties, human behaviour seems to resist evolutionary interpretation because of the way in which human culture permeates every aspect of our lives, allowing us to control our environment – and our destinies – to an unprecedented level.

In a series of insightful and eminently readable books, Henry Plotkin has been trying to steer a course through these treacherous waters, explaining why psychology needs evolutionary theory, how evolutionary thinking should be applied to psychological issues and now, with the publication of **The imagined world made real**, how to incorporate culture into an evolutionarily oriented psychology. Unlike textbooks, like Bridgeman's, which tend to assume that one has already bought into an evolutionary approach, Plotkin's books are aimed at the deeply sceptical, if not downright hostile, quarters of both the biological and social sciences.

The value of Plotkin's contribution to the evolutionary psychology cannot be overestimated in my view. His is a voice of cool reason and clever thinking in a field where debates can become over-heated yet remain utterly sterile. His aim is to get past the hoary old chestnuts that are continually raised by the critics of evolutionary psychology and to explain, in clear, simple language, why an evolutionary approach does not commit one to becoming a rabid genetic determinist, nor a spinner of media-friendly, but scientifically vacuous, tall stories. In his first book, **Darwin machines and the nature of knowledge** (1994), he dealt, broadly speaking, with the evolution of intelligence, putting paid to the notion that such an endeavour must posit any form of genetic "hard-wiring": as soon as one sees any form of intelligent behaviour in the world, Plotkin argues, one knows for sure that genes alone cannot be responsible. Flexible, contingent, intelligent behaviour only evolves when the problems to be dealt with are too complex or unpredictable to encompass in a set of genetically-encoded instructions. Intelligent behaviour thus evolves precisely because genes aren't up to the job; any fears of genetic determinism with respect to human behaviour are therefore entirely misplaced.

In his second book **Evolution in mind** (1997), Plotkin argued more explicitly for an evolutionary approach to human psychology. Here, Plotkin's thoughtful meditations on the issue immediately dispelled any fears that this will involve psychology surrendering to biology and then vanishing altogether. Plotkin demonstrated amply how psychology could benefit from an evolutionary framework, but also illustrated how human behaviour also requires explanations at a group and societal level which, at present, evolutionary theory cannot deal with adequately. Of course, he was talking about culture, which he defines, in its broadest possible terms, as ideas that are shared and agreed on by all members of a group. In **The imagined world made real**, Plotkin expands on this initial foray in order to demarcate the theoretical landscape needed to explore both the evolution of culture and the processes of cultural evolution themselves.

To do so, Plotkin brings in ideas from philosophy and social theory, as well as those from evolutionary biology, realising that any complete explanation of human behaviour will require a truly inter-disciplinary and multi-level explanation. Two evolutionary ideas that Plotkin views as being critical to this endeavour are niche construction theory and multi-level selection theory.

According to niche construction theory (Plotkin & Odling-Smee, 1981), animals do not passively occupy ecological niches, but actively modify them. Active modification of an ecological niche by an organism changes the selection pressures that act on the organism itself: in effect, individual organisms can become the engineers of their own evolution. Spiderwebs, for example, modify the selective environments of the spiders

that spin them, creating new opportunities for selection to act. Other forms of niche construction modify the selective environment of the constructing organism's descendants, by for example, insects laying eggs on a particular kind of leaf, which then forms the diet of the larvae when they hatch. In such cases, the modified niche is an example of what is called "ecological inheritance". Ecological inheritance can have a profound effect on the evolutionary process since it represents a second form of inheritance that differs from standard genetic inheritance. The application to human evolution thus becomes immediately obvious: inheritance of land, chattels, money and status play an especially important role in human societies, and may thus represent a particularly dramatic example of the niche-construction process. Moreover, developmental psychologist Michael Tomasello and philosopher Matteo Mameli have argued convincingly that other humans may also have played a powerful niche constructing role during the course of human evolution, shaping our psychology and in particular our "mind reading abilities" – our ability to attribute thoughts, feelings, beliefs and desires to others – so that today human psychological development is utterly dependent on the presence of other human minds for its normal expression: as Mameli says, we are "mind shapers", as well as mind readers.

Plotkin then brings David Wilson's theory of multi-level selection into play (Sober & Wilson 1998). In essence, this is the notion that natural selection acts not just at the level of the gene, or indeed the individual, but also at higher levels of organisation. The key point is that there is a tension between selection at the level of the individual, which tends to favour traits that act in the organism's own direct interests, and selection at the level of the group, where traits are selected in individuals that enable the group as whole to function more efficiently, but which entail some cost to the individuals who bear them. One of the most crucial conditions to be met is that there must be both competition between individuals in different groups, as well competition between individuals within the same group. In both cases, we have competition between individuals as required by the theory of natural selection, but the difference lies in the level at which that competition occurs. Within groups, individuals are the vehicles and they are in direct selfish competition with each other. Between groups, however, individuals in one group are joined together in the face of competition with individuals in another group.

The notion of multi-level selection is met with scepticism by most biologists for reasons I won't go into any real detail about here, suffice it to say that they hang on the relative strength of selection for individuals over selection of entire groups of individuals. Since individuals live and die at faster rates than groups, individual selection is believed to always outstrip selection for groups. Plotkin, however, believes that multi-level selection has something to offer explanations of human evolution since it can help account for the emergent nature of human culture. For example, selection for skills that enable one to get along with one's fellows can only evolve in a group context. If there is no group, there is no selection pressure for such skills to evolve. If these skills increase the coherence and effectiveness of one's group in competition with other less cohesive groups, selection for cohesive groups can take place. As many of these skills will evolve in a non-genetic, niche-constructing, mind-shaping way, they need not converge on the same form in each group. "Cultural differences" can then begin to emerge as a result of this process. Groups will therefore become more heterogeneous over time in their behaviour, while at the same time, within groups, this process will make individual

behaviour more homogenous – this is the way we do things. This in turn will reinforce ongoing processes of group selection and so the ratchet will turn. Since this theory is so hotly disputed, this could be seen as perhaps the weakest point of the book, but Plotkin's presentation of Sober and Wilson's (1998) argument is persuasive and, to my mind at least, highly promising.

Plotkin ties these two evolutionary theories to philosopher John Searle's theory concerning the manner in which humans construct a social reality for themselves. Plotkin devotes a lot of space to this theory, essentially paraphrasing Searle's entire book – which, as an aside, reveals Plotkin to show the same enviable skill that Martin Amis displays in his reviews and literary criticism: both Amis and Plotkin can tell you the entire plot of a book, analysing it thoroughly and in detail, while at the same time conveying such enthusiasm for it that, despite knowing practically everything about it you could possibly want to know, you still desperately want to read the book for yourself.

Searle's idea is, essentially, that humans have the capacity to generate "institutional facts" – those which are only true because everyone agrees that they are – which we use to construct a world of shared beliefs and values. Two human psychological abilities – our meta-representational skills and symbolic language – are seen as key to this ability. As Tomasello (1999) has also argued, the move from individual to shared intentionality and then to the construction of constitutive rules (those which determine how institutional facts should be applied appropriately) requires both an appreciation of how others see the world and an ability to think symbolically, since the construction of an institutional fact is an inherently symbolic act. Importantly, both Searle and Tomasello argue strongly for the existence of an external reality as part of this construction: only by understanding that there is an objective, external reality independent of anyone's viewpoint can we fully appreciate why others' perspectives differ from each other – this is not social constructionism of a post-modern stripe. Plotkin then uses this theory to show how key human psychological adaptations can both lead to cultural processes and be shaped by them – in other words, the niche constructing abilities afforded to us by our psychological attributes (which themselves are the product of evolution and niche construction) enable us to both create culture and to be created by our culture. Culture thus doesn't press down on us from above nor does it appear as a purely emergent property of individuals acting in concert. Rather it is produced in the spaces between things: it emerges from the interaction of individuals with their surroundings. The dichotomy between culture and biology is thus revealed to be as sterile and pointless as the nature-nurture, genes vs environment debate (of which it is merely a variant).

The **imagined world made real** obviously doesn't have all the answers. Plotkin is merely showing how the merging of the social and biological sciences potentially produces better and more satisfying answers than either can on its own. In this respect, it is very much a work in progress. Not everything necessarily hangs together as well as it might if one subjects it to close inspection, but so what? I for one appreciate a bold statement, even if several bits are missing from the puzzle, than yet more worthy but dull admissions that everything is much more complex and difficult than we think. Plotkin's optimism that human culture and its evolution are there to be explained is refreshing and inspiring. Reading this book might not change your mind about the big

issues of culture and human agency, but it will make you think. What more could you ask?

REFERENCES.

Mameli, M (2001) Mindreading, mindshaping and evolution. **Biology and Philosophy**, **16**, 597-628.

Plotkin, H (1994) **Darwin machines and the nature of knowledge**. Harmondsworth: Penguin.

Plotkin, H (1997) **Evolution in mind: An introduction to evolutionary psychology**. Harmondsworth: Penguin.

Plotkin, H (2003) **The imagined world made real: Towards a natural science of culture**. Harmondsworth: Penguin.

Plotkin, H C & Odling-Smee, J (1981) A multilevel model of evolution and its implications for sociobiology. **Behavioral and Brain Sciences**, **4**, 225-268.

Searle, J (1995) **The construction of social reality**. London: Penguin.

Sober, E & Wilson, D S (1998) **Unto others: Evolution and psychology of unselfish behavior**. Cambridge, MA: Harvard University Press.

Tomasello, M (2001) **The cultural origins of human cognition**. Cambridge, MA: Harvard University Press.