

Book of the month

Evolutionary psychiatry

A revolution—neo-Darwinian theory—has transformed biology in the past few decades, using games theory and systems theory to push and extend Darwin's central insight to its limits, and illuminating whole areas of biology which were otherwise obscure. It is now clear why in social animals such as ants and bees there are individuals who are sterile and yet work for the good of the colony, or why many male animals will kill the young of other males of their own species; and the latter has enormous implications for understanding why child abuse is far more common in *step-fathers*. Perhaps the most important insight, encapsulated in Richard Dawkins' phrase, the selfish gene, is that the essential unit of natural selection is not the organism but the *gene*, the organism being seen merely as a gene's way of making another gene. The intellectual core of the neo-Darwinian approach is the idea of 'inclusive fitness'; fitness is not measured in terms of the survival of the individual organism but of the survival of the genes which that organism shares with others in the population. The enigma of altruism then makes simple Darwinian sense—an individual will sacrifice itself if a sufficient number of other individuals carrying the same genes (i.e. its relatives) are more likely to survive.

Medicine was slow to realize that many of these ideas also applied to understanding of the origin and nature of disease. In a carefully argued and genetically sophisticated overview, Nesse and Williams¹ showed that many medical phenomena only made sense when viewed from an evolutionary perspective (see review, *JRSM* 1996; 89: 475–6). We must, however, be careful, since evolution is exceedingly subtle on occasion, and half-thought-out reflex intuitions can be misleading, to say the least.

Anthony Stevens and John Price have extended the evolutionary approach by looking at psychiatry, their basic philosophy being that 'a psychiatric disorder is . . . an ancient adaptive response which . . . has become maladaptive'. In the opening chapters of *Evolutionary Psychiatry*² they emphasize that the human brain consists broadly of four hierarchically organized systems, of very different evolutionary ages, with a 'reptilian brain' perhaps 300 million years old, a 'palaeo-mammalian brain' principally consisting of the limbic system, a 'neo-mammalian brain' consisting of cerebral neocortex, and finally, in a stage probably unique to the human brain, a left hemisphere specialized for language and symbolic processing. All of these are functioning at the same time, although not all are available to consciousness, and at times they can

act in contradictory ways. They have evolved and been selected for survival in a very different world from that in which we now live. The human 'environment of evolutionary adaptedness' or 'ancestral society' consisted originally of the African savannah, with small migratory tribal groupings. Since that is very different from modern civilization, difficulties inevitably arise. The argument is identical to that by which it was at one time advantageous for us to consume scarce fat, salt and sugar whenever possible, but it is maladaptive now that high fat, high salt, high sugar diets are readily available.

Most of Stevens and Price's ideas centre on concepts derived from what have been called the four F's of ethology—feeding, fighting, fleeing and sexual intercourse. In particular they stress the importance of attachment, based in Bowlby's ideas, and of dominance hierarchies and the various forms of interaction and symbolic display which occur between high and low dominance individuals in competition for mates, resources, territory and so on. They argue that a wide range of disorders, including the affective disorders, personality and obsessional disorders, anxiety, phobias and eating disorders, are 'disorders of attachment and rank' of which depression is the most clearly stated. '[Non-clinical] depression is adaptive . . . precisely because it promotes adjustment to attachment loss and loss of rank both at the same time'. Clinical depression is, in contrast, maladaptive but is nevertheless only a quantitative extension of ordinary depression.

The great hazard in any neo-Darwinian account is that it can easily become a 'Just-So Story'. Darwinian theory says that natural selection means that organisms are adapted to their environment. Any behaviour must therefore be adaptive; and therefore it is easy to think up a story as to why it *might* be adapted. But that does not mean the story is true. For that one needs evidence, preferably in terms of novel predictions which, to be persuasive, are counter-intuitive. The problem is easily seen in a classic error in ethology. Young birds spontaneously run for cover when an eagle or other predator flies overhead. The traditional account involves an 'eagle-fleeing instinct' which would obviously be adaptive. The proper explanation is, however, very different. Raptors in flight have a different shape from other birds and are relatively rare. The young birds are actually responding to novelty and difference, not to any 'ancestral' learning about birds of prey. The proof is in an experiment: rear young birds where all the silhouettes they see are hawk-shaped and they then run for cover when a non-hawk-shaped bird flies overhead. The same difficulty occurs in Stevens and Price's accounts. They may be true but no novel evidence is provided—only attractive stories that happen to fit into current 'creation myths' about our origins. It is a bit like the old Hippocratic and Galenic theories of the humours; they seemed able to explain

everything, but without measurement of the intervening variables, the black bile and so on, they could not seriously be tested and would eventually be found wanting.

Stevens and Price are on particularly thin ice when they try to make sense of schizophrenia. Their theory is a variant of heterozygote advantage, suggesting that individuals with schizotypy, which can be seen as a common *forme fruste* of schizophrenia, are selected for. That idea is not novel, but what is novel is the idea that schizotypic individuals are selected because their quasi-religious ideations make them effective and charismatic leaders, whose role is to split apart overly large human groups into smaller subgroups, taking their followers with them, which is to the advantage of *the group as a whole*. The authors are here unabashed 'group selectionists', despite acknowledging, as they put it, that group selection 'has had a bumpy ride'. So bumpy, in fact, that the vehicle has disintegrated under the strains to which it has been subjected, and hardly a serious worker currently believes in it. Here Mrs Thatcher was, for once, correct: in evolutionary terms, 'there is no such thing as society'. There are only individuals; but sometimes self-interest and the interests of the group can be made to coincide.

Overall, this book is a brave attempt to ask the sort of questions in which psychiatry has traditionally not been interested but which must be addressed to make biological and cultural sense of its phenomena. Psychiatric illnesses, like all diseases, do not exist as God-given entities but occur because biological organisms are struggling for survival in a complex world of other organisms and, more particularly, because in a complex sociocultural world they are struggling to pass on their genes better than others of their own species (and it is *intra-specific* competition that is the

engine that drives most neo-Darwinian theories). If, however, this book looks superficially neo-Darwinian, it is rarely actually that. One of the authors is a Jungian analyst, and the language of archetypes keeps recurring (most absurdly in an account of dreams); its ultimate source is the intra-psychic competition of the Freudian id, ego and superego, dressed up in 1950s ethology. The hallmarks of neo-Darwinian theory are mathematical and logical analysis, assessing whether novel genes can successfully 'invade' otherwise stable genetic systems, and empirical evidence to contrast separate theories. The former is entirely lacking in the present account, and the latter almost absent. When it does occur, as in the very brief account of why depression is more common in women, it is circumvented almost tautologically. Where evidence is particularly needed is with claims such as that charismatic leaders tend to be schizotypal; if so, do their relatives have an increased incidence of schizophrenia? Despite all these drawbacks the book is a provocative read, and even if one does not always believe the answers there is no doubt about the importance of the questions.

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References

- 1 Nesse RM, Williams GC. *Evolution and Healing: the New Science of Darwinian Medicine*. London: Phoenix, 1996
- 2 *Evolutionary Psychiatry: A New Beginning*. Anthony Stevens & John Price. London: Routledge, 1996. [Pp 267. £14.99. ISBN 0 415 13840 X, paperback]

The Troubled Helix: Social and Psychological Implications

Eds Theresa Marteau, Martin Richards
xvii+359pp Price £35 ISBN 0-521-46288-6
Cambridge: Cambridge University Press, 1996

The proliferation of books and articles on 'the new genetics' is almost keeping pace with the Human Genome Project itself and, with each addition to the genre, there is a danger of inducing resistance to genetic angst. This particular volume, unpromisingly subtitled 'Social and Psychological Implications', disarms the sceptic at once by devoting its substantial opening section to a series of first-hand accounts of experiences from a remarkably articulate group of people

whose lives have been affected by the availability of diagnostic tests for genetic disease. These riveting pieces illuminate everything that follows and ought to be read by everyone who has any involvement in this field—be they geneticist, psychologist, family doctor, health service manager or politician.

The rest of the book is divided into a series of educational and reflective chapters covering basic genetics, the practicalities of operating a genetic counselling service, legal and social issues, public understanding of genetics, and racism, feminism and eugenics. In other words, it is a *pot-pourri*, in parts polemical, in others whimsical, but generally well informed and a valuable resource for those who want an authoritative view on the wider aspects of modern human genetics.

Each chapter carries a substantial reference list and there is an adequate index to the whole volume.

The chapters by Derek Morgan on legal issues and by Janice Wood-Harper and John Harris on the ethics of human genome analysis appealed particularly to me. Though dealing mainly with uncertainties, both these contributors adopt a down-to-earth approach and make liberal reference to real-life examples in setting out their arguments. Other readers, approaching the topic from different perspectives, will perhaps find more appeal elsewhere and it is both a strength and a weakness of the book that its target audience is ill defined. The advantage is that virtually anyone who picks it up will gain something from it but, on the negative side, those who consider themselves specialists in some particular aspect of human