



Book Review

Economics as an evolutionary science: From utility to fitness
by Arthur E. Gandolfi, Anna S. Gandolfi and David P. Barash.
New Brunswick: Transaction Publishers 2002

Reviewed by Daniel Nettle

The union of evolutionary biology and economics has been on the horizon for some time now. After all, economics concerns the theory of how individuals decide to what activities to allocate their time, energy and resources; modern behavioural biology could be described in exactly the same way, though of course it is not limited to *Homo sapiens*. Economics and biology even share many of the same tools, notably game theory and various kinds of optimisation models. In practice there seem to have been two major gulfs between these evidently consilient fields, both of which this important book makes initiatives to cross.

The first gulf is one of disciplinary territory. Economics has traditionally concerned itself with the production and consumption of goods in the market. This restriction has an enormous methodological advantage in that all such activity is by definition monetised; thus economics gains a useful, universal and fungible measure of value. Behaviour outside the arena of the market – friendships, marriage, parenting and so on – have generally been left to sociology and psychology. This territorial restriction can ultimately make no sense. The things people value most, and which have greatest impact on their work and consumption

decisions within the market, take place outside the monetised domain. If a species has evolved that makes decisions as a maximising rational actor in one part of its life, there is no intellectual justification for assuming that this does not also characterise its behaviour in the other parts. Moreover, the portion of human activity that is marketised has varied with historical circumstance, and in many traditional societies has been close to zero. Yet there is no reason to assume that the rational actor model does not apply to such societies; or rather, if it fails in some places, it fails in all.

Evolutionary biology, happy for its part with the non-human case, has generally fought shy of explaining human behaviour, invoking such notions as culture and consciousness as meaning that the theories do not apply. There are well-known exceptions, from E. O. Wilson onwards, but they are often controversial, and seen by some as an overweening imperialism on biology's part. This curious situation means that economics and evolution, despite a very obvious continuity of both concerns and methods, have lain either side of a virtually uncrossable fiefdom of sociology and psychology. Neither of the latter disciplines share, for the most part, economics and evolution's concern with

optimisation and self-interest.

This book tackles the gulf head on. It begins with a useful review of the work of Gary Becker, one of those from the economic side who has ranged furthest into non-market behaviour like marriage and child-rearing. The authors then present such a convincing evolutionary-economic discussion of several topics in human behaviour that, firstly, the timeliness and correctness of the approach is hard to argue with, and secondly, I was left wondering what place is going to be left for the traditionally defined social sciences, with all their emphasis on the autonomy of culture and group-level emergent properties, in the coming disciplinary shake-up. I have a partisan answer to this question, of course:- it is about time that all of us, economists, sociologists, behavioural ecologists, human biologists, accepted that what we are doing is anthropology, a totally unified field of human science that is consilient in philosophy whether dealing with hunter-gatherer reciprocity, parent-offspring conflict or the theory of the firm. I would like to offer such an anthropology as a useful venue in which the marriage of economics and evolution (and all the other human sciences) can be held. It will be congenial to all since it must be committed to modeling, to methodological individualism and to the notion of optimisation. But the optimisation of what?

This brings us to the second current gulf between economics and evolution. Economics has assumed rational actors who maximise their utility, but left the question of what it is that gives human beings utility outside its domain. This limits the explanatory depth of economics, making it a discipline of *how* (how do markets satisfy the desires for utility of diverse people) rather than *why* (why do people desire what they desire). It also leaves the discipline oddly close to unfalsifiability; in principle, anything at all can give people utility, and by assuming this, any pattern of behaviour can be said to maximise it. Gandolfi, Gandolfi and Barash re-focus the maximisation from utility to biologi-

cal fitness, thus bringing economics into line with evolution.

This refocussing has obvious benefits for economics. It gains in explanatory depth. It may also gain in descriptive adequacy too. Many of the preferences people demonstrate - for conspicuous consumption, for example, or for marriage - only make sense if what they are seeking to maximise is something much deeper than monetised income; a set of fitness proxies like status, sex, and so on. On the other hand biology stands to gain, too, from incorporating economics' traditional concern with capital investments.

This neat gain emerges most clearly in a fascinating discussion of the demographic transition. In contemporary populations, there is no positive relationship between wealth and number of children, and all individuals have many fewer children than material conditions would permit. This observation seems incompatible with the idea that people are fitness maximisers, and has led some to invoke the notion that, since we are wired up to be Pleistocene hunter-gatherers, we are simply not equipped to make the decisions which would maximise our fitness in our current, novel environment.

An alternative approach is to point out that quality of children is traded off against quantity. What modern families are doing is investing more heavily in a smaller number (as the reliability of health and wealth has increased, and the cost of producing a high status child undoubtedly increased). The authors take the argument further and point to another level of trade-off, that of resources invested in offspring against resources invested in non-human capital to be passed on as inheritance. As the returns to non-human capital investment have increased, many families have switched to having a small number of offspring but with grandchildren who will have a material head start. The authors show that very long-term fitness could be maximised by investing very much less than maximal resources directly into child-rearing.

The book is not by any means exhaustive in its coverage, nor particularly richly referenced. However, it does give a clear flavour of what evolutionary economics will look like. One great appeal of the approach is that it envisages human beings as relatively flexible optimisers. Rather than, as in much evolutionary psychology, a mind that is stuck in the Pleistocene, behaviour is seen as responding fairly directly to current conditions. This opens the way to the direct testing of behavioural data against optimisation hypotheses and models. The other dizzying appeal is the implication that there is no need for a separate social science lying between biology and economics. Marriage, divorce, moral codes, religious observance; these are all topics which would traditionally be seen as requiring the invocation of group-level functions and of culture. In evolutionary economics, they are just

tionary economics, they are just alternative strategies with different production functions and demand curves. Their persistence or change is, quite literally, of the same order as a change in the price of fish. It is admittedly a little more complex, with some social goods having utilities dependent on others' consumption, and so on, but there is no fundamental intellectual division anywhere within the realm of human behaviour. Whether this vision will prove hubris time alone will tell, but Gandolfi, Gandolfi and Barash have certainly provided a highly readable and plausible manifesto.

Daniel Nettle is in the Department of Biological Sciences and Psychology at the Open University, United Kingdom. Email: daniel.nettle@ntlworld.com.