Books and Perspectives

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Explaining the Existence of the Very Improbable by the Action of Cumulative Selection on Random Events

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The Blind Watchmaker, by Richard Dawkins. Essex: Longman Scientific, 1986. pp. xiii + 332. Hardcover, $18.95.

During the past 20 years, there has been a fundamental shift in the *Zeitgeist* of behavioral scientists, a steady increase in the importance of evolutionary theory, as a heuristic, as a source of questions about the behavior of animals, and as a framework for interpreting the results of behavioral studies. In 1969, Hodos and Campbell published their classic critique "*Scala naturae:* why there is no theory in comparative psychology," and comparative psychology will never be quite the same. Shortly, thereafter, Bolles (1970) and Rozin and Kalat (1971) published, respectively, "Species-specific defense reactions and avoidance learning" and "Specific hungers and poison avoidance as adaptive specializations of learning," each initiating reinterpretation of major areas in animal behavior. Indeed, since 1966, when G. C. Williams' presented his groundbreaking *Adaptation and natural selection,* the impact of evolutionary theory on the study of behavior has been

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growing steadily. Classic ethology (group selectionist, perfectionist, and generally simplistic in the level of evolutionary argument employed by its practitioners) has metamorphosed into the far more theoretically sophisticated fields of sociobiology and behavioral ecology. Comparative psychologists have begun to come to terms with the less desirable implications of the fact that the intellectual roots of their discipline are to be found in the work of Spencer and Romanes rather than that of Wallace and Darwin.

The growing influence of evolutionary theory on the study of behavioral processes is not going to pass developmental psychobiology by. Further, simple acceptance both of an evolutionary origin of life's diversity and of materialistic explanation of the apparent design of living creatures no longer suffices to qualify the believer as a true Darwinian in the rough-and-tumble of today's evolutionary biology.

Increasingly, as the implications of modern versions of Darwin's model for the study of behavior and its development become more widely appreciated, developmental psychobiologists will be challenged to discuss their contributions within a neo-Darwinian framework. We, and even more surely our students, will require fluency in the concepts of the synthetic theory of evolution to communicate effectively with specialists in a variety of allied biological disciplines.

In the most recent of his three volumes advocating the neo-Darwinian synthesis, Richard Dawkins provides an intriguing introduction to the nature of contemporary explanation of the complexity of living systems and the efficiency of those systems in surviving and reproducing. Unlike Dawkin's extraordinarily successful, decade old, *The selfish gene,* his latest volume, *The blind watchmaker,* is not a book for all readers independent of their sophistication in evolutionary biology. If you enjoyed Dawkin's second volume, *The extended phenotype,* you will probably find much of *The blind watchmaker* too elementary to hold your interest. If you are looking for an extention of the originality and intellectual fireworks of *The selfish gene,* you may be a bit disappointed; *The blind watchmaker* is a more conservative, more orthodox treatment of neo-Darwinian theory. No memes or survival machines here.

So, while it is always a pleasure to read a book as well written, as clever in its use of analogy, and as delicately laced with British send-ups and put-downs as *The blind watchmaker* (even the index has one), Dawkins' latest contribution is not really a book for the expert in evolutionary biology. At the level of popular science writing, on the other hand, the volume is a tremendous success. Dawkins is never dull and is frequently fascinating. Whether discussing the relationship of the 40-year itinerary of the tribes of Israel lost in the wilderness to Gould and Eldredge's punctuated equilibrium model or the similarity of a top-40 radio rock show to runaway sexual selection, Dawkins always provides an analogy to both amuse and enlighten.

Interested in the nature of miracles and the probability of life elsewhere in the Universe? Ever wonder why angels' wings, but not those of bats or birds, emerge from the shoulder blades? Confused about whether the message encoded in DNA is more like a recipe than a blueprint; unclear about what difference it makes? You'll enjoy *The blind watchmaker.* If you haven't read *The selfish gene;* if in fact you haven't read much evolutionary theory for a while, *The blind watchmaker* is a fine place to catch up on Red Queens and green beards. More important, if you've always believed in evolution, but have never really quite known why, you'll thoroughly enjoy this wide-ranging discussion of the origins of evolutionary theory and the controversies, both modern and historical, surrounding it.

It is, of course, traditional to express the view that those of us studying the mechanisms of behavior need not pay much attention to developments in the study of function. Someday, perhaps, there will be a true rapprochement, but for the foreseeable future "we" are free to ignore "them."That the subject matters of developmental psychobiology and evolutionary biology are, even today, not quite so distant as one might have thought is suggested by the final chapter of *The blind watchmaker*. In a brief 30 pages, Dawkins disposes of a trio of alternatives (creationism, Lamarckism, 'molecular drivism') to the neo-Darwinian view he champions. Dawkins' rejection of Larmarckism is, in part, the result of his dismissal of preformationism and his examination of the consequences of epigenesis as a process in development. Dawkins argues compellingly that, in principle, it is impossible for the inheritance of acquired characteristics to occur in any life form whose embryonic development is epigenetic rather than preformationistic. The fundamental concerns of evolutionary theorists and developmental psychobiologists are more closely related than is often realized. Study of causation and study of function are complementary and *The blind watchmaker* is an intriguing, readable starting point for those interested in the former and seeking an introduction to the latter.

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