



## NEW BIOLOGICAL BOOKS

*The aim of this section is to give brief indications of the character, content and cost of new books in the various fields of biology. More books are received by The Quarterly than can be reviewed critically. All submitted books, however, are carefully considered for originality, timeliness, and reader interest, and we make every effort to find a competent and conscientious reviewer for each book selected for review.*

*Of those books that are selected for consideration, some are merely listed, others are given brief notice, most receive critical reviews, and a few are featured in lead reviews. Listings, without comments, are mainly to inform the reader that the books have appeared; examples are books whose titles are self-explanatory, such as dictionaries and taxonomic revisions, or that are reprints of earlier publications, or are new editions of well-established works. Unsigned brief notices, written by one of the editors, may be given to such works as anthologies or symposium volumes that are organized in a fashion that makes it possible to comment meaningfully on them. Regular reviews are more extensive evaluations and are signed by the reviewers. The longer lead reviews consider books of special significance. Each volume reviewed becomes the property of the reviewer. Most books not reviewed are donated to libraries at SUNY Stony Brook or other appropriate recipient.*

*The price in each case represents the publisher's suggested list price at the time the book is received for review, and is for purchase directly from the publisher.*

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### ROGUES AND ROTTERS: A POPULAR VIEW OF EVOLUTIONARY PSYCHOLOGY

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A review of

THE IMPACT OF THE GENE: FROM MENDEL'S PEAS  
TO DESIGNER BABIES.

By Colin Tudge. New York: Hill and Wang. \$27.00.  
v + 375 p; index. ISBN: 0-374-17523-3. [Originally published in 2000 by Jonathan Cape, United Kingdom, as *In Mendel's Footnotes*.] 2001.  
"The history of science is the history of human beings; it is not the logical outworking that nonscientists and bad philosophers of science suppose it to be" (p 166).

In assessing the impact of genetics on modern life, Colin Tudge's new book goes beyond the usual "genes and society" genre that includes potentially disquieting topics such as designer babies, gene cloning, or genetically

modified organisms (GMOs). Sounding a "more positive note," Tudge points out that "essentially genetic insights" are now able to be used "to reexplore the principal theme of the Enlightenment: the true nature of human nature" (p 4). Through knowledge of our genetic makeup, humans can "understand ourselves more fully," so that we can devise "social structures that are humane and just on the one hand and robust on the other" (p 5). Once we understand "how genes really work . . . then all the biology seems to fall into place" (p 7). Although "ethical issues require further input," he notes that we need not be "waylaid by the technicalities" (p 7). Tudge's

book is thus not just about genetics per se, but about how genetics applied to human understanding will direct biology and "the future of humankind"—the title of Chapter 1. No simple explication of genetic technologies, this book instead uses the history and present-day understanding of genetics—and its companion of evolutionary theory—to justify and ground the new school of thought known as evolutionary psychology. In short, this book is a popularized account of the totalizing sensibility favored by some residents of the Center for Philosophy at the London School of Economics (LSE), where Tudge is currently a research fellow.

The author begins by urging his readers to appreciate how much we owe to the "genius" of Mendel, especially since heredity is perhaps "the central obsession of humankind" (p 3). He explains that the combination of ideas about heredity associated with Mendel, and ideas of evolution by means of natural selection associated with Darwin, led to the "modern synthesis" of evolution in the early part of the 20th century. With a set of ideas from molecular biology added to the mix, Tudge states that "we have virtually all of the hard core of modern biology" (p 10). Dismissing outright ecologists' and psychologists' arguments against such a narrow view that excludes them, he states that the "canon of neo-Darwinism-cum-molecular-biology" is the "hard core" of biology, and "the spring from which all may drink" (p 10).

The organization of the book therefore closely follows this logic of the science. The first part takes readers back to the origins of genetics to the work of Gregor Mendel, "the peasant and the scientist" who first established the rules of heredity, and then brings readers forward to some of the present-day insights associated with the advent of molecular biology. The middle part of the book takes readers back to Darwin and the establishment of his evolutionary theory and then forward to the justification for evolutionary psychology. The latter parts of the book deal specifically with the applications of theory to practice and take readers from subjects such as crop improvement to designer babies and conservation biology. It concludes with an epilogue that explores the ethical founda-

tions of the application of genetics to solving problems of humanity.

The book is clearly written and even the most difficult aspects of technical science are lucidly explained. The first part of the book on Mendel and modern-day genetics is fairly accurate and is an engaging introduction for students interested in a popular history of genetics. Tudge has benefited nicely from Vítěslav Orel's biography of Mendel (1996) and he has done a good job presenting Orel's new portrait for a popular audience. In these respects, the book is a model of popular scientific writing. In other respects, however, it demonstrates some of the dangers inherent in popularization.

Taking an unabashedly partisan stance on a divisive subject, Tudge selectively rewrites the history of evolution so that evolutionary psychology follows as the logical entailment of evolutionary theory. All contrary arguments are dismissed, as are rival versions of evolutionary theory. Furthermore, the latter is presented as some long footnote from Mendel to Dawkins. All too often, Tudge lapses into hyperbolic excess when a pet theory is introduced. He declares that Darwin was the "finest field naturalist of all time" (p 161), while Alfred Russel Wallace—name misspelled—gets barely a mention; he tells us that Darwin was, of course, the "greater" (p 162), although we never know why. Natural history, systematics, and biogeography, all the field, experimental, or otherwise empirical aspects of evolution, take back seats to the realms of high theory where mathematical logic, not biological reality, reign supreme.

In Tudge's hands, mathematics functions as a kind of handy polarizing filter for the history of evolution. He tells us that in addition to the absence of a viable theory of heredity, the great flaw in Darwin's theory was the fact that "his ideas were unquantified" (p 165), that he was aware of his inadequacies, and that his "desideratum" was "the need to manipulate his evolutionary notions with the precision of math" (p 167). This was only "tackled seriously," he says, by the "great British biologist-mathematicians R. A. Fisher and J. B. S. Haldane" (p 167) in the 1920s and 1930s. The "truly appropriate" math was, however, developed in the 1930s by the Hungarian mathe-

matician John von Neumann, who developed game theory, later applied to evolution by John Maynard Smith. History—sans the polarizing filter—reveals a more complete picture, however: Darwin did not have much of an articulated desideratum to “quantify” natural history, his area of interest (although he did read widely in his attempts to understand and measure variation), and his vociferous critics were far too busy concentrating on more pressing problems (scientific, philosophical, and moral) with his theory to find it problematic because of the absence of numbers (the age of the Earth based on Lord Kelvin’s erroneous calculations for one thing, and the absence of direct evidence in support of natural selection for another). The application of mathematics to natural history was hardly a well-established practice in the mid-century (the founding of statistics and its connection to variation is only dated to the 1840s with the work of Adolphe Quetelet), and Mendel himself did not exactly win the applause of the community with his path-breaking statistical studies of heredity in 1866 (although he finally did win adherents with the same work in 1900). Fisher and Haldane did lay the groundwork for mathematical population genetics, which was indeed essential for the evolutionary synthesis of the 20th century, but so too did the American Sewall Wright (the three names are repeated together so often that have become “the holy trinity” of evolutionary theory). Leaving out Wright—the founder of the shifting balance theory of evolution unpopular with evolutionary psychology because it allows for nonadaptive evolution—but including game theorist Neumann is just one particularly egregious example of Tudge’s self-serving rewriting of history.

Of Darwin’s other ideas we are told that he seemed to “lose interest” in natural selection after writing *Origin* (p 164), becoming, says Tudge, more interested in sexual selection. The fact that some of Darwin’s finest work in support of his theory of descent with modification by means of natural selection took place well after *Origin*, with his extensive and imaginative botanical studies, is completely ignored, and the fact that sexual selection just happens to be a hot topic (no pun intended)

at the LSE, escapes mention (see Cronin 1991). Throughout the sections on evolution, Richard Dawkins is elevated to the status of the resident expert; his book, *The Selfish Gene* (Dawkins 1976) is described as “brilliant,” the expression “selfish gene” is described as “wonderfully arresting,” while the selfish gene theory is described repeatedly in glowing terms as if what is really a very interesting, provocative, but not yet widely accepted insight had become the single greatest development in the history of evolutionary biology since the evolutionary synthesis itself (pp 186, 189). The only close second is the “evolutionary stable strategy” (ESS) associated with John Maynard Smith, who is, incidentally, a longtime favorite of the LSE.

Even more problematic: there is little substantive criticism included nor even so much as seriously entertained with respect to evolutionary psychology. Critics of this most controversial school of thought are dismissed outright as being “politically correct” or of spreading “nonsense” (p 173); if they were only to “do some homework” on the subject they “would surely be ashamed of their own [political] obduracy” (p 5). There are so many such dismissive remarks that one gets the distinct feeling that Tudge believes that all critics of evolutionary psychology are a combination of political zealots, moral dwarfs, or antiscientific nonintellectuals. Statements such as “[t]he critics thereby manage to conclude that the arguments from evolutionary psychology must be illiberal and inhumane, in contrast to those of the politically correct, which of course have everyone’s best interests at heart” (p 224) are all too common. Anyone curious about the values implicit in evolutionary psychology is told that such “socialist objections to selfish genes and selfish DNA are simply muddleheaded” (p 159), while anyone seriously worried about genetic determinism is castigated and told that the phrase “is just a slogan for the lazy-minded” (p 305).

Readers are told repeatedly that this is a new science, not yet quite fashionable. With adequate financial support and time, it “will surely prove to be one of the most significant intellectual and moral legacies of the late twentieth century” (p 173), once the “non-

sense" (meaning the criticism) has died down. It is a serious science, done by "serious thinkers" (p 195). Yet the examples Tudge provides are anything but serious. At one point he earnestly tries to show how it will help us understand such vexing mysteries of the heart, like why it is that women prefer "rotters"—defined as being the "love 'em and leave 'em" types (p 201). The answer is that rotters, who spread their genes widely within a population, are considered more attractive to women. The fact that some men seem equally attracted to "rottettes" (would that be the right term here?) or the fact that most sensible people prefer neither seems entirely irrelevant. In yet another example, he argues that "cheating plays a large part in the affairs of all animals" (p 205), and that this holds true for men—as everyone knows—but also for women whose "arithmetically ideal strategy" (p 205) is to have children by "rogue" men (defined as those who sexually attract many partners), but then raise them by "nice" ones who will serve as good providers. He concludes that "[m]any more women than is socially comfortable have taken their lead from hedge sparrows" (p 205). He notes that "[g]enes are indeed selfish and do not care about the happiness, or other such indulgences, of their possessors" (p 201).

Tudge's examples will not only fail to convince readers of the seriousness of evolutionary psychology, but ironically, challenge the very scientific veracity of what he earnestly wishes to promote as science (not to mention the critical faculties of some of its followers). The biased and dismissive tone used by Tudge, moreover, is equally unfortunate: it only serves to repel rather than attract serious readers. The book is, however, useful in a classroom setting, especially in courses in "biology and society" or the history of science, or per-

haps literature and science for its use of rhetoric. Tudge's selective rewriting of history and science alongside his unshaken belief that his is the only politically neutral approach, demonstrate how powerfully ideologies can operate tacitly in science. My own recommendation would be to pair Tudge's volume with Stephen Jay Gould's *The Mismeasure of Man* (1981), a book with a competing ideological position for students to critique. Students can additionally be asked to find parallels with E O Wilson's totalizing perspective in a book such as *Consilience: The Unity of Knowledge* (1998) as a related exercise. For more involved critiques they may also refer to the classic history of the "heredity-environment" controversy in America in the first part of the 20th century by Hamilton Cravens, *The Triumph of Evolution: American Scientists and the Heredity-Environment Controversy, 1900-1941* (1988); the concise history of eugenics and genetics by Diane Paul, *Controlling Human Heredity: 1865 to the Present* (1995); and perhaps the provocative discussion of ideology and biology by R C Lewontin et al., *Not In Our Genes: Biology, Ideology, and Human Nature* (1984). Students can then be asked to think critically about both the subtle and overt ways that both historians and scientists defend rival ideological positions with similar claims of value neutrality. They may then begin to understand how it is that even the best well-intentioned scientists—and science—can go astray. They may also begin to appreciate that genetics applied to human affairs is a serious business that requires special vigilance through informed critical inquiry, preferably in a manner that respectfully considers alternative points of view. Ironically enough, Tudge himself offers the best lesson students can learn from his example as the quotation at the beginning of this review indicates.

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