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Finding Babies in Many Baths (Review of Evolution: The History of an Idea, Third Edition. By Peter Bowler)

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Evolution: The History of an Idea, 3rd ed.

By Peter Bowler. Berkeley: University of California Press, 2003. 464 pp. Paper, $24.95.

Peter Bowler's 1984 book Evolution: The History of an Idea is a standard introductory history of theories of biological evolution. A minor revision in 1989 updated some of the material, but with the appearance of this third edition Bowler has completely rewritten the book to "reflect the large scale changes that were taking place in the way we view some aspects of the rise of evolutionism" (p. xi). The book presents an up-to-date yet accessible introduction for the nonexpert on the intellectual history of evolution and evolutionism, defined by Bowler as "any theory postulating a natural process for the development of life on earth" (p. xvi).

Bowler intends to present us with a nontriumphalist view of the rise of evolutionism, a picture of the paths that led to the current widespread scientific acceptance of Darwin's natural selection account of evolution and of the dead ends that philosophers and scientists of previous generations took toward understanding the creation and development of life on Earth. He intends to review the Darwinian revolution before Darwin and the non-Darwinian revolution after Darwin (Bowler, 1988). His text takes us to the present, reviewing debates in contemporary evolutionary science and debates in society (e.g., creationism, intelligent design theory).

This is a lot of material to cover. The book's commendable comprehensiveness comes at the cost of length. The book weighs in at almost 400 pages, excluding bibliography; moreover, the reader who is not familiar with many of the perspectives on evolution that preceded the currently dominant approach (the modern synthesis) can easily be overwhelmed by the subtle differences between the many different theories that have appeared over the centuries, especially because Bowler necessarily has to cover these approaches briefly in order to cover them all. Because aspects of the various theories reappear over time, however, close attention to the different perspectives is worthwhile.

The benefit of Darwinian history for psychologists

Although it is probably not a bad thing for everyone to familiarize themselves with the history of Darwinism-one of the two or three most important scientific theories of the modern age-this is the American Journal of Psychology. What is there about this book that can benefit psychologists and the field of psychology?

Readers whose professional interests include the psychology of science and scientific discovery (see Tweney, 1998) may be one psychological audience for this book. Although it may provide some basic raw data, however, the coverage of any

specific theorist and the process by which his or her theoretical ideas were developed is not sufficiently deep or sufficiently focused on psychological processes to be of much value to this audience. Bowler is not to be faulted for this, of course: He is a historian, not a psychologist. Given that, it is not surprising that this book is focused more on the sociological, historical, and political forces that shaped the development of ideas than on the intraindividual psychological processes.

A bigger benefit of this book for psychologists, then, is not in the specific study of how Darwinian ideas were developed but in broader lessons of how competing theories grow, how conflicts within science can best contribute to advancing our understanding of scientific phenomena, and how we should respond to theories that challenge our beliefs or ideologies.

Conflict in science

Bowler has long argued that the first result ofDarwin's publication of Origin of Speciesw as not the widespread acceptance of the natural selection mechanism as the means by which evolution occurred. Rather, "Darwin succeeded in converting the world to evolutionism not because he had the theory of natural selection, but despite the fact that most of his fellow biologists had major reservations about it" (Bowler, 1993, p. 3). Agreement that evolution was caused because organisms possessing certain variants of a feature were selected (i.e., were more successful at surviving and reproducing in a given environment) did not emerge until the early 20th century.

In the meantime, a variety of theories were offered as to how evolution occurred. Both these post-Origin theories and the theories that preceded Darwin can be looked upon from our vantage point as wrong. But we should learn the lesson that these theories often contained important precursors and parallels to currently accepted ideas in evolutionary science and introduced important concepts that play a part in our understanding of Darwinism. In the early 19th century, for example, French anatomist Georges Cuvier proposed a model of comparative anatomy emphasizing commonality of internal structures of animals as an indication of their relationship. Cuvier retained the notion that species had immutable structures, so this identification of common form was viewed as a "perfect expression of the argument from design." However, when this commitment to the fixity of species was relaxed by later theorists, "they realized that each form could be seen as a superficially modified version of a basic animal type which Darwin would interpret as the common ancestor of its group" (p. 109).

The application of comparative study to evolution also benefited from the concept of homologous and analogous biological features, developed by Richard Owen in the 1840s. Analogies are features in different species that share an adaptive similarity but are not related to one another; homologies are shared features that stem from a shared history. For Owen, the shared history of homologous features provided evidence not of natural selection but of an underlying intelligent

design. Once again, it was only when biologists took these valuable concepts out of an otherwise scientifically less valuable perspective that they were able to use the homology concept to understand the common evolution of various species.

These and numerous other examples of the way in which valuable insights into the development of life can be drawn from otherwise unacceptable theoretical positions should give psychologists pause. Psychology (and other human sciences) has often lurched forward through dramatic theoretical controversies, where proponents on each side of the controversy take more than a scientific interest in the inadequacy of the competing perspective (e.g., psychoanalysis vs. cognitive-behavioral approaches, radical behaviorism vs. cognitivism, situationism vs. dispositionalism, psychoanalysis vs. feminism, social constructionism or phenomenology vs. nomothetic empiricism). The risk posed by these sorts of conflicts is that each side in the debate rejects in toto the insights of the other, thereby impeding what is presumably our mutual goal: a greater understanding of the way in which the mind (however you construe that term) works.

The application of Darwinism to psychology has suffered from this problem at least as much as any other psychological perspective. After all, it is the implication that humans were of a piece with other species that has most raised objections to evolutionism over the centuries, and it was E. O. Wilson's (1975, 1978) bold pronouncements about the implications of evolution for human behavior that most enraged his critics.

Since the late 1980s, reference to evolutionary concepts have increased manyfold in the psychological literature (see Scher & Rauscher, 2003, for further discussion). This rise probably can be attributed to the forceful and effective advocacy of scholars promoting a view they call evolutionary psychology (e.g., Buss, 1995, 2004; Cosmides & Tooby, 1997; Dennett, 1995; Pinker, 1997, 2002; Tooby & Cosmides, 1992) and to vociferous critics of the specific approach and of any application of evolution to human psychology generally (see Rose & Rose, 2000)

The term evolutionary psychology as a long history (see Stanley, 1895); however, the modern-day proponents of evolutionary psychology insist that only a specific metatheoretical perspective is appropriate for the evolutionary study of mind and behavior. This perspective combines the adaptationist and gene-centered approach to evolutionary biology with the modular, cognitive approach to psychology (see Scher & Rauscher, 2003).

In contrast, a number of recent publications have appeared recently arguing that room must be made for a variety of valid alternative approaches to evolutionary psychology (Caporael, 2001; Heyes, 2000; Laland & Brown, 2002; Moore & Michel, 1998; Scher & Rauscher, 2003). The specific approach advocated by Cosmides, Buss, Pinker, and others (which I have called cognitive adaptationism; Scher, 2004) has valid insights to offer. However, any insistence that one specific approach is the way to proceed, and other approaches have nothing to offer, is

counterproductive to the goal of advancing the science of psychology (although it may be effective for the short-term advancement of one's particular scientific perspective).

Researchers in evolutionary psychology, broadly construed, need to learn the lesson strewn throughout the history of Darwinism: Very few biological theories are likely to be completely wrong (and very few completely right; even Darwin got many things wrong). Rather than myopically focus on one's own approach, evolutionary psychologists must be open to drawing the valuable out of a variety of theories and synthesizing the various approaches; this almost certainly will result in better, more useful theoretical approaches.

The prime example of this process in the history of evolution is the modern synthesis of evolution and genetics that occurred in the early 20th century and has underpinned nearly all of biology since. As Bowler points out, at the turn of the 20th century genetics was presented as evidence against evolution and natural selection: The discontinuous variation implied in Mendelian genetics and demonstrable in experimental studies in the lab seemed to be incompatible with the continuous variation that would be needed for natural selection to function as predicted. Naturalists working in the field, on the other hand, saw continuous variation all around them.

Synthesis of these two perspectives grew out of both the development of new conceptual ideas (e.g., population genetics) and a greater willingness by all parties to accept ideas from competing perspectives. (A reduction in personal animosity between naturalists and geneticists and an increased professionalization of the study of evolution were especially important; Ruse, 1996).

In psychology, the need to synthesize insights from many different subdisciplines presses upon us now as much as ever. Evolutionary psychology is already a synthesis, of course-between biology and psychology. However, a much broader set of influences must be more regularly tapped if we are to reach a synthesis that will use evolutionary concepts to increase our understanding of psychology. Rather than see developmental, physiological, and cognitive perspectives competing for status and funding, scholars should be searching for the synthesis that will unify these ideas into a new perspective on evolution and behavior.

Although it is too little known in psychology, progress in this direction is being made. For example, the developmental systems approach to evolution (Griffiths & Gray, 1994, 2004; Oyama, Griffiths, & Gray, 2000) draws on developmental psychology and developmental evolutionary biology to construct a model of natural selection that incorporates not just the genetic material transmitted from generation to generation but also the ontogenetic process whereby a phenotype is produced. According to this approach, "the fundamental unit that undergoes natural selection is neither the individual gene nor the phenotype, but the life cycle generated through the interaction of a developing organism with its environment ....

The 'developmental system' is the whole matrix of resources that interacts to reconstruct that life cycle" (Griffiths & Gray, 2004, p. 2). Although these models have general relevance-developmental processes shape every aspect of the phenotype-the models are particularly relevant to psychologists, with our long tradition of studying the developmental processes shaping the psyche.

To cite just one other example, Quartz (2003) sketches an approach that also incorporates developmental processes in evolutionary psychology. He does so within the framework of developmental cognitive neuroscience, thereby bringing actual physical structure into the evolutionary psychological picture. Whereas the developmental systems approach stresses the role of selection, Quartz's developmental evolutionary psychology focuses much more on how developmental constraints shape the evolution of psychology.

Theories and ideologies

The history of Darwinism shows us that we will lose much if we focus our attention only inward on our own perspective and refuse to be open to alternatives. Much of this inward focus can be at least partially traced to ideological commitments. However, Bowler's account makes clear that no particular ideological position is naturally supported by Darwinism.

Although Karl Marx was skeptical of Darwin's theory because of its parallels with capitalism, he apparently appreciated the fact that it supported a materialist view of human nature. (Bowler explains that the claim that Marx offered to dedicate a volume of Das Capital to Darwin is a myth.)

The horror of the eugenics movement in North America and Europe and the race theories of the Nazis often are seen as relying on evolutionary ideas, but in fact Hitler's "final solution" and the eugenics movement actually seek to subvert natural selection, imposing an artificial selection process on humans.

Philosopher-psychologistsJohn Dewey, WilliamJames, and Charles Peirce saw the triumph of Darwinism as support for the notion of freedom against genetic determinism because Darwinism destroyed the notion that nature was progressing toward some fixed goal. "Nature was inherently creative, and the lack of constraints on evolution guaranteed the freedom of the individual will," Bowler observes (p. 320).

In our time, Bowler points out, many oppose the use of evolutionary theory in psychology because they hope to "block the efforts of those who would use biology to endorse racist or other right-wing ideologies." But, these opponents forget "that earlier advocates of theories similar to their own were capable of endorsing the policies they despise" (p. 368).

Finally, Bowler reminds us, "one of the most pessimistic predictions about the

future of humanity produced in the last century, Aldous Huxley's Brave New World, foresaw social conditioning through learning and environmental manipulation as the means by which our masters might enslave us-all the time claiming that it was for our own good" (p. 317).

Conclusions

The history of Darwinism can serve us as a guide to how evolutionary psychology should proceed. One of the most successful ways for science to advance is not with a Kuhnian rejection of previous perspectives but with synthesis of multiple approaches into a new and more productive perspective. I have no doubt that the multiple approaches vying for attention in evolutionary psychology (broadly construed) ultimately will lead to new and fertile developments in psychology. We can only hope that both evolutionary psychologists and their critics will learn the lessons of history and work toward a true new synthesis and that the new synthesis will be as productive as the early-20th-century synthesis was in evolutionary biology.

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