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## Preface

For as long as I can remember I have been fascinated by the behavior of living things. Although I grew up within the urban confines of New York, that did not prevent me from acquiring a variety of animal specimens for study, including newts, snakes, lizards, parakeets, gerbils, rabbits, and various tropical fish. My interest in living behavior led me to study psychology as an undergraduate in the early 1970s at Queens College of the City University of New York, and then to graduate study in experimental psychology in the mid and late 1970s at McGill University in Montreal.

As an undergraduate at Queens, I was much impressed by the theories of B. F. Skinner and saw in his radical behaviorism what I considered to be a truly scientific and grand theory of behavior; simply put, that animals and people alike do what they are rewarded for, with no need to be concerned about their desires, wants, or purposes. But my studies in language acquisition and bilingualism at McGill with Wallace Lambert and G. Richard Tucker, together with the influence of Donald Hebb (whose last year at McGill coincided with my first), led me to cognitive theories that, in contrast to Skinner's behaviorism, focused on the role of mental and neural processes in determining behavior.

Impressive developments in the so-called cognitive revolution accompanied my tenure at the University of Illinois at Urbana-Champaign during the 1980s and 1990s. But in spite of these developments, I sensed two important gaps in psychology's account of animal and human behavior. First, I felt that psychological theory provided no convincing explanation for the obvious purposefulness of behavior. Although cognitive psychology emphasized the role of internal mental processes in explaining

behavior, these processes were seen as transforming input (stimuli, sensations, perceptions) into output (responses, behavior). But we observe that behavior is purposeful when actions are varied to achieve a certain outcome, and I could not see how any input-output or cause-effect model, behaviorist or cognitive, could account for this.

Second, the psychological theories I knew provided no explanation for the goals and preferences that animals and humans have. Behaviorism tries to explain animal and human actions as resulting from reinforcement in the form of rewards (for example, food for a hungry rat, money for a person). Cognitive psychology uses more complex theories of motivation. But why are things such as food, money, and sex rewarding or motivating in the first place?

These basic questions about behavior remained unanswered in my mind when, in 1989, I met two fascinating and very approachable men: the late Donald T. Campbell and William T. Powers. Don Campbell introduced me to Charles Darwin (actually, to Darwin's theory of evolution and its implications for psychology) and to his former associate and co-teacher Powers. Bill Powers in turn led me to a fascinating theory of purposeful behavior having its roots in the work of Claude Bernard.

It would take several more years before all the pieces started coming together, during which time my first book, *Without Miracles*, appeared. But by taking heed of the discoveries of two giants of biology and modern developments of their theories, I began to find answers to my very basic questions about animal and human behavior.

Although I consider myself extremely fortunate to have met Campbell and Powers when I did, I can't help feeling somewhat cheated by my undergraduate and graduate education in psychology, which completely ignored both Bernard and Darwin, whose revolutionary contributions to the life sciences create an essential foundation for understanding animal and human behavior. Consequently, the purpose of this book is to introduce the lessons of Bernard and Darwin to those interested in understanding the *what*, *how*, and *why* of animal and human behavior.

Campbell, Powers, Bernard, and Darwin are not the only individuals who had an important influence on the evolution of this book. Richard Marken and Hugh Petrie provided comments that greatly improved the book, as did several anonymous reviewers of the manuscript. Greg

Williams not only provided a thorough and detailed list of insightful and helpful comments, but also served as a rapid-turnaround copy editor and, with his wife Pat (the other half of the Gravel Switch Typesetting Team), transformed the manuscript into the formatted print and illustrations you now hold in your hands. I thank Michael Rutter of the MIT Press for his editorial assistance and for his company during a great day of mountain biking near Tucson in June 1997. The red pencil of Sarah Jeffries did wonders to transform my often wordy, loquacious, redundant, superfluous writing style into something more closely resembling readable modern English prose (this is the one sentence she didn't get to see). Fellow music lover Rich Palmer provided an invaluable service by somehow being able to "undue" the hundred or so overdue books I had in my possession from the vast stores of the University of Illinois library. And I must also recognize the stimulating environment, freedom, and support that the University of Illinois at Urbana-Champaign and its Department of Educational Psychology have provided over the last twenty years.

Last but certainly not least, I am truly appreciative of the love, support, and tolerance of my wife, Carol, who once again had to share me for an extended period with the demanding mistress that a book-in-progress becomes. I promised her it was just a temporary fling. But I am sure she will understand that some habits are hard to break.