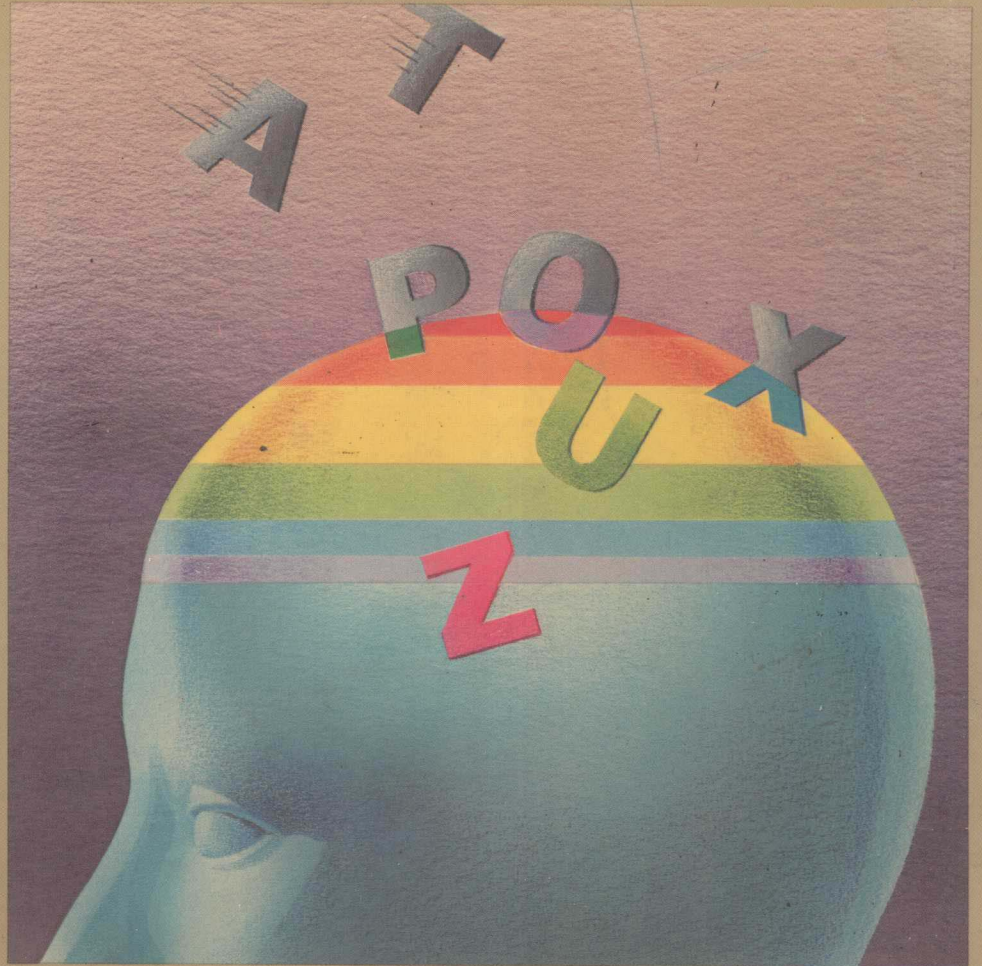


# *A*PPPLIED *PSYCHOLOGY* *FOR TEACHERS*

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## *A BEHAVIORAL COGNITIVE APPROACH*

**WESLEY C. BECKER**



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*WESLEY C. BECKER*



SCIENCE RESEARCH ASSOCIATES, INC.  
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# PREFACE

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This book is designed primarily for teachers in training at the undergraduate level, although it could easily be used for inservice and some graduate courses. It attempts to systematically cover areas of Educational Psychology important to teachers. It is designed to be a two-term course of three hours each term or a one-semester course of four or five hours. Of course other arrangements are possible through being selective in assigning chapters.

A number of areas of psychology (the study of individuals and groups) have generated empirical principles useful to the teacher in decision making. These areas include developmental psychology, individual differences, personality theory, cognitive psychology, social psychology, measurement theory, learning theory, instructional psychology, and behavior theory.

The implications of empirical behavior theory cut across many different aspects of teacher decision making and provide a set of *core concepts* that one can build from to understand more complex events. In understanding how students in different social environments develop differently, behavior principles apply. In understanding good classroom management practices, behavior principles are a factor. In understanding effective teaching practices, behavior principles enter consideration. In understanding effective ways of monitoring student progress, behavior principles are pertinent. Because the basic principles of behavior underly much of what this text is about, I cover them in early chapters.

In addition to having an understanding of the *empirical* principles underlying learning processes, teachers need to have a *logical* understanding of the structure of knowledge systems and how such knowledge is important to teaching strategies. For example, in teaching basic concepts, there are logically derivable principles for sequencing examples that will facilitate student learning. In teaching more complex problem-solving routines, it is important to be able to analyze subskills assumed by the routine and teach them first. Knowledge of how to analyze and carry out general-case instruction is very important to the breadth of applications the student can make for any given instruction. It adds *power* to teaching. In the past two decades, considerable progress has been made in analyzing the nature of concepts, principles, problem-solving routines, problem-solving strategies, and some of the metacognitive processes related to managing one's thinking processes. In approaching these areas, our attempt is to present a systematic viewpoint, showing where possible how more complex forms of behavior and thinking grow out of simpler forms. In the process, it is our hope that our students will develop a systematic, empirically based frame of reference for approaching the professional problems faced by teachers.

Teachers also need a background for understanding students' individual differences and developmental changes. Learning processes are continually interacting with our biological bases and maturation processes. Unlike most texts in this area, I did not begin with developmental processes because it is my belief that a background in behavior theory and the analysis of cognitive knowledge would provide a stronger foundation for approaching the psychological implications of developmental processes for teachers.

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My goal was to collect and synthesize what psychology has to offer teachers in a cohesive, practically oriented fashion. Alternative viewpoints are examined, but within the framework of a systematic *empirical* orientation.

### **ORGANIZATION OF THE TEXT**

After an introductory chapter that discusses some of the issues involved in taking an empirical, scientific approach to human behavior, the text has four major parts, plus a concluding chapter that discusses some of the technological changes likely to affect teachers before too long.

Part I examines how teachers can use the basic principles of behavior to strengthen, weaken, and maintain behavior. The chapters explore systematic application of such principles for instruction at the elementary level, the secondary level, in physical education, in coaching, and in music education. Part I concludes by examining cognitive-motivational processes and group processes for their implications for teachers.

Part II explores the design of quality instruction through the use of mastery learning strategies and the careful, *logical* analysis of what is to be taught. The goal is to learn how teaching sequences can be designed that will lead to efficient learning and generalizable learning.

Part III examines developmental issues and individual differences. Chapters analyze the nature of intelligence, cognitive development, personal and social development, sex-related issues, how to deal with problems in student social behavior, and the special needs of special children.

Finally, Part IV describes issues involved in monitoring and evaluating instruction in more detail. Chapters cover criterion-referenced tests, norm-referenced tests, and an introduction to norm-referenced test theory.

### **SPECIAL FEATURES OF THIS TEXT**

1. While building from the practical (readily usable) principles of behavior, there is up-to-date coverage of higher-cognitive processes.
2. It provides a systematic frame of reference for viewing classroom activities, and yet it provides a broad coverage of such topics as developmental processes, group process, cognitive-motivational processes, sex differences and equity issues, intelligence, behavior problems, and special education.
3. It is the only book of its type to systematically examine the design of quality instruction covering such areas as the basic structure of effective teaching (mastery learning models), the structure of cognitive knowledge, strategies for teaching different kinds of knowledge including concepts, facts, rules, principles, transformations, fact systems, problem-solving routines, and problem-solving strategies.
4. It illustrates program-design principles with an analysis of teaching reading and mathematics.
5. It teaches the basic principles for strengthening, weakening, and maintaining

behavior and shows how to apply them to design effective teaching-management systems for both elementary and secondary education. Use of special reinforcement systems for hard-to-teach students is discussed. Applications of principles to improving physical education, music education, and coaching are detailed.

6. It is the only text of its kind to outline a system-wide plan for systematically teaching responsibility to students, both in social areas and academic areas.
7. The text examines system designs for monitoring student learning using criterion-referenced tests.
8. Norm-referenced tests and their interpretation are examined.
9. Finally, some promising technologies of the near future—microcomputers, classroom network systems, and videodisc systems are illustrated with programs now in the developmental stage.

#### **SUPPLEMENTS**

A *Student Workbook* and an *Instructor's Manual* have been designed to accompany this text. The *Workbook* contains "Study Questions" which should be read before starting a chapter to help focus your study. After reading a chapter (or occasionally at various points in a chapter) go to the *Concept Practice* programmed instruction in the *Workbook* and (when included) the "Essential Definitions". Finally, return to the "Study Questions" and attempt to answer the questions in your own words. Answers are provided in the *Workbook* so you can check your answers. The *Workbook* also contains some projects to be carried out to apply what you are learning.

The *Instructor's Manual* contains test items, supplemental reading lists, suggestions for classroom presentations, and a guide for evaluating projects.

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Wesley C. Becker  
Eugene, Oregon  
September, 1985

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## CHAPTER

**1****SCIENCE, HUMAN VALUES, AND  
TEACHING-INTEGRATING  
POLARITIES**

When first faced with a scientific approach to the understanding of human behavior, as taken by psychologists, students often have many questions. This opening chapter examines some of those questions with the goal of helping you to understand the potential value of such an approach.

**SOME QUESTIONS**

- Does taking an objective view of human behavior detract from a personal view of humans as feeling-thinking persons?
- Are humanist values incompatible with a scientific approach to the study of people?
- Is freedom of choice incompatible with scientific determinism?
- How does scientific control differ from social control?

These and related questions are examined in this first chapter to clarify for you the assumptions about values and the philosophy of science that underpin our views.

**A PERSONAL PERSPECTIVE**

A year ago I had a student named Carl in my undergraduate educational psychology class—a class many students perceived as behaviorally oriented. I was presenting an objective view of human behavior that had grown out of the experimental study of behavior change processes (learning). Carl was also taking a course from another professor. His other professor, who had recommended my class, was focusing on a phenomenological perspective that emphasized the role of our personal learning history (especially the language we use) in structuring what we see; his goal was to make students aware of their own biases. What was noteworthy about Carl was his orientation to the world. Carl's personal orientation was Zen Buddhist. He dressed differently and approached the class differently than any student I have known. He was constantly trying to

integrate the views of two professors and was also trying to translate back and forth between his Zen philosophy and behavioral principles. In his view, a person is a *unity* that can be looked at from the inside or the outside. I admired the wisdom of his position. I was pleased when he later told me that he had learned much from me that would be useful in his teaching career. In discussions with this student, I recalled what I had learned from Robert Pirsig's *Zen and the Art of Motorcycle Maintenance* (1974).

Pirsig's thesis was that we need a way of looking at the world that unites the polarities that have dominated philosophic history—logical-emotional, technology-art, objective-subjective, deductive-intuitive, physical-spiritual, classical-romantic, “square” and “hip”—*without doing violence to either*. In today's psychology a major polarity is the cognitive approach versus the behavioral approach; another is the humanistic orientation versus the behavioral. Within the behavioral approach is yet another expression of Pirsig's classical-romantic polarity, namely, respondent behavior (emotional, reflexive) versus operant behavior (which has the potential to be logical and intelligent).

Pirsig's pursuit of an integration of these polarities led to the study of values (qualities). For him values lie not in the object or the subject, but in *the reactions of the subject to the environment* (objects). *The most important aspect of our existence is neither objective or subjective, but an event relating both*. To illustrate his point, Pirsig uses the example of the amoeba placed in a plate of water with a drop of sulfuric acid in it. If the amoeba could think and talk, it would quickly say “This environment has poor quality.” And it would likely (if it could) behave in a way that would change that environment.

Pirsig goes on to show that both classical (logical) and romantic (emotional) views of the world deal with values. *The romantic (or artistic or existential) view treasures the values in immediate perceptions, while the classical (or logical or technological) view looks for value in events that relate the present to the past and the future*. While it happens that “squares” in their analytic habits may fail to see the beauty before them, this is not a necessary outcome of intellectually oriented learning. Just as you might enjoy the beauty of the countryside and the wind in your face on a BMW bike, you can also learn to attend to what has happened in the past and might happen in the future if the oil, tires, and engine timing are not attended to (the art of motorcycle maintenance). Taking a romantic view of students (young and old) for all the ways they can please us, does not exclude the possibility that with a little teaching technology, we might come to better meet our goals for them. We are all both emotional-feeling beings with an internal view of ourselves, and rational-intelligent beings capable of taking an objective view of our world and how it works (including ourselves).

Because we see value in the scientific study of behavior does not mean that we have become (or will become) inhuman. If you love someone, you can still decide rationally to disagree with him or her on some choice. It is important to keep an open mind and heart in looking for value. Those taking a more scientific approach to the “art of teaching” (empirical behaviorists) have often been criticized by humanists as being simplistic, rigid, and impersonal. They have also been criticized by cognitive psychologists as being wrong. As far as I can see, we are all “blindmen” describing the same “elephant” from different perspectives, and there is likely to be truth in each of the so-called opposing positions.

My personal point of view grows out of empirical behavior theory, but it doesn't stop there. I see value in studying how logical analysis can help us *develop a theory of instruction about cognitive learning, and how emotions and feelings can be developed and changed through learning processes*. Finally, I believe that a continuous sequence of value judgments underlies all that we do