predictions. For example, they point to flaws in the modern treatment of group selection and question some of the explanations accounting for the evolution of alternative strategies. Not only does this approach clearly illuminate the issues, it also shows students and skeptics how good science, and good sociobiology in particular, is accomplished.

Because the concept of adaptation, usually viewed as a trait that allows an individual to "solve" a problem set by nature, lies at the heart of most sociobiological problems, Krebs and Davies begin their book with a discussion of how natural selection operates on individuals to fashion these traits. They do so effectively by using concrete examples rather than abstract reasoning to make their points. In this first chapter they dwell on one of the most important, and yet paradoxical, behavioral adaptations, the evolution of altruism. Hamilton's idea that altruistic behavior can evolve among relatives because they are likely to possess copies of the genes coding for this behavior, Triver's notion that altruism can evolve among strangers as long as a network of reciprocal partners can detect nonreciprocators, and Alexander's concept that individuals can sometimes manipulate others to behave altruistically when it is not in their own interest to do so, are all presented clearly and early in the book because they are to play pivotal roles in explaining behavioral issues that will follow. Beginning with this chapter, the reader is exposed to two techniques that Krebs and Davies use throughout to keep the presentation flowing. One involves separating complex or quantitative arguments from the text by placing them in boxes. The other refers the reader to more detailed and technical papers that are summarized in a "further reading" section. Both help keep the text simple but prevent the message from becoming simplistic.

In the next two chapters two powerful methods of studying adaptation are presented. The first involves comparing related groups or organisms living under differing conditions and showing how differences in behavior are correlated with differences in ecology. The second method uses optimality principles and entails measuring the costs and benefits of behavior. The distinction between situations in which costs and benefits depend only on the nature of the physical environment, and those in which they depend on how other individuals are being, is stressed, and various techniques for solving these problems, such as game theory, are explored in uncomplicated ways. The utility of both approaches is highlighted with numerous examples, but the pitfalls and limitations of each, as well as the latest ideas for overcoming them, are also discussed.

Armed with these concepts, Krebs and Davies tackle the key problems in sociobiology: advantages and disadvantages of group living; economics of resource defense; strategies of combat; sex and its role in selection; reproductive conflict, shaping mating systems, and modes of parenting; cooperation in birds, mammals, and insects; maintenance of behavioral polymorphisms; communication and the design of signals; and arms races among species. In each chapter theoretical ideas and models are presented intuitively and clearly and are integrated with provocative summaries of the most recent and persuasive studies. Usually, tables and figures from the original papers are used with great effect to support the argument. This book clearly has evolved from a longer and more detailed book edited by the authors and titled Behavioral Ecology: An Evolutionary Approach. But it is not simply a watered-down version. Krebs and Davies have added much originality not only by organizing material in a logical and coherent way but also by salting each chapter with many new and stimulating ideas. These tantalizing possibilities unite diverse threads of thought while at the same time opening up new avenues of research. These speculations are usually couched in terms that should lead to rapid experimentation, and although they are often incomplete, they are always thought provoking.

The book concludes with critical introspection. The plausibility of the main premises is scrutinized, and attempts are made to relate the functional approach to the study of behavior with the more mechanistic approach of classical ethologists and the learning theories of psychologists.

In sum, this book is exciting, informative, and provocative. It provides a good look at a rapidly expanding field, and it does so in a clear and intuitive manner. By emphasizing the value of careful reasoning and imaginative design of experiments, it provides a valuable model for tackling problems in behavioral ecology and sociobiology. These attributes make it an ideal text for first- and second-year undergraduates, as well as an excellent vehicle for professionals in other disciplines who want to see what sociobiology is all about when unencumbered by political and emotional rhetoric.

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**Neisser's Challenge**

Ulcir Neisser

Memory Observed: Remembering in Natural Contexts
$24.95 cloth; $12.50 paper

**Review by**

Mary C. Potter

Ulcir Neisser is the Susan Ginn Sage Professor of Psychology at Cornell University. He is author of Cognitive Psychology. Mary C. Potter is professor of psychology at the Massachusetts Institute of Technology. She is interested in research on memory for brief events such as rapid sequences of pictures and RSVP, mental representations of pictures and words, and the referential aspects of language processing.

In his preface to this book of readings, Neisser gives a discouraging assessment of contemporary work on memory, an assessment that invites assent:

When modern cognitive psychology began to appear . . . memory was among its central concerns . . . Hundreds of models of memory were soon proposed and tested in thousands of experiments. . . . The upshot of so much effort has been disappointing. There is little sense of progress; genuinely important questions are seldom addressed; most research focuses on questions that are essentially methodological. It has taken me a long time to understand why . . . Eventually I realized that no theory can make sense out of what it is supposed to explain.

This challenge experiments in the first section, "If X is an indicator aspect of the Y domain, do X and Y change in the same way?"

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no theory can be expected to integrate an essentially arbitrary set of data. We have been accumulating the wrong kind of knowledge.

Consequently, theories of memory are either so closely bound to particular experiments that they are uninteresting, or so vague that they are intellectually unsatisfying. (p. xi)

This challenge to current theories and experiments on memory is elaborated on in the first selection, an article by Neisser first published in 1978. He asserted then: "If X is an interesting or socially significant aspect of memory, then psychologists have hardly ever studied X." (p. 4). In the rest of the book Neisser invites us to take up the challenge and follow him on a quest for the right kind of knowledge, knowledge that points the way toward a more adequate theory of memory.

Structure of the book
The first thing to note about this book is that it deals only with long-term memory and primarily with one or another forms of recall. The book is divided into seven sections. The first consists of Neisser's 1978 article, and the next five correspond roughly to functions of memory; the seventh section is about individuals with exceptional memories. Three of the 44 selections were written by Neisser for this volume, as were brief introductions to each section. There is also an original article by Linton. The rest are excerpts from a diversity of sources. Standard journal articles, usually shortened, constitute about half of the selections. The oldest selection, "The day they heard about Lincoln," was published in 1899, but over two-thirds were published in 1970 or later. Overall, less than a third of the selections were familiar to me.

The five functional divisions are labeled Remembering, Testifying, Forgetting, Performing, and Getting Things Done. With the exception of the section on testifying, the divisions seem somewhat arbitrary. This difficulty with classification is a key to both the virtues of the book and its weaknesses. It is a useful compilation of a diversity of memory phenomena, most of them neglected in experimental psychology. The problem, however, is that the phenomena do not coalesce into a set of tractable theoretical problems, or (when they do coalesce) the problem turns out to be one already addressed by the very memory theories that Neisser finds so sterile.

Nonetheless, the book presents a challenge and a stimulus to a contemporary student of memory. Can one's theories be stretched to include the phenomena described here? In many cases, I see no particular difficulty. The astonishing ability of a Yugoslavian oral poet to learn an epic poem in a single hearing (Lord) turns out on examination to incorporate familiar principles such as the contribution of rhythm to retention, the use of paraphrase, chunking of familiar themes and phrases, and the like. Sanford's inability to recall a morning prayer he had read aloud some 5,000 times is but an extreme demonstration of the ineffectiveness of what amounts to maintenance rehearsal. Sherlock Holmes buffs can place an isolated sentence in a particular story, but only if it plays a role in that story's plot (Neisser and Hupcey)—a familiar effect of semantic structure on memory.

Other selections are interesting in that they extend the study of memory to a new situation, but again without calling into question standard theoretical explanations. In this category are Rubin's study of very-long-term verbatim memory for the 23rd Psalm and similar pieces; Linton's methodologically innovative, even heroic, study of memory for events in her life; and the six selections on eyewitness testimony. In the latter group is Neisser's fascinating analysis of John Dean's memory, a study made possible when transcripts of Nixon's tapes became available after Dean had testified. Dean's memory for those meetings with Nixon was generally accurate but far from literal. The case provides an excellent illustration of modern views about the propensity for abstraction and condensation in memory; I question, however, whether it requires the coining of a new term, repisodic memory.

New territory
New territory is explored in some selections, but still within the standard research conventions. There is Keenan, MacWhinney, and Mayhew's study of memory for a natural conversation, which supports the hypothesis that sentences with "high interactional content" (the speaker's intentions, beliefs, and relations with the listener) are remembered more literally than sentences that simply convey neutral information. Sheingold and Tenney looked at children's ability to recall events surrounding the birth of a younger sibling as a function of their age at the time and their age when interviewed (mothers' reports were used for validation). Surprisingly, not much is forgotten between ages four and twelve about such an event, judging from the results, but if the child was younger than three at the time of the birth, virtually nothing is remembered. This attempt to obtain objective evidence on childhood amnesia is complemented by Robbins's study of parents' memory of child-rearing practices, which are compared with what the same parents reported at the time. Readers who are parents will not be surprised that recall was often erroneous and tended to be distorted toward socially approved norms. A related result is reported by Goethals and Beckman, who found that people who have changed their opinions as a result of persuasive communication are likely to misremember their earlier views.

Other selections are notable for their imaginative methodology. Squire and Slater discuss a clever test of very-long-term memory: recognition of the names of one-season television shows and famous racehorses. Their results suggest that forgetting levels off about eight years after an event. Brown and Kulik got people to recall how, when, and where they heard of President Kennedy's assassination and like disasters, events they claim produce "flashbulb memories." Neisser provides a different account of the phenomenon, suggesting that rehearsal plus later confabulation may be involved. Nickerson and Adams studied people's inability to remember the appearance of a penny—the obverse of a flashbulb memory, in that multiple exposures produce a blank. Roesiger and Crowder reveal that there is a serial position effect (marred only by Lincoln) in memory for the presidents of the United States.

Extraordinary memories
The topics of the selections mentioned so far may be novel, but most of the phenomena fit well enough into conventional psychology. The case histories of people with extraordinary memories present a greater challenge, although with one exception (Stromeyer's eidetiker) these individuals have memories that are affected by familiar variables. Neisser speculates that such remarkable memories may be more common than we suppose; in any case, they do invite more attention to individual differences in memory.

There are some selections that take the reader into domains that are strange to the conventional cognitive psychologist. An example is Freud's essay on an early
Meeting Neisser’s challenge

What, then, of Neisser’s challenge? Recall his diagnosis of contemporary theories of memory: “No theory can be expected to integrate an essentially arbitrary set of data. We have been accumulating the wrong kind of knowledge.” Toward the end of the book, however, Neisser makes this comment on the selections: “Some facts have been established, but there has been little progress at the theoretical level. Few studies have tried to go beyond commonsense notions of memory.” (p. 366). Moreover, as already indicated, the standard theoretical constructs are capable of accounting for most of the new facts presented in the book. Thus, Neisser’s challenge fails, in that no promising new theory of memory emerges from his quest. Nonetheless, he escorts the reader through interesting and often unfamiliar terrain; I recommend the trip. It seems likely that more and more cognitive psychologists will be traveling these paths, even if the conceptual gear they bring along is made in the laboratory.

Responding to Public Law 94:142

Steven J. Apter
Troubled Children/Troubled Systems
New York: Pergamon Press, 1982. 283 pp. $28.50 cloth; $13.95 paper

Ralph F. Blanco
Prescriptions for Children with Learning and Adjustment Problems. 2nd ed.
Springfield, Ill.: Charles C Thomas, 1982. 286 pp. $17.75

Steven J. Apter is professor of special education at Syracuse University. He is editor of Focus on Prevention: The Education of Children Labeled Emotionally Disturbed. Ralph F. Blanco is professor of school psychology at Temple University and consulting psychologist at the St. Edmonds Home for Crippled Children (Roosemont, Pennsylvania). He is coauthor of Case Studies in Clinical and School Psychology with J. G. Rosenfeld. Phil Schoggen is professor in the Department of Human Development and Family Studies at Cornell University. He is coauthor of Qualities of Community Life: Methods of Measuring Environment and Behavior Applied to an American and an English Town with R. G. Barker.

Since the passage of Public Law 94:142 (The Education of All Handicapped Children Act of 1975), educators have been working feverishly to honor the obligations that the new law imposes on the schools to meet the educational needs of children who have a wide range of physical, mental, and emotional handicaps. Regular classroom teachers are now expected to accommodate children whose mild-to-moderate handicaps previously were used to segregate them into special classes. Special classes, in turn, are now expected to serve youngsters whose disabilities are so severe that they had always been excluded from public schools. The work of school psychologists has expanded greatly as demands for assessment of learning capabilities have multiplied.

But few educators were prepared either by professional training or by experience to meet these new responsibilities. Regular teachers had dealt only with “normal” children; handicapped children were the responsibility of others. Special education teachers knew little about how to work with severely disabled children. Many people, including school psychologists, had grave reservations about the validity and usefulness of popular assessment procedures.

Valiant efforts are being made to cope with the new and difficult situation. Programs of professional meetings have considered the problems at length. Countless workshops, conferences, and short courses of intensive training have been held to upgrade the skills of teachers, special educators, school psychologists, and other specialists. Curricula of professional training programs have been modified, and of course the professional literature has been filled with advice, exhortation, criticism, and self-deprecation. It is against this background of professional and academic turmoil that the two books under review should be considered. Just as there is no general agreement in the field about how to cope with the new demands, the two books take very different approaches to the problems of providing educational opportunities for children with special problems. In fact, it would be hard to imagine positions that differ more fundamentally and completely than those of Apter and Blanco.

Apter begins with “a frank and honest admission that their professional expertise is limited to school psychologists.” (p. xi) He also addresses the reader directly: “I would rather not be the person who is called on to deal with the problems of troubled children, the ailing system that surrounds them, and the professional who has to be maximally effective within this context.” (p. xiv) However, Apter belies the self-deprecation in his approach. He is clearly an expert in his field, and his book is a comprehensive and well-written guide to the legal and professional ramifications of Public Law 94:142. Apter’s book is a valuable resource for educators, psychologists, and administrators who are working with children with special needs.

Blanco’s book is more focused on the practical aspects of implementing Public Law 94:142. He provides a variety of case studies and examples of successful interventions. Blanco’s book is a valuable resource for educators who are trying to implement the law in their schools.

In eleven chapters, Apter develops a comprehensive and practical approach to the problems of working with children who have special needs. He begins with a review of the legal and philosophical foundations of Public Law 94:142, and then discusses the implications of the law for educators, psychologists, and parents. Apter also provides guidance on how to implement the law in schools, and how to address the unique needs of children with special needs.

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