ROGER BROWN

Words and Things

An Introduction to Language

With a New Preface by the Author

ROGER BROWN

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and Things

To my father and mother

Preface to the Paperbound Edition

The original Introduction to *Words and Things* includes this paragraph: "The ten chapters that follow are concerned with such very old problems as the nature of meaning, the language of animals, the relations between language and thought, the character of primitive language, the possibility of phonetic symbolism, and the techniques of persuasion through language. In short, a set of real chestnuts, most of them either given up for dead, or demonstrated to be pseudo questions, or officially proscribed by scholarly societies. While I admit to believing that the old questions are the best, it is not merely antiquarian interest that causes me to discuss them now. The pleasant surprise is that there is a lot of new evidence on these matters, evidence derived from psychology, descriptive linguistics, and anthropology" (p. 16). One decade later the pleasant surprise is that there is a lot more new evidence and no one today would suggest that the topics of *Words and Things* ought to be given up for dead. With the thought that the reader of this paperbound edition may wish to know something of the later history of the subjects treated I would like to outline what has happened and to reference a few works of importance.

The perception of speech has turned out to be a still more remark-

able accomplishment than Chapter I represents it as being. Evidently we do not proceed in a pedestrian linear fashion identifying each vowel and consonant in its turn but rather only sample acoustic data drawing on our knowledge of grammar and meaning to make up the rest(1). With respect to reading, Chapter II seems to have drawn a correct conclusion: children should be given direct instruction in letter-to-sound correspondences using the kind of instructional method called "phonic" or "phonetic"(2). In 1958 most reading research had concentrated on the problems of the beginning reader but in the past few years the performance of the skilled reader has come under scrutiny(3). He does not operate as the child, at first does, sounding out letters or words from left to right. The skilled reader perceives text in something like the way that all of us perceive speech: the data are selectively sampled and combined with knowledge of grammar and semantics to yield the meanings of large units. Ulric Neisser has made an analogy that nicely captures the current view of both advanced reading and speech perception; we construct meaning much as the archaeologist reconstructs the past—from bits of evidence and a lot of general knowledge.

Chapter III of *Words and Things* expounds and then rejects the behaviorist view that meaning is a response. A year later Noam Chomsky, the creator of transformational grammar, launched a more far-reaching attack on behavioristic treatments of the psychology of language(4). In my judgment the inadequacy of behavioristic theory in this area is now well demonstrated and the critical stance of Chapter III needs no revision. On the positive side Chapter III concentrates on referential aspects of meaning. As it happens, however, the most interesting work on meaning in recent years(5) has abstracted from reference to focus on the process of retrieving meanings for words in sentences.

Chapter IV discusses evidence for and against an ancient, fascinating hypothesis: that there is, in certain kinds of vocabulary, in all languages, a relation between sound and sense that is not arbitrary. This hypothesis of a universal phonetic symbolism is still alive today. There have been some negative findings but as recently as May of 1968 I read a report of new evidence supporting the position that low back vowels universally suggest large magnitudes and that high front vowels suggest small magnitudes. Interested readers may want to consult the experimental papers(6).

The claim, in Chapter V, that no animal species has a communication system that can properly be called a language has not been upset. John Lilly raised high hopes for the dolphin(7) but the dolphin has let him down. The claim in Chapter V that no animal has the *capacity* to acquire a language is powerfully buttressed by Eric Lenneberg's(8) evidence that it is not brain size, either relative or absolute, that provides the biological basis for such capacity but rather the structural properties that make a brain human. Even so, one intrepid couple, Allen and Beatrice Gardner at the University of Nevada, is following in the path of the Kelloggs and the Hayeses (whose work is described in Chapter V), raising a chimpanzee as if it were a human infant and trying to teach it language. With,

however, one immense improvement; the Gardners are using gesture rather than vocalization. Two other investigators, David Premack and Arthur Schwartz(9) are trying to teach chimpanzees a motoric system that models certain features of language.

The discussion of linguistic reference in childhood has its most direct continuation in the fascinating studies of Robert Krauss and Samuel Glucksberg on the development of communication skills in children(10). The book *Symbol Formation* by Werner and Kaplan also includes much important material on reference in childhood(11). However, it is not reference that has been most intensively studied in child speech in recent years but rather grammar or syntax(12). This is because a new school of linguistics, the transformational school deriving from the work of Chomsky(13), has provided developmental psychologists with an explicit and powerful description of the end state of development—the grammatical knowledge of the adult speaker. Transformational linguistics stresses the productivity of linguistic knowledge, the fact that everyone speaks and understands sentences he has never heard. With this aspect of the terminal state in focus the central developmental question becomes: How does a child extract from the finite sample of speech to which he is exposed the latent structure that will generate an infinite set of sentences? It is interesting to find in *Words and Things* a statement of the problem that anticipates the new "developmental psycholinguistics:"

"If someone wants to learn to play bridge he can do so by watching others at play. When he has learned the game he will not be restricted to the bids and moves that others have been observed to make but will be able to originate novel yet appropriate moves. He has not memorized a particular set of contingencies and actions but, rather, from observing a limited set, he has extracted rules that enable him to act appropriately in any contingency that may arise in any particular game of bridge. And so it is with speech. From observation of a limited sample of play one learns the rules of this game and becomes a kind of creative participant, extending the game along lines permitted by its structure" (p. 107).

The great question of Chapter VII is whether language is simply a vehicle for the expression of thought or is, perhaps, a major determinant of the form of thought. It is probably fair to say that the role of linguistic codability in memory (discussed in Chapter VII) is now well established(14). For other "determining" functions there is some evidence(15) but still nothing decisive. The whole issue has taken on new interest in connection with supposed distinctions in the linguistic "codes" of lower and middle class speakers(16). It is implicated also in current discussions of the relation between linguistic understanding and Piaget's account of the development of thought in children (17).

Chapter VIII considers the possibility that the direction of psycholinguistic development, in the phyletic, historical and individual-develop-

mental senses, is from the concrete to the abstract. The chapter also considers the possibility that in aphasia and schizophrenia psycholinguistic functions may be considered to have "regressed" in the sense of having become exceptionally concrete. The chapter is correct in its conclusion that these grand generalizations will not pass the test of evidence if "concrete" is understood to mean relatively subordinate in a classification hierarchy and "abstract" relatively superordinate in such a hierarchy. In another sense of concrete and abstract, considered near the end of the chapter, the case is still open. The research literatures more or less relevant to this chapter are very large and so I have listed only a few works of exceptional importance(18).

Chapter IX exasperates me. There was a significant generalization hidden in the various contingencies affecting the persuasive power of messages which I completely missed. It was the principle of consistency in attitude change, a principle formulated as "cognitive balance" by Heider and others, as "congruity-incongruity" by Osgood and Tannenbaum, and as "consonance-dissonance" by Festinger. In its several formulations the principle of consistency has been a major theme of the social psychology of the past decade(19).

The most interesting development concerning linguistic reference in psychology (Chapter X) seems to me to be the development of automatic, computer-effected, content analysis. In the "General Inquirer"(20) we now have a set of programs for assigning semantic tags to words in text and current developments promise that we shall soon have programs for assigning such tags to the particular meanings of words in text. When rules of content analysis become fully explicit, as they must for the computer to work with them, the problem of "reliability," as it is discussed in Chapter X, simply ceases to exist.

This, roughly, is what has happened in ten years to the ten topics of *Words and Things*. With the perspective of a decade the book seems not so much incorrect as introductory. Because it focussed on a set of cognitive and rather "philosophical" questions *Words and Things* had a slightly old-fashioned quality when it first appeared, not quite in the current mode. But the mode has changed and the old questions are now recognized to be among the important questions for students of language to answer. Psychological "chestnuts," it seems, have a certain preservative power; like calcium propionate in bread, or a pinch of myth in drama, they retard spoilage.

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Preface

I N 1951 the Social Science Research Council brought together three linguists and three psychologists interested in language behavior for a summer seminar at Cornell University. As is usual with interdisciplinary seminars, no very specific outcome was envisaged—beyond the always desirable "interaction." For once, however, subsidized interaction proved to be lively, grew autonomous, spread rapidly, and ended in the foundation of a new area of research—"psycholinguistics." Within a few years there appeared several good books on psycholinguistics, a general review of the subject was published as a special supplement to the *Journal of Abnormal and Social Psychology*, and an increasing number of young research scientists came to identify themselves as psycholinguists.

Descriptive linguistics was a great find for American psychology. Our first admiration was for the impeccably behavioristic methods of the linguist. Then came the great excitement of finding that this "new" science had turned up phenomena with which psychology was long familiar—perceptual constancy, acquired perceptual distinctiveness, sensory generalization, the importance of differential reinforcement, positive and negative transfer in learning. It looked as if the findings of linguistic

science could be readily "translated" into psychology, greatly enriching the painfully thin chapter on language behavior. The discovery of these results gave psychology the thrill of a massive independent confirmation.

More slowly, we began to absorb the really new things linguistics had to say about language and behavior in general. During the decades of concentrated work on conditioning and instrumental learning psychologists generally assumed that language required no direct study. Language behavior was understood to be the class of responses produced by the muscles of articulation and, as such, it would conform to the general laws of response acquisition which could be more conveniently discovered in the salivary reflex of the dog and the bar pressing of the rat. There was, of course, some uneasiness about this assumption. I heard it expressed once by a distinguished learning theorist who said: "What I can't understand is why animals don't talk," but for the most part psychologists voiced no doubts.

There is a refrain running through descriptive linguistics which goes like this: "Language is a system." "System" is a word that conditioning theorists only use in the last chapters of their studies when they "extrapolate" the results with bar pressing to human thought, personality dynamics, and social change. We all understand that talk about how "conditioned responses get organized into a system so as to yield complex mental processes" is an incantation to preserve our sense of relevance. Consequently it has taken psychologists a long time to realize that the linguist means something when he says: "Language is a system." Very simply he means that when someone knows a language he knows a set of rules: rules of phonology, morphology, reference, and syntax. These rules can generate an indefinite number of utterances. Learning a language is more than the rehearsal of particular sentences. From particular sentences we induce a governing set of rules and the proof is that we can say new things, never heard and never rehearsed, which nevertheless conform to the rules and are comprehensible to people who know the rules. The most important thing psychology is likely to get from linguistics is the reminder that human behavior includes the response that is novel but appropriate.

Properly classified, linguistics seems to be a subdivision of cultural anthropology, for the linguist describes one kind of cultural system. In the organization of a university, however, the linguist is often placed in one of the language-and-literature departments where his immediate colleagues are literary men not likely to share his interest in laws of behavior, his horror of subjectivism and culture-bondage, and his concern with methodology. In that position the linguist may suffer from what I. A. Richards once amusingly diagnosed as an Ishmaelite Complex: he sulks in his tent and dreams of world conquest. It is understandable that this Ishmael should enjoy his contact with the behavior sciences since they honor his work and share his point of view but there is a price to be paid for this fellowship.

For many years linguists have absolved themselves of responsibility for the most difficult questions concerning language behavior by rele-

gating such problems to the province of psychology, sociology, and anthropology. By narrowly restricting the phenomena in which he would permit himself to be interested, the linguist kept his achievement agreeably close to his objectives. In acknowledging that his study is one of the behavior sciences the linguist takes upon himself the great burden of those sciences. All the little ravelled ends of linguistic methodology—class variations in speech, alternative phonemic solutions, the role of meaning in morphemics—lead out to the general study of human behavior. What kind of a scientist is it who would fail to pursue the leads of his own research?

"Psycholinguistics" has never seemed to me to be a good name for the empirical study of language behavior. In the first place the word has an absurd but intrusive false etymology; it sounds as if a "psycho-linguist" ought to be a deranged polyglot. More seriously, the name appears to limit the field to the traditional objectives of linguistics and that is not desirable. In fact, the range of research already belies the name for many studies are now called "psycholinguistic" which make no use of descriptive linguistics. Rather, we aspire to a "psychology of language." Descriptive linguistics now seems to make the best single contribution to this field, but there are also notable contributions from general and social psychology, from anthropology, sociology, acoustics, literary criticism, mathematics, and philosophy.

My own interest in the study of language began in philosophy classes with Professor Charles Stevenson and in a psychology seminar with Professor Edward Walker at the University of Michigan. The first exciting contacts with linguistics came through Professors Charles Fries, Hans Kurath, and Kenneth Pike at Michigan. The chairman of the department of psychology at Michigan, Professor Donald Marquis, first suggested that I prepare a course in the psychology of language and gave me an opportunity to offer it in his department. At Harvard I joined the Cognition Project, which is inspiringly directed by Professor Jerome Bruner, and found in the theoretical ideas of that Project an excellent analytic tool for the study of language. Harvard showed its customary hospitality to new fields of scholarship by creating a committee to administer a Ph.D. in psychology and linguistics. The four graduate students who undertook that program have all collaborated with me on one or another of the research projects reported in this book. They are Miss Jean Berko, Donald Hildum, Eugene Gordon, and—the first man to take this new degree— Dr. Eric Lenneberg. Among the undergraduates at Harvard there have been several who elected to write Senior Honors theses on research problems in the psychology of language, and I am grateful for my contacts with these young men. They are James Beck, Raymond Leiter, and John Loeser. All of the people named in this paragraph have helped to shape *Words and Things*.

Cambridge, Massachusetts, is a good place to live for one interested in the psychology of language. In the recent past it was the home of two great pioneers in this field—George Kingsley Zipf and Benjamin Lee

Whorf. Such eminent men as Professors Joshua Whatmough and Roman Jakobson offer superlative linguistic instruction at Harvard. Among the psychologists at Harvard are Professor John Carroll, who was the chairman of the original "psycholinguistics conference" at Cornell, and Professor George Miller, who wrote the fine textbook that I have used in my course on the psychology of language. In the Harvard Department of Social Relations Professors Gordon Allport, Clyde Kluckhohn, and Henry Murray have all made valuable contributions to the empirical study of language. The Massachusetts Institute of Technology in Cambridge is a great center for studies in acoustical phonetics and the mathematical theory of communication. At both Harvard and M.I.T. many of my young colleagues and friends are working on language—Dr. Susan Ervin, Professor Dell Hymes, and Dr. Eric Lenneberg at Harvard; Professors Noam Chomsky, Davis Howes, and John Swets at M.I.T. Among the recent visitors to Cambridge have been Professor Charles Morris, a "founding father" of the psychology of language, and Professor Solomon Asch whose studies of metaphor and of the doctrine of "suggestion" have an honored place in this field. It is a great privilege and inspiration to live in this community.

The Harvard Laboratory of Social Relations gave financial support for many of the experimental studies reported in this book. Two journal editors, Professor Bernard Bloch of *Language* and Professor M. Brewster Smith of the *Journal of Abnormal and Social Psychology* have been especially generous in publishing our studies and particularly helpful in criticizing our presentations. I also wish to thank John Wiley and Sons, Inc., for permission to quote extensively from my chapter "Language and Categories" which appears as an Appendix in *A Study of Thinking* by Jerome S. Bruner, Jacqueline I. Goodnow, and George A. Austin. Material from this Appendix appears in Chapters I, III, VI, and VII. Figure 1 in Chapter VI is reprinted with permission from the same source. Finally, I am indebted to the learned lady who typed this manuscript, Mrs. Martha Robinson.

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Contents