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BOOK REVIEWS

ROBINSON, J. O. *The Psychology of Visual Illusion*. London: Hutchinson University Library. 1972. Pp. 285. £3.00.

In 1885, J. J. Oppel first drew attention to an unusual group of two-dimensional patterns which he described as "geometrical-optical illusions". Subjective impressions of these patterns differ appreciably from those indicated by their actual physical characteristics. Thus, when placed in appropriate contexts, straight lines are seen to curve and bend, upright lines appear tilted, continuous lines seem discontinuous and lines of similar length are judged to differ. Psychologists are divided over the importance of geometrical illusions. For some they are inconsequential visual curiosities unworthy either of detailed experimental study, or serious theoretical consideration. Others regard illusions rather as illustrating inappropriate operation of those perceptual mechanisms which otherwise afford a veridical account of spatial dimensions. For more than 100 years the latter have made painstaking attempts to determine why these mechanisms should operate in this way. Remarkably, although theories of illusions abound, an entirely acceptable theory remains to be developed.

In 1968, Dr Robinson, author of this book, proposed an interesting theoretical distinction between "illusions" and "distortions". But those who like myself expected him to develop this promising point of view here will be disappointed. He devotes himself instead to illustrating most of the known illusions, enumerating many attempted explanations for their distorted appearance and evaluating them critically. For good measure, several other types of perceptual distortion including figural after-effects, formal ambiguity and contrast effects are likewise considered. This reviewer, at least, was glad to find his expectations unrealized. Robinson's book makes a highly commendable contribution to what is acknowledged widely as one of the most fundamental problem areas of experimental psychology. It states most theoretical positions clearly and fairly—with the exception of the discussion of perceptual distortion of angular size which is extremely confused. Its numerous illustrations are unusually accurate—with the exception of Figure 6.7 which is incomplete. Its documentation is very comprehensive—with the exception of omitting a definite reference to J. C. Poggendorff. Its distinctions between and cross-referencing of several different types of perceptual distortion is extraordinarily clear—with the exception of formal ambiguity and reversible perspective which appear to be understood as identical phenomena. But these oversights are trivial in the context of the whole. I recommend Robinson's book strongly to my own students and advise others to do likewise. GERALD H. FISHER

CARROLL, JOHN B. and FREEDLE, ROY O. (Eds). *Language Comprehension and the Acquisition of Knowledge*. New York: John Wiley. 1972.

In the spring of 1971, John Carroll and Roy Freedle organized a workshop on discourse comprehension at the University of North Carolina. Sponsored by the Committee on Basic Research in Education, the workshop was devoted to the problem of how people gain knowledge through language. Most of the 17 participants contributed their workshop papers, edited to some extent, to make up the volume that essentially is the conference report.

The book is well edited. To a certain degree it owes its readability to the organization of the conference itself. The invitation to the participants and discussants has been accompanied by an explicit list of problems and topics to be treated, while the selection of participants guaranteed a general high level. However, no more than three of these were linguists (Chafe, Simmons and Bever), and only the first gave an explicitly linguistic contribution (concerning the determinants of tense, "foregrounding" and definiteness in discourse). One participant (Scriven) made a philosophical contribution on the concept of comprehen-

sion. But the great majority of the participants had a psychological background: though one might regret this bias, it has certainly contributed to the coherence of the book.

The actual editing, too, has been very effective. Each paper is followed by a detailed summary of the conference discussion to which it gave rise. This allows the reader to savour the main consonances and dissonances that developed during the workshop. The book opens with John Carroll's lucid review of the measurement of language comprehension, both from the psychometric and the experimental psycholinguistic points of view. The paper makes a distinction between apprehension of strictly linguistic information, and the wider inferences that can be made from it. These two general aspects of language comprehension are in turn given attention in the succeeding chapters. The book closes with a paper by Freedle and Carroll, which is meant to give an "overview" of the volume, but which in fact presents an outline of three more or less recurrent topics during the workshop: presuppositions, information-processing models, and attentional processes. Unlike most conference reports in psycholinguistics, the volume contains an author and subject index.

Between the introductory and closing chapters by the Editors, one finds 12 contributions. Though discourse was a main theme at the workshop, only a few of the papers are explicitly concerned with text or prose (as opposed to single sentences). One of these, in particular, is Chafe's already-mentioned paper; others are some of the psychological papers. One of the main problems in these papers is how to characterize or control the structure of text. It appears that two distinct approaches are being taken. The one is to experiment with a text which has been constructed deliberately to express certain pre-conceived relational structures. This is the practice adopted by Freedle and by Frederikson. The subject's comprehension of the text can then be measured in terms of a number of memorized or inferred relations. The other approach is to develop something like a text grammar or a powerful semantic system by means of which an arbitrary text can be formally expressed. This has the advantage that more natural prose can be used with a wider variety of relations. But the papers by Simmons and by Crothers in which this has been attempted show that this ideal is still far from practicable. Finally, prose is the natural material in studies concerned with applied problems of the instructional use of language. These problems are particularly dealt with in papers by Rothkopf and Sticht. The former studies the question as to what kinds of structural properties of text activate the reader's learning readiness; the latter discusses the relations between learning from listening and learning from reading, as well as the abilities that are required for those forms of learning.

Strictly theoretical are the papers that restrict themselves to the study of single-sentence processing. Trabasso's contribution discusses different sentence verification models and reports a series of never published experiments that had been done by the author in cooperation with Phil Gough and had awaited explanation until the recent development by Clark, Chase, Trabasso and Glucksberg of detailed information-processing models. One of the conclusions is that the internal representation of sentential information (such as S-V-O) reflects the order of processing. This may be related to Bever's paper which presents a new version of the Whorfian hypothesis. The theme is that syntactic structure, especially surface order, may co-determine the resulting conceptualization, since the order of processing may give different weights to different aspects of the resulting thought. Intriguing as this is, one would have liked to see a discussion of ways to determine independently (i.e. non-linguistically) the structure of such conceptualizations, since this has been the problem with Whorf's hypothesis from the outset. Olson's paper is concerned with the use of sentences as descriptors of perceptual situations. One can have appreciation for Olson's inventive experimentation and the effectiveness of his "minimum redundancy principle" as Freedle calls it; one may be less inclined to buy his more general views on reference and meaning.

The still recent extension of psycholinguistic research to larger units of analysis and to strictly semantic problems has increased its usefulness for the theory of instruction and for applied problems of reading and teaching. To this the book bears witness.

W. J. M. LEVELT