HANS HÖRMANN, *Psychologie acr Sprache*. Berlin, Springer Verlag, 1967. 395 pp. Price: DM 58.—. $14.50.

Since the appearance of George Miller's *Language and Communication* (1951) an explosive development took place in the psychology of language. There is not necessarily a causal relation between these events: Miller's book was a faithful (though, it should be added, highly inspiring) account of the state of affairs in the field at the time of writing, whereas many new developments took a direction not indicated in Miller's review. It is, however, not in the last place Miller himself who was responsible for this change in the outlook of psycholinguistics. To mention just one instance: it was Miller who stressed the importance of transformational grammar for psycholinguistics. But other developments too, resulted in the out-of-dateness of Miller's course book. Osgood and Sebeok's *Psycholinguistics* (1954) marked a first step in a fast-growing interaction of linguistics and psychology. Osgood's invention of the semantic differential technique initiated a series of researches that has by now far surpassed the twelve hundred. The Whorfian hypothesis became a fad, leading to ever more ingenious experiments, a.s.o.

With these developments, the happy behavioristic uniformity of the field, still apparent in Miller's and Osgood & Sebeok's texts (though in different ways) came to an end. The heterogeneous developments turned psycholinguistics into an area of great conflicts and of little *communis opinio*. This may be part of the reason why Miller's book was never followed by a survey of the more recent developments. People worked in one 'camp' or another, but nobody showed sufficient distance to give an objective account of the entire field. It needs a student from a country like Germany, that is little involved in the new developments, to accomplish this task. There is more need for information than there is active involvement in the German language area: Kainz's last volume shows a surprising lack of information on the new developments in the field of psycholinguistics and other books are not available.

Professor Hörmann's *Psychologie der Sprache* is a laudable attempt to fill the national (German) and international gap. Apart from the above mentioned new issues, the book covers subjects like the information theoretical approach, the probabilistic structure of language, word association, language acquisition and many other

topics. Professor Hörmann does not attempt to impose a unified view. He realistically states the different viewpoints as they are and weighs them against the empirical evidence available. The book is moreover well-written, it avoids technicalities and introduces new terms with care (there is a glossery of mainly learning theoretical terms to assist the less informed reader). This makes it a readable introduction to psycholinguistics that may be used with profit by both psychologists and linguists.

Though always informative, Hörmann's introduction is incomplete and even wrong at certain points. This is most apparent where the author discusses transformational grammar and its impact on psycholinguistics. The usefulness of generative grammar for psycholinguistics is formulated as follows: 'Der Sprachpsychologe ... erwartet vom Linguisten also nicht so sehr eine Grammatik, welche aus einer *Beschreibung* von grammatikalischen Sätzen besteht, sondern eine Grammatik, die ein System von Regeln formuliert, nach welchen grammatikalische Sätze, d.h. akzeptable Morphem-Sequenzen, *produziert*, gebaut werden können. (49). However, generative grammars do not differ from traditional grammars in the objective to give structural descriptions of grammatical sentences. The innovation is that these descriptions are assigned to the sentence by a set of rules, not that there are no descriptions any more. Hörmann's use of the word *produziert* is somewhat suspect. Take for instance his description of the generative capacity of phrase structure grammars: 'Eine derartige Phrasenstruktur-Grammatik muß jedoch, wenn sie der Realität der Sprache gerecht werden will, so komplex sein, daß sie als ausschließliches Modell des *psychologischen* Geschehens im Sprecher unwarscheinlich wird'. (50). The notion of grammatical generation, however, has nothing to do with the production of a sentence by a speaker).[1]) And it is thus not true that Chomsky *therefore* (*daher*) introduced transformational rules in the grammar (50).

In the description of the transformational part of the grammar Hörmann makes the same mistake as numerous psychologists made before him (e.g. Miller, Mehler, Osgood): 'die Komplizierten Typen

[1]) It is ironic that Hörmann does not sufficiently distinguish between the two notions of *Produktion*, whereas he, in his foreword, unmasked a similar confusion in the German literature, resulting from the double meaning of *bedeutend* (which, by the way, is not a synonymy as the author says).

von Sätzen werden ... als Transformationen eines Kernsatzes aufgefaßt' (51). Similar statements can be found on p. 271. In transformational grammar sentences are never transformationally derived from *sentences*, but from abstract structures (base structures). Kernel sentences are sentences; they are themselves transformationally derived (be it with a minimum of transformational machinery). They are end points, never starting points of transformational derivations. These errors could have been prevented if the author had considered the more recent literature on the subject. Chomsky's *Aspects of the theory of syntax* (1965) is not mentioned. But even if the chapters under concern were written before the appearance of *Aspects*, Hörmann should have reviewed the fundamental joint papers by Chomsky and Miller in the *Handbook of Mathematical Psychology* Vol II (1963), and he should also have referred to the Fodor & Katz anthology *The structure of language* (1964). This would have had the extra advantage that certain issues that became extremely central in the recent developments had been mentioned. Instances are the competence-performance issue and the distinction between underlying and derived (deep and surface) structure. An up-to-date survey cannot bypass these notions. But it should be admitted that most publications in this domain (Fodor, Bever, Garrett) are from 1965 or later and may not have been available to the author.

Minor errors can be found in the presentation of Osgood's work. Page 201: 'Dies sind die drei Faktoren des Semantischen Raumes. Es sind nicht deshalb drei, weil dieser Raum nicht mehr Dimensionen haben könnte, sondern weil die bisherigen Analysen nicht mehr Dimensionen ergeben haben'. The truth is that *all* analyses gave more than three factors. Evaluation, Activity and Potency are just those factors that are common to nearly all analyses. At the same page the D-measure is called 'Profil-Korrelationsmaß', while Osgood's explicit argument for using D was that it should *not* be a correlation (*The measurement of meaning*, p. 91).

Hörmann's effort to give faithful representations of facts and theories is sometimes too accepting. Examples are the discussions of Mowrer's and Johnson's theories of sentence understanding. Mowrer's analysis of 'Tom ist ein Dieb' (213) is cited with approval. Nothing is said about the strong arguments against considering the predicative sentence as a conditioning device, though these argu-

ments are clearly stated in the literature.[2]) Johnson's model of the speaker as 'weaving' through the P-marker: first deciding on 'sentence', than on 'noun phrase' plus 'verb phrase', etc. 'ist zur Zeit das beste Modell des Geschehens, welches auf der psychologischen Seite dort abläuft, wo auf der linguistischen Seite die Phrasenstruktur-Regeln am Werke sind'. (271). Here Hörmann does not really equate psychological and grammatical generation, but he does not warn the reader that a consequent application of such a parallelism (as in Johnson's theory) leads to the nonsensical conclusion that the speaker decides on producing a sentence, consisting of a noun phrase and a verb phrase, etc. *before* he decides what he is going to talk about (i.e. the lexical elements).

Similar uncriticalness is found in the presentation of Zipf's law (89). Herdan's unceasing efforts [3]) to unmask the 'law' and to replace it by a log-normal distribution (succesfull or not) should have been discussed. Actually, the whole chapter on the probabilistic structure of language adds little to Miller's 1951 presentation (The Miller and Newmann studies 1958 [4]) are not mentioned either).

Hörmann gives an illuminating presentation of the behavioristic and neobehavioristic theories of meaning (Ch. XI), and concludes that these theories cannot account for the acquisition of language and for the stability of meaning. To overcome the difficulty he proposes the hypothesis that '*Bedeutung* ist nicht Assoziation, sondern *Wissen einer Assoziation*' (227). Whether this is a real gain or just a new terminology is an open question untill the laws of this *Wissen* are specified. Are they different from the laws of association and in what respects (e.g. is knowledge obtained and increased by repetition as in association or by essentially different

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[2]) Osgood (Am. Psychol. *18*, 1965, 735) and Fodor (J. verb. Learn. verb. Beh. *4*, 1965, 73) give essentially the same argument by analysis of the sentence *Tom is a perfect idiot*, where *perfect* does not become conditioned to *Tom*. Syntactic information is necessary for the listener to understand such sentences.

[3]) e.g. Herdan, G., 1960. *Type-Token mathematics*, The Hague.

[4]) Miller, G. A., Newman, E. B. and Friedman, E.A., 1958. Length-Frequency Statistics for written English. *Inf. and Contr. 1*, 370.
Miller, G. A. and Newman, E. B., 1958. Tests of a statistical explanation of the rank-frequency relation for words in written English. *Amer. J. Psychol.*, *71*, 209.

means? Is *Wissen* introduced to stress the psychological reality of *rules*?). Hörmann does not specify his position, neither in this chapter nor in the one on language acquisition. In the latter chapter the need for specification is still increased when the author introduces the question 'An welchem Punkt der Sprachentwicklung wird die Rolle des Bewußtseins deutlich?' (294), and at the same page he talks about 'der neue Faktor *Bewußtsein*'. It can be very profitable to discuss language acquisition in terms of *Bewußtsein*, but if it means only that the child understands language, nothing is gained by the introduction of this concept. This understanding is exactly what should be explained. It seems however that this is what Hörmann means by *Bewußtsein;* he specifies the new factor as: 'das Kind begreift sozusagen die Pointe des Witzes, den man Sprache nennt'. (294). There is a need for new principles of explanation, not for new terms.

In the last chapter on the Whorfian hypothesis the thorough analyses by Lantz and Stefflre (J. abn. soc. Psychol. 1964) are not reviewed and no attempt is made to relate the validity of the hypothesis to the time interval between stimulus exposure and recognition. The latter variation shows clearly that *storing* is necessary for positive results. Perception in itself does not show the coding effect.

All this shows that it is not hard to find gaps and errors in Hörmann's book, but this is presumably the case for any survey of literature. What is more important is that Hörmann's book provides us with a first comprehensive map of the maze of modern psycholinguistics. The carefully edited text [5]) and the often inventive way of reviewing incoherent material (e.g the clear chapters on association) make the book also useful as a course guide. The wide circulation it deserves may however be hampered by the disproportionately high price.

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[5]) One editorial unevenness: On p. 224 the author refers to a source: Brown 1965. This is not in the reference list.