The work shows the influence of Claude Bernard, the father of experimental medicine, and of Ramon y Cajal. It also reveals the influence of Skinner and Sidman. With these ingredients and a little Spanish salt and a great sense of humor it makes for an excellent and very readable book, which will surely have a good deal of success among the public for whom it is meant.

Writing about the traditional sciences (physics, chemistry, and biology), Bayés makes note of the fact that uniformity exists in criterion concerning the methodology, application, and use of these sciences; in the behavioral, the social sciences, however, the situation changes. "In this case, not only are the Russians, the Americans, and the Chinese no longer in agreement as to the method of reaching their goals, but within each country . . . various groups reveal their disagreement with one another" (p. 17). This, the author believes, should not worry us too much, given that behavioral and social sciences are newcomers. The problem, surely, is that mankind expects too much of these sciences, and that they, in turn, have not given us all that is expected of them.

The knowledge provided by science, Bayés points out, is not exact but probabilistic, not infallible but fragmentary. Its direction cannot be defined; it presents problems of difficulty and increasing numbers; it is necessary to verify the empirical proofs on which it is based; it is self-corrective, accumulative, always positive, looking for similarities and not differences, and independent of the motivations of the investigator and his ideology. All of this indicates that one is dealing with a book that is rather orthodox, which does not stretch the concept of science in order to embrace speculations without bases, nor political or ideological parameters. For Bayés, science is independent of politics, ideology, common sense, and, of course, religion.

Some topics Bayés treats in a very general manner. To this, one can answer that the present book is not a work of statistical methodology but an introduction to methodology, directed towards an undergraduate audience. One would like more depth in the analysis of certain subjects. Probably the most interesting chapters are those dedicated to the study of the origins of science and the motivations of scientists.

The book is short, and clear; it has great perspectives and very few limitations. It is written in a country in which nobody has been interested (or daring enough) in dealing with these so very difficult and important subjects. This book represents a landmark in the history of scientific psychology in Spanish-speaking countries, and it is going to have enormous success.

Developing Language in Context

Lois Bloom

One Word at a Time. The Hague: Mouton, 1974. Pp. 261. 26.- Dutch Guilders.

Reviewed by PATRICIA MARKS GREENFIELD

Lois Bloom is Associate Professor of Psychology and Education (Programs in Developmental Psychology and Speech Pathology and Audiology), Teachers College, Columbia University, from which she received her PhD. Bloom contributed a chapter to Review of Child Development Research, Vol. 4 *(ed. by F. Horowitz), and is author of* Language Development: Form and Function in Emerging Grammars.

Reviewer Patricia M. Greenfield is Associate Professor of Psychology at the University of California, Los Angeles. A Harvard University PhD, Greenfield has taught at Merrill College; UC, Santa Cruz; and Stanford University. She is coauthor (with J. Smith) of a book on early language and (with E. Tronick) of The Bromley-Heath Guide to the Care of Infants in Groups.

One Word at a Time by Lois Bloom is conceived as a study of the presyntactic period of language acquisition. Bloom's goal is "to explain the emergence of grammar by looking at changes in children's *use* of single-word utterances . . . by looking at linguistic behavior in relation to the nonlinguistic behavior and context which go along with what children hear and what they say" (p. 12). This formulation leads Bloom to analyze seriously the role of cognitive development in language acquisition, an important direction in current research. Her use of Piaget in this regard provides valuable hypotheses about the interconnections between cognition and language. A second strong point of Bloom's study is that she uses video recording as a method of data collection. This tool is ideally suited to study the relation between language, behavior, and situational context. The value of Bloom's video recordings for the serious student or researcher is greatly expanded by the inclusion of sound and sight transcriptions as an appendix to the book.

Other aspects of Bloom's goal are not so well realized. For one thing, the book contains relatively little developmental analysis of word use. For another, there is no analysis of the "nonlinguistic behavior and context which go along with what children hear," that is, the context of linguistic input from adult speakers.

Bloom draws her data from a diary kept on the speech of her daughter Allison, supplemented by four 40-minute videotape recordings of Allison and audio recordings of three other children. Although she conceives of her study as focusing on the period of single-word utterances, her videotaped corpora do not actually begin until two months after Allison has started to produce two-word sentences. While Bloom also has diary material, the diary is not described in very much detail, and relatively few data are presented from it. The supplementary audiotapes from three other children apparently represent

only the tail end of the period of single-word utterances. From the perspective of my own study (with J. H. Smith) of the period of one-word utterances, it is easy to see that this distribution of data has led to relatively little analysis of the period when the child is truly uttering "one word at a time" and relatively detailed analysis of successive single-word utterances, a type of speech event that lies, developmentally, at the very border of syntax.

Bloom's sparse use of her diary data eliminates, moreover, the major advantage of this method of data collection: Because a diary is a potentially continuous record, it can 1) document gradual, and therefore subtle, developmental changes, 2) record unique events of special theoretical significance, and 3) record virtually every speech event at the early stages when the child may utter as little as one word in an entire day.

Although Bloom conceives of herself as examining the relation between the child's linguistic and nonlinguistic behavior, she makes a sharp division between "the meanings of particular words or the meaning relations among words (*semantics*) and the underlying cognitive structures (*concepts* or thoughts) that represent the relations among persons, objects and events in the world (1973, p. 21)." In our book we have used the term "semantic" to apply to the meaning relation between a single word and a cognitive representation of real-world events. At one level, this is merely a terminological difference from Bloom. But at a deeper level, it reflects an important theoretical difference. Bloom seems to envisage two separate but parallel structures, a cognitive one and a linguistic one. But how can the organization and representation of perceived reality constitute the cognitive underpinnings of language (Bloom, p. 21) if the two structures are entirely separate? My view is that the single-word utterance is a functional part of the cognitive organization of a particular referential situation. Hence, we use the term "semantic function" to indicate the structural point at which the child's word fits into the cognitive structure of a given event. In claiming that the word is part of the cognitive structure of an event, we are saying something about *how* nonverbal cognitive organization is used in the language learning process.

It is possible that one reason that Bloom does not view the child's word as integrated with his or her way of structuring a nonverbal referential situation is that she sees situational structure as external to the child:

> The behavior or interaction exists in the situation, and the child uses a word, or a succession of single words in reference to it. But his use of such words is related to the situation (and successive single words are related to each other only because of the situation) and not derived from the grammatical "function" or "structure" of the words themselves. (p. 137)

But the situation is not external to the child. What is omitted from Bloom's account is that we are never talking about an "objective" situation, but about the child's view of it—the way in which the child has structured the situation perceptually or cognitively. Hence the child's word is related to the child's representation of the nonverbal situation. Bloom's theoretical discussion never even considers the possibility of such a single, integrated cognitive structure unifying the word with the representation of the nonverbal situation.

Bloom is particularly interested in the question of why children at a certain stage can utter only "one word at a time." She concludes that immaturity of motor speech production is not a factor. This conclusion may be a correct one, but the data she cites in support provide no evidence one way or another. Allison, in her 16-month video session, forms many "sentences" consisting of a standard English word followed by *widà*, a seemingly meaningless sound pattern. Bloom considers this to be evidence that Allison could produce sentences that consisted of two phonological units in systematic order at a stage when she could otherwise produce only successive single-word utterances. However, at the time of this video session, Allison is already producing meaningful two-word utterances and has been doing so regularly for two months. For example, in this session she uses *more* as an initial word in combination with four different substantives. One can only conclude that whatever factor has limited Allison to "one word at a time" at an earlier point in development is no longer doing so.

BLOOM takes many strong stands. Although I may not always agree with them, they make *One Word at a Time* lively and stimulating reading. It is a book that all people seriously interested in how children acquire language should judge for themselves.

Associationism: 17-18th Centuries

David Rapaport

The History of the Concept of Association of Ideas. New York: International Universities Press, 1974. Pp. xiii + 189. $8.50.

Reviewed by DUANE SCHULTZ

David Rapaport (1911–60) was Professor of Psychology and Director of Research at the Menninger Foundation. A PhD of the University of Budapest, Rapaport was a member of the Austen Riggs Foundation. His work dealt primarily with diagnostic psychological testing procedures, the psychology of general paresis, and the organization and pathology of memory and thinking.

Duane Schultz, the reviewer, is Adjunct Professor of Psychology at the American University in Washington, D.C., from which he received his PhD. He has taught at the University of North Carolina and at the University of Groningen, Holland. Schultz has written seven books, including A History of Modern Psychology (2nd Ed., *1975*).

ASSOCIATION is certainly one of the oldest concepts in the history of psychology, one that has been in more or less continuous use from Aristotle to the present day. Whether that longevity bespeaks great wisdom from the past to store and treasure, or an embarrassment