vided an explicit unifying structure for the varied work presented in this book.

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Categories and processes in language acquisition. Y. Levy, I. M. Schlesinger, and M. D. S. Braine (Eds.). Hillsdale, NJ: Erlbaum, 1988. Pp. 284.

This book is a collection of articles about the acquisition of linguistic categories, in particular word classes and relational categories. All but one of the contributors participated in a study group on early language acquisition held in Jerusalem during the academic year 1982–83.

Although some of the articles present ideas that their authors had already put forth in articles published elsewhere, the assembly, under one cover, of different approaches to this fundamental issue makes the volume stimulating reading and a valuable aid to researchers and advanced students of the field. The book contains eight chapters besides an introduction and a concluding chapter.

Braine provides a very clear introduction to the volume. He emphasizes three main points that make the book unique: (a) the cross-linguistic perspective; (b) a belief in the usefulness of focusing on elementary (rather than complex) syntax for a sound theoretical grounding of language development – this means focusing on word classes (nouns, verbs, and adjectives) and relational categories (such as actor–patient and subject–object); and (c) a belief in methodological empiricism as a metatheoretical perspective. The articles try to account for the child's acquisition of fundamental linguistic categories invoking only minimal innate knowledge, although, according to Braine, the latter cannot be denied completely, given the present state of our knowledge.

In chapter 1, Ninio and Snow argue that the early categories guiding the linguistic expression of children is pragmatic and not semantic in nature. For each communicative intent, the child has at first "only *one* means of

expression" (p. 13). Evidence for the existence of pragmatic categories is provided if it is found that "children treat categories that in adult semantic analysis are equivalent differently in different speech acts" (p. 14). The authors cogently remark that the agent–action relation in assertions is, in fact, equivalent to the relation of addressee–desired action in requests. One of the consequences is that in requests, the agent/addressee can be deleted, whereas in assertions, the agent is nondeletable.

The idea that "language needs to be understood in terms of the way it is used" must indeed be taken seriously. Ninio and Snow provide a very interesting and original attempt to substantiate it through the analysis of examples selected from the corpora of Hebrew-acquiring children. The analyses and arguments proposed, however, might be more accessible if the exact natures of the assumed functional categories were more clearly defined. Are they the categories indicated in the introduction that cut across function, semantics, and interactional context? Do they cover only the force of the communicative intent, or do they extend to the "communicative deep structure" itself, like "the act of requesting the cessation of an ongoing activity"? The latter, however, resembles the hybrid categories that the authors criticize since it includes both the requesting force and the semantics of determining that an activity can go from "on" to "stop."

In a very clear and apposite way, Maratsos argues that the child may learn formal categories on the basis of their structural properties. Although he does not rule out the idea that these categories may at some point or other in development have semantic correlates (e.g., actionality for verbs), he considers several pieces of data that are incompatible with the claim that semantic properties are "the organizational basis of the emergent structural verb category" (p. 38). These can be summarized as follows: non-actional terms occur early with grammatical operations characteristic of verbs (they are preceded by *can't* and *don't*, take a "transitive object," and can take verbal endings); and actional terms, which are not verbs in adult language (like *snoopy* and *helpful*, for example) and are not used by the child as verbs. Maratsos says that, at present, "it seems reasonable to guess that the child progresses to the verb category by a remarkable direct and accurate structural route that does not involve action predicates as a developmental intermediate" (p. 39).

Maratsos asks a very pertinent question: Why does the learning of arbitrary features of the system seem so unlikely to many researchers that they need to invoke semantic or functional principles to explain how the child can grasp them? Making sense of the world is also ordering it, and finding regularities and cross-relations. This idea does not surprise cognitive psychologists, but it seems more difficult to accept in language theorizing. Here Maratsos has the courage to say it clearly, and the article by Levy brings in some data that make the question Maratsos asks even more difficult to answer. Where can the very idea of making formal distinctions among words come from if not from the child's dealing with the linguistic material itself? The hypothesis of an original semantic organization needs to count on the child's apprehension of formal differences between words

or else has to make the assumption that children consider it necessary for differences in meaning to be reflected in formal differences between words. How far removed is this assumption from that which grants the child a priori knowledge of some (yet undefined) word classes and structural categories in the language, the acquisition process dealing with setting up the classes in the "normative" way? Maratsos himself, however, leaves open the possibility that semantic properties may play a role at some point or other in development, and finding out to what degree this may be so remains a central developmental question.

Berman's chapter asks the same question as asked by Maratsos: Does the child break into the linguistic system by initial attention to distributional factors in the co-occurrence of grammatical categories or by reliance on semantic factors as determiners of lexical class membership, or both? Berman suggests that in a first, pregrammatical period, the child learns words as form–meaning connections without any classification in terms of word classes. Children are thought to (innately) distinguish predicates from arguments, and this distinction "will predispose them to seek out N/V contrasts in their mother tongue" (p. 50). Word-class distinctions are initially triggered by the child's experience with the most typical exemplars of the different categories manifesting "a confluence of semantic, morphological and syntactic properties that set them apart from members of other word-class categories" (p. 45). In English, count nouns are good exemplars of the noun class because they can take plural morphology and they refer to individuals (in contrast to abstract and mass nouns); action verbs are also good exemplars of their word class because they can take durative as well as perfective inflections (their morphology is "structurally unmotivated") and their meaning is removed from state and object words.

The child at first constructs restricted classes based on conceptual commonalities (e.g., that of "activity" words), extending them later to other items on the basis of formal and/or semantic properties. This gives rise to errors (e.g., the use of a prefixal m-marker to indicate ongoing activities also for verbs that do not take such a marker), showing that the child can extract formal cues from words and attribute a meaning to them. Abstract grammatical categories eventually result from the combination of the initial semantic categorization with the observation of "morpho-syntactic privileges of co-occurrence and word-internal modifications" (p. 58). Thus, in Berman's view the achievement of end-state knowledge is gradual and requires an "integrative explanation" in which at first pragmatic cues and then semantic and morpho-syntactic considerations are involved. The chapter ends with an interesting cross-linguistic discussion pointing out that "once children know what kind of cues to attend to" in their language, the acquisition of word classes "will not be facilitated or hampered by the specific form those particular cues happen to adopt in a given target language" (p. 68).

Levy's chapter suggests that young children do indeed work on formal properties of language as a way of organizing the linguistic material itself, at first without necessarily looking for semantic correlates of the formal

distinctions identified. She provides as evidence the early acquisition of gender inflections as well as verb and noun derivations in Hebrew: Children seem to discover formal regularities before finding out what these regularities correspond to semantically. According to Levy, another important formal acquisition of Hebrew-acquiring 2-year-olds is some knowledge that the consonantal root of lexical items is constant whereas their vocalic pattern is allowed to vary. Although the child has to learn the details of how this consonantal–vocalic combination works, Levy stresses rightly that the child has made quite substantial progress once he or she has grasped this basic notion, a progress that opens up the way to finding relevant solutions to specific problems.

The chapter provides examples supporting the ideas put forth, and in this sense it is much better documented than most chapters of the book, although sometimes the reader will have difficulty in matching them to the descriptions provided in the text (see, for example, the data reported in Table 4.7 relative to the stages of development of plural inflection described in the text).

In chapter 5, Ninio proposes that what children know when they start to combine words is the meaning of certain predicate terms. Since several words can fulfill the semantic conditions of being arguments of a given predicate word, children form argument classes containing all the words that can figure in the argument slot of a predicate–argument relation: "These argument classes are homogeneous as to word-class membership" (p. 113). For example, the term *this* has an argument class that consists of nouns, whereas the term *don't* has an argument class consisting of verbs. Thus, if children "have the right semantics, they will produce the right grammar as well" (p. 113). This suggestion holds only if it is assumed that children can identify the "semantic logical argument" of a predicate and can distinguish, for example, *this is a ball* from *this is big* and *this is to drink*.

A predicate–argument relation can itself be embedded in another predicate–argument relation and fulfill the argument or the predicate slot of the higher order structure. The combinatorial properties of words within these structures allow the child to learn formal classes like that of adjective and verb. Thus, an adjective is a predicate word such that "when it is combined with an argument in a [predicate word] + [argument word] construction, the combination functions as an argument" (p. 116).

Two interesting points can be drawn from Ninio's proposal. One is that it credits the child with relatively low-level knowledge (word meaning) while conceiving that the child's functioning can itself be the source of higher level knowledge. The second is the idea that what constitutes an end-point construct at one level can become a component at another, higher level of functioning. These ideas can be found in Piagetian constructivist theory as well, and some elaboration on the link would have been interesting to make.

The reader would have benefited from a definition of terms like "logical arguments," "logical status of a combination," and so forth, as well as from a clearer statement concerning the status of the predicate–argument

structure, and how children identify predicates: If the structure is conceived as a primitive, is it a conceptual primitive or is it linguistic in nature, linked to the semantics of words?

Schlesinger's chapter on the origins of relational categories presents a broad view of language acquisition and contains insightful remarks such as the one that opens section 11: "[I]f anything is certain in this field [language acquisition] it is that the complexity of the processes involved is such as to rule out an explanation in terms of a single all-embracing principle" (p. 146).

Schlesinger presents his theory of semantic assimilation in two parts: One deals with the formation of relational categories like that of agent and action, and the other deals with the formation of grammatical categories, such as subject-predicate, starting from semantically based relational categories.

According to Schlesinger, the child at first learns some "fixed patterns" like, for example, *mummy runs* (learned by rote and not analyzed in terms of categories); then, by formal and semantic similarities discovered with utterances like *daddy runs* he or she will be able at first to form a restricted pivot pattern (PP) of the form [runner] + *run*, and gradually, by assimilation of other utterances to this pattern (for example, *Cindy jumps*), will form an "open relational pattern" of the type [mover] + [moving], finally extending it to the [agent] + [action] pattern: the agent, as an animate doing something, precedes the action that he does.

At this point, if the child is confronted with utterances that do not contain prototypical action words (for example, *find, see, stand*), he or she is likely to notice that the context in which these words are used is a context of action similar to that in which the prototypical action words are used. This similarity as well as the formal similarity between the utterances (animate first and activity word after) will lead the child to analyze, for example, the utterance *Billie found an empty bottle* in terms of the [agent] + [action] pattern. By incorporating relations that are increasingly further removed from the prototypical [agent] + [action] nucleus by formal and chained semantic similarities, the original restricted relation will gradually be extended to become the larger, syntactically based, subject-predicate relation that will accommodate all the instances assimilated.

Semantic and formal similarity work together: When the former is weak, the latter stimulates the comparison, allowing the detection of a sometimes remote common denominator. Schlesinger's chapter goes a long way in trying to spell out the routes that may eventually lead the child to form grammatical categories and provides interesting linguistic examples that cannot but stimulate the student of language phenomena. Of particular interest is the linguistic discussion showing that the subject in adult language "is not semantically neutral; it retains the flavor of the agent category from which it derives" (pp. 140–141). This property of the subject makes semantic assimilation more plausible. "If the adult notices similarities between subjects and agents why should the child avoid taking account of them?" (p. 141).

If Schlesinger's analysis is correct, the reader may wonder whether there is a real change from the agent to the subject category or whether the category remains substantially semantic, with its members having more abstract properties in common than the agents of the original agent–action relation (properties such as being in motion, being the cause of the action described, and being in control of this action). Although Schlesinger treats the intricacies of the relation between the agent–action and the subject–predicate categories at great length, the reader would have benefited from a more thorough discussion of the difference between them. From some discussions in the chapter (e.g., on p. 131), a semantic relation like agent–action appears to be at the intersection of cognition and linguistic expression; in other parts, however, the latter appears as the defining criterion for deciding which semantic relation is expressed (see, for example, section 12.5, pp. 154–156). Does this fluctuation reflect the intrinsic complexity of these conceptual constructs, a complexity that Schlesinger's treatment tries to approach?

The theory of language acquisition set forth in Wolff's chapter is based on "association and distributional analysis" and is embodied in a series of computer models (called program SNPR). The SNPR model builds its knowledge structure from an initial small base with frequency as a key to discriminate "good from bad structures." Simply stated, the model parses the language sample (consisting at first of unsegmented strings of letters or phonemic symbols representing perceptual primitives) while recording the frequencies of all pairs of contiguous elements. The most frequent pair of contiguous "minimal" elements forms a new single element (SYN) which is added to the data structure. All elements are searched for shared contexts, resulting in the construction of PAR elements. These can then be "folded" or integrated into SYN elements, which thereby become increasingly "complex." For example, if two structures, one ABC and the other ADC, exist, a PAR element is formed stating that B and D can replace each other, and the PAR element is "folded" into the SYN elements as a constituent. By generalization, B and D will take each other's place in other structures as well. Incorrect generalizations are eventually avoided by monitoring the usage of PAR elements in all the SYN contexts, and creating new, differentiated, PAR elements accordingly.

It is claimed that the model is able to discover word boundaries, build structures that look like phrase structure trees, and develop disjunctive categories corresponding fairly well with word-class categories in English (nouns, verbs, adjectives), although this process requires at the moment "impractically long program runs" if it has to work on natural language.

The program reflects, moreover, some of the known facts of language acquisition as, for example, the U-shaped curve of irregular forms (in particular, plurals and past tenses in English). At the moment, the model is incompatible with the fact that children are known to omit phonemes from words and function words from their first multiword utterances. The understanding of this inconsistency is one of the goals of future projects.

The model is intriguingly effective given the relative simplicity of the

processes involved. One of the important qualitative differences between the model and the child that occurs to a naive reader is that, contrary to the model's production, that of the child is supposed to reflect the particular communicative intention he or she wants to express at a particular time. Does the fact that this constraint is not discussed mean that it is a trivial problem for the model?

In the last chapter, Braine proposes an all-embracing theory of language acquisition. After a well-argued critique of the learnability model proposed by Wexler, Culicover, and Hamburger in different writings, Braine addresses seven broad questions about language acquisition whose reasoned answers outline, for the author, the kind of learning mechanism and language acquisition model worth starting with. The model that Braine sees gradually taking shape is a "sieve memory" model in which "several potentially competing features of an input element are usually registered, and in which rules or patterns vary in strength as a function of input variables, notably frequency" (p. 233). Whereas in Wolff's model infrequent patterns go unnoticed by the searching process, in Braine's model all the patterns are registered at first and decay later if they are not frequent enough.

Braine clearly spells out the assumptions of the model: One of these is that the predicate–argument relation is a primitive comparable to the relation existing between a concept and its instances. Another important assumption is that the meaning of an utterance is analyzed according to categories at various levels of abstraction determined by the child's conceptual knowledge of the world; these categories can be those of actor, action, location, and so forth. Two examples of how a sieve memory model might operate are provided. One of the examples concerns the acquisition of the first combinatorial rules by the child. It is instructive to compare this example to the one provided in Schlesinger's chapter. Like Schlesinger, Braine supposes that mothers are likely to utter descriptive sentences like *daddy is eating* while pointing at daddy who is eating, but he also makes a further assumption: The child is able to apprehend that *eat* is the predicate and *daddy* is its argument on the basis of his hunch about what the mother might have wanted to say in the particular situational context in which the sentence was uttered.

In the last part of the chapter we find a stimulating discussion of causative verb errors and the children's application of verb forms to adult noun words. Both errors are generalizations that "depend on ignorance as well as on rule knowledge" (p. 247). Braine emphasizes the "ignorance" part and proposes a "generalization by default" mechanism to explain the errors observed. Another interesting issue raised is whether hypothesizing a semantic basis for early grammar implies discontinuity in development. Braine argues cogently that this is not the case on the basis of the probabilistic link between semantic and grammatical categories (actor with subject, patient with object, etc.) as well as of results obtained with experimental languages. The chapter ends with a plea for experimentation with meaningful miniature artificial languages using children as subjects in order to clarify many important questions about language-acquisition processes.

For Braine this is a very promising way of obtaining the desired constraints to language acquisition theorizing.

Levy and Schlesinger provide a welcome clarifying conclusion. They place the different articles in perspective by comparing the authors' positions relative to the status they accord to semantic, pragmatic, and formal categories in the child's early linguistic system and to the weight they assign to distributional and semantic analyses in the learning mechanism.

In sum, *Categories and Processes in Language Acquisition* constitutes an important contribution to the language acquisition literature. Focusing on the origins of word classes and relational categories means dealing with a crucial problem of language acquisition, namely, that of investigating how children acquire knowledge about the existence of a linguistic system having properties and constraints of its own. The collection of stimulating articles allows the reader to consider different ways in which the child might achieve this major breakthrough. At the same time, the advanced student and the researcher are made aware of the numerous assumptions that lie behind superficially straightforward interpretations of children's speech. The cross-linguistic perspective gives breadth to the issues dealt with and allows a deeper understanding of them. The organization and clarity of the articles may at times leave something to be desired, but the patient reader will be amply rewarded for the effort spent.

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Facts and fads in beginning reading: A cross-language perspective. Dina Feitelson. Norwood, NJ: Ablex, 1988. Pp. viii + 211.

Near the beginning of her book on beginning reading instruction, Dina Feitelson relates a pair of revealing anecdotes. In 1973, when she and a colleague went on a tour of British Infant Schools, their visits to Devonshire coincided with the first days of swimming lessons. In one school, the headmistress, firmly in control of the novice swimmers' first encounters with the water, organized the children into groups of 12. She directed and guided the children's changing into bathing suits and entering into the pool; she then led them through a series of exercises to acquaint them with being in the water. In unison, the children jumped, stamped, ran from one side to the other, crawled, and walked with their hands, legs floating behind them in the knee-high water. Finally, the headmistress directed the children to line up, ascend the steps, and wrap themselves in their towels, which had been previously laid out by the children themselves. The children were in the water less than 10 minutes, Feitelson recalls, "yet, essential first steps in learning to swim . . . had been introduced and drilled. Even more essential, initial hesitations and fears had been disposed of before they had a chance to take root." Not a single child, Feitelson notes, refused to enter the pool or lie down in the water.