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How Children Learn the Meanings of Words by Paul Bloom. Cambridge, Massachusetts: MIT Press, 2000, xii+300 pp.

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How do children learn the meanings of words? In his new book, Paul Bloom examines a variety of issues associated with children's word learning, a process intricately connected with other aspects of language acquisition. Bloom claims that children learn words via cognitive abilities that already exist for other purposes, such as the ability to infer others' intentions, the ability to acquire concepts, and an appreciation of syntactic structure. Bloom's book provides a series of elegant and convincing arguments concerning how children learn words.

In Chapter 1, "First Words," Bloom lays out the plan for the book and briefly describes issues surrounding the overall topic. In Chapter 2 the author explores *fast mapping*, in which children make a quick guess about a word's denotation on the basis of limited experience. Chapter 3, "Theory of Mind," deals with a wide range of topics, including the listener's ability to determine the references made by his or her interlocutor's choice of words; here also, Bloom investigates children's appreciation of the mental states of others, through which children acquire lexical items (and syntax as well) by means of associative learning. Because the majority of words that children initially acquire are nouns, Bloom gives special treatment to nouns and pronouns: Common nouns are discussed in Chapter 4, and pronouns and proper names are dealt with in Chapter 5.

In Chapter 6, "Concepts and Categories," Bloom extends his analysis to the conceptual foundations of word learning. In Chapter 7, "Naming Representations," he discusses a case study important to any theory of concepts and naming—visual representations. From here, Bloom moves to other parts of speech: In Chapter 8, "Learning Words through Linguistic Context," he offers an account of how children learn verbs and adjectives, as the development of syntactic abilities cannot be dissociated from the development of lexical abilities. Chapter 9 deals with how we learn the words for numbers and Chapter 10 with how the words we learn affect our mental life. In Chapter 11, "Final Words," Bloom provides a brief summary and some general remarks. Throughout the book, the author weaves in ideas proposed by such linguists, psychologists, and philosophers as B. F. Skinner, Noam Chomsky, and Jean Piaget, who, through different lenses, have closely observed and analyzed how human beings develop and how they conceptualize the world around them.

As with most language acquisition texts, Bloom makes early reference to an issue long relevant to human development: the nature/nurture debate. These alter-

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natives have been particularly salient in the study of language acquisition. According to Skinner (1957), language learning is based on experience. Skinner's empiricist view stands in striking contrast to Chomsky's (1959, 1965) nativist view that humans have a biological endowment which enables us to discover the framework of principles and elements common to human languages. Bloom argues throughout his book, however, that as more details of language development continue to be revealed, it appears even more improbable that either nativism or empiricism alone could account for the complexity of the language acquisition process.

Chomsky claims that speech is a central aspect of human linguistic ability and that there *are* universal features in language development. Significant similarities have been identified in the patterns of language acquisition across different languages, and this fact suggests that species-specific biological factors play a crucial role in the ability of humans to acquire and process language. Regardless of the language they speak, children first acquire the names of basic objects (e.g., *dog*) and then develop gradually in both the more abstract (e.g., *animal*) and more concrete directions (e.g., *collie*). Generally speaking, therefore, early vocabulary is concrete, and increased abstraction and specification follow.

Yet Bloom asserts that we cannot ignore the influence of environmental factors in language development, referring to positive correlations in vocabulary sizes between parents and children (Chapter 2). Also, Bloom acknowledges the existence of crosslinguistic or crosscultural differences (Chapter 3) in patterns of language acquisition. Because mothers provide linguistic modeling in a variety of ways, mothers are crucial agents of language socialization, and patterns of language socialization may differ across cultures. Bloom mentions, for instance, the Kaluli culture of Papua New Guinea, in which very little sustained dyadic verbal exchange takes place between mother and child; thus, adults appear to give little effort to teaching the meanings of words to their youngsters. In Western societies, mothers generally modify their language to some extent when interacting with their children, and these modifications would seem to accelerate the rate of children's language acquisition. In this way, a great degree of cross cultural variation seems to exist, attesting to the complexity of environmental factors.

Bloom adds in Chapter 4 that while in certain cultures adults do not usually label objects for children, they might nonetheless teach proper names to their children. Thus some type of parental encouragement seems ubiquitous, which might explain why children of other cultures do not necessarily learn vocabulary more slowly. The evidence provided in Chapters 2, 3, and 4 therefore leads to the reasonable inference that heredity draws the blueprint for development, but environmental factors, such as parental encouragement, affect children's word learning. In this regard, in his account of how children grasp the meanings of words, Bloom claims that environment and inborn capacity, as well as maturation, interact in a complex fashion during language acquisition in young children. Even if acquiring nouns early is in part a genetically transmitted trait, the acquisition of even simple

nouns requires a great many conceptual, social and linguistic capabilities that interact in intricate ways.

Bloom further adds that children's word learning must occur in pragmatic contexts in order to provide material for communication. Because the basic function of language is communication, Bloom claims "the best way to learn a word through context is by hearing it used in a conversation with another person" (p. 192). Bloom thus suggests that we should examine the controversy surrounding the nature/nurture debate from a more comprehensive perspective. Clearly Bloom's position does not differ significantly from the emergentist paradigm (MacWhinney, 1999), which claims that domain-general cognitive mechanisms (e.g., working memory) work on environmental stimuli to result in the complex and elegant structures that characterize language. In this sense, Bloom's view is a constructivist one, stressing the interaction between the organism and the environment (i.e., children gradually learn words by interacting with environmental factors such as parents' speech patterns).

An intriguing concept—both cognitively and crosslinguistically—is Bloom's account of the nature of our numerical ability. In Chapter 9 Bloom refers to Wynn (1992), who provides evidence that 5-month-old infants seem able to deal with the quantification of small numbers of objects. In one exemplary experiment, babies were briefly shown a doll that was then hidden behind a screen. The babies then saw a hand place another doll behind the screen, and subsequently the screen was pulled away to show one or three dolls. In response, the babies appeared surprised at the unexpected "wrong" answers, and this is a finding that, though Bloom does not refer in detail to Piaget, clearly challenges Piaget's (1952) cognitive theory that claims that infants cannot think about objects that are not physically present or about past events.

Furthermore, since Bloom emphasizes the existence of some association between the development of theory of mind and the onset of word learning (Chapter 2), his argument in this book inevitably questions the very nature of Piaget's view that thought processes change via a series of stages. According to Piaget (1932), children's speech in the preoperational period (2 to 7 years of age) often lacks the ability to take perspective; their speech reflects the assumption that other people share their own view of things. As Bloom argues, however, if the ability to infer others' intentions is critical for children's learning of the meanings of words, two-year-old children should be able to take another individual's perspective. This argument contradicts Piaget's conclusions about preoperational children's limitations in perspective taking. Because Piaget's substantial underestimation of the abilities of young children is already well known, if Bloom had developed his argument explicitly against the Piagetian framework his ideas would have been even more thought-provoking.

In short, while I feel that Bloom's discussions are unconvincing in some respects and that many of the questions posed remain unanswered, this book is a compelling account of how children learn the meanings of words. Because the

book is written in a clear, engaging, and casual style, it might be accessible even to those who have little background in psychology or linguistics. At the same time, the evidence presented in the book, including abundant and trustworthy data from many independent studies as well, will be equally valuable to those researchers who are engaged in language and cognition studies.

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