

Commentary on Paul Bloom's

How Children Learn the Meanings of Words

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Paul Bloom (2000)'s main concern in this book is about how children learn the meanings of words. This concern leads him to face many different problems. Just to mention the most important ones:

- How much input do children need to learn a new word? (p.26).
- Do children learn words better than adults do? (p. 26).
- To what extent does word learning differ from other types of learning? (p. 26).
- How do children make the connection between words and what they refer to? (p. 60).
- How do children parse the world into the right sorts of entities, and how do they parse the language to find the names for these entities? (p. 119).
- How do children learn names for individuals – pronouns and proper names – distinguishing them from common nouns that refer to kinds? (p. 121).
- How is it that we come to possess concepts? (p. 148).
- How important is syntax to learn aspects of the meanings of words? (p. 208).
- How do children come to learn the meaning of number words?
- Are words necessary for thought?

Bloom tries to answer all of them grounding his discussion in experimental reports, and, certainly, he succeeds in providing a solution to most of them, even if it is sometimes a provisional one:

- Children can grasp aspects of the meaning of a new word on the basis of a few incidental exposures, without any explicit training or feedback – in fact, even without any explicit act of naming (p. 26).
- There is no evidence that children learn words quicker or more efficiently than adults do (chapter II).
- Learning the meanings of words is not qualitatively different from learning facts about the world (chapter II).
- Children make the connection between words and what they refer to through their understanding of the referential intentions of others: they use their theory of mind to learn the meanings of words (p. 60).
- Children’s capacity to parse the world into the right sorts of entities is due to their cognitive capacity to grasp the object principles; their capacity to parse the language to find the names for these entities is due to their capacity to perform a distributional analysis on the linguistic input (p. 119).
- Children learn pronouns and proper names distinguishing them from common nouns through the use of syntactical cues, lexical contrast, and contextual information - namely, observing the range of entities that pronouns and proper names are used to refer to (chapter V).
- Children learn concepts because they have an essentialist bias that is central to their understanding of categories: they believe that the members of a category possess internal properties, and that they are members of the same category because they share those internal properties (chapter VI).
- No word meaning can be learnt entirely through syntactic cues: syntax is certainly an important informational source as to the meanings of words, but it must be integrated with information obtained from other inferential mechanisms (chapter VIII).
- Number words are learned in two distinct stages: in the first, children learn that number words correspond to numerosities of sets, but they do not know which numerosities they correspond to; in the second stage, they learn the precise meanings of the number words (chapter IX).
- Words are not necessary for thought: rich abstract thought is possible without words. Language can create new concepts; however, it is not the form of language that causes the concepts to emerge: it is the content that the language conveys (chapter X).

Although he gives an answer to all these questions, he must admit that the most important question remains unanswered: “Nobody knows how children learn the meanings of words” (p. 262).

In my opinion, he falls short of explaining how children learn the meanings of words because he lacks altogether a workable theory of meaning. Bloom equates meaning with concept. According to him, to know the meaning of a word is to have a certain *concept* that is associated with a certain form (p. 17). The equivalence between meaning and concept is variously underlined by Bloom in several passages of his work: on page 89, for instance, he states: “Learning a word involves mapping a form, such as the sound “dog”, onto a meaning or concept, such as the concepts of dogs”. Similarly, on page 242, he maintains that: “what goes on in word learning is establishing a correspondence between the symbols of a natural language and concepts that exist prior to, and independently of, the acquisition of that language”.

Not having any workable theory of meaning, but only the equivalence between meaning and concept, Bloom is doomed to consider the following four cognitive capacities as the necessary and sufficient ones to word learning: the ability to acquire concepts, the ability to infer the intentions of others, the appreciation of syntactic structure, and certain general learning and memory abilities (p. 10). Children would need nothing else to learn the meanings of words. The ability to acquire concepts would ensure children’s capacity to parse the world into the right sorts of objects. The ability to infer the intentions of others would ensure children’s capacity to map words onto the objects, actions, and events in their environment (this ability would ensure some other capacities as well: for instance, children’s capacity to conceive of words as arbitrary and bi-directional signs). The appreciation of syntax helps children make broad distinctions, such as whether a word refers to an individual versus a property.

In my opinion, however, these four cognitive capacities are not sufficient or adequate to explain word learning. Let us consider, for instance, how children learn non-object names. According to Bloom, the cognitive capacity that allows children to grasp the object principles, and consequently to learn the meanings of words referring to objects that satisfy the Spelke-principles, cannot explain how they learn words such as “conference”, “fight”, “party”, “story” and “joke” that refer to individuals that cannot be considered as Spelke-objects¹. To account for these words, Bloom proposes then to resort to theory of mind: children are induced to see these words as referring to non-object individuals because they sense that they are thought of as single individuals or singular entities in their interlocutor’s mind. These individuals exist because they have been intentionally created, designed, desired by other people, or social and historical factors (chapter IV).

However, this is a circular explanation. Children learn certain words through their understanding of the referential intentions of others, that is, the others’ thought of what words refer to. But it is precisely this that a theory of word learning should explain: *how* one understands what others think

a certain word means. To understand the meaning of a word is to understand what it means for others, and to understand *how* one understands the meaning of a word is to understand *how* one understands what this word means for others. But if we say that we understand a certain word through our understanding of the others' thought, or because we can understand their intentions, we will have not explained how it happens: simply, we will have tautologically reformulated our aim. By saying that children understand the meaning of words such as "conference", "fight" or "party" because they sense what is going on in their interlocutor's mind, one does not explain how they learn such words: one simply states that children learn the meaning of these words because they understand what their interlocutor means.

I do not want to deny the utility of the intentional stance, or theory of mind: anyone knows what the adaptive advantages are in conceiving of others as beings provided with thought, desires, intentions, beliefs, and so on. What I want to point out is the fact that having a theory of mind is only a *precondition* that is required for us to conceive of the existence of meanings as possible, and not an *explanation* of how we learn meanings. We know that there are such things as meanings, and that they have a certain kind of existence because they are used by human beings, and human beings are special beings because, unlike other beings and entities, they think, desire, speak, and so on.

Moreover, as some authors have observed, theory of mind would not even be necessary to explain human beings' capacity to learn words (Cimatti, 1999, 2000, Geurts, 2000, Hirsh-Pasek et al., 2001). The role that theory of mind is supposed to play in word learning could be ascribed just as well to some other mechanisms, such as association, reinforcement, etc. It is possible that children exploit (what we adults think to be) intentional information without having any understanding of what it means to have intentions or mental states, and therefore without attributing any mental states to their interlocutor, but simply basing themselves on some associative mechanism (see also Green's explanation of the false-belief task in Heyes, 1998).

The four cognitive capacities that Bloom proposes as necessary and sufficient to explain word learning reveal their inadequacy also in other instances. As admitted by Bloom himself (p. 22), although the program of relating word learning to issues of reference and categorization (and, consequently, of ascribing word learning to the capacities to understand the referential intentions of others and grasp the object principles) works well for common nouns like "dog" and "gold", it works very poorly for determiners, prepositions, and modals. Not for nothing, Bloom treats such words in a cursory manner, dedicating only a few pages to pronouns, determiners and prepositions, and not mentioning modals, quantifiers, complementizers and question words at all. Moreover, as observed by Bickerton (2001), even when he deals with them, he tends to rename the problem

¹ A Spelke-object can be defined as a connected and bounded region of matter that maintains its connectedness and

rather than solving it. Trying to explain, for instance, how children learn the meanings of “a” and “the”, Bloom states that they: “attend to NPs such as “the dog” and “the cups” and figure out the semantic role of the determiners across all of these phrases” (p. 116). But, how do they figure it out? These words could be interpreted as embodying some other meaning as well.

Also the explanation of how children learn verbs seems to suffer similar difficulties. Relying only on the capacities to grasp the object principles, to appreciate syntactic cues to meaning and to make general inferences, does not seem to suffice. How do children cope with the fact that the same event can be interpreted in different ways? How do they come to know that a certain event corresponds to “bringing” rather than to “carrying” or “taking”? Are they provided with “preverbal event concepts” that, as Naigles (2001, p.1113) suggests, “would direct children’s attention to default events for their initial referent mappings”? If so, Bloom should add another cognitive capacity to the four original ones: the capacity to grasp event principles. But this would lead to an uneconomic proliferation of innate cognitive capacities, one for each kind of experience children live (objects, events, perceptions, feelings, thoughts, etc). Moreover, how could they distinguish one kind from the others? Should they be provided with an additional capacity specifically dedicated to this aim?

Bloom’s difficulty in accounting for these and other cases of word learning originate from the equivalence he establishes between meaning and concept. Believing that meaning is equal to concept, he provides himself with theoretical, conceptual and analytical tools that are more suitable to analyze how children learn concepts than how they learn meanings. One of the four cognitive capacities he considers as necessary and sufficient to word learning is specifically devoted to the acquisition of concepts. The others are either general capacities not special to word learning (theory of mind, and certain general learning and memory abilities), or only subsidiary to word learning (an appreciation of syntactic cues to meaning). Actually, what Bloom offers is not so much a theory of how children learn the meanings of words, as a theory of how they learn concepts.

However, concepts are not meanings. The meaning of a word is univocal: it is valid for, and shared by, everybody, and it has to be so to safeguard the communicative function of language. On the contrary, concepts are individual: everybody can have a different concept of that to which the word refers. For instance, everyone understands what the word “freedom” means, despite the fact that everyone can have a different concept of “freedom”. Moreover, the meaning of a word remains so throughout time despite what people think of it or believe it represents may change during time: as Bloom himself recognizes: “We are comfortable translating a word from an ancient Greek text

into the English word *star*, even though the ancient Greeks believed that stars were holes in the sky” (p. 19).

The phenomenal, conscious experience of the meaning of a word is very different from that of the concept that the meaning of the word represents. To be conscious of the meaning of a word is to be able to differentiate it from the meaning of other words: we understand the meaning of the word *dog* because we know that the word “dog” does not mean the same as, for instance, the words “cat” or “table” mean. On the contrary, to be conscious of the concept that is expressed through a word is to be able to differentiate it from the other concepts that may be expressed through the same word. Even if when I say “dog” you understand what I mean, the concept I have of a “dog” may be very different from your concept of “dog”: for me a dog can be a nasty animal, whereas for you it can be a lovely one.

Moreover, the difference between meaning and concept stands out when we think about the fact that while all words have a meaning, not all words have an associated concept. While it seems reasonable to have concepts for words like “dog” and “cat”, it does not seem plausible to have concepts for other words such as “and”, “or”, and “to”. What is the concept of “and”, “or”, and “to”? Usually concepts influence or govern our behavior: my concept of dogs, for instance, may lead me to avoid dogs and to prefer cats. May we find a parallel influence of a supposed concept of “and” on our use of this word? Apparently, we cannot find it, which would be an indirect evidence of the fact that concepts for words like “and” and “or” do not exist. On the contrary, meanings exist both for words like “dog” and “cat”, and for words like “and”, “or”, and “to”. In fact, if we are able to understand the difference between the phrase “dog and cat” and the phrase “dog or cat”, it is precisely because “and” and “or” have different meanings.

Not having a definition or theory of meaning independent of the notion of concept, Bloom fails to notice that they differ. If he had realized that they differ, he would have certainly been obliged to ask himself what it is that makes them differ, and that makes them differ also from other kinds of conscious experience, such as images, representations, thoughts, perceptions, and so on. Most probably, he would have reached the same conclusion that other authors had already reached: meanings, concepts, images, representations, thoughts, etc. are all different products of different ways of mentally working. When performing certain mental operations we experience images, when performing other mental operations we experience memories, when performing still different mental operations we experience meanings, and so on. In some authors’ opinion as well as in my opinion, the fundamental mental mechanism that allows us to obtain different mental products is

attention². Depending on the way in which we move our attention, where and when we move it, the span of time involved in moving it, we consciously experience different things. Meanings, for instance, are the result of a meta-attentional operation: to learn the meaning of a word, children have to attentionally focus on, isolate, select, and retain in their memory the attentional operations they have been told, or induced to pay attention to. Each meaning is composed of a specific sequence of attentional operations: the sequence represents the skeleton that supports and allows the conversion or actualization of the meaning into any of its sensible, perceptible instances, whether they are images, memories or thought process (Marchetti, 2003).

Despite resorting to attention and its related concepts (pointing, focusing, eye gaze) several times in his book (I counted more than forty explicit occurrences), Bloom does not seem to conceive of it as a fundamental capacity, but only as a subsidiary one. Bloom sees attention as a secondary and accessory process that serves as a support for those cognitive capacities he conceives as fundamental: gaze following, for instance, is treated as a constituent of a more general capacity, theory of mind. In his work, attention is never considered for *the conscious experience* that it produces directly, but for *the cognitive capacity or mechanism* for which it works. In his view, attention is simply a tool that connects the human mind with the world, thus allowing the fundamental cognitive capacities to operate on the world: it is a kind of arrow or pointer that makes children establish a relation between the words and the world, figuring out what the words refer to in the world. Attention is not considered for its fundamental role in determining conscious experience (Mack and Rock, 1998, Marchetti, 2001), and in producing and shaping the world as we know it. Consequently, he cannot realize that it is precisely through, and thanks to, the use of attention that children as well as adults can experience perceptions, images, objects, meanings, ideas, memories, and so on.

Conceiving of attention only as something that allows us to connect our mind with the world, and not as the fundamental tool that allows us to perceive, experience, think about, remember, etc. the world, poses unsolvable problems. Let us see why. This conception presupposes that at least three entities exist independently of, and prior to, any activity of ours: the mind, the world, and the gap between them. Consequently, each of these entities should have its own predefined structure, quality, dimension, components, etc. But admitting that such entities exist entails admitting that all we human beings should have the same experiences, perceptions, thoughts, memories, etc. when focusing our attention on something in the world, and that any experience, perception, thought, etc. should be univocal and unquestionable. However, our daily experience very often shows the

² The importance of attention for our mental life, and specifically for meaning formation and construction, has been recognized since the second half of the last century: see Ceccato, 1969, Ceccato and Zonta, 1980, Marchetti, 1993, Vaccarino, 1981.

opposite. The same thing or event can be seen, described, perceived, and thought about in different ways, and conversely different things can be described, seen, thought about in the same way; different people see the same thing from different points of view; even the same person can change one's mind about the same thing at different times; and so on.

Bloom's hypothesis about human being's capacities to grasp the object principles and to understand the referential intentions of others actually answers, and adheres to, the presupposition of the independent existence of the three entities. However, it does not and cannot answer the problems that such presupposition entails. To answer them, we have to reconsider the role of attention, and figure out what we can produce and obtain through it. When we focus our attention, we consciously experience something. Depending on how, where, and when we focus it, we experience different things. If we look at the following,



we can see either a “line”, a “twisted line”, a “black sign on a white page”, a “fissure”, “white spaces around a line”, a “graph”, the “top of a sheet of paper perpendicularly lain on the page” or something else, depending on how we focus our attention, which side of the page we focus on, and how we combine the various focused elements. If the world assumes different forms, it is precisely because we shape it through different attentional operations. Attention is not simply a kind of arrow or pointer that serves to connect the mind with the world; on the contrary, attention allows us to give form and sense to the world, as well as to our mind and the relationships between the two. When we look “out there”, we do not find a world that is already well defined, structured, composed of such and such objects, classified, etc.: the world becomes so only after we have attentionally worked on it.

If Bloom had taken into account the fact that attention is the key to conscious perception and experience, he would have realized that world perception and conception in general, and word learning in particular, are strictly dependent primarily on attention and only subsequently on the other cognitive capacities. Children learn to perceive and experience a certain kind of world by moving their attention and applying it to their somatosensory system and sense-organs in a certain

way. In a similar way, they learn the meanings of words essentially by performing and retaining the attentional operations that constitute such meanings. They repeat those attentional operations that adults invite, or make them, repeat, by means of gestures, eye gaze, sounds, other words, etc. In repeating them, they become conscious of the meanings, experiences, perceptions, and so on, and learn to differentiate one meaning from the others, one experience from the others. As Ceccato (1968, p. 38) has shown, even the most abstract, nonfigurative words are learnt this way:

L' "o" mostra nel modo più chiaro una struttura attenzionale. Bisogna che l'attenzione, dopo essere stata applicata ad una cosa, passi ad un'altra, abbandonando la prima. "Vuoi il cioccolatino o la caramella?", etc., diciamo al bambino. Intanto gli sottraiamo alla vista l'una delle due cose; ed egli impara. (The "or" shows an attentional structure in the most patent way. It is necessary that the attention, after being engaged on an object, is disengaged from it and addressed to a new object. While asking the child: "Do you want the chocolate or the sweet?", etc., we remove one of the objects from his view, and he learns).

In learning words, attention is not so much simply drawn toward this or that property, object, or event of the world, as it is used to construct and determines those very phenomena.

I believe that if Bloom had been aware of the real importance of attention in meaning construction and learning, he would not have resorted only to theory of mind and the other dedicated capacities to explain word learning: he would have instead addressed himself to mainly analyzing how adults help children control their attention, and how words pilot attention.

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