

SYNTACTIC PRIVILEGE

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This paper is addressed to the view of Schank and Birnbaum (1981) that syntax has no 'privileged' position in parsing. Evidently what is meant is (a) that syntactic parsing has no logical or temporal priority over semantic processing, and (b) that syntax has been assigned attention far out of proportion to its interest or distinctiveness. (The latter is not asserted outright, but seems implicit in the overall tone of the discussion.) In the view of the authors (henceforth 'SB'), syntactic considerations come into play in sentence understanding only where it is needed to resolve indeterminacies. It is this view that I wish to subject to scrutiny.

Part of the case for the position that syntactic parsing is not a prerequisite to semantic analysis lies in the fact that there are sentences which can be understood without any invocation of syntactic considerations at all. Such a case is

(1) John ate lunch.

since it is intrinsic to the concept of eating that it is an action carried out by animate beings; thus, since only John denotes such a being in (1), it denotes the actor, leaving lunch to be understood as denoting whatever was ingested. On the other hand, since animate beings are themselves ingestible, one would presumably have to invoke at least low-level

syntactic cues to correctly parse

(2) The cannibals ate the Rev. Dr. Abercrombie.

It is possible, however, that SB would deny that syntax must be called even in this case since world knowledge might be capable of sorting out the roles. One might suppose that there is a script called \$CANNIBAL which includes a scenario involving putting missionaries in pots of boiling water and then eating them; assuming that there is no other world knowledge to suggest that missionaries typically return the favor, then (2) can be parsed *asyntactically* as well. If this is so, however, then there is a problem with

(3) The Rev. Dr. Abercrombie ate the cannibals.

No speaker of English would interpret (3) as synonymous with (2); thus, even if (2) is parsed *asyntactically*, (3) could not be. But given that the amount of prior semantic information (i.e. individual word meanings) is exactly the same in both cases, how is a decision to be made to call the syntax in the case of (3) but not in the case of (2)? Comparable problems will frequently arise with figurative language; so, for example,

(4) The tail wagged the dog.

is a way of saying that some expected relationship was reversed; and yet wag is a good case of an asymmetric predicate, requiring that one of its arguments refer to a body part or extension thereof (such as a flag) while the other denote an animate being of some kind. In a case like (4), there is no indeterminacy on purely semantic grounds as to which NP should denote which, but the result that would ensue from processing (4) in parallel fashion to

(5) The dog wagged his tail.

is, in effect, overruled by the syntax. It is, indeed, only from this overruling that one would know that one was dealing

with figurative language. Assuming that (4) is parsed syntactically but not (5), we are then forced onto the following dilemma: syntax is called only where it is needed to overrule the consequences of an asyntactic parse; but the conditions under which such a call need be made themselves depend on syntactic information (in this case word order cues), since the word-level semantic information (all else that is available) cannot distinguish (4) from (5).

What SB have done here is to confuse redundancy and superfluity. Cases like (1) and (5) show that syntax is sometimes redundant; but since word-level semantics does not provide a way of distinguishing when it must be called and when it need not be, syntax must be called indiscriminately. We might call this the 'fail-safe' conception of the interaction of syntax and semantics.

Nonetheless, SB might well answer, there is evidence that human language users actually do parse asyntactically. They cite the fact that someone with imperfect knowledge of a foreign language may nonetheless be able to read written materials in the language, using nothing but word meaning and world knowledge as a guide. But while there is no doubt that human beings are capable of doing this, it does not follow that this is what they would do if they were not forced to. To say that one often doesn't need a certain kind of knowledge to carry out a given task does not imply that one ignores it if one has it.

I would like finally to call attention to a problem that is not addressed at all by SB, but which is at the very center of concern in the design of adequate natural language understanding systems. As SB present it, the problem of language understanding comes down to that of ascertaining the meanings of linguistic expressions and then interrelating them in appropriate ways. No mention is made, however, of the problem of knowing what the expressions are to begin with. How does one

know, for example, that green apple is an expression denoting the object of perception in (6a) but not in (6b)?

- (6) a. John saw the green apple.  
b. John saw the green apple tree.

Examples of this kind can be multiplied in many directions. For example, in

- (7) a. I watched John and Mary run to the police station.  
b. I watched John and Mary ran to the police station.

John and Mary is an expression denoting the performers of the act of running in (7a), but not in (7b). The kinds of examples discussed by SB involve few multi-word constituents, and those that do arise seem to be of a kind that can be handled by rather local recognition mechanisms; but cases like (7) show the need in some cases to take global syntactic context into account as well. The problems that arise in this regard are not trivial, and as long as they exist, syntax will remain 'privileged' at least in the sense that it will make a major claim on the attention of some investigators and thus continue to have a life of its own.

Reference:

Schank, R. and L. Birnbaum, 1981. Meaning, Memory and Syntax. Dept. of Computer Science, Yale University. Res. Rep. No. 189. To appear in T. Bever and L. Miller, eds., Cognitive Philosophical Computational Foundations of Language. In press.