A Case of Early Lexical Insertion

Ronald Neeld

One of the basic principles of Generative Semantics is that
lexical insertion may follow certain transformational operations
(McCawley 1968, Fodor 1972). However, it has been an open question
as to whether there is a single level where lexical insertion
occurs, or whether it is staggered throughout a derivation.
McCawley, for example, speculates that the proper level for lexical
insertion might be after the operation of cyclic rules but before
the operation of postcyclic rules. Fodor 1972 presents evidence that
the lexical item beware must be inserted after Affix Hopping, and
is therefore a case of rather late lexical insertion. Fodor points
out that if all items can be inserted late, lexical insertion need
not be staggered. But if evidence for cases of early lexical
insertion can be found, then this evidence, along with the arguments
for cases of late lexical insertion presented in McCawley 1968 and
Fodor 1972, would support staggered lexical insertion.

One piece of evidence for rather early lexical insertion comes
from the study of anaphora in English. Lees and Klima 1963 present
an analysis of this area of language in which there is a rule of
pronominalization which converts a full noun phrase to a pronoun
under certain conditions. Within the framework of Generative
Semantics the semantic representation of a sentence must include,
at least in part, its logical structure. The Lees and Klima analysis
is deficient in that it does not properly explain the relation between
the logical forms and surface forms of sentences containing pronouns.
I believe that a proper explanation of this relation must have a
form roughly along the lines sketched by McCawley 1970. McCawley's
analysis maintains that noun phrases are represented as variables
in a predicate calculus, and that there are rules which specify
that some variables are replaced by a full noun phrase while the
other occurrences of the variable are replaced by pronouns. This
proposal is superior to that presented by Lees and Klima on
syntactic as well as semantic grounds, for it avoids the difficulties
inherent in the transformational rule treatment of pronominalization
(cf. Bach 1970).

Given this proposal, the constraints on prominalization must
be reformulated as constraints upon which variable can be filled
in by a full noun phrase. The major condition is that presented by
McCawley:

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(1) ...a noun phrase may be substituted for any
occurrence of the corresponding index which
either precedes or is in a 'higher' sentence
than all other occurrences of that index. (176)

This constraint allows us to account for the cases noticed by Ross 1967 where forward pronominalization is impossible.[1]

(2) a. Bill's$_i$ realizing that he$_i$ was unpopular
bothered him$_i$.
b. Realizing that he$_i$ was unpopular bothered Bill$_i$.
c. *Realizing that Bill$_i$ was unpopular bothered him$_i$.

Using McCawley's theory of anaphora, the remote structure of (2) is (using McCawley's notation):

(3)
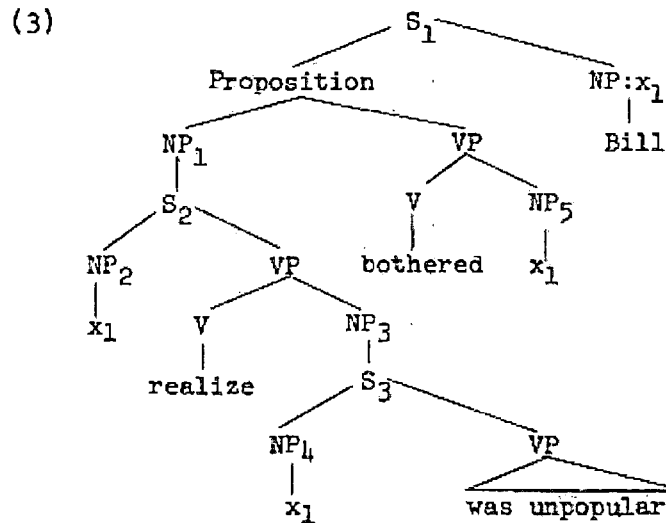
Either NP$_2$ or NP$_5$ may have the variable x$_1$ replaced by the lexical item Bill. This gives either (2a) or (2b) (where Equi has applied in the latter). However, NP$_4$ cannot be replaced by Bill, due to constraint (1); the variable that NP$_4$ dominates does not either precede or command all other occurrences of the variable. By using the underlying variable approach to pronominalization, (3c) can be explained by constraint (1), which is needed anyway in a grammar of English.

The significance of the theory of anaphora for lexical insertion is that the replacement of variables by noun phrases must take place before Equi applies. If Equi applied first, NP$_2$ in phrase marker (3) would be deleted. Then, when the time came to replace the remaining variables, constraint (1) would not be violated by replacing NP$_4$ by the full noun phrase, and there would be no way to block (2c).[2] After the operation of Equi, the variable which NP$_4$ dominates in fact precedes all other occurrences of that variable (since NP$_5$ is to the right of NP$_4$). The point is that the operation of Equi destroys part of the information needed for the statement of

constraint (1). The replacement of variables by noun phrases and pronouns is a lexical insertion process. Since this process must take place before Equi, we have a case where lexical insertion cannot take place at the end of a derivation. Since there are also cases where lexical insertion takes place late in a derivation, the evidence presented here indicates that lexical insertion should be staggered.

NOTES

1. Ross tried to explain the restriction exhibited in (2) by claiming that pronominalization is a cyclic rule. This proposal fails in several respects. To begin with, Ross is using a theory in which pronominalization is a transformational rule, and we have already seen the deficiencies of such a theory. Furthermore, there is evidence that pronominalization cannot be cyclic, summarized in Postal 1971.

2. There is no restriction in general against having an antecedent in a complement sentence, with an anaphor to the right of the complement sentence:

(i) For Mary to hit him$_i$ would annoy John$_i$.

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