A Case of Early Lexical Insertion

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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 pronominalization 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:
(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 \( x_1 \) realizing that he \( x_1 \) was unpopular bothered him \( x_1 \).
   b. Realizing that he \( x_1 \) was unpopular bothered Bill \( x_1 \).
   c. *Realizing that Bill \( x_1 \) was unpopular bothered him \( x_1 \).

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

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(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). 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\textsubscript{i} would annoy John\textsubscript{i}.

REFERENCES
