Indexing, Coreference, and Logical Form in the Government-Binding Theory

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I. Conditions on Indexing

1) *We like me
2) *We like us
3) *We believe me to be intelligent
4) \{He\} likes him [\{He\} \neq him]
5) They like him [they \neq him]
6) Assign referential indices freely
7) A pronoun must be free in its Governing Category
   (An NP is bound if coindexed with a c-commanding NP, free otherwise)
   [cf 'RI' from 'Conditions on Transformation']
8) Approximate formulations of the relevant definitions
   -- The Governing Category of an NP is the minimal NP or S in which it is governed.
   -- a governs b iff a is a lexical category (V, A, N, ??) or tense, and a
     minimally c-commands b. Ex's = The Governing Category of the subject or
     object in a finite clause is the finite S. The G. C. of the object of an
     infinitive clause is the infinitive S.
9) *He\textsubscript{1} likes him\textsubscript{1} him is not free in its Governing Category
10) He\textsubscript{1} likes him\textsubscript{2} O.K.

11) An anaphor must be bound in its Governing Category
12) *Myself\textsubscript{1} left
13) *They\textsubscript{1} like themselves\textsubscript{2}

14) A 'name' must be free (cf. Disjoint Reference rule from 'Remarks on Coreference'

15) *\{J\textsubscript{1}\} likes John\textsubscript{1}
   \{He\textsubscript{1}\}
16) *\{J\textsubscript{1}\} thinks J\textsubscript{1} is intelligent
   \{He\textsubscript{1}\}
17) Who [e\textsubscript{1} thinks [he\textsubscript{1} is intelligent]]
18) *Who does [he\textsubscript{1} think [e\textsubscript{1} is intelligent]]

Apparently, a variable patterns like a name. This is the so-called Crossover
Phenomenon.

II. The Interpretation of Indexing

19) \ldots \text{NP}\textsubscript{i} \ldots \text{NP}\textsubscript{j} \ldots \text{ i \neq j} <\text{a) non-coreference}
\ldots <\text{b) disjoint reference}
(19b) is the required interpretation, otherwise the disjoint reference effect cannot be described. In (1) and (5), a non-coreference requirement will not suffice.

20) \( \ldots \text{NP}_4 \ldots \text{NP}_4 \ldots \) Overlap in reference (otherwise 'We think I will win' would be impossible)

III. Problems

21) Split antecedents

\[ \begin{array}{c}
1 & \text{they } \not\in \text{ John; } \not\in \text{ Bill} \\
2 & \text{they } \not\in \text{ John; } \not\in \text{ Bill} \\
3 & \text{they } \not\in \text{ John; } \not\in \text{ Bill}
\end{array} \]

22) \( \text{They}_1 \) like themselves \( \text{should be O.K. even if they } = \text{ Bob \\ John,} \) themselves \( = \text{ Bob, John, Sam,} \) clearly an incorrect result.

IV. New Improved Theory (= Old Theory: On Binding)

23) 'On Binding' theory [as modified in Freidin and Lasnik]
   a. Assign referential indices freely.
   b. Assign 'anaphoric' index to all non anaphors
   c. Reindex an NP \( _1 \) that is free(1) in an opaque domain
      \( \text{or NP}_j, \ldots \{1\ldots\} \)
   d. \( \not\text{NP}_c \)

24) John \( _1 \) likes himself \( _2 \)
   \( \not\)

25) John \( _1 \) likes himself \( _1 \)

26) John \( _1 \) thinks that himself \( _1 \) will win
   \( \not\)
   \( \text{or 2} \)

27) \( \ldots \text{NP}_1 \ldots \text{NP}_1 \ldots = \text{coreference} \)

28) \( \ldots \text{NP}_1 \ldots \text{NP}_2, (1) = \text{disjoint reference} \)

29) They \( _1 \) like him \( _2, (1) \) they \( \not\) him

30) \( \ldots \text{NP}_1 \ldots \text{NP}_2, \not\ldots = \text{free reference} \)

31) John \( _1 \) thinks he \( _2, \not\) will win \( \text{John can be he but need not} \)
    \( \text{from reindexing of (1)} \)

32) John \( _1 \) told Bill \( _2, (1) \) that they \( _3, \not\) should leave

33) John told Bill about themselves
V. Level of Application of Binding Theory

35) Whose book did he read
36) Who \( x \rightarrow \) he \( \lambda \) read \( x \)'s book

37) Whose book \([\text{he} \lambda \text{read} \ x']\) This representation does not capture the fact that (35) displays the crossover effect.

38) Binding theory follows the LF rule of reconstruction which changes the S-structure of (35) into (36).

VI. GB Theory revised

Can (14) be eliminated? For (18), it can.

39) Who does \([\text{he} \lambda \text{think} \ [c \lambda \text{is intelligent}]]\)
   
e must receive some interpretation, but all possibilities are ruled out.

40) a. \( e \) is not a variable here because it is not locally bound by an operator
    b. \( e \) is not a 'trace' because it is not bound in its governing category
    c. \( e \) is not 'PRO' (the EQUI empty category) because it is governed. But
       PRO is a pronominal anaphor, hence cannot be governed.

41) This argument does not extend to (35) however, and (15), (16) are also left unaccounted for.