Gapping and Interpretation
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Recently, Gapping has usually been treated as an interpretive rule that assigns controllers to or copies material into empty categories, although some linguists have continued to treat it as a late syntactic deletion rule. An interpretive analysis of Gapping and other "deletion under identity" rules means that "deletions can be narrowly restricted in sentence grammar, perhaps just to deletion of certain grammatical formatives and pronouns" (Chomsky 1977, 132)). The interpretive analysis of Gapping, then, has come about largely as a result of the metatheoretical aim of constraining the various components of grammar. In this squib, I present more direct evidence that Gapping cannot be maintained as a syntactic deletion rule, but I also show that there is an unanticipated metatheoretical cost to treating it interpretively, because it is sensitive not only to the logical form of the LF component, but also to the effects of Affix Hopping, a local rule presumably among the stylistic rules of the PF component of the "Y" grammars outlined in Chomsky and Lasnik (1977) and subsequent work.

My evidence against Gapping by deletion comes from negative gapped sentences. Although many writers have claimed

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that negative sentences simply cannot be gapped, the resulting strings, such as (1), are not only grammatical, but ambiguous between a narrow scope negation reading (a conjunction of negations, as paraphrased in (2)) and a wide scope negation reading (negation of a conjunction, as paraphrased in (3)).

(1) Ward can’t eat caviar and Sue, beans.
(2) Ward can’t eat caviar, and Sue can’t eat beans.
(3) It is not possible (or desirable) for Ward to eat caviar and for Sue (simultaneously) to eat (merely) beans.

(1) can have the reading paraphrased in (2) in a context like, “Oh, no, I made caviar and beans for dinner, and then I found out that Ward can’t eat caviar and Sue, beans.” (1) can have the reading paraphrased in (3) if the context is, instead, “Sue is supposed to be Ward’s honored guest at dinner. Ward can’t eat caviar and Sue, beans.” The narrow scope reading is true just in case neither person can eat the food named. The wide scope reading is true just in case it can’t be that they both eat the foods mentioned.

Either a deletion rule of Gapping or a rule of interpretation can easily account for the narrow scope reading of (1) paraphrased in (2). The former could delete the tense, negation, modal, and verb of the second conjunct in (2), to produce the string in (1). The latter could copy, or choose as controller in LF, the tense, negation, modal, and verb of the first conjunct for the empty categories generated in place in the gap in (1), as in (4):

(4) Ward can’t eat caviar and Sue \( \Delta_{\text{AUX}} \Delta_{V} \) beans

2 Ross (1970), Jackendoff (1971), Neijt (1979), and Sag (1980) all take this position, and Stillings (1975) agrees, though with reservations.

3 It is worth noting that the scope ambiguity discussed here can arise with any sentence operator, not just with negated modals. There are both modalless gapped sentences ((9) and (10) in the text) and affirmative gapped sentences ((i) below) that exhibit the same ambiguity. As with examples (1)–(3) in the text, (i) is ambiguous between a narrow and a wide scope reading of the tense and modal, (ii) has only the narrow scope reading, and (iii) has only the wide scope reading; it asserts the possibility of a conjunction.

(i) Ward can eat caviar and Sue, beans.
(ii) Ward can eat caviar and Sue \{can eat\} beans.
(iii) Ward can eat caviar and Sue eats beans.

4 Like Williams (1977), I am assuming the Empty Structures Hypothesis of Wasow (1979); deltas represent lexical categories only. Since NOT and Tense are not lexical categories, I will assume that empty nodes for them are not generated, but that they can be copied or chosen as controllers (I remain neutral on this point, although I cease mentioning both possibilities in what follows) by interpretive rules if and only if the member of a lexical category that they reciprocally c-command is.
Analyses of the wide scope reading of (1) paraphrased in (3), however, are not so straightforward. A string like (5) seems to be the only possible deletion source for the wide scope reading, since it is the only grammatical surface structure with the appropriate reading.

(5) Ward can’t eat caviar and Sue eat beans.

However, in order for a deletion analysis to work, the tenselessness of the second conjunct in (5) must somehow be accounted for. This would seem to be a hopeless task, though, for examples (6)–(8) show that tenseless second conjuncts are not freely generated in Gapping environments, nor can Gapping always delete just Tense, as Williams (1981) suggests.

(6) *Ward eats caviar and Sue eat beans.
(7) *Oh, no! Chris isn’t in the den and the baby be in the boiler room?
(8) *Linda hasn’t read her paper or Richelle have read hers.

Worse for the deletion analysis, (7) and (8) have grammatical gapped versions with wide scope readings for which there is no reasonable deletion source, given the ungrammaticality of (7) and (8):6

(9) Oh, no! Chris isn’t in the den and the baby, in the boiler room!
(10) Linda hasn’t read her paper or Richelle, hers.

An interpretive rule of Gapping would, however, derive the wide scope readings of (1), (9), and (10) without the puzzle of surface sources with tenseless verbs. If the wide scope readings are to be accounted for, the rules that establish the scope of sentence operators must raise operators, on occasion, to produce structures like (11) in LF.

(11) NOT CAN \[s[\text{S} \text{Ward } [\text{Aux present}][\text{V eat} \text{ caviar}]] \text{ and } [s \text{ Sue } \Delta_{\text{Aux}} \begin{cases} \Delta_v \\ \text{eat} \end{cases} \text{ beans}]]

A rule of Delta Interpretation, such as that in Fiengo (1974), could then link the empty elements in the second conjunct with the appropriate constituents of the first conjunct in (11) to produce wide scope gapped readings.

5 I am grateful to the anonymous reader who brought to my attention the existence of sentences like (7).
6 Examples like (6)–(10) pose a problem for any late syntactic deletion analysis, including the one in Sag (1980), which nearly obliterates the usual distinctions among the levels of grammar by allowing rules like Gapping to be formulated as syntactic deletion rules that nevertheless have access to information from logical form for their structural descriptions. Although such mixed rules would solve the problem for deletion illustrated in (16)–(18), they could do nothing to supply grammatical deletion sources for sentences like (9) and (10).
It remains, though, not only to discuss at greater length the operator-raising rule that yields structures like (11), to which I return, but also to investigate whether an interpretive analysis can explain the ungrammaticality of (6)–(8). That is, can Gapping by Delta Interpretation be made to treat (12)–(14) differently from the way it treats (11) so as not to predict that (12)–(14) will yield grammatical sentences with only the Tense empty, as (11) does?

(12) Ward [present]_Aux eat caviar and Sue Δ_Aux eat beans
(13) NOT [S Chris [present]_Aux be in the den and the baby Δ_Aux be in the boiler room]
(14) NOT [S Linda [present]_Aux have +en read her paper and Richelle Δ_Aux have +en read hers]

Gapping can distinguish in the required manner, but only by adhering to the following constraint: an empty Aux cannot be interpretively linked to Tense in a previous conjunct if Affix Hopping in the previous conjunct would move the Tense to a position not syntactically parallel to the second conjunct delta. Clearly, the way to build this constraint into the grammar is to stipulate that the results of Affix Hopping must be in place in S-structure, the input to LF. Then the requirement of syntactic parallelism of deltas and their controllers (Fiengo (1974)) will ensure the desired results. With Affix Hopping done in S-structure, as in (15) rather than (12), the reason for the deviance of (6)–(8) and sentences like them becomes clear; there is no syntactically parallel element in the first conjunct to link with the delta in the second conjunct.7

(15) Ward [eat + present]_V caviar and Sue Δ_Aux eat beans

However, there are serious problems with performing Affix Hopping in S-structure. First, Affix Hopping is the kind of low-level, local housekeeping rule that might best be assigned to the PF component of the grammar. More seriously, it has been assumed that Tense, as part of Infl, must be a daughter to S in S-structure, not hopped and adjoined to V, so that it may govern and assign nominative Case to the subject NP (Chomsky (1982, 52)). Consequently, interpretive Gapping’s requirement that affixes be hopped in S-structure could prove troublesome enough to warrant an attempt to return to Gapping as a late syntactic deletion rule. However, in addition to the absence of grammatical deletion sources for some gapped sentences, Gapping exhibits another characteristic indicating that it must be an interpretive rule and apply at LF. It is sensitive to logical form.

7 Affix Hopping must be defined on affixes or categories of affixes, not on lexical categories like Aux. On the other hand, the empty node in the second conjunct in (15) must be an Aux node, since deltas represent lexical categories only and Tense, Agr, Infl, etc., are not lexical categories (see footnote 4). Consequently, we do not expect an empty Aux node to hop in (15).
Consider the following examples:

(16) Tommy wanted to explore the haunted house, and Susie {\{wished\} to sleep in the ghost’s bedroom.}

(17) a. Each of the boys wanted to explore the haunted house and Susie {\{wished\} to sleep in the
ghost’s bedroom.}

b. Susie wanted to explore the haunted house and each of the boys {\{wished\} to sleep in the
ghost’s bedroom.}

(18) a. None of the boys wanted to explore the haunted house and Susie {\{wished\} to sleep in the
ghost’s bedroom.}

b. Susie wanted to explore the haunted house and none of the boys {\{wished\} to sleep in the
ghost’s bedroom.}

The ungapped versions in (16)–(18) are all perfectly acceptable, as is the gapped version in (16). The gapped versions in (17), though, sound decidedly odd, and the gapped versions in (18) are even worse. A late syntactic deletion rule of Gapping with no access to logical form could not avoid producing the gapped versions in (17) and (18) if it is to produce the one in (16). Gapping by Delta Interpretation, however, could be constrained to prevent the unwanted Gapping. Once the scope of quantifiers has been determined, the gapped version of (18a), for instance, would look like (19), ignoring irrelevant features:

(19) (\neg \exists x (x \text{ is a boy } \& x \text{ wanted to explore the haunted house}) \& (\text{Susie } \Delta_{\text{Aux}} \Delta_{\text{V}} \text{ to sleep in the ghost’s bedroom})

The condition necessary to block gapped sentences as in (17) and (18) seems to be that $\Delta_{\text{Aux}}$ and $\Delta_{\text{V}}$ cannot be interpretively linked with material if either party to the linking is in the scope of an operator, while the other party is not. Let us call this the Operator/Verb Interpretation condition (OVI).

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8 OVI apparently applies only in sentence grammar, as distinguished from discourse grammar in Williams (1977). It does not operate, for instance, with “VP deletion” sentences:

(i) None of the boys wanted to explore the haunted house, but Susie did.

It does, however, apply in the case of conjunction reduction, if somewhat more weakly than with Gapping:

(ii) *Susie and none of the boys finished on time.

(iii) *Susie and all of the boys finished on time.
OVI, it turns out, also figures in an account of the behavior of the original data in (1)-(3). There are three ways in which deltas can satisfy OVI if there is any kind of operator with potential sentential scope in the first conjunct—a modal, negation, or a quantifier. The first way (Case A) is for a second operator to be generated in the second conjunct. This, indeed, seems to improve sentences like (17) and (18):

(20) All of the boys wanted to explore the haunted house, 
    \[
    \begin{cases} 
    \text{all} \\
    \text{a few}
    \end{cases}
    \text{ and }
    \begin{cases} 
    \text{some} \\
    \text{of the girls, to sleep in the ghost's bed-}
    \text{room.}
    \end{cases}
    \]

The second way (Case B) is for the operator in the first conjunct to be part of the controller for the $\Delta$'s. In such a case, the operator will be copied into or control a $\Delta$ in the second conjunct and thus have scope over the $\Delta$'s there. Case B can obtain only when the first conjunct operators originate in Aux or V and have their narrowest scope. For if they originate elsewhere or are raised in LF, they will not be in an appropriate parallel position to control the second conjunct's $\Delta$'s (see Fiengo (1974)). The unavoidable result of Case B in the data we have been considering, then, is the narrow scope interpretation of modals and negation associated, for instance, with the reading of (1) paraphrased in (2). The third way that first conjunct operators can come to have scope over second conjunct $\Delta$'s and thereby satisfy OVI (Case C) is by having operators that are interpreted as having scope over both conjuncts at once. This case is illustrated in (11), which shows the logical form for the wide scope reading of (1) paraphrased in (3), and in (13) and (14).

Such structures as (11), (13), and (14) presumably come about as a result of raising the operators of the first conjunct. However, if operators are adjoined only to the beginning of the first conjunct, as in (21), which is what one might expect for the scope of sentence operators, OVI will disallow Delta Interpretation, since the first conjunct’s Aux and V are in the scope of operators that do not have scope over the empty categories.

A second quantifier introduced to satisfy OVI seems to be subject to an interesting separate constraint, which I cannot pursue in this squib. The second quantifier must match the first in its monotonicity, as defined in Barwise and Cooper (1981), that is, roughly speaking, its positiveness or negativeness. Contrast (i) with (20).

(i) All of the boys wanted to explore the haunted house and 
    \[
    \begin{cases} 
    \text{none} \\
    \text{neither} \\
    \text{few}
    \end{cases}
    \text{ of the girls } \begin{cases} 
    \text{*\text{wanted}} \\
    \end{cases}
    \text{ to sleep in the ghost's bed-}
    \text{room.}
(21) \([S (\text{NOT CAN } [S \text{ Ward present eat caviar}] \text{ and } [S \text{ Sue } \\
\Delta_{\text{Aux}} \Delta_{V} \text{ beans}])]

OVI's prevention of Delta Interpretation in a structure like (21) predicts correctly that (1) cannot mean 'For Ward to eat caviar is not possible and Sue eats beans'. To produce the correct wide scope readings of such sentences, then, there must be operator raising to the higher sentence and subsequent Delta Interpretation, which would produce a structure like (11) from (21).

This raising to the higher sentence can occur only with gapped second conjuncts, that is, ones with empty Tense at least. (2), for instance, with its filled Aux and V, cannot have the very wide scope reading. Though such a condition on a special raising rule for a marked construction like Gapping is easily statable, the reason for it remains a mystery. However, such a rule, together with OVI, does predict exactly the ambiguity that we find in sentences like (1). Furthermore, whatever the ultimate form and explanation of the special operator raising and OVI, the fact that they must be stated in terms of logical form constitutes evidence that, although Gapping depends upon the output of Affix Hopping, it is an interpretive rule. This means that the role of Tense in the assignment of Case, as well as the characteristics used to distinguish rules to be assigned to the different components of sentence grammar, may have to be modified, but that deletion under identity, at least for Gapping, need not be a part of sentence grammar at all.

References


SQUIBS AND DISCUSSION


