On "Gapping and the Order of Constituents"*

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1. Since the position of the verb in subordinate clauses and main clauses differs in German, it is not at all obvious what its position in deep structure should be. While most transformational analyses of German have assumed a base order SOV, a consequence of J. R. Ross's (1970) analysis of Gapping is that the underlying order of German must be SVO. The purpose of this paper is to suggest an alternative hypothesis about Gapping to show that no claim about deep structure order can be made on the basis of Gapping alone.

Gapping is a transformation which deletes verb(s) in a conjoined structure to produce sentences like "Suzie joined NOW and Martha Bread and Roses." Table 1 lists the possible outputs of Gapping. The starred outputs are those which apparently do not occur in any natural language.

<table>
<thead>
<tr>
<th>A</th>
<th>SVO + SO</th>
<th>C</th>
<th>SO + SOV</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>SOV + SO</td>
<td>*D</td>
<td>SO + SVO</td>
</tr>
<tr>
<td>E</td>
<td>VSO + SO</td>
<td>*F</td>
<td>SO + VSO</td>
</tr>
</tbody>
</table>

Some languages, like English, exhibit only one of the possible gapping patterns; others, like German, exhibit several such patterns. Ross (1970, 12) groups languages according to the gapping patterns they exhibit, as shown in the following chart (Ross does not consider gapping patterns E and *F):

* I am grateful to Joan Bresnan, to David Perlmutter, and especially to John R. Ross for their comments on earlier versions of this paper.

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The imperative by placing the subject after the verb. Other exceptions to Ross's generalization have been reported in the literature. Therefore, we need to look for an alternative explanation for the facts about distribution shown in Table 2.

Table 1 indicates that all kinds of forward Gapping occur (Column 1), but that backward Gapping (Column 2) occurs only when the identical verbs are clause-final. But note that output C could also be produced by the independently motivated rule of Node Raising (NR). Let us suppose that Gapping is not a two-way transformation as Ross suggested, but rather a one-way (forward) transformation, and that the outputs listed in Table 1 are actually produced by two different rules: Node Raising and Forward Gapping. Schematically, these two rules apply to the possible input strings with the results shown in Table 3:

To explain the distribution of the gapping patterns in various languages, Ross (1970, 18) makes the following set of hypotheses, which I shall refer to as the Two-Way Gapping Proposal:

1. a. Gapping is a single rule which operates both forward and backward. The direction of gapping depends on the input phrase structure configuration: forward if the identical elements are on left branches, backward if they are on right branches.

   b. Languages whose deep structure order is SOV always have the verb in clause-final position.

   c. Gapping is an anywhere rule in any language whose grammar it appears.

Ross's hypotheses have important consequences for the theory of grammar. First, he must assume that Gapping is an "anywhere" rule1 which can apply before or after Scrambling in order to get both B and C patterns in Russian. Second, the ordering arguments of his analysis lead him to conclude that no language with any kind of Extrapolation, Verb Movement, or Scrambling rule can be SOV in the base; for otherwise, (backward) Gapping could apply to the coordinate structure SOV x SOV to produce SO + SOV, and then Scrambling could apply in turn to give *SO + sVO. Thus Ross is claiming that a language is SOV if and only if it has no movement rules which have the effect of making the verb nonfinal. If the interaction between Gapping and such movement rules is the only evidence used to determine underlying word order, then Ross's claim is true, of course, but by definition rather than empirically. Insofar as there is any independent evidence about underlying order, Ross's claim is probably false. For example, Siouan languages, which are rigid SOV languages, form

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We see that these two rules do in fact produce all and only the well-formed outputs of Table 1. Under this assumption, there is another explanation for the distribution in Table 1. I shall refer to the following set of hypotheses as the One-Way Gapping Proposal:

(a) a. Gapping operates only forward.  
b. Node Raising and Gapping are ordered after any movement rules which affect the linear position of the verb.

c. If a language has Gapping, then it also has Node Raising.

The order of Node Raising with respect to movement rules that affect the linear position of the verb is crucial, since any analysis of Gapping must block the generation of D and D'. If Scrambling is last cyclic, then it must precede Node Raising in order to feed it (SVO + NV | SVO+ SOV + SOV | SO + SVTO). Note that we need not prevent Scrambling from applying after Node Raising as well, since if Scrambling can only apply to constituents of the same S, then it cannot produce D given the proposed derived structure for Node Raising (see fn. 4):

![Diagram](image)

*Under this proposal, Gapping is no longer an example of a mirror image rule in the sense of Langacker (1969). Note that the condition that Gapping works only forward is really the same condition as on Prefixalization (whether it is a condition on the applicability of a transformation or a condition on interpretation as enclitic). Prefixalization works only forward in coordinate structures, both backward and forward in subordinate structures. Gapping of course applies only to coordinate sentences.

Although backward Gapping is shown to be a case of a more general rule, Node Raising, it is responsible to collapse forward Gapping with NP deletion rules in all languages. Given a conjunctive string a b v b, a b, where a, b, and c are all noun phrases, the forms a b c, a b, and c can be deleted (i.e., gapped) if a is a verb, but not necessarily if a is an NP. Compare German: Ich sah, dass Heinrich den Brief abzogen und Heidi schrieb ‘I knew that Heinrich dictated the letter, and Heidi wrote.’

Node Raising can only apply to clause-final verbs. Under this analysis, if a language is SVO and lacks a movement rule which would make the verb clause-final, then Node Raising will never have a chance to apply to the verb, and only A but not D will be produced, since Gapping works only forward. Such is the case in English.

D and D' will always be starred outputs since (forward) Gapping is, in all languages, ordered after Scrambling and other reordering rules affecting the linear position of the verb.

The One-Way Gapping Proposal makes the predictions about the distribution of the gapped outputs in Table 1 which are enumerated on the next page in Table 2. To find which gapping patterns will be found in a given language, one need only determine the permissible surface structure orders and look under the appropriate bipartite column. A language which scrambles like Russian will have both SOV and VSO as possible inputs, and therefore will have A, B, and C-type outputs. These predictions agree with those of Ross's chart in that no language will have only output types A, B, or C. They differ in that the One-Way Gapping Proposal makes the letter, and Heidi wrote. 'Den Brief is not interpreted as object of schrieb. Thus, in languages, the second occurrence of two identical NPs can be r-maximised but not deleted (or the identical NPs can undergo raising if they are clause-final).

Consider, for example, the type of complementation construction illustrated by:

(i) The members of the church voted to name Nixon Chairman of the Year.

The same conditions which govern the acceptability of postpone the object Nixon in (i) also govern the acceptability of Conjunction Reduction in the conjunctive sentences (ii):

(ii) The committee nominated Nixon and the members of the C-group voted to name Nixon Chairman of the Year.

Thus the ungrammaticalities of (iii) predict the ungrammaticality of (iv): *The members of the Church voted to name Chairman of the Year Nixon.

(iv) *The committee nominated and the members of the church voted to name Chairman of the Year Nixon.
Further prediction that only languages without SOV inputs can exhibit no Gapping whatsoever. And in fact, Bach (1970) has observed that Chinese and Thai have no Gapping; both are SVO languages according to Greenberg (1966). Note that German falls very neatly into place in Table 4: it exhibits orders B and C (at least for simple tenses) in subordinate clauses where the input order is SOV, but only A in main clauses, where the input order is SVO.

To conclude, if the One-Way Gapping Proposal is correct, then no claim about base order can be made on the basis of Gapping, since it is only the input order of constituents after the application of reordering rules, and not the deep structure order, that is relevant.

2. It remains only to justify the above assumption that Gapping is a one-way and not a two-way rule. The following two arguments, due to Rott (personal communication), show that backward Gapping, unlike forward Gapping, exhibits the same behavior as Node Raising, and suggest that they are in fact the same rule.

First there are different conditions on forward and backward Gapping. In some dialects of German, backward and forward Gapping behave differently with respect to the perfect and modal auxiliaries in subordinate clauses, as shown by the following gapped sentences:

(3) a. Peter las den Brief und Heidi das Buch lesen.
   b. Weil Peter den Brief schreiben und Heidi das Buch lesen will, wird keine Mathematik getan werden.
   c. Weil Peter den Brief geschrieben hat und Heidi das Buch gelesen hat, wurde keine Mathematik getan.
   ‘Because Peter read the letter and Heidi the book, no math was done.’

(4) a. Peter hat den Brief geschrieben und Heidi das Buch gelesen.
   b. Weil Peter den Brief geschrieben hat und Heidi das Buch gelesen hat, wurde keine Mathematik
   getan.
   ‘Because Peter wrote the letter and Heidi read the book, no math was done.’

The (a) and (c) sentences are produced by forward Gapping; the (b) sentence by “backward Gapping”. It is the contrast among (c) sentences that is important here. We have seen that forward Gapping cannot apply to auxiliary verbs in subordinate clauses, but that there is no such condition on “backward Gapping”. This strange fact can be more naturally stated under the One-Way Gapping Proposal.

Second, the only condition on the so-called “backward Gapping” rule is that the verb be in absolute final position in surface structure. Consider the following sentence with conjoined subordinate clauses:

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(5) a. Peter will den Brief schreiben und Heidi das Buch lesen.
   b. Weil Peter den Brief schreiben und Heidi das Buch lesen will, wird keine Mathematik getan werden.
   c. Weil Peter den Brief geschrieben hat und Heidi das Buch gelesen hat, wurde keine Mathematik
   getan.
   ‘Because Peter writes the letter and Heidi reads the book, no math will be done.’

This sentence has four variations, depending on whether or not the relative clauses $S_1$ and $S_2$ have been optionally extrapolated:

(6) a. Weil ein Mann, der eine Taschenuhr trug, nach Rom fuhr und eine Frau, die einen Pelzmantel trug, nach Paris fuhr.
   b. Weil ein Mann nach Rom fuhr, der eine Taschenuhr trug, und eine Frau, die einen Pelzmantel trug, nach Paris fuhr.
   c. Weil ein Mann, der eine Taschenuhr trug, nach Rom fuhr, und eine Frau nach Paris fuhr, die einen Pelzmantel trug,
d. Weil ein Mann nach Rom fuhr, der eine Taschenuhr trug, und eine Frau nach Paris fuhr, die einen Pelzmantel trug, ...

‘Because a man who wore a pocketwatch traveled to Rome, and a woman who wore a fur coat traveled to Paris,...’

All four variations can be gapped forward to delete the second occurrence of fuhr, but only (7a) can be “gapped” backward to delete the first occurrence of fuhr, since only in (7a) are both occurrences of fuhr in final position in the respective sentences:

(8) a. Weil ein Mann, der eine Taschenuhr trug, nach Rom, und eine Frau, die einen Pelzmantel trug, nach Paris fuhr, ...

b. *Weil ein Mann nach Rom, der eine Taschenuhr trug, und eine Frau, die einen Pelzmantel trug, nach Paris fuhr, ...

c. *Weil ein Mann, der eine Taschenuhr trug, nach Rom, und eine Frau, nach Paris fuhr, die einen Pelzmantel trug, ...

d. *Weil ein Mann nach Rom, der eine Taschenuhr trug, und eine Frau nach Paris fuhr, die einen Pelzmantel trug, ...

This condition is the same condition as the one on Node Raising which can only apply to identical clause-final constituents. Just as “backward Gapping” cannot apply to the verb if Extraposition or some other transformation has moved a constituent to the right of the verb, Node Raising cannot apply to an NP if any transformation such as Dative Movement has made that NP non-clause-final. If the two rules are collapsed, this similarity can be captured. The apparent asymmetries of (7) will follow naturally. The One-Way Gapping Proposal predicts that whenever conditions are found to constrain Node Raising will also be found to constrain “backward Gapping”.

References

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