

Another Note on Clausal Pied-Piping

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1. Introductory remarks

At the end of my article on pied-piped infinitives in German relative clauses (Van Riemsdijk (1984)) I speculated on a possible extension of my proposal. The idea, which is not relevant in the present context, was based on a talk entitled "Predicates and Arguments" at the 1982 GLOW conference in Paris by Richard Kayne. This is not surprising, since Kayne's work is often inspirational. In fact, his recent article on antisymmetry in syntax (Kayne (1993)) has caused me to look again at pied-piping of infinitives in German.¹

In my earlier article on the topic, I argued that a sentence like (1) has the structure given in (2).

- (1) das Buch, das zu lesen er uns empfohlen hatte
 the book which to read he us recommended had
 'the book, to read which he had recommended to us'
- (2) [NP das Buch [CP [Spec,CP [CPi [Spec,CP das_j] Spec,CP [IP PRO
 e_j zu lesen]IP]CPi]Spec,CP er uns e_i empfohlen hatte]CP]NP

The claim is, in other words, that the infinitival complement to empfehlen is a CP which is pied-piped as a whole into the specifier of the containing CP, and that the relative pronoun, which originates as the object of the embedded infinitive, is moved into the specifier of that infinitival CP.

This analysis, if correct, is somewhat remarkable. In particular, it suggests that the relative pronoun, though positioned in the lower [Spec,CP], acts as if it were an operator at the higher CP. While such a situation holds in pied-piping constructions in general, cf. (3), it is unexpected with wh-elements in [Spec,CP] because of the correspondence effect.

- (3) the man whose brother I saw

¹ Many thanks are due to the participants at the 1993 Thomasburg Workshop on Generative Syntax, and particularly to Norbert Corver, who later commented on a first draft. I also thank the participants at the Groningen workshop on LF for stimulating discussion. In addition, I am very grateful to Josef Bayer, Dorothee Beermann and Riny Huybregts for their comments.

In (3), whose is in the specifier of the NP (or DP) and yet acts as the operator binding the variable in the (reconstructed) NP (DP). Solutions involve various conventions for the percolation of the wh-feature, the reconstruction process itself, or LF-adjunction of the wh-word to the containing CP. For wh-elements in [Spec,CP] such moves have generally been thought to be unavailable. The reason is that something like the correspondence effect² is believed to hold. The correspondence principle says that a wh-element must take scope in the [Spec,CP] it occupies at s-structure. While a number of interesting deviations from the correspondence principle have come to light, cf. among others Van Riemsdijk (1983), the generalization appears to hold on the whole. In particular, we do not assume that a wh-word which has been moved into some [Spec,CP] at s-structure can freely undergo LF-movement to take wider scope.

In the (1984) article, I adopted a feature percolation approach with the (not implausible) proviso that percolation of this kind is limited to left branches, modulo a preceding preposition. Thus, the wh-feature on the d-word in (2) would be able to percolate up to the containing [Spec,CP].

Another approach is presented in Grewendorf (1986). In this article, which is a critique of mine³, much of my proposal is adopted, but with one major difference. It is suggested that there is a process by which the embedded infinitival clause is adjoined to the containing S (i.e. to IP), whereupon the d-word is extracted from its embedded [Spec,CP] and moved into the [Spec,CP] of the containing CP. Clearly, such a move would solve the scope problem. It would also solve a problem pointed out by Grewendorf, viz. that at s-structure German infinitivals never have a filled [Spec,CP]. This generalization, if it is one⁴, is violated by a structure like (2) but avoided under Grewendorf's proposal. Unfortunately, it is not clear that the transformational process invoked by Grewendorf is independently motivated. Furthermore, if it existed, it would be far from clear why other violations of his generalization could not escape in the same way. For example, why shouldn't an infinitival question like (4), which violates the generalization and is, indeed, ungrammatical, be salvaged in the same way by adjoining wen to the containing CP?

² See Van Riemsdijk & Williams (1981), Van Riemsdijk (1983).

³ For a more elaborate and fundamental critique, see Haider (1985). This is not the place, however, for a reaction that would do justice to Haider's proposals. For a critical appraisal of my analysis as well as of Haider's and Grewendorf's alternative solutions, see Trissler (1988).

⁴ For one thing, it is not entirely clear that wh-infinitivals lacking the infinitive marker zu are not CPs. E.g.

(i) Sie weiss nicht mehr wem glauben
she knows no more whom (to) believe

- (4) *Er fragte sich, wen zu besuchen
he wondered whom to visit

A second problem arises when other cases of pied-piping are taken into account. Take for example the fact that certain PPs with a relative pronoun in them can be extracted from a containing noun phrase, as shown in (5). The same extraction, however, is never possible when that noun phrase is apparently left-adjoined to IP.

- (5) der Mann, von dem der Peter drei Bücher gelesen hat
the man by whom the Peter three books read has

- (6) *der Mann, von dem drei Bücher der Peter gelesen hat

A third problem arises in view of the behavior of pre-subject clitics. Direct and indirect object clitics are known to be able to encliticize to C? . If Grewendorf's analysis is correct, we would expect such clitics to be able to be inserted between the d-word and the rest of the infinitival clause. Sentences of this kind are systematically ungrammatical, however.

- (7) *das Buch, das uns zu lesen der Peter empfohlen hat
the book which us to read the Peter recommended has

- (8) *der Dichter, den ihr mit Schiller zu vergleichen
the poet whom her with Schiller to compare

der Lehrer aufgetragen hat
the teacher told has

A final problem with Grewendorf's proposal was suggested to me by Norbert Corver. If the rule extracting and adjoining the d-word from [Spec,CP] is an instance of Move? , we would expect it to behave in an across-the-board manner. But then Grewendorf's analysis makes exactly the wrong prediction in a case like (9) and (10).

- (9) das Buch, das_i zu lesen ich e_i mir vornehme, aber *(das_i)
the book which to read I (me) plan but which

zu rezensieren ich e_i mich weigere
to review I (me) refuse

- (10) die Kinder, deren sich anzunehmen der Minister
the children whom (gen) refl. take-care-of the minister

versprochen hat, aber *(denen) Asyl zu gewähren
promised has but whom (dat) asylum to give

die Regierung sich weigert
the government refl. refuses

There are good grounds, then, to reject an analysis along the lines of Grewendorf's proposal and to stick to the assumption that the d-word and the rest of the infinitival clause form a constituent at s-structure.

In Kayne's article on the antisymmetry of syntax (Kayne (1993)), yet another strategy to solve the above problem is introduced. Kayne suggests that c-command should be modified. In particular, he proposes that specifiers, or rather XPs that constitute specifiers, are not upper limits for the domain of c-command. In a structure like (3), for example, the wh-word whose would c-command the trace of the NP whose brother (or, if the trace is a copy of the moved phrase, a position inside that copy). Similarly, the d-word in (2) would be able to c-command in exactly the same fashion that it does in the non-pied-piped variant of (1), viz. (11).

(11) das Buch, das_i er uns [PRO e_i zu lesen] empfohlen hatte

It should be clear, as it is to Kayne himself (Kayne (1993:18)), that this modification of c-command is not without its problems. It is one such problem that I wish to address in this note.

2. Pied-piped CPs and parasitic gaps

The interaction between the clausal pied-piping construction discussed in this note and parasitic gaps sheds new light on the place and the c-command potential of the d-word in examples like (1). Consider the following example of a relative clause with a pied-piped infinitive.

(12) der Mann, [den_i e_i zu besuchen]_j sich der Hans e_j vorgenommen hatte
the man whom to visit (refl) the John planned had
'the man, to visit whom John had planned'

Suppose now that we add a clausal adjunct with a parasitic gap corresponding to den, i.e. e_i. An example of such an adjunct would be (13).

(13) [ohne vorher e_i benachrichtigt zu haben]
without before informed to have
'without having informed before'

There are two basic positions for adjuncts containing parasitic gaps in a German clause: the so-called middle field, that is between the subject and the verb cluster in positions where we would expect the corresponding simplex adjuncts to occur as well, and in extraposition, that is to the right of the verb cluster⁵. Taking into account both the matrix clause and the embedded infinitival

⁵ In addition to the rather marginal acceptability of parasitic gaps in general, there is a further factor to take into account in judging the grammaticality of the relevant examples. Many speakers find the parasitic gap in the extraposed position slightly less acceptable than in the middle field. In the presentation I will assimilate both cases to grammatical sentences, except where necessary for the discussion.

clause⁶, this means that there are four potential positions for the adjunct with the parasitic gap⁷. These are indicated by '#' in (14) and listed individually in (15).

(14) der Mann, [den_i e_i # zu besuchen #]_j sich der Hans # e_j vorgenommen hatte #

- (15) a. ?der Mann, [den_i e_i [ohne vorher ec_i benachrichtigt zu haben] zu besuchen]_j sich der Hans e_j vorgenommen hatte
- b. der Mann, [den_i e_i zu besuchen [ohne vorher ec_i benachrichtigt zu haben]]_j sich der Hans e_j vorgenommen hatte
- c. *der Mann, [den_i e_i zu besuchen]_j sich der Hans [ohne vorher ec_i benachrichtigt zu haben] e_j vorgenommen hatte
- d. *der Mann, [den_i e_i zu besuchen]_j sich der Hans e_j vorgenommen hatte [ohne vorher ec_i benachrichtigt zu haben]

⁶ Note that the four positions given are simply the positions where an adjunct might be base-generated (modulo the existence of extraposition). In other words, the positioning of the adjunct in the matrix clause is not assumed to be the result of extraction from the embedded clause.

⁷ Note that the position of the adjunct in (15a) could give rise to a problem with the no-c-command condition on parasitic gaps depending on the structure attributed to such sentences. This problem might be avoided if it is assumed that the adjunct precedes the trace. The problem in question is not specific to the case under discussion but has to do with the overall analysis of parasitic gaps in German. For the purposes of the present article it seems reasonable to suppose that whatever the right solution is, it will be applicable here. It might be noted, however, that the problem is avoided under an across-the-board approach to parasitic gaps as advocated for Dutch in Huybregts & Van Riemsdijk (1985). The results presented here carry over straightforwardly to such an ATB-analysis, but in order not to unnecessarily clutter up the presentation, the main text discusses parasitic gaps in a more or less mainstream setting.

The question mark in (15a) can be attributed to a more general cacophonous effect which results from the juxtaposition of two infinitives such that each infinitive is preceded by the infinitive marker zu. Since this is an independent factor, a straightforward pattern emerges: parasitic gaps can be licensed inside the embedded infinitival clause, but not outside it.

This conclusion is confirmed if we take control facts into account. In (15) the matrix subject controls the PRO-subject of the infinitival complement. Hence the indexing of PRO would not change if the clause containing it were part of the matrix clause. Consider now a case of non-subject-control.

- (16) das Buch, [das PRO_j e zurückzugeben] der Lehrer_i keinem
 the book which to return the teacher (to) no
 'the book, to return which the teacher would recommend

 Schüler_j empfehlen würde
 student recommend would
 no student'

Suppose now that we insert the following adjunct in (16).

- (17) [ohne PRO ec gelesen zu haben]
 without read to have
 'without having read'

This would yield the following possibilities. For ease of exposition, the grammaticality judgments are given separately in (20) because the two control possibilities for PRO have to be taken into account.

- (18) das Buch, [das PRO_j e # zurückzugeben #] der Lehrer_i keinem
 Schüler_j # empfehlen würde #
- (19) a. das Buch, [das PRO_j e [ohne PRO ec gelesen zu haben] zurückzugeben] der Lehrer_i
 keinem Schüler_j empfehlen würde
- b. das Buch, [das PRO_j e zurückzugeben [ohne PRO ec gelesen zu haben]] der Lehrer_i
 keinem Schüler_j empfehlen würde
- c. das Buch, [das PRO_j e zurückzugeben] der Lehrer_i [ohne PRO ec gelesen zu haben]
 keinem Schüler_j empfehlen würde
- d. das Buch, [das PRO_j e zurückzugeben] der Lehrer_i keinem Schüler_j empfehlen würde
 [ohne PRO ec gelesen zu haben]

- (20) a. *PRO_i / ?PRO_j⁸
 b. *PRO_i / PRO_j
 c. *PRO_i / *PRO_j
 d. *PRO_i / *PRO_j

Like before, these examples show that parasitic gaps can only be licensed in the embedded infinitival clause. In other words, we may conclude that the d-word, which may be assumed to bind the two gaps, is in the lower [Spec,CP], not in the higher one. Clearly, such a state of affairs is incompatible with an analysis such as Grewendorf's in which the d-word is raised out of its embedded clause. Presumably, it is incompatible as well with an analysis in which the raising in question takes place at LF. Finally, it is not compatible with the proposal in Kayne (1993) to permit wide scope c-command from specifiers. On the other hand, these findings do seem to support my original analysis (Van Riemsdijk (1984)) inasmuch as percolation is to dominating nodes, not to c-commanding ones. Before I embark upon further speculations on the implications of these data, however, a few factual complications must be considered.

3. Further considerations

Two further aspects of the construction in question should be briefly addressed here.

First, it appears, though judgments become increasingly murky at this point, that (19c) becomes substantially better when the full lexical subject der Lehrer is replaced by a subject pronoun, say ich (T). Thus (21) would have the status shown in (22).

(21) das Buch, [das PRO_j e zurückzugeben] ich_i [ohne PRO_{ec} gelesen zu haben] keinem Schüler_j empfehlen würde

(22) ?PRO_i / *PRO_j

I will assume that the reason for this pattern is to be found in the clitic status of the subject pronoun. It is a well-known fact about German and Dutch that subject pronouns can cliticize leftward onto C? or, in the absence of a lexical C? onto [Spec,CP]. In the case under consideration, the subject clitic thereby becomes part of the fronted embedded CP, in a sense. If we assume now that the adjunct containing the parasitic gap is attached to the same CP, but to the right of the pronoun, then these facts would follow. What is suggestive, at any rate, is that the control of the PRO-subject of the adjunct is by the matrix subject pronoun and not by the indirect object. This suggests that whatever the exact analysis may be, the adjunct clause is attached in some high position, high enough to be outside the c-command domain of the indirect object.

A second remark concerns the alternative derivations in which no pied-piping occurs. In principle, a straightforward prediction is made here: since in such derivations the d-word ends up in the matrix

⁸ For a discussion of the question mark, see the remarks concerning (15a) above.

[Spec,CP]-position, we expect a less restricted range of possibilities for adjuncts with parasitic gaps. The prediction appears to be borne out, although testing it is complicated by two factors: (a) the status of long extraction in German in general, and (b) the question as to out of what type of infinitival complement the extraction is.

As for question (a), the fact of the matter is that in many, especially northern, German varieties long extraction is less than fully grammatical. This fact, needless to say, tends to obscure judgments on other effects. As for question (b), there are three types of infinitival complements that must be considered. The source could be a non-extraposed complement, an extraposed complement, or a verb raising complement.⁹ The first and the last of these are well-nigh impossible to distinguish, and since on the verb-raising variant the differences between matrix and embedded contexts disappear in all relevant respects, we do not expect to be able to test the relevant contrasts. In other words, we expect parasitic gaps to be licensed as in simplex clauses. This is indeed the case, as shown in (23).

- (23) a. der Mann, den_i sich der Hans_j [ohne PRO_j vorher ec_i
benachrichtigt zu haben] zu besuchen vorgenommen
hatte
- b. der Mann, den_i sich der Hans_j zu besuchen vorgenommen
hatte [ohne PRO_j vorher ec_i benachrichtigt zu haben]

The interesting case, therefore, is the one where extraction is from the extraposed infinitival complement. Here we have three variants because two variants are indistinguishable in the b- and c-examples, viz. matrix extraposed and embedded non-extraposed in (24b) and matrix extraposed and embedded extraposed in (24c).

- (24) a. das Buch, das_i der Lehrer_j keinem Schüler_k [ohne PRO_{j/??k}
ec_i zu lesen] empfehlen würde zurückzugeben
- b. das Buch, das_i der Lehrer_j keinem Schüler_k empfehlen
würde [ohne PRO_{*j/k} ec_i zu lesen] zurückzugeben
- c. das Buch, das_i der Lehrer_j keinem Schüler_k empfehlen
würde zurückzugeben [ohne PRO_{j/k} ec_i zu lesen]

The complications mentioned above do not warrant crystal clear judgments. Nevertheless, these examples do indicate that parasitic gaps can occur in a way that is compatible with the d-word being in

⁹ I argued in Van Riemsdijk (1984) that the CP-pied-piping examples are derived from non-extraposed non-verb-raising sources. Note, incidentally, that the process of verb raising alluded to here is the clause union type clustering of the verbs first described in Evers (1975), not the process of raising the verb to I or C which was later infelicitously given the same name.

the matrix [Spec,CP]-position.

4. Conclusion

The facts discussed above all point towards the empirical conclusion that the d-word in clausal pied-piping constructions like ? in German remains in the embedded [Spec,CP] throughout the derivation. It is tempting to speculate that this observation is related to the fact that d-words in relative clauses are rather less operator-like than question words. It is relevant, in this context, to note that in many languages relative clauses are formed by means of a resumptive pronoun strategy, where the pronouns behave like normal pronouns rather than variables.¹⁰ Another relevant fact, often cited in this connection is the observation that weak crossover effects are virtually absent in relative clauses.¹¹ Taken literally, this could mean that the d-word need not be in a position from where it could c-command some variable in the relative clause. All that is required is for there to be a correlative in the relative clause, where the correlative is either a special pronoun, like a d-pronoun, or a regular pronoun. In the former case, the pronoun moves into a position where it is accessible for the establishment of a predication relation with the head of the relative clause. This would require that the specifier of a phrase in the [Spec,CP] closest to the head is accessible to such a predication relation. The latter case may be more properly characterizable in terms of aboutness.

Such an approach would then give us an interesting handle on yet another contrast between relative clauses and questions. And here we return to the subject matter of clausal pied-piping. While it remains unclear why certain languages (like German) do and other languages (including Dutch and French) do not allow clausal pied-piping¹², we now have a tentative answer as to why German does allow clausal

¹⁰ See Van Riemsdijk (1989) for a discussion of Swiss German relative clauses in such terms as one example in point.

¹¹ See Chomsky (1982: footnote 11, p. 92) for an initial discussion of this observation. For a somewhat different and apparently contradictory interpretation, see Lasnik & Stowell (1991).

¹² This is the overall picture. Distinctions tend to be blurred to a certain extent when other relative pronouns such as Dutch hetwelk (a somewhat archaic form meaning "which") are taken into account. As Jan Koster and Jan-Wouter Zwart point out to me, pied-piped infinitivals headed by hetwelk are not as fully ungrammatical as their counterparts with simple d-words.

pied-piping in relative clauses but by and large does not in w-questions. This is illustrated in the following examples.¹³

(25) das Buch, das zu lesen er uns empfohlen hatte
the book which to read he us recommended had
'the book, to read which he had recommended to us'

(26) ?*Ich fragte ihn, was zu lesen er uns empfehlen würde
I asked him what to read he us recommend would
'I asked him what he would recommend that we read'
(*I asked him to read what he would recommend to us)

As the glosses show, the same contrast shows up in English to the extent that clausal pied-piping is highly marginal and stilted in the relative clause case but totally impossible in the corresponding wh-question. More generally, it would appear that pied-piping is always somewhat more liberal in relative clauses than in questions. This is not only true for the types of categories that permit pied-piping, but also for the relative strength of the requirement that the relative pronoun itself be in the first position (modulo a preposition) within the pied-piped constituent.

¹³ It should be mentioned that the contrast is not fully black and white for all speakers. I have not encountered any native speakers, however, for whom there is no contrast at all. Trissler (1991) basically treats pied-piped wh-questions as grammatical but remarks that they are less frequent (her footnote 9).

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