

Reconstruction in German relative clauses

In favor of the Matching Analysis

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In this paper I argue in favor of a Matching Analysis for German relative clauses. The Head Raising Analysis is shown to fail to account for parts of the reconstruction pattern in German, especially cases where only the external head is interpreted and the absence of Principle C effects. I propose a Matching Analysis with Vehicle Change and make consistent assumptions about possible deletion operations in relatives so that the entire pattern can be captured by one analysis which therefore proves superior to previous ones.¹

1. Introduction

Reconstruction effects are one of the hallmarks of A'-chains. To the extent that they are found in relativization, relatives can be assimilated to other types of A'-movement. Principle C effects have proved to be crucial for the syntax of relative clauses because they are largely absent, contrary to what is found in other types of A'-movement, cf. Munn (1994), Safir (1999), Citko (2001), Sauerland (2003). This absence has played an important role in the evaluation of various analyses of relative clauses and as we will see favors the Matching Analysis over the Head Raising Analysis. This article discusses German data that provide even stronger evidence for the superiority of the Matching Analysis. I will argue in favor of an implementation of the Matching Analysis that combines ingredients from both Citko (2001) and Sauerland (2003). In section 2, I will illustrate reconstruction effects in German relative clauses. Section 3 discusses a number of problems for the Head Raising Analysis and concludes that it is insufficient. Section 4 presents a Matching Analysis that avoids these problems.

2. Reconstruction in German restrictive relatives²

2.1. Data

The following examples illustrate reconstruction for Principle A,³ variable binding and idiom interpretation.⁴ The part of the external head that is reconstructed is enclosed by brackets,⁵ the reconstruction site is indicated by underline:

¹ I would like to thank the audience at the SAM2 workshop 2005 in Utrecht for helpful discussion and the reviewers whose corrections and suggestions have lead to substantial improvement of the paper. The research reported on here is presented in much more detail in chapter 2 of Salzmann (to appear).

² Non-restrictive relative clauses, which are normally thought not to allow reconstruction, are not addressed here and probably require a different analysis. See Heck (2005) for some interesting discussion.

- (1) a. das [Gerücht über sich_i], das Peter_i nicht ___ ertragen kann
 the rumor about self which Peter not bear can
 ‘the rumor about himself_i that Peter_i cannot bear’
 b. das [Foto von seiner_i Geliebten], das jeder Mann_i
 the picture of his beloved which every man
 in seiner Brieftasche ___ hat
 in his wallet has
 ‘the picture of his_i beloved that every man_i keeps in his wallet’
 c. die [Rede], die er ___ geschwungen hat
 the speech which he swung has
 ‘the speech he gave’

2.2. Implications of reconstruction

I follow recent work (Bhatt 2002) in assuming that reconstruction effects imply that there is a relative clause-internal representation of the external head. This directly rules out the traditional Head External Analysis where the external head is coindexed with the relative clause operator but is not explicitly represented inside the relative. The remaining options are the Head Raising Analysis (HRA, Bianchi 2004, de Vries 2002, Bhatt 2002) and the Matching Analysis (MA, Citko 2001, Sauerland 2003). The two options are schematically illustrated below:⁶

- (2) a. the [_{XP} [book₂] [_{X'} X^o [_{CP} [_{DP} Op/which t₂]₁ C^o [John likes t₁]]]]
 b. the [book]_i [_{CP} [Op/which book_i]₁ John likes t₁]

The HRA in (2a) follows Bhatt (2002). The external head moves together with the relative operator to Spec, CP. The head NP then subextracts and moves to the specifier of some functional head. In the MA in (2b), the first step is the same. Importantly, however, the external head is related to its relative clause-internal counterpart not by movement but by ellipsis. Importantly, there is a relative clause-internal representation of the external head in both derivations. Given standard assumptions about reconstruction in A'-chains, the Preference Principle (Chomsky 1995) applies and deletes the restriction from the operator position but retains it in the lower copy. The LF for (1a) then looks as follows (ignoring CP-external material):

- (3) [_{CP} [das ~~Gerücht über sich_i]₁ Peter_i nicht [x Gerücht über sich_i]₁
 which rumor about self Peter not rumor about self
 ertragen kann]
 bear can~~

³ Picture-NP Anaphors in German are subject to the Binding Theory and do not allow for logophoric use, cf. Kiss (2001). Furthermore, interference by an implicit coreferential PRO can be ruled out due to the noun *Gerücht* ‘rumor’, cf. Bianchi (1999: 116ff.), Salzmann (to appear). Consequently, the example in the text does provide evidence for reconstruction.

⁴ The idiomatic expression *eine Rede schwingen* lit. ‘swing a speech’ means ‘give a speech’.

⁵ As in other languages, only the external NP is reconstructed, cf. Kayne (1994), Bianchi (1999), Bhatt (2002), Salzmann (to appear).

⁶ Movement dependencies are indicated by number indices while coreference relations are indicated by means of letter indices. This is necessary to keep the HRA and the MA apart. PF-deleted constituents like the NP in Spec, CP of (2b) appear in outline. LF-deletion will be indicated by means of strike-through.

Reconstruction in relative clauses can thus successfully be handled in terms of the Copy Theory and is thus assimilated to reconstruction in other types of A'-movement. So far, both analyses make the same predictions. In the following section, I will discuss data where the HRA makes the wrong predictions.

3. Problems for the HRA

In this section, I will discuss two configurations where it seems that the lower relative clause-internal copy is *not* interpreted. As I will argue in some detail, this is unexpected under the HRA.⁷

3.1. Interpreting only the external head

There are configurations where the external head must not be reconstructed into the relative clause because it contains material that is only licensed relative clause-externally, i.e. in the matrix clause. The first type concerns idiom formation. In the following example, the external head contains an idiomatic NP that must be interpreted together with the matrix verb (Heck 2005: 14, ex. 53):

- (4) Er **schwingt** [**grosse Reden**], die keiner __ hören will.
 he swings grand speeches which no.one hear wants
 'He gives grand speeches no one wants to hear.'

Under the HRA, this is unexpected because reconstruction is the default. However, if the Preference Principle applied in this case, the idiomatic interpretation would no longer be available because the idiomatic NP would not be adjacent to the idiomatic verb. Such examples are therefore incorrectly predicted to be ungrammatical as the following LF shows, a fact Bhatt (2002: 47f. note 1) concedes:⁸

- (5)§Er **schwingt** [_{XP} [~~grosse Reden~~]₂, [_{CP} [die [~~grosse Reden~~]₂]₁
 he swings grand speeches which grand speeches
 keiner [_X **grosse Reden**]₁ hören will]].
 no.one grand speeches hear wants

The second type involves anaphor binding. In the following example, an anaphor inside the external head is bound by an R-expression in the matrix clause:

⁷ The HRA has also been subject to general criticism because it involves movement steps that are poorly motivated and violate well-established constraints of grammar. I will not discuss these aspects here, the reader is referred to Borsley (1997), Heck (2005) and Salzmann (to appear). see Bianchi (2000) and de Vries (2002) for replies and improvements of the HRA that avoid some of these problems.

⁸ I use the symbol "§" for a representation that predicts the wrong grammaticality, both when it wrongly predicts a sentence to be bad and when it incorrectly predicts it to be well-formed.

- (6) Schicken **Sie_i** uns ein [Foto von **sich_i**], das ___ beweist,
 send you us a picture of self which proves
 dass Sie ein wahrer Ferrari-Anhänger sind.
 that you a true Ferrari-fan are
 ‘Send us a picture of yourself which proves that you are a true Ferrari-fan.’
www.vodafone-racing.de/pda/f_fancontest.html

Since anaphors are subject to Principle A in German, reconstructing the external head into the relative clause would lead to a crash, the anaphor would no longer be in a local relationship with its antecedent and end up unbound. Again, the HRA makes the wrong prediction. One might object at this point that this configuration belongs to one of the cases where the Preference Principle can be overridden. It has been noticed for English that anaphors can also be interpreted in the final landing site of an A'-movement operation. In the following example, the anaphor can be bound by *John*:

- (7) **John_i** wondered [which picture of **himself_{i/j}**]₁ Bill_j saw ___₁.

Whatever the precise technical reason (e.g. LF-movement of the anaphor to its antecedent, cf. Munn 1994, Chomsky 1995), one could argue that the same mechanism prevents deletion of the anaphor in the upper copy in (6) so that the anaphor would be correctly bound after all. However, this argument does not go through because the German equivalent of (7) is ungrammatical (cf. Kiss 2001):

- (8) **Hans_i** fragt sich, [_{CP} [welches Foto von ***sich_i/ihm_i**]]₁
 John asks self which picture of self/him
 ich am besten ___₁ mag].
 I the best like
 ‘John_i was wondering which picture of himself_i/him_i I like best.’

Only a pronoun is acceptable here. This implies that the Preference Principle cannot be overridden in German in this configuration and that the grammaticality of (6) is most plausibly due to interpretation of the external head.^{9, 10}

⁹ Things are actually slightly more complex, at least under Bhatt's version of the HRA where the head noun moves from the relative operator phrase to the spec of some functional head, cf. (2a). If the higher position counts as CP-external and nominal (as Bhatt 2002 claims) binding an anaphor in the final landing site might perhaps be possible in German as well. However, since the nature of the head X is left unclear, this explanation remains spurious. Furthermore, it is not available under Bianchi's (2004) or de Vries' (2002) versions where the external head occupies a relative clause-internal position.

¹⁰ One of the reviewers questions the validity of the argument advanced here. He argues that reconstruction is in principle optional and is only forced if the dislocated phrase contains an element (e.g. an anaphor) that can only be interpreted in the reconstructed position. This is a very contested issue that would require much more discussion than space constraints allow. To a large extent it depends on the Principle C facts discussed in the next subsection. If Principle C effects are systematic in A'-movement, as claimed below, reconstruction must be obligatory because R-expressions have no special, e.g. anaphoric property, that would independently force reconstruction. Consequently, the Preference Principle applies by default. There are some well-defined cases like (7) where the Preference Principle can be overridden, but as discussed in the text this does not work for German. Ambiguous relative clauses with anaphors that can be bound both relative clause-internally and relative clause-externally (Kayne 1994: 87, ex. 8 and de Vries 2002: 82, ex. 26) therefore also do not provide any evidence that reconstruction is optional. Rather, as I will argue in section 4, deletion operations in relativization are subject to certain interpretive constraints that eventually lead to a pattern that is quite close to optionality.

3.2. Absence of Principle C effects

While reconstruction for anaphor binding was shown to be straightforward in relatives, there are no Principle C effects:

- (9) a. die [Nachforschungen über **Peter**_i], die
 the investigations about Peter which
er_i mir lieber __ verschwiegen hätte
 he me.DAT prefer conceal would.have
 ‘the investigations about Peter_i that he_i would have rather concealed from me’
- b. der [Artikel über **Peter**_i], auf den
 the article about Peter on which
er_i am meisten __ stolz ist.
 he the most proud is
 ‘the article about Peter_i that he_i is most proud of’

Some speakers are puzzled by such examples when first confronted with them. The coreference is more easy to get if the subject is slightly stressed. This arguably has to do with the somewhat exceptional anaphoric relation in this case, the antecedent is not prominent enough (Bianchi 2004). Once this is taken into account, the sentences are fine.¹¹

Again, this is unexpected under the HRA. If the Preference Principle applies, we expect the offending R-expression to be retained in the lower relative clause-internal copy thereby triggering a Principle C violation as the LF of (9b) shows:

- (10) § der [~~Artikel über **Peter**~~_i]₂, [_{CP} [auf [den ~~Artikel über **Peter**~~_i]₂]₁
 the article about Peter on which article about Peter
er_i am meisten [x Artikel über **Peter**_i]₁ stolz ist.
 he the most article about Peter proud is

One might object (Jan-Wouter Zwart, p.c.) that the grammaticality of these cases follows from the fact that the A'-moved phrase does not reconstruct because it takes wide-scope, as argued for certain types of *wh*-movement in Heycock (1995: 558) and Fox (1999):

- (11) a. [Which stories about Diana_i] did she_i most object to __?
 b. * [How many stories about Diana_i] is she_i likely to invent __?

In (11a), the use of *which* implies that the stories questioned are D-linked. Heycock (1995) and Fox (1999) assume that in those cases, the restriction of the *wh*-phrase is interpreted in the operator position. This accounts for the absence of Principle C effects. In (11b), however, a verb of creation is used, which implies that the stories do not exist yet. The amount quantifier *many* therefore must take narrow scope with respect to *likely*. Under the assumption that it is interpreted together with the restriction, the R-expression will end up in the c-command domain of the coreferential pronoun and trigger a Principle C effect. Such an

¹¹ Bianchi (2004) thus reaches a different conclusion than Bianchi (1999: 109ff.) where Principle C effects are taken to be the default in Italian. She observes that they are obviated when the coreferential subject pronoun is of the strong, i.e. overt type but not if a small *pro* is used. One of the anonymous reviewers has correctly pointed out that there is a certain tendency to use a focus particle (e.g. *selbst*, ‘self’) in German as well in these cases. Whether this type of focus has a general ameliorating effect on Principle C violations is a question I have to leave for further research.

approach predicts a relative clause based on a verb of creation to trigger Principle C effects, a prediction that seems to be borne out:

- (12) * die [vielen Geschichten über Diana]_i, die
 the many stories about Diana which
 sie_i wahrscheinlich wieder ___ erfindet
 she probably PRT invents
 ‘the many stories about Diana_i that she_i is likely to invent’

Relative clauses would thus be perfectly parallel to *wh*-movement. However, I think that this is not correct, for two reasons. The grammaticality of sentences like (11a) is far from well-established. While it is uncontroversial that (11a) is better than (11b), such sentences are still strongly degraded for many speakers. In fact, the ungrammaticality of a sentence like *Which picture of John does he like?* was used in Chomsky (1995) to motivate the Preference Principle. He argues that even though nothing in the restriction of the *wh*-phrase requires reconstruction (i.e. there is no bound variable and no anaphor), the fact that such sentences are ungrammatical shows that there must be reconstruction. The Preference Principle takes care of this.

The problem certainly is to some extent empirical. Most (naïve) speakers consider sentences where the R-expression is contained inside an argument as in (11a) ungrammatical. This is also the position in Munn (1994), Sauerland (2003), Citko (2001) and Bianchi (2004). Others claim that Principle C effects can be absent under certain conditions not necessarily having to do with scope, cf. Safir (1999), Fischer (2004). Safir (1999: 609, ex. 61) provides a representative list, but again, many of those examples are often rejected by native speakers. Importantly, while the status of Principle C effects in *wh*-movement is contested, everybody agrees that *wh*-movement contrasts with relativization, where Principle C effects are clearly weaker. The same kind of contrast is also found in German. The *wh*-movement equivalents of (9) are strongly ungrammatical for the speakers I have consulted:

- (13) a.* [Welche Nachforschungen über **Peter**_i]₁ hätte **er**_i
 which investigations about Peter would.have he
 dir lieber ___₁ verschwiegen?
 you.DAT rather concealed
 lit.: ‘Which investigations about Peter_i would he_i have preferred to conceal from
 you?’
- b.*[Auf welche Artikel über **Peter**_i]₁ ist **er**_i am meisten ___₁ stolz?
 on which articles about Peter is he the most proud
 lit.: ‘Which articles about Peter_i is he_i most proud of?’

I will take this contrast to be meaningful and will henceforth assume that there are Principle C effects in *wh*-movement but not in relativization.^{12, 13}

¹² Interestingly, Heycock (1995: 561) and Fox (1999: 190, note 55) assume that (11a) is actually a case of late merger, i.e. *about Diana* is interpreted as an adjunct that can be merged after *wh*-movement has taken place. This seems quite counterintuitive. Examples where the R-expression is contained in bona fide adjuncts are much better as the following contrast shows (from Safir 1999: 589, note 1):

i) * [Which investigation of Nixon_i]₁ did he_i resent ___₁?
 ii) [Which investigation near Nixon’s_i house]₁ did he_i resent ___₁?

What about the narrow-scope cases in (11b) and (12)? Most likely, they are independently ruled out because such expressions have been argued to contain an implicit coreferential PRO, as admitted in Heycock (1995: 558, note 13) and Fox (1999: 167, note 24).

(14) * [How many PRO_i stories about Diana_i] is she_i likely to invent ___?

The presence of an implicit PRO inside the moved phrase is sufficient to trigger a Principle C violation, irrespective of whether there is reconstruction or not. The same holds for the relative in (12), where there is a PRO inside the external head.¹⁴ Such cases are therefore irrelevant and do not provide any evidence for reconstruction for Principle C.¹⁵

The upshot of this discussion is that the absence of Principle C effects in German relatives is real and remains unexplained under the HRA.

4. A Matching Analysis

In this section, I will propose a new implementation of the Matching Analysis which not only captures the entire reconstruction pattern in German relatives but also proves superior to previous approaches.

4.1. Basic assumptions

The basic derivation is as depicted in (2b). The relative operator moves together with an occurrence of the external head NP to Spec, CP where that NP is PF-deleted under identity with the external head:¹⁶

Since many speakers find (ii) much better than (11a), it seems preferable to analyze *about Diana* as an argument, which cannot be merged late and invariably leads to a Principle C effect. See Heycock (1995: 557, note 13) and Fischer (2004: 183ff.) for more discussion of the argument-adjunct asymmetry.

¹³ Henderson (2005) comes to the opposite conclusion for English and argues that Principle C effects are not a relevant diagnostic. He adopts a HRA across the board and argues that the MA is unnecessary. The Principle C pattern, however, is essentially left unaccounted for.

¹⁴ As argued in Salzmänn (to appear) reconstruction is arguably necessary in both cases to control the PRO. But strictly speaking, the ungrammaticality would still be due to the PRO, not due to the coreferential pronoun.

¹⁵ As pointed out in Heycock (1995: 558, note 15), the PRO-problem can be circumvented by embedding the verb of creation more deeply. But as argued in Salzmänn (to appear) such examples are still independently degraded due to constituency problems so that they do not provide evidence for reconstruction.

¹⁶ One of the reviewers asked what the MA looks like in possessive relativization and adverbial relativization as in the following two examples:

- i) The teacher whose book I read.
- ii) The city where I live.

It is certainly less obvious whether there is deletion at all in these cases. As for possessor relativization there are strong reasons to assume that there is. The following example from German shows that reconstruction is possible in possessive relativization implying that there has to be a representation of the external head inside the relative clause:

- iii) Der [Mörder **seiner**_i Tochter], [dessen Motive]_i **kein** Vater_i ____i
the murderer his.GEN daughter whose motives no father
versteht, ist gewöhnlich ein Psychopat.
understands is usually a psychopath
lit.: 'The murderer of his_i daughter whose motives no father_i understands is usually a psychopath.'

- (15) das [**Buch**_j] [_{CP} [das ~~Buch~~_j]₁ er ___₁ mag]
 the book which book he likes
 ‘the book which he likes’

As for the LF, the Preference Principle applies by default, leading to unrestricted quantification:

- (16) das [**Buch**_j] [_{CP} [das **Buch**_j]₁ er [x **Buch**]₁ mag]
 the book which book he book likes

In addition, the external head or the lower relative clause-internal copy are (exceptionally) deleted if they contain an element with a *positive licensing requirement* that is not licensed in that particular position. By elements with a positive licensing requirement I mean elements like anaphors, bound pronouns and idiom chunks which depend on other elements to be licensed. Importantly, deletion is subject to recoverability. The following subsection illustrates the two cases of exceptional deletion.

4.2. Reconstruction and non-reconstruction

Let’s first discuss the cases in (1) where the external head has to be reconstructed into the relative clause. These examples have one thing in common: their external head contains an element with a positive licensing requirement which, however, is not licensed in that position. The assumptions introduced in the previous subsection derive the correct result: the Preference Principle retains the idiomatic NP only in the lower copy adjacent to the idiomatic verb. Additionally, the external head is deleted because the idiomatic NP is not licensed there. The following LF illustrates this for the idiom example in (1c):

- (17) die [~~Rede~~_j], [_{CP} [die ~~Rede~~_j]₁ er [x Rede]₁ geschwungen hat]
 the speech which speech he speech swung has

Deletion of the external head is allowed because its content is recoverable from the lower relative clause-internal copy. The same applies to the cases with variable binding and anaphor binding in (1a–b).¹⁷

The only way of getting a copy of the external head inside the relative is to assume an abstract analysis of the possessive relative pronoun (cf. also Bhatt 2002). It is decomposed into an empty operator plus the external head: [OP + murderer of his daughter]-GEN. The entire LF-structure of the relative clause then looks as follows:

- iv) Der [Mörder **seiner**_i Tochter], [wh [~~Mörder **seiner**_i Tochter~~]-GEN-Motive]₁ **kein Vater**_i
 the murderer his.GEN daughter whose motives his.GEN daughter motives no father
 [x [Mörder **seiner**_i Tochter]-GEN-Motive]₁ versteht, ist gewöhnlich ein Psychopat.
 murderer his.GEN daughter motives understands is usually a psychopath
 lit.: ‘The murderer of his_i daughter whose motives no father_i understands is usually a psychopath.’

The relative pronoun is thus simply the spell-out of the abstract structure. With adverbial relatives, examples with reconstruction are difficult to find so that it is unclear whether a relative clause-internal representation of the external head and an ellipsis operation are required. I have not been able to construct fully convincing examples. But should there be such cases, one would have to resort to abstract analyses of the adverbs. In ii) above, *where* would then be the spell-out of [in Op city].

¹⁷ Scope reconstruction and the low construal of superlative adjectives (Bhatt 2002), which are not discussed here, probably require extra assumptions in this system. The Preference Principle will lead to scope reconstruction and the low construal of adjectives. At the same time, the scopal element/the adjective is also present in the external head. Importantly, these scopal elements are not subject to a “positive licensing requirement”, both are in principle licensed inside the external head because wide-scope and the high-reading of

The converse case is represented by the examples in (4) and (6) where only the external head may be interpreted. Here, the problematic copy is the lower relative clause-internal one as it contains an element with a positive licensing requirement that is not licensed there: the idiomatic NP is not adjacent to the idiomatic verb and the anaphor is too distant from its antecedent. This is where the assumptions about deletion become relevant again: the lower copy is exceptionally deleted while the external head is retained. Nothing forces its deletion in this case. This derives the correct result as the following LF for the idiom case in (4) shows:

- (18) Er **schwingt [grosse Reden]_j**, [_{CP} [die [~~grosse Reden~~]_j]_i keiner
 he swings grand speeches which grand speeches no.one
 [x ~~grosse Reden~~]_i hören will].
 grand speeches hear wants

The content of the deleted copy can be recovered from the external head.¹⁸ Since the external head is retained, it can form part of an idiom with the matrix verb.

4.3. Absence of Principle C effects

As for the absence of Principle C, I would like to adopt an idea by Sauerland (2003): he argues that since a MA involves an ellipsis operation between the external head and its representation in Spec, CP we can expect specific properties of ellipsis to surface. The crucial property in the current context is that ellipsis allows certain mismatches between antecedent and the elided constituent. For instance, an R-expression can correspond to a personal pronoun. Consider the following pair:

- (19) a. *John likes **Mary_i**, and she_i does, too.
 b. John likes **Mary_i**, and she_i knows that I do, too

In both cases, the antecedent *like Mary* is the same, so that both sentences are expected to be ungrammatical, contrary to fact. Embedding should not affect Principle C effects. The contrast follows, however, if the ellipsis site contains a personal pronoun instead since Principle B is sensitive to embedding:

- (20) a. *John likes **Mary_i**, and she_i does (*like her_i*), too.
 b. John likes **Mary_i**, and she_i knows that I do (*like her_i*), too

(20a) is still out due to Principle B. (20b), however, is impeccable. Fiengo & May (1994) handle this mismatch by a mechanism they term “Vehicle Change”, which can turn an R-expression into a personal pronoun in an ellipsis site. Importantly, this very process can be used to explain the absence of Principle C effects: an R-expression inside the external head

the adjective are possible. Under the assumptions made so far, it is not possible to exceptionally delete the external head. As a consequence, both copies are in principle retained. It is clear, however, that such an LF cannot be readily interpreted since it expresses contradictory scope relations. I will assume for these cases that either copy can be privileged to yield the respective readings. Importantly, this option is limited to scopal elements because it yields a difference in interpretation. See Salzmann (to appear) for more detailed discussion.

¹⁸ Recoverability thus works both ways. My proposal is very similar to the one in Citko (2001) in that deletion can exceptionally affect an occurrence of a given NP that is not part of the same chain. If the external head does not contain an element with a positive licensing requirement it is retained together with the lower CP-internal copy.

corresponds to a pronoun in the occurrence in Spec, CP.¹⁹ This is illustrated in the following LF of (9b):

- (21) der [Artikel über **Peter**_i]_j, [_{CP} [auf [den Artikel über ~~ihn~~_i]_j]_l
 the article about Peter on which article about him
er_i am meisten [x Artikel über **ihn**_i]_l stolz ist.
 he the most article about him proud is

This relative clause is correctly predicted to be equivalent to a simple sentence with a coreferential pronoun inside the picture NP because – as in English – anaphors and pronouns are in free variation inside picture NPs, cf. Kiss (2001).²⁰

- (22) **Er**_i ist am meisten stolz auf diesen Artikel über **ihn**_i.
 he is the most proud on this article about him
 ‘He_i is most proud of this article about him_i.’

4.4. Evidence for Vehicle Change

While Vehicle Change derives the desired result, the absence of Principle C effects could still have a different source. What is needed is explicit evidence that there is reconstruction in these cases and that the R-expression really corresponds to a pronoun. I will provide such evidence in this subsection.

¹⁹ As a matter of fact, Sauerland (2003) entertains two types of Vehicle Change: Next to the one described in the text, Vehicle Change can also turn the entire external head into an NP-anaphor *one*. In Salzmann (to appear) I provide evidence that this is not only unnecessary but also undesirable. I will present one of those arguments in the next subsection.

²⁰ One of the reviewers asks what prevents Vehicle-changing the entire external head into a pronoun. If this were possible, the following sentence would be incorrectly predicted to be grammatical:

- i) *Der Lehrer_i, **dem**_i **er**_i den Studenten befahl __ zu gehorchen
 the teacher who.DAT he the students told __ to obey
 ‘The teacher who_i he_i told the students to obey.’

If Vehicle Change applied to *der Lehrer* ‘the teacher’ we would get the following structure:

- ii) Der Lehrer_i, [dem **ihn**]_i **er**_i den Studenten befahl [x **ihn**]_i zu gehorchen
 the teacher who.DAT he.DAT he the students told he.DAT to obey
 ‘The teacher who_i he_i told the students to obey.’

The sentence should therefore be just as grammatical as the following base sentence:

- iii) Er befahl den Studenten, ihm zu gehorchen.
 He told the students he.DAT to obey
 ‘He told the students to obey him.’

It may thus seem that Vehicle Change derives the wrong result. Fortunately, this is not the case. Vehicle Change cannot apply in this case because it always targets DPs and changes them into personal pronouns. In the case at hand, however, the external head *Lehrer* ‘teacher’ is just an NP – the ellipsis operation does not involve the external determiner. As a consequence, the structure of this example looks as follows and correctly predicts its ungrammaticality:

- iv) *Der Lehrer_i, [dem **Lehrer**]_i **er**_i den Studenten befahl [x **Lehrer**]_i zu gehorchen
 the teacher who.DAT teacher he the students told teacher to obey
 ‘The teacher who_i he_i told the students to obey.’

4.4.1. Lack of correlation

The first part of the evidence for Vehicle Change comes from interaction with variable binding and scope reconstruction. Notice first that Principle C effects are absent in English relatives as well, cf. Munn (1994), Sauerland (2003), Safir (1999) and Citko (2001):

(23) The [relative of **John**_i] that **he**_i likes __ lives far away.

Crucially, however, Principle C effects re-emerge if reconstruction is forced for variable binding or scope reconstruction, cf. Fox (1999) and Sauerland (2003: 213ff.):²¹

(24) a. *The [letters by **John**_i to her_j] that **he**_i told every girl_j to burn __ were published.
 b. *I visited all the [relatives of **Mary**'s_i] that **she**_i said there are __ left.

This has been taken as evidence in favor of the HRA: once reconstruction is necessary, we get a full copy of the external head in the c-command domain of the coreferential pronoun and a Principle C effect ensues. However, this is not the case in German (first observed in Heck 2005) as the following example shows:

(25) das [Buch von **Peter**_i über *ihr*_j Leben],
 the book of Peter about her life
 das **er**_i *jeder Schauspielerin*_j __ sandte
 which he every.DAT actress sent
 lit.: 'the book by Peter_i about her_j life that he_i sent every actress_j'

This argues against the HRA and in favor of a MA with Vehicle Change:

(26) das [~~Buch von **Peter**_i über *ihr*_j Leben~~]_j,
 the book of Peter about her life
 [_{CP} [das [~~Buch von **ihm**_i über *ihr*_j Leben~~]_i] **er**_i
 which book of him about her Life he
*jeder Schauspielerin*_j [x Buch von **ihm**_i über *ihr*_j Leben]_i] sandte
 every actress book of him about her life sent

Again, the sentence corresponds to the following base sentence:

(27) **Er**_i sandte *jeder Schauspielerin* [ein Buch von **ihm**_i über *ihr* Leben].
 he sent every actress a book by him about her life
 'He_i sent every actress a book by him_i about her life.'

4.4.2. Embedding effects with semi-idiomatic expressions

The previous section has shown that an R-expression inside the external head corresponds to something that behaves differently with respect to binding theory. The following facts will show very clearly that it must be a pronoun.

There are certain semi-idiomatic expressions where there seem to be Principle C effects:

²¹ Safir (1999: 613, note 22) questions the correlation. In Salzmann (to appear) it is shown that many of the English examples used in the discussion are unacceptable for independent reasons. Taken together, this suggests that English is not so different from German and that a MA might work as well.

- (28)* der [Streit über **Peter_i**], den **er_i** — vom Zaun gebrochen hat
 the fight about Peter which he off.the fence broken has
 lit.: ‘the fight about Peter_i; that he_i started’

In simple sentences, only an anaphor is possible inside those picture NPs:

- (29) **Er_i** hat einen [Streit über ***ihn_i/sich_i**] vom Zaun gebrochen].
 he has a fight about him/self off.the fence broken
 ‘He_i started a fight about *him_i/himself_i.’

This is remarkable given that normally both pronouns and anaphors are possible in picture NPs in German, cf. Kiss (2001) (as in English, cf. Reinhart & Reuland 1993:661):

- (30) a. **Peter_i** sah [ein Foto von **ihn_i/sich_i**] in der Zeitung.
 Peter saw a picture of him/self in the newspaper
 ‘Peter_i sah a picture of him_i/himself_i in the newspaper.’
 b. **Peter_i** findet [dieses Gerücht über **ihn_i/sich_i**] ungerecht.
 Peter finds this rumor about him/himself unfair
 ‘Peter_i finds this rumor about him_i/himself_i unfair.’

The asymmetry between (30) and (29) has been explained by the postulation of an implicit PRO in the semi-idiomatic cases (cf. e.g. Reinhart & Reuland 1993):

- (31) **Er_i** hat einen [**PRO_i** Streit über ***ihn_i/sich_i**] vom Zaun gebrochen].
 he has a fight about him/self off.the fence broken
 ‘He_i started a fight about *him_i/himself_i.’

As a consequence, (28) will also contain an implicit PRO:

- (32) *der [**PRO_i** Streit über **Peter_i**], den **er_i** — vom Zaun gebrochen hat
 the fight about Peter which he off.the fence broken has
 lit.: ‘the fight about Peter_i; that he_i started’

Due to the PRO, Vehicle Change, which turns Peter into him, cannot save the sentence. Even though there is no Principle C violation, the sentence is still out for Principle B as the following LF shows:²²

- (33) * der [~~PRO_i Streit über Maria_i]~~_j, [_{CP} [den [~~PRO_i Streit über sie_i]~~_j]₁ **sie_i**
 the fight about Mary which fight about her she
 [x PRO_i Streit über **sie_i]**₁ vom Zaun gebrochen hat
 fight about her off.the fence broken has

If the pronoun in (31) is more deeply embedded, the Principle B violation disappears:

- (34) **Er_i** hat einen [**PRO_i** Streit über Marias Kritik an **ihn_i]** vom Zaun gebrochen.
 he has a fight about Mary’s criticism of him off.the fence broken
 ‘He started a fight about Mary’s criticism of him.’

²² I assume that both the external head and the restriction of the higher copy inside the relative clause are deleted because of the PRO. The PRO needs to be controlled and is therefore only licensed in the c-command domain of the coreferential subject. It also belongs to the class of elements with a positive licensing requirement.

Importantly, the same happens with R-expressions inside the external head:

- (35) der [**PRO**_i Streit über Marias Kritik an **Peter**_i], den **er**_i ___ vom Zaun brach
 the fight about Mary's criticism of Peter which he off.the fence broke
 lit.: 'the fight about Mary's criticism of Peter_i that he_i started'

In other words, the R-expression behaves like a pronoun, and this is exactly what Vehicle Change predicts. The following LF shows this for (35):

- (36) der [~~PRO_i Streit über Marias Kritik an Peter_i]~~_j, [_{CP} [den [~~PRO_i Streit über~~
 the fight about Mary's criticism of Peter which fight about
~~Marias Kritik an ihm~~]_j]_l **er**_i [_X PRO_i Streit über Marias Kritik an **ihm**_i]_l
 Mary's criticism of him he fight about Mary's criticism of him
 vom Zaun gebrochen hat
 off.the fence broken has

Consequently, (35) is good because (34) is, and (32) is ungrammatical because (31) (the version with the pronoun) is bad. Importantly, other types of A'-movement do not show this embedding effect, coreference between *Peter* and *er* remains impossible:

- (37) * [Einen Streit über Marias Kritik an **Peter**_i]_l hat **er**_i ____l vom Zaun gebrochen.
 a fight about Mary's criticism of Peter has he off.the fence broken
 lit.: 'A fight about Mary's criticism of Peter_i, he_i started.'

There is no ellipsis involved in topicalization and consequently no Vehicle Change that could alleviate the Principle C effect.

4.5. Previous approaches

In this final subsection, I will very briefly argue against previous analyses; cf. Salzmann (to appear) for more detailed discussion. It is clear that an unmodified version of the HRA is inadequate because it fails to capture cases where the external head is interpreted (4, 6) and the absence of Principle C effects (9, 25) and the embedding effect (32 vs. 35).

Safir (1999) assumes a HRA but additionally applies Vehicle Change to account for the absence of Principle C effects. However, Vehicle Change is unconstrained in his approach and applies to all lower copies of A'-movement, thereby incorrectly predicting alleviation of Principle C effects across the board. Examples like (13) therefore remain unaccounted for. Furthermore, cases of non-reconstruction like (4) and (6) cannot be handled.

Bhatt (2002) and Sauerland (2003) apply the HRA whenever there is reconstruction. In cases without reconstruction they resort to a version of the MA similar to the one proposed here. This captures a large part of the data, but crucially fails to account for (25) where the HRA would apply and predict Principle C effects, contrary to fact. Furthermore, it is not so clear what happens in examples like (4) or (6). They would presumably apply the MA in that case (see the cryptic remarks in Bhatt 2002: 47f. note 1), but it is not clear what happens to the lower relative clause-internal copy. In addition, their approach is less economical than the one advanced here since two analyses are needed instead of just one.

Munn (1994) and Citko (2001) present a different version of the MA where the lower relative clause-internal copy can be deleted if it does not contain material that has to be

interpreted there. This accounts for the absence of Principle C effects and also handles the cases of non-reconstruction in (4) and (6). Crucially, however, it fails to explain (25) where the lower relative clause-internal copy has to be retained for variable binding. It incorrectly predicts a Principle C effect. In addition, the embedding effect (32 vs. 35) remains unaccounted for.

I conclude from this that the version of the MA proposed here is not only descriptively more adequate but also more economical than previous approaches in that it handles the entire reconstruction pattern in German relatives with just one type of analysis.

5. Conclusion

I have shown that the reconstruction pattern in German relatives cannot be accounted for by the HRA alone because there are cases where it incorrectly predicts reconstruction, as in (4), (6) and (9). I have proposed a Matching Analysis that handles both cases of reconstruction and non-reconstruction. Cases where only the external head is interpreted follow from specific assumptions about deletion in relative clauses. The absence of Principle C effects is a consequence of Vehicle Change that relates R-expressions to personal pronouns. The fact that Principle C effects do not re-emerge if reconstruction is independently required (25) and the embedding effect with semi-idiomatic expressions (32 vs. 35) provides direct evidence for Vehicle Change. The analysis proposed here thus captures the entire reconstruction pattern and is therefore superior to previous approaches.

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