8

Yet Another HPSG-Analysis for Free Relative Clauses in German

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8.1 Basic properties of free relatives in German

Free relatives in German basically behave as NPs. As is first noticed by Groos and Riemsdijk (1981), an interesting property of free relatives that they do not share with ordinary relative clauses is that the relative pronouns are sensitive to matrix case requirements as well as to subordinate ones.

(1) a. Wer schwach ist, muß klug sein.
who-NOM weak is must clever be-NOM[1]
'Whoever is weak is clever.'

b. *Wer klug ist, vertraue ich immer.
who-NOM clever is trust-DAT I ever
intended: 'I trust whoever is clever.'

c. Was du mir empfiehlst, macht einen guten Eindruck.
what-ACC you me recommend makes-NOM a good impression
'What you recommend me makes a good impression.'

Glancing at (1a,b), it appears that the free relative pronoun must satisfy the matrix and subordinate case requirements at the same time: in well-formed (1a), both the matrix clause and the embedded clause

[1]The case specification on the gloss of the verb here indicates the verb's case requirement on the NP realizing as the free relative clause. I use this notation throughout this paper.

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require a nominative NP, whereas in ill-formed (1b), the matrix requirement (dative) conflicts with the subordinate one (nominative). However, (1c) suggests that things are slightly more complex. This sentence is fully acceptable even though the two case requirements (i.e. nominative and accusative) are different. It should be noted here that the neuter free relative pronoun *was* has the same morphological form in the nominative and accusative. The correct generalization, then, seems to be that the two case requirements must be identical in terms of the morphological forms of the pronouns, rather than in terms of their exact values. This phenomenon is sometimes referred to as the 'matching effect' of free relatives.

This indeterminate nature of *was*, whereby it appears to satisfy conflicting two requirements at the same time, has been claimed by some authors (Bayer 1996, Bayer and Johnson 1995, Dalrymple and Kaplan 2000 and Ingria 1990) to pose a problem for a treatment of agreement that is solely based on unification: in the standard unification-based agreement mechanisms, where strict atomic identity is always required, if two conflicting values are imposed on a single item, the result would be a feature conflict, wrongly ruling out well-formed sentences like (1c).

However, closer look at the empirical facts reveals that the underlying assumption of these authors that the two requirements are simultaneously satisfied by the free relative pronoun cannot be maintained after all. Free relatives with the masculine free relative pronoun *wer*, when they appear in non-sentence-initial positions (i.e. either in the Mittelfeld or extraposed), no longer obey the above case-form identity requirement. Such deviations are allowed under the condition that the case requirement from the matrix clause is less oblique than that from the embedded clause, as is displayed by the contrast of (2a,b):[2]

[2]According to Müller (1999b), non-matching free relatives are also possible in the sentence-initial position:

(i) Wen der Streße des Tages häufig nicht losläßt, sollte eine
whom-ACC the stress the day-GEN often not leave should a
Entspannungsmethode erlernen, zum Beispiel Autogenews Training.
relaxation method learn for example self hypnosis training

'Those who frequently fall prey to daily stress should make themselves familiar with a relaxation method like self hypnosis.' (Müller 1999b:11)

My informants systematically rejected examples of such pattern. I am not sure why speakers vary in their judgements in such examples.

(2) a. Ich will, wem ich immer vertraue, um Rat
I will whom-DAT I ever trust for advice
bitten.
ask-ACC
'I will for advice ask whoever I always trust.'

b. * Ich vertraue, wen du mir empfiehlst, immer.
I trust-DAT whom-ACC you me recommend ever
intended: 'I always trust whoever you recommend me.'

The data in (2) suggests that an account which simply presupposes that matching effect is ubiquitous is inadequate. Hence, we need a more elaborated system to account for such deviation.

Another interesting property of free relatives is that, when they appear in the sentence-initial position, they often require coreferential demonstrative pronouns to immediately follow them. This is traditionally referred to as the 'left dislocation construction'.

(3) a. Wer klug ist, dem vertraue ich.
who-NOM clever is that-DAT trust I
'I trust whoever is clever.'

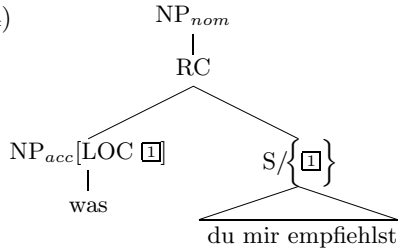
b. Was du mir empfiehlst, das macht einen
what-ACC you me recommend that-NOM makes a
guten Eindruck.
good impression
'What you recommend me makes a good impression.'

This construction is somewhat anomalous as regards its sentence structure. German is often characterized as a verb-second language. As this term suggests, typical finite declarative clauses in German have one constituent in the sentence-initial position immediately followed by the finite verb. Sentences like those in (3) are exceptional in that they apparently have two constituents in the sentence-initial position. Furthermore, in this construction, the free relative pronoun is completely insensitive to the matrix case requirement, which is instead satisfied by the demonstrative pronoun. Thus, the left dislocation position can be considered as a non-argument position. Notice that ill-formed case requirement patterns in the absence of demonstrative pronouns as in (1b) are perfectly acceptable with the help of demonstrative pronouns as in (3a). No previous work on German free relatives has offered an explicit analysis of this construction. In my analysis, this phenomenon will be treated by introducing lexical entries for demonstrative pronouns specifically designed to be used in this construction.

8.2 The internal structure of free relatives

The first explicit HPSG-analysis of German free relative clauses was proposed in Müller (1997). Müller (1999b), which is an elaborated version of Müller (1997), assumes a unary projection schema[3] which projects an RC (relative clause) to an NP. The rough structure of the free relative clause in (1c) in Müller's analysis is shown in (4).

(4)



According to Müller, the reason for assuming such structure is to account for the behavior of free relatives which are "partly like NPs . . . and partly like sentences". In this structure, however, there is no direct relation between the free relative pronoun which is subcategorized by the embedded verb and the projected NP which is subcategorized by the matrix verb. In order to account for the so-called matching effect, he introduces a relational constraint, which, roughly stated, ensures that the case required from the matrix clause and the case required from the embedded clause are identical with respect to their 'morphological case'. (See Müller (1999b) for more detail.) The problem of his analysis is that the structure of unary projection and the relational constraint for maintaining the matching effect are somewhat stipulative.

The claim of this paper is that the matching and non-matching behaviors of free relatives observed in the previous section can be immediately accounted for by simply assuming the free relative pronoun to be the head of the projected NP.[4] By elaborating the lexical entries

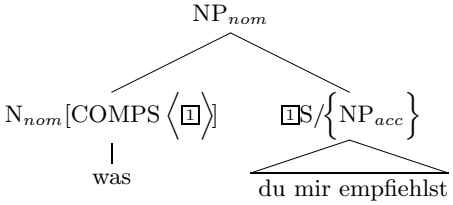
[3]The use of a unary schema for the analysis of free relatives was originally proposed by Koch (1996).

[4]Such a view dates back at least to Bresnan and Grimshaw's (1978) analysis for English free relatives and is sometimes called the 'head analysis' for free relatives. More recently, Kim (2001) adopts the head analysis for English free relatives in the framework of HPSG in which free relatives are assigned a head-modifier structure. My analysis differs from Kim's in that it assumes a head-complement structure rather than a head-modifier structure. The advantage of assuming a head-complement structure is that the structure of the free relative clause can be generated by the general head-complement rule without adding any new structural mechanism to the grammar. If one assumes a head-modifier structure, on the other hand, it seems that one has to introduce a special kind of head-modifier rule with

for this type of pronouns, it is indeed possible to give a suitable account of the entire phenomena within the limitations of the standard assumptions of HPSG.

I propose that the structure of the free relative clause in (1c) is the one shown in (5); the lexical entry for *was* to be used in this tree is sketched in (6).

(5)



(6)

$$\left[\begin{array}{l}\text{LOC}\left[\begin{array}{l}\text{CAT}\left[\begin{array}{l}\text{HEAD}\ \begin{bmatrix}\textit{noun}\\ \text{FR}\ +\\ \text{CASE}\ \text{nom}\vee\text{acc}\vee\text{none}\end{bmatrix}\\ \text{VAL}\,|\,\text{COMPS}\ \left\langle \text{S}\left[\begin{array}{ll}\text{INV} & -\\ \text{TOPIC} & \boxed{5}\{-\}\\ \text{SLASH} & \left\{\begin{array}{l}\boxed{2}\text{NP}_{\boxed{1}}\\ [\text{CASE nom}\vee\text{acc}]\end{array}\right\}\end{array}\right]:\boxed{3}\right\rangle\end{array}\right]\\ \text{CONT}\left[\begin{array}{l}\text{INDEX}\ \boxed{1}\begin{bmatrix}\text{PER} & 3\\ \text{NUM} & \text{sg}\\ \text{GEN} & \text{neut}\end{bmatrix}\\ \text{RESTR}\ \left\{\boxed{3}\right\}\end{array}\right]\end{array}\right]\\ \text{NONLOC}\,|\,\text{TO-BIND}\ \begin{bmatrix}\text{SLASH} & \left\{\boxed{2}\right\}\\ \text{TOPIC} & \boxed{5}\end{bmatrix}\end{array}\right]$$

The NP in (5) is licensed by the standard head-complement rule which discharges all the complements flatly at once as shown in (7).

(7) $[\textit{phrase}] \rightarrow \text{H}[\textit{word}],\ \text{C}^*$

That is, the free relative pronoun takes an S/NP as a complement and projects up to an NP. The merit of assuming this structure is that all the necessary constraints for maintaining the matching effect can be specified in the lexical entry for the free relative pronoun (6). The case requirement from the matrix clause is specified as the CASE value of this pronoun as a consequence of its being the head of the projected

enriched information about the modifier and modifiee which is entirely limited in use to the free relative construction.

NP. The case requirement from the embedded clause is specified as the possible CASE value of the unrealized NP on the SLASH value of the complement S. Hence, ignoring the disjunctively added value 'none' of the HEAD|CASE feature, whose purpose will be made clear below, the above entry ensures that the case requirement from either clause can be either nominative or accusative, exactly corresponding to the empirical observation.[5]

As for semantics, the CONTENT value 3 of the embedded clause is picked up and restored in the RESTR set of the free relative pronoun; the free relative pronoun itself has a vacuous content. The index 1 of the NP required from the embedded clause is identified with that of the free relative pronoun itself. Consequently, it is correctly identified with the index of the projected NP since the CONTENT value of the mother is constrained to be identical to that of the head daughter in a head-complement structure by the Semantic Principle.

The complement S is specified as [INV –], since all subordinate clauses in German are verb-final. Free relative pronouns are further specified in the lexicon as having a head feature [FR +], which is passed up to the projected NP by virtue of the Head Feature Principle. It is used in the treatment of the left dislocation construction to distinguish free relatives from other NPs: see the discussion in section 8.3.3.

8.3 Sentence-initial free relatives

In this section I will show how the present proposal can be extended to account for the left dislocation construction and the matching and non-matching contrast of masculine free relative pronoun *wer*. But before proceeding to the specific analyses, I must first clarify the assumptions I have implicitly been making about the sentence structure of German and extend it a bit to satisfy the needs for a precise formulation of such phenomena.

8.3.1 Extraction and the TOPIC constraints

Fronting of constituents to the Vorfeld (sentence-initial position) is considered to be nonlocal. Hence, it is generally treated by the SLASH mechanism in HPSG.[6] I follow this convention.

[5] In the proposed analysis, no theoretical object is postulated that carries the information of the 'case form' of a certain nominal item. Instead, it attains the 'matching effect' by a combination of disjunctive stipulations in the lexicon. An apparent inadequacy of this strategy is that it does not directly capture the generalization in a theoretically consistent way, while its substantial advantage is its relative mechanical simplicity.

[6] This was originally proposed in the GPSG framework by Uszkoreit (1987).

Generally, any constituent can be fronted. However, certain elements sometimes must or must not appear in the Vorfeld. Here, I resolve this issue by introducing a new nonlocal feature[7] called TOPIC whose value is a set which only permits + or – as its members. The basic idea is that phrases specified as [TOPIC {+}] obligatorily appear in the Vorfeld while phrases specified as [TOPIC {–}] never appear in the Vorfeld. Just like other nonlocal features, this feature is inherited from daughter to mother unless the head explicitly specifies to bind off the inheritance. One merit of set values against simpler +/– binary values is that set notation allows the possibility of indicating phrases that are optionally topicalized; the specification [TOPIC {}] is quite suitable for such a purpose. I assume that the vast majority of lexical items are specified as [TOPIC {}] to ensure their optional appearance in the Vorfeld. Another merit is that they fit well with the standard mechanism of nonlocal inheritance.

The V2 head-filler ID rule is formulated as follows so that it can ensure the TOPIC constraints intuitively stated above.[8]

(8)

$$\mathrm{F}\begin{bmatrix}\mathrm{LOC} & \boxed{1} \\ \mathrm{NONLOC}\,|\,\mathrm{INHER}\,|\,\mathrm{TOPIC} & \boxed{2}\,set(+)\end{bmatrix},$$

$$[phrase] \rightarrow \mathrm{H}\left[\begin{array}{ll}\mathrm{LOC}\,|\,\mathrm{CAT} & \left[\begin{array}{ll}\mathrm{HEAD} & \left[\begin{array}{ll} verb & \\ \mathrm{VFORM} & \mathrm{fin} \\ \mathrm{INV} & + \end{array}\right] \\ \mathrm{VAL} & \left[\begin{array}{ll}\mathrm{COMPS} & \langle\rangle \\ \mathrm{SPR} & \langle\rangle\end{array}\right]\end{array}\right] \\ \mathrm{NONLOC} & \left[\begin{array}{ll}\mathrm{INHER} & \left[\begin{array}{ll}\mathrm{SLASH} & \left\{\boxed{1}\right\} \\ \mathrm{TOPIC} & set(-)\end{array}\right] \\ \mathrm{TO\text{-}BIND} & \left[\begin{array}{ll}\mathrm{SLASH} & \left\{\boxed{1}\right\} \\ \mathrm{TOPIC} & \boxed{2}\end{array}\right]\end{array}\right]\end{array}\right]$$

According to this head-filler rule, since the filler daughter must satisfy the constraint [TOPIC *set*(+)], a phrase carrying the feature [TOPIC {–}] cannot function as a filler to a finite clause (i.e., they cannot appear in the Vorfeld). On the other hand, since the head daughter must satisfy the constraint [TOPIC *set*(–)], the head of a finite clause can-

[7] The reason I use a nonlocal feature will be made clear in section 8.3.3.

[8] $set(\tau)$ designates a possibly empty set, all of whose members are of type τ. The notation $set(+)$ is equivalent to $\{\}\vee\{+\}$, since there is only one object, namely the atomic value + itself, that instantiates the type +.

not contain a phrase specified as [TOPIC {+}] (i.e. [TOPIC {+}] items must obligatorily appear in the Vorfeld).

Introduction of the SLASH elements is controlled by the Complement Extraction Lexical Rule (CELR), analogous to the one in Pollard and Sag (1994).

(9)
$$\left[\begin{array}{l}\text{LOC}\quad\left[\text{CAT}\left[\begin{array}{ll}\text{HEAD} & \neg prep \wedge \neg\left[\begin{array}{ll} noun & \\ \text{FR} & + \end{array}\right] \\ \text{VAL}\,|\,\text{COMPS} & \boxed{1} \oplus \left\langle [\text{LOC}\ \boxed{2}] \right\rangle \oplus \boxed{3} \end{array}\right]\right] \\ \text{NONLOC}\,|\,\text{INHER}\,|\,\text{SLASH} \quad \{\} \end{array}\right]$$
$$\Longrightarrow \left[\begin{array}{ll}\text{LOC}\,|\,\text{CAT}\,|\,\text{VAL}\,|\,\text{COMPS} & \boxed{1} \oplus \boxed{3} \\ \text{NONLOC}\,|\,\text{INHER} & \left[\begin{array}{ll}\text{SLASH} & \left\{\boxed{2}\right\} \\ \text{TOPIC} & \left\{-\right\}\end{array}\right]\end{array}\right]$$

The HEAD value constraint on the input of this rule prohibits complements of prepositions and free relative pronouns to be extracted, both of which would result in ungrammatical sentences. The output [TOPIC {–}] specification is necessary for excluding the possibility of double extraction.

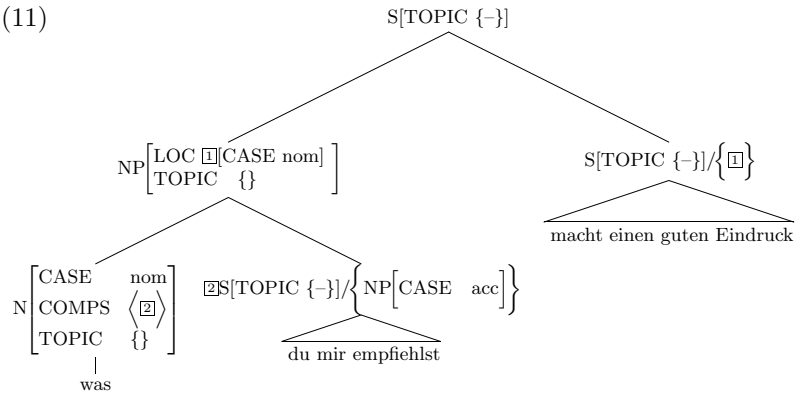
(10) *[Von wem]$_i$ [[ein Bild $\_i$]$_j$ hast du $\_j$ gemalt]?
of whom a picture have you drawn

intended: 'Whom did you draw a picture of?' (Müller 1999a:96)

Since a head from which a complement has been extracted (e.g. the noun *Bild* in (10)) is marked as [TOPIC {–}] by the CELR, a phrase with such a head cannot function as a filler to a main clause because the nonlocal [TOPIC {–}] value of the head daughter would be inherited to the mother and contradict with the constraint [TOPIC *set*(+)] for the filler in the head-filler ID rule (8). Thus, sentences like (10) are ruled out.

The rough structure of the sentence (1c) is shown in (11).

(11)



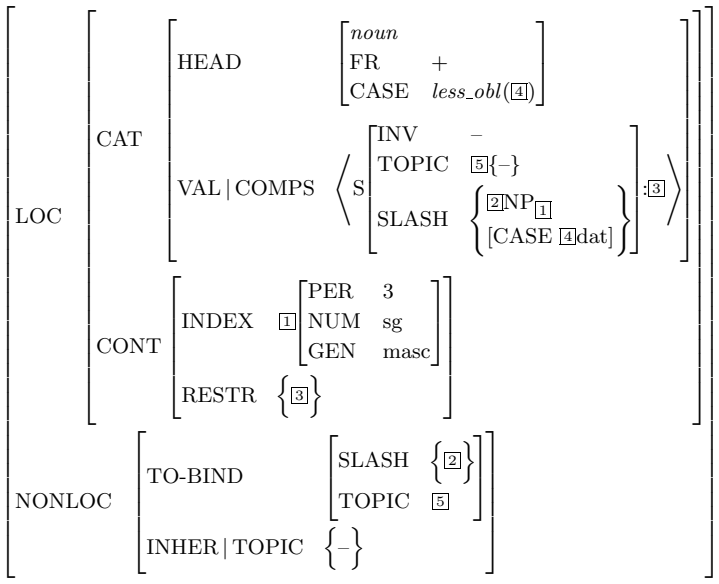
In this sentence, the free relative clause realizes itself as the filler to the main clause. The matrix verb *macht* has undergone the CELR with the effect of having pushed one NP from its COMPS list to its SLASH set, which happens to be a free relative clause. Recall that, in the lexical entry for *was* (6), the TOPIC value[9] as well as the SLASH value of the complement S is lexically bound off. Without this binding of the TOPIC value, free relative clauses would wrongly be excluded from the Vorfeld since it would inherit the [TOPIC {–}] specification from its complement S which would conflict with the structural constraint in the head-filler ID rule (8).

8.3.2 Sentence-initial vs. non-sentence-initial *wer*

The difference of behavior of masculine free relatives in the sentence-initial position and non-sentence-initial positions, namely, that the matching effect is somewhat loosened in the latter environment, can be treated by assigning distinct lexical entries for the free relative pronouns appearing in each environment. I assume that one of them is derived by a lexical rule from the other. (12) displays the lexical entry for *wem*, the dative form of *wer*, introducing free relatives in non-sentence-initial positions.

[9] The original purpose of specifying [TOPIC {–}] on the output of the CELR is to prohibit double extraction, unwanted *structural* realization of SLASHed elements. Hence, this constraint is entirely irrelevant in the cases when SLASH values are *lexically* bound off and should be bound off together with the SLASH value in such cases.

(12)



The CASE value of this lexical item is constrained as *less_obl*(dat),[10] allowing sentences like (2a) in which the case requirement from the matrix clause is less oblique than that from the embedded clause. The specification [TOPIC {–}] ensures that free relatives headed by this pronoun cannot appear in the Vorfeld (i.e. in the sentence-initial position). That is, since TOPIC is a nonlocal feature, this value is inherited to the matrix NP level and obeys the constraints on the head-filler rule (8) introduced above that excludes phrases marked as [TOPIC {–}] from the Vorfeld.

The lexical entry for *wem* which introduces free relatives in the sentence-initial position is derived from the above lexical entry by the Free Relative Topicalization Lexical Rule formulated as (13):

[10] *less_obl*(x) is a relation which relates the input case value x to a less or equally oblique case value in the obliqueness hierarchy (nom < acc < dat ...). For example, the specification *less_obl*(dat) is equivalent to the familiar disjunction 'nom∨acc∨dat'.

(13)
$$\left[\begin{array}{l}\text{LOC}\left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\text{HEAD} & \left[\begin{array}{ll}\textit{noun} & \\ \text{FR} & + \end{array}\right] \\ \text{VAL}\,|\,\text{COMPS} & \left\langle \text{S[SLASH}\left\{\text{NP[CASE }\boxed{1}\text{]}\right\}\text{]}\right\rangle \end{array}\right] \\ \text{CONT}\,|\,\text{INDEX} & \left[\begin{array}{ll}\text{PER} & 3 \\ \text{NUM} & \text{sg} \\ \text{GEN} & \text{masc}\end{array}\right]\end{array}\right] \\ \text{NONLOC}\,|\,\text{INHER}\,|\,\text{TOPIC} \quad \{-\}\end{array}\right]$$

$$\Longrightarrow \left[\begin{array}{l}\text{LOC}\,|\,\text{CAT}\left[\begin{array}{ll}\text{HEAD} & \left[\text{CASE} \quad \boxed{1}\vee\text{none}\right] \\ \text{VAL}\,|\,\text{COMPS} & \left\langle \text{S[SLASH}\left\{\text{NP[CASE }\boxed{1}\text{]}\right\}\text{]}\right\rangle \end{array}\right] \\ \text{NONLOC}\,|\,\text{INHER}\,|\,\text{TOPIC} \quad \{+\}\end{array}\right]$$

This rule identifies the matrix and subordinate case requirements by the tag [1]. Hence, the output lexical entry allows only sentences strictly embodying the matching effect. Again, ignore the CASE value 'none' at the moment. The INDEX specification [GEN masc] on the input limits the application of this rule to masculine free relative pronouns. The specification [TOPIC {+}] constrains the free relatives headed by this pronoun to appear in the sentence-initial position only.

8.3.3 Left dislocation

In the left dislocation construction, the demonstrative pronoun must immediately follow the free relative clause.

(14) a. Wer klug ist, den will ich um Rat bitten.
who-NOM clever is that-ACC will I for advice ask
'I will ask for advice whoever is clever.'

b. *Wer klug ist, ich will den um Rat bitten.

To account for this type of construction without the help of a new structural mechanism, I assume that demonstrative pronouns trigger left dislocation; demonstrative pronouns to be used in the left dislocation construction are lexically specified to have a nonempty SLASH value whose single element is a free relative clause (i.e. NP[FR +]).[11]

[11] Though free relatives are not the only elements that can be left-dislocated, I limit my attention to left dislocation of free relatives in this paper. This does not mean, however, that the perspective presented in this paper cannot be extended to cover left dislocation phenomena of phrases other than free relatives.

The lexical entry for *das* is shown in (15).

(15)
$$\begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{noun} \\ \text{CASE} & \text{nom}\vee\text{acc} \end{bmatrix} \end{bmatrix} \\ \text{CONT}\,|\,\text{INDEX} & \boxed{1}\begin{bmatrix} \text{PER} & 3 \\ \text{NUM} & \text{sg} \\ \text{GEN} & \text{neut} \end{bmatrix} \end{bmatrix} \\ \text{NONLOC}\,|\,\text{INHER} & \begin{bmatrix} \text{SLASH} & \left\{ \text{NP}\boxed{1}\begin{bmatrix} \text{FR} & + \\ \text{CASE} & \text{none} \end{bmatrix} \right\} \\ \text{TOPIC} & \{+\} \end{bmatrix} \end{bmatrix}$$

The [TOPIC {+}] specification in the above lexical entry ensures that this demonstrative pronoun must obligatorily appear in the Vorfeld, ruling out sentences like (14b) above.

With the lexical specification of the SLASH value as in (15), it is possible to characterize the distribution of the left dislocation construction of free relatives without appeal to any kind of new structural mechanism. The rough structure of the sentence (3b) is shown in (16). Here, the SLASH value 3 of the lowest S is discharged by the demonstrative pronoun in the Vorfeld, in parallel to ordinary V2 clauses. However, in this case, the immediate upper S still inherits a SLASH value 1 from its filler daughter, which is discharged by the free relative clause in just another application of the head-filler rule.[12] Note that the [TOPIC

[12] A referee has pointed out to me that some restriction should be needed to rule out sentences like the following:

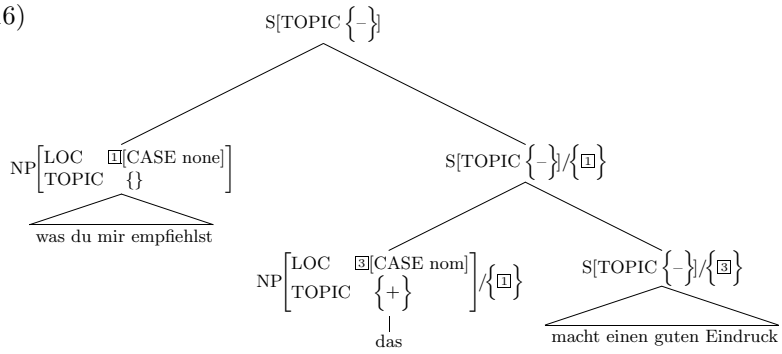
(i) *[Wer klug ist]$_j$, Maria$_i$ [$_{\text{S}/\{\text{NP}_i,\text{NP}_j\}}$ sagt, –$_i$ [$_{\text{S}/\{\text{NP}_j\}}$ den$_j$ will
who-NOM clever is Maria says that-ACC will
sie um Rat fragen]].
she for advice ask
intended: 'Maria says that she will ask for advice whoever is clever.'

Such 'long distance left dislocation' of free relatives are automatically prohibited in my account since in (i) the matrix S illegally contains two phrases in its SLASH value before combining with the Vorfeld NP *Maria*. Note that the head daughter in the V2 head-filler rule in (8) is specified to have exactly one SLASH element. This constraint is independently necessary to prohibit illicit left dislocation in the absence of demonstrative pronouns.

(ii) *[Wen du mir empfiehlst]$_j$, ich$_i$ [$_{\text{S}/\{\text{NP}_i,\text{NP}_j\}}$ will –$_i$ –$_j$ um Rat
whom-ACC you me recommend I will for advice
bitten].
ask

{+}] value of the filler daughter (if there is one) is bound off in the V2 head-filler rule in (8). This enables the recursive application of this ID rule here.

(16)



As is already mentioned, left dislocated free relatives are free from the matrix case requirements. To capture this fact in terms of the non-argument characteristic of the left dislocated constituent, I introduce a new CASE value 'none' here, i.e., I assume that non-argument NPs are marked as [CASE none]. Hence, the slashed element on the lexical entry for the demonstrative pronoun is specified as [CASE none]. In addition, I assume that all free relative pronouns, except for those introducing masculine non-sentence-initial free relatives, are lexically specified as having the possibility of instantiating themselves as [CASE none]. The consequence of these two stipulations is that any free relative, whatever the case requirement from the embedded clause may be, can freely

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intended: 'I will ask for advice whoever you recommend me.'

This sentence is ruled out for exactly the same reason as (i) above, namely, the violation of the single SLASH element constraint on the head daughter in the head-filler rule (8).

Further, note also that the following sentence, in which the matrix verb and subject are in reverse order as opposed to (i), is correctly predicted to be well-formed in the present theory.

(iii) [Wer klug ist]$_i$, [$_{S/\{NP_i\}}$ glaubt Hans, [$_{S/\{NP_i\}}$ der$_i$ wird
who-NOM clever is thinks Hans that-NOM is
ausgebildet]].
trained
'Hans thinks that whoever is clever will be trained.'

If we assume that the matrix verb *glauben* subcategorizes for S[INV –] (i.e. either V1 or V2 clause), the SLASH value originated in the demonstrative pronoun in the filler position of the subordinate clause is passed up to the matrix S and discharged by the sentence-initial free relative.

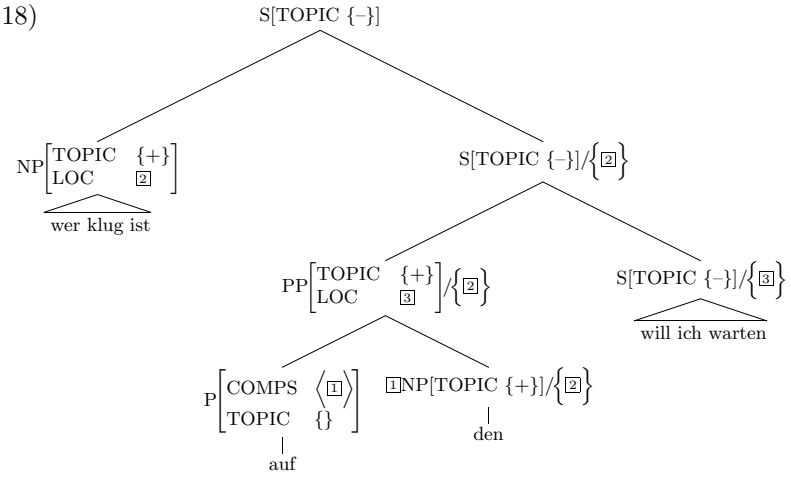
appear in the left dislocated position, to the desired effect.

A further consequence of the present proposal is that it can account for the fact that demonstrative pronouns do not necessarily occupy the Vorfeld position directly by themselves.

(17) Wer klug ist, auf den will ich warten.
who clever is for that will I wait
'I wait for whoever is clever.'

In the lexical treatment of left dislocation presented here, such possibilities are straightforwardly predicted without any further stipulation. The structure of the sentence (17) is shown in (18).

(18)



Note that the nonlocal [TOPIC {+}] specification on the demonstrative pronoun is passed up to the PP by the Nonlocal Feature Principle, correctly assuring the existence of the demonstrative pronoun inside the Vorfeld position. The motivation for using a nonlocal mechanism for the TOPIC value is now clear. If this feature were not nonlocal (for example, if it were a head feature), it would be rather difficult to detect the appearance of the demonstrative pronoun inside the Vorfeld which is embedded as a complement of a preposition.

8.4 Linear order and extraposition

Extraposed free relative clauses exhibit the same distribution as those occurring in the Mittelfeld (i.e. sentence-internal argument position) rather than those occurring in the Vorfeld, that is, when free relatives do not appear in the sentence-initial position, the matching effect is loosened regardless of whether they are extraposed or not:

(19) a. Ich will, wem ich immer vertraue, um Rat
I will whom-DAT I ever trust for advice
bitten.
ask-ACC
intended: 'I will ask for advice whoever I always trust.'

b. Ich will um Rat bitten, wem ich immer vertraue.

c. *Wem du vertraust, will ich um Rat bitten.
whom-DAT you trust will I for advice ask-ACC
intended:'I will ask for advice whoever you trust.'

Although some authors (Keller 1995 and Bouma 1996) argue in favor of treating extraposition via a nonlocal dependency, I follow Hinrichs and Nakazawa (1998) where they assume a flat structure of a finite clause in which an extraposed phrase realizes itself as a sister of the finite verb and other arguments of this verb, being obliged to occupy the rightmost position by some linear order constraint. This simple structure is motivated by the empirical fact that extraposition never occurs crossing a clause boundary, which strongly suggests that this phenomenon is fundamentally a local one.

I assume a binary head feature EXTRAP. Phrases specified as [EXTRAP +] are controlled by the LP rules defined below to obligatorily occur at the rightmost position in a clause, whereas phrases specified as [EXTRAP –] occur in the Mittelfeld (in between the finite verb and the sentence-final verbal constituent).

In German, extraposition of an NP is generally prohibited. Therefore, I assume that all the ordinary nouns are lexically specified as [EXTRAP –]. In contrast, free relatives can be extraposed freely. Hence, I drop this specification from the lexical entries for free relative pronouns, leaving this value underspecified. As a consequence, a free relative pronoun can have either + or – value for this head feature, which will then be inherited to the projected NP by virtue of the Head Feature Principle, thus predicting their optional extraposability.

I assume the following LP rules:

(20) $\left[\begin{array}{l}\text{HEAD}\,|\,\text{EXTRAP}\ -\\ \text{VAL}\left[\begin{array}{ll}\text{COMPS} & \langle\rangle\\ \text{SPR} & \langle\rangle\end{array}\right]\end{array}\right] \prec \left[\text{HEAD}\left[\begin{array}{ll}\textit{verb}\\ \text{INV} & -\end{array}\right]\right]$

(21) $\text{H}\left[\text{HEAD}\left[\begin{array}{ll}\textit{verb}\\ \text{INV} & +\end{array}\right]\right] \prec \text{C}$

(22) $\text{F} \prec \text{H}$

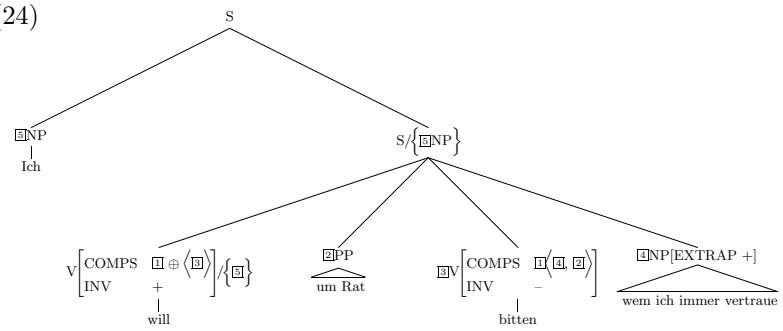
(23) $$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{INV} & - \end{bmatrix} \end{bmatrix} \prec \begin{bmatrix} \text{HEAD} \mid \text{EXTRAP} & + \\ \text{VAL} & \begin{bmatrix} \text{COMPS} & \langle\rangle \\ \text{SPR} & \langle\rangle \end{bmatrix} \end{bmatrix}$$

(20) and (21) constrain the order of elements inside a finite clause. (20) ensures that a phrase specified as [EXTRAP –] precedes the sentence-final verbal complement. (21) ensures that the finite verb appears first in the clause before it combines with a filler preceding it (hence, the V2 position).

(22) constrains the order of a head and its filler. (23) ensures that a phrase specified as [EXTRAP +] appears after the sentence-final verbal constituent, i.e., at the sentence-final position. The empty valence specifications on the extraposed element prevent its unwanted application inside the extraposed constituent; the head specified as [EXTRAP +] carries nonempty valence specifications inside the phrase where it combines with its complements and specifiers. Hence, the LP rule (23) does not apply there.

These LP rules interact with the ID rules and the lexical specifications already introduced to precisely distinguish well-formed structures from ill-formed ones. The structure (24) is assigned to the sentence (19b). Note that the free relative clause is obliged to appear at the rightmost position inside the matrix clause by the LP rule (23) since it happens to instantiate itself as NP[EXTRAP +].

(24)



8.5 Open problem

In this final section, I discuss some problematic data for my analysis. As in English, free relative pronouns in German can also be pied-piped as is shown in (25) - (27):

(25) a. Mit wem du arbeitest, dem mußt du
with whom-DAT you work, that-DAT must you
vertrauen.
trust.
'You must trust whoever you work with.'

b. Auf was sie Appetit hat, (das) schmeckt gut.
on what-ACC she appetite has that-NOM tastes well
'What she has appetite for is delicious.'

c. * Ich warte auf, auf wen du wartest.
I wait for for whom you wait
intended: 'I wait for whoever you wait for.'

(26) a. Wessen Eltern gestorben waren, der wurde ins
Whose parents dead were, that-NOM was to-the
Waisenhaus geschickt.
orphans' home sent.
'Whoever's parents were dead, was sent to the orphans' home.'

b. Mit wessen Schwester du verheiratet bist, den mußt
with whose sister you married are that must
du als Bruder akzeptieren.
you as brother accept
'You must accept whoever's sister you are married with as your brother. '

c. Wessen Schwesters Tochter du liebst, den mußt du als
whose sister's daughter you love that must you as
Vater akzeptieren.
father accept
'You must accept whoever's sister's daughter you are married with as your father. '

(27) a. Ihr könnt beginnen, mit wem ihr wollt.
you can begin with whom you will
'You can begin with whoever you want to (begin with).' (Bausewein 1990:155)

b. Worüber du redest, muß ich nachdenken.
on-what you talk must I ponder
'I must ponder on what you talk about.'

Data concerning sentences like these are fairly uncertain. My informants showed considerable variation as regards the acceptability of the

sentences listed above. Furthermore, it turned out that the precise condition under which the demonstrative pronouns can be omitted is also unclear and difficult to pinpoint. But what seems to be undeniable is that there are certain number of native speakers who find some of these sentence acceptable.

Unfortunately, my analysis does not extend naturally to cover cases like these. As for the examples in (25) where the category of the relative word and the projected phrase coincide (both are nominal here), it might still be possible to maintain the hypothesis that the free relative pronoun is the head of the projected phrase, that is, we could account for the fact that projected phrases turn out to be NPs if we assumed that the free relative pronoun subcategorizes for a preposition and an S/PP as complements in such cases.[13]

As for the examples in (26) and (27) where the category of the relative word (determiner in (26) and noun in (27), respectively) and the projected phrase (NP in (26) and PP in (27), respectively) do not coincide, a further difficulty arises. In these cases, it is impossible to attribute the category of the projected phrase to that of the relative word. I have no explanation for these data.

8.6 Conclusion

In this paper, I argued that German free relatives can best be analyzed as NPs headed by the free relative pronouns inside them. The proposed analysis, which I believe is in line with the spirit of HPSG that most of the constraints necessary for building up phrases can be encoded in the lexical information of the heads of the phrases, is free from any kind of empty categories or ad hoc structural stipulations. Thus, it straightforwardly captures the typical distributions of free relatives as argument NPs in the matrix clause. It also successfully captures the distribution of the left dislocation construction of free relatives, which has never been explicitly analyzed so far, by use of lexical specification of the SLASH value and the general head-filler structure without introducing any kind of new mechanism.

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[13]The unacceptability of (25c) would be a mystery for any account which treats the free relative clauses in (25a,b) as NPs. The internal structures of the free relatives in (25a,b) and (25c) should be the same and if such free relatives could really be projected to NPs, there should in principle be no reason why they cannot appear as complements of prepositions.

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