

# Yet Another HPSG-Analysis for Free Relative Clauses in German

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## 1 The data

### 1.1 Sentence-initial FRs

- (1) a. Wer schwach ist, muß klug sein.  
who-NOM weak is must clever be-NOM<sup>1</sup>  
'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.'

- Case requirements from the matrix and subordinate clauses must match in terms of case form.<sup>2</sup> (matching effect: cf. Groos and Riemsdijk 1981)

- (2) a. Wer klug ist, dem vertraue ich immer.  
Who-NOM clever is, that-DAT trust I ever.  
'I always trust whoever is clever.'

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<sup>1</sup>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.

<sup>2</sup>Two cases are defined to match in terms of case form iff either (i) they are identical or (ii) the forms of case-inflecting items of the person and gender in question are identical in both cases. (E.g. nominative and accusative match when the pronoun is in neuter third person singular because neuter third person singular pronouns exhibit the same morphological form in nominative and accusative.)

- b. Was du mir empfiehlst, dem vertraue ich.  
 what-ACC you me recommend that-DAT trust I  
 ‘I trust whatever you recommend me.’

- Left dislocation construction: sentence-initial FR immediately followed by coreferential demonstrative pronoun (d-pro). (two constituents in the sentence-initial position)
- When d-pro is present, matching effect does not obtain. (Matrix requirement is satisfied by d-pro.)

## 1.2 Non-sentence-initial FRs

- (3) a. Ich will, wem ich immer vertraue, um Rat bitten.  
 I will whom-DAT I ever trust for advice ask-DAT.  
 ‘I will for advice ask whoever I always trust.’
- b. Den Hund füttert, wen der Hund mag.  
 the dog feed-NOM whom-ACC the dog likes  
 ‘Whoever the dog likes feeds it.’
- (4) a. \*Ich vertraue, wen du mir empfiehlst, immer.  
 I trust-DAT whom-ACC you me recommend ever  
 intended: ‘I always trust whoever you recommend me.’
- b. \*Ich will um Rat bitten, wer klug ist.  
 I will for advice ask-ACC who-NOM clever is  
 intended: ‘I will ask for advice whoever is clever.’

- In the case of masculine FRs (*wer*), if the matrix case requirement is less oblique<sup>3</sup> than the subordinate one, the matching effect is no longer required.

## 1.3 Pied-piping

- (5) a. Mit wem du arbeitest, \*(dem) mußt du vertrauen.  
 with whom-DAT you work, that-DAT must you trust.  
 ‘You must trust whoever you work with.’

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<sup>3</sup>The obliqueness hierarchy (cf. Bausewein 1990 and Müller 1999) is assumed to be something like the following:

(i) nom < acc < dat ...

- 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. Sie kocht, auf was sie Appetit hat.  
 she cooks-ACC on what-ACC she appetite has  
 ‘She cooks what she has appetite for.’
- d. Er vertraut, auf was sie Appetit hat.  
 he trusts-DAT on what-ACC she appetite has  
 ‘He trusts what she has appetite for.’
- (6) 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.’
- *Wer* can be pied-piped by a preposition only in the presence of a corresponding d-pro.
  - Pied-piped *was* is compatible to either case requirement from the matrix clause. (d-pro optional)
  - *Wessen*, the genitive form of *wer*, is still marginally acceptable though this form is becoming increasingly rare in this language. (d-pro obligatory)

## 2 Previous Analyses

### 2.1 Unification puzzle

- (7) Ich nehme was einen guten Eindruck macht.  
 I take what a good impression makes  
 ACC → ?? ← NOM

**Claim:** (Bayer 1996, Ingria 1990)

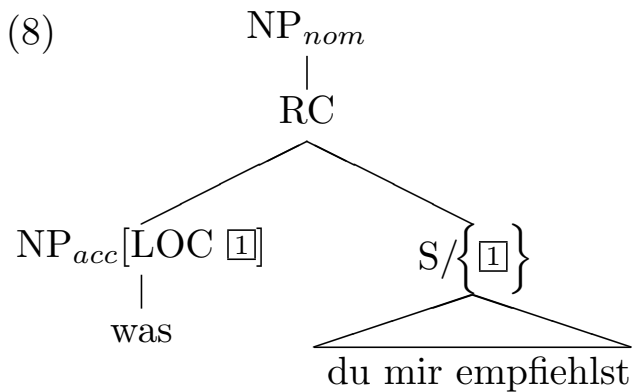
- Unification is problematic as an agreement resolving mechanism.
- Some kind of other mechanism is necessary to give a natural account for the double-valued behavior of *was*.

**Problem:** Strict matching effect is not always imposed:

- *wer* in non-sentence-initial FRs (e.g. (3))
- sentence-initial FRs with d-pro (e.g. (2))

Not clear how to account for these cases.

## 2.2 Müller (1999) in HPSG

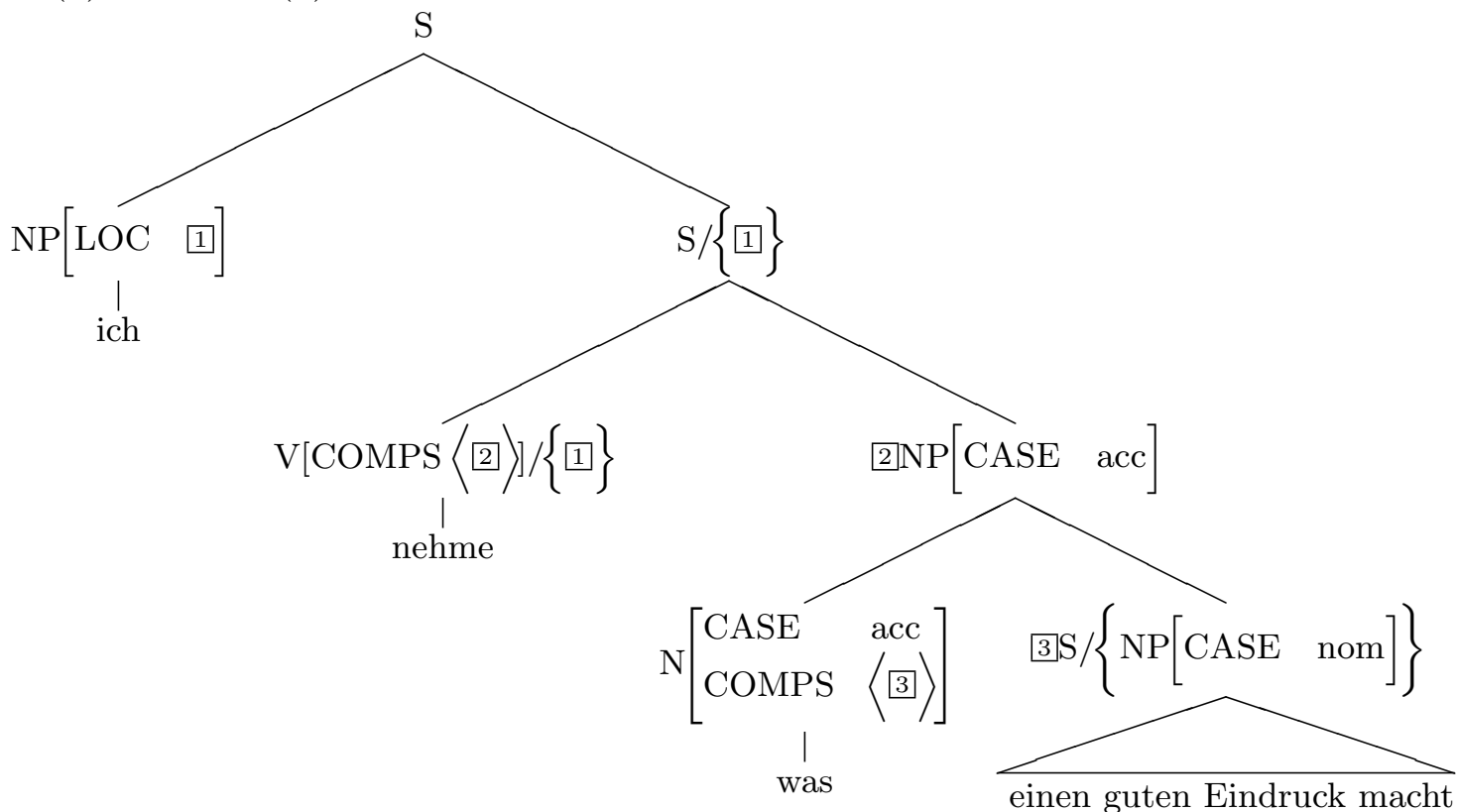


- Non-headed RC schema for relative clauses.
- Unary non-headed schema for projecting RC to NP.<sup>4</sup>
- Relational constraint ensuring the relation between matrix and subordinate case requirements.

## 3 The Analysis

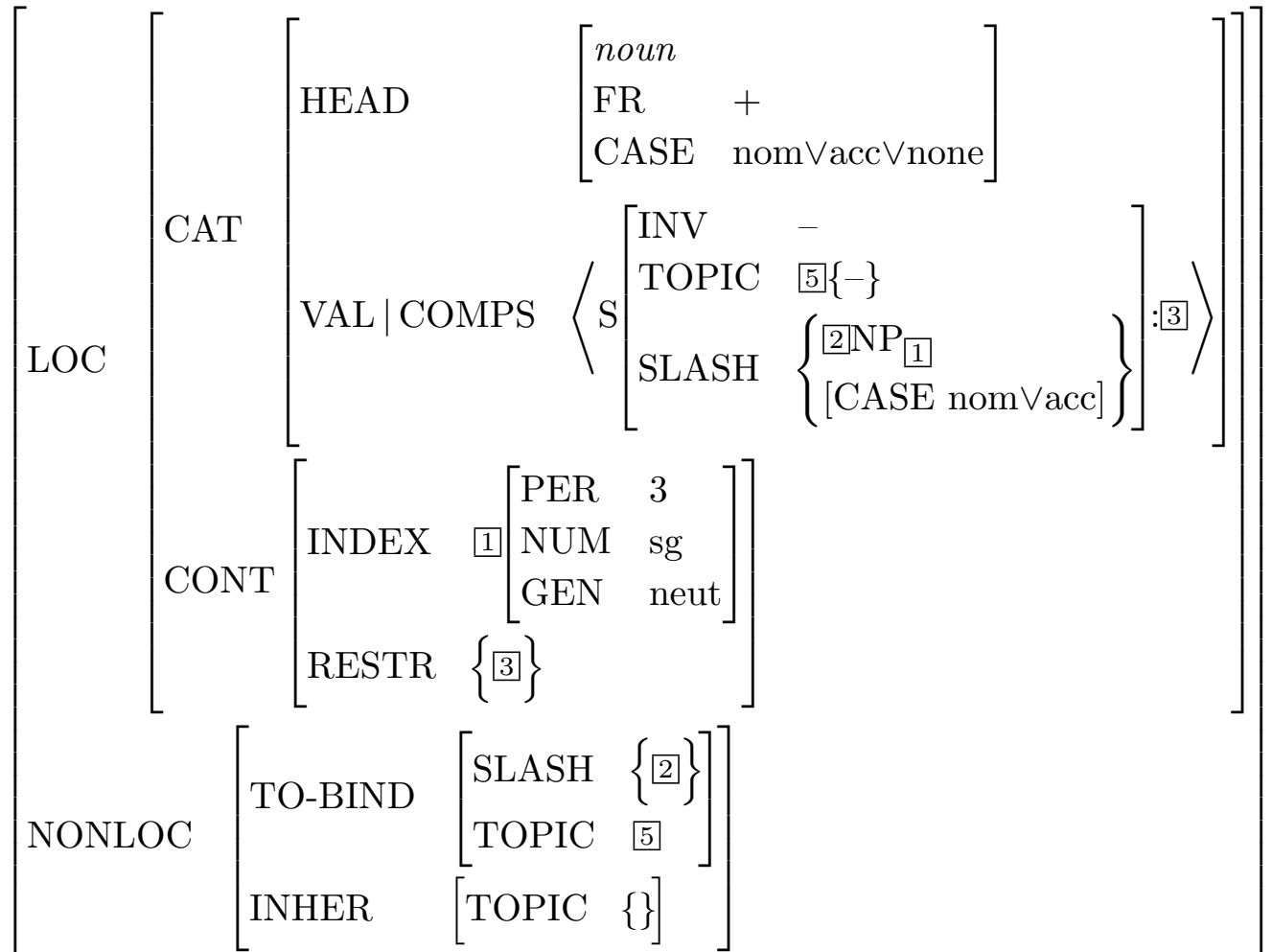
### 3.1 The structure of FRs

(9) tree for (7)



<sup>4</sup>Originally proposed by Koch (1996).

(10) lexical entry for *was*:



- The free relative pronoun subcategorizes for an S/NP as a complement and projects up to an NP. (head hypothesis: cf. Bresnan and Grimshaw 1978 for English FRs)
- The ‘matching effect’ is treated entirely in terms of lexical specification:
  - matrix case requirement: CASE value of this pronoun (‘nom\acc\none’)<sup>5</sup>
  - subordinate case requirement: CASE value of the unrealized NP on the SLASH value of the complement S (‘nom\acc’)

## 3.2 Sentence-initial FRs

### 3.2.1 The TOPIC feature

Basic idea:

- [TOPIC {+}] phrases obligatorily appear in the Vorfeld (sentence-initial topic position).
- [TOPIC {-}] phrases are obligatorily excluded from the Vorfeld.

<sup>5</sup>The purpose of the CASE value ‘none’ is explained later. It is used in the left dislocation construction.

- [TOPIC {}] phrases can either appear or not appear in the Vorfeld.

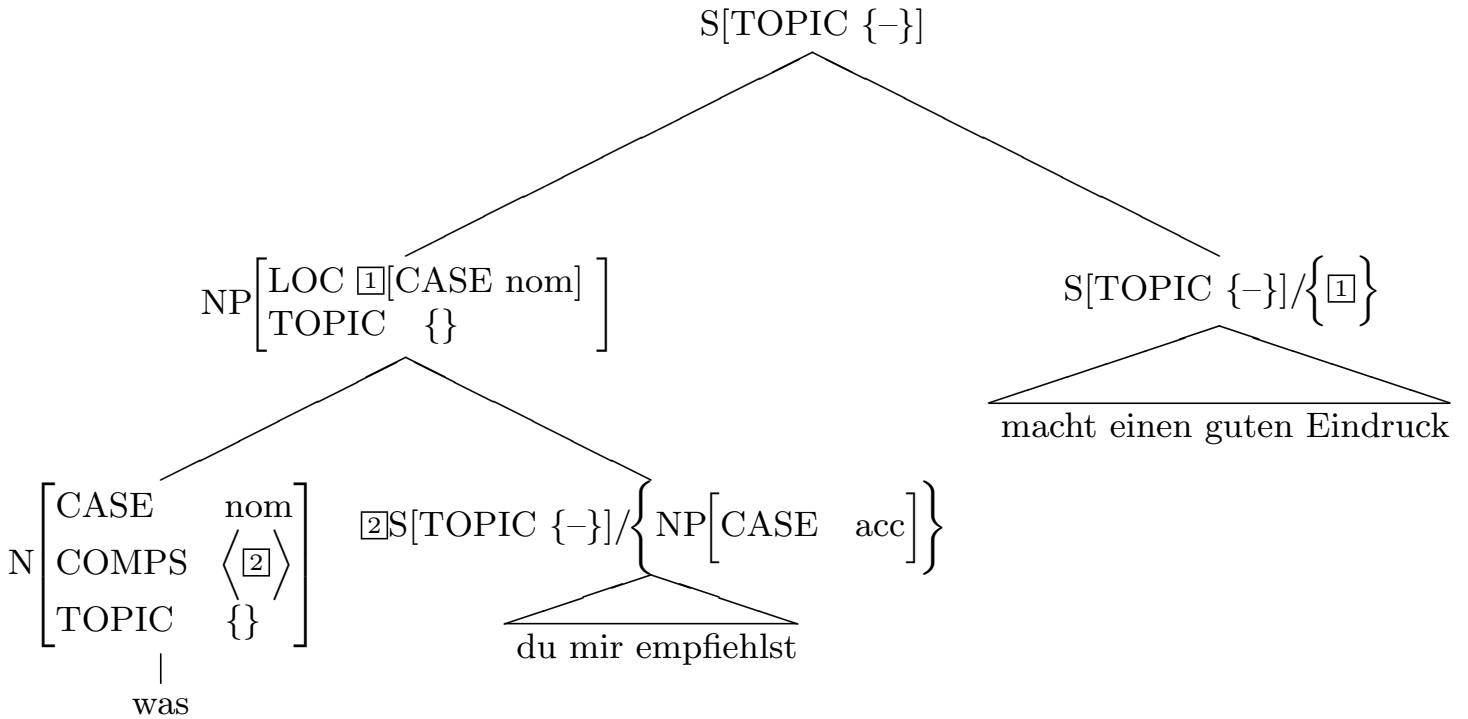
Formulation as constraints on the head-filler rule:

(11) V2 head-filler rule<sup>6,7</sup>

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

[phrase] →

(12) tree for (1c)



<sup>6</sup>The treatment of V2 clauses as a head-filler construction was originally proposed by Uszkoreit (1987).

<sup>7</sup>*set*( $\tau$ ) designates a possibly empty set, all of whose members are of type  $\tau$ . The notation *set*(+) is equivalent to  $\{\} \vee \{+\}$ , since there is only one object, namely the atomic value + itself, that instantiates the type +.

### 3.2.2 Sentence-initial vs. non-sentence-initial *wer*

(13) lexical entry for *wem*:<sup>8</sup>

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- [TOPIC {-}] limits the distribution to non-sentence-initial positions.
- *less\_obl* relation ensures the possibility of non-case-matching distribution.

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<sup>8</sup>*less\_obl*(x) is a relation which relates the input case value x to a less or equally oblique case value. For example, the specification *less\_obl*(dat) is equivalent to the familiar disjunction ‘nom∨acc∨dat’.

(14) Free Relative Topicalization Lexical Rule

$$\left[ \begin{array}{l} \text{LOC} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \textit{noun} \\ \text{FR} \quad + \end{array} \right] \\ \text{VAL} | \text{COMPS} \left\langle \text{S}[\text{SLASH} \{ \text{NP}[\text{CASE} \boxed{1}] \}] \right\rangle \end{array} \right] \\ \text{CONT} | \text{INDEX} \left[ \begin{array}{l} \text{PER} \quad 3 \\ \text{NUM} \quad \textit{sg} \\ \text{GEN} \quad \textit{masc} \end{array} \right] \end{array} \right] \\ \text{NONLOC} | \text{INHER} | \text{TOPIC} \left\{ - \right\} \end{array} \right] \\ \Rightarrow \left[ \begin{array}{l} \text{LOC} | \text{CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \text{CASE} \quad \boxed{1} \vee \textit{none} \right] \\ \text{VAL} | \text{COMPS} \left\langle \text{S}[\text{SLASH} \{ \text{NP}[\text{CASE} \boxed{1}] \}] \right\rangle \end{array} \right] \\ \text{NONLOC} | \text{INHER} | \text{TOPIC} \left\{ + \right\} \end{array} \right] \end{array} \right]$$

- [TOPIC {+}] limits the distribution of the output lexical entry to the sentence-initial position.
- Strict matching effect (ensured by tag  $\boxed{1}$ ).

### 3.2.3 Left dislocation

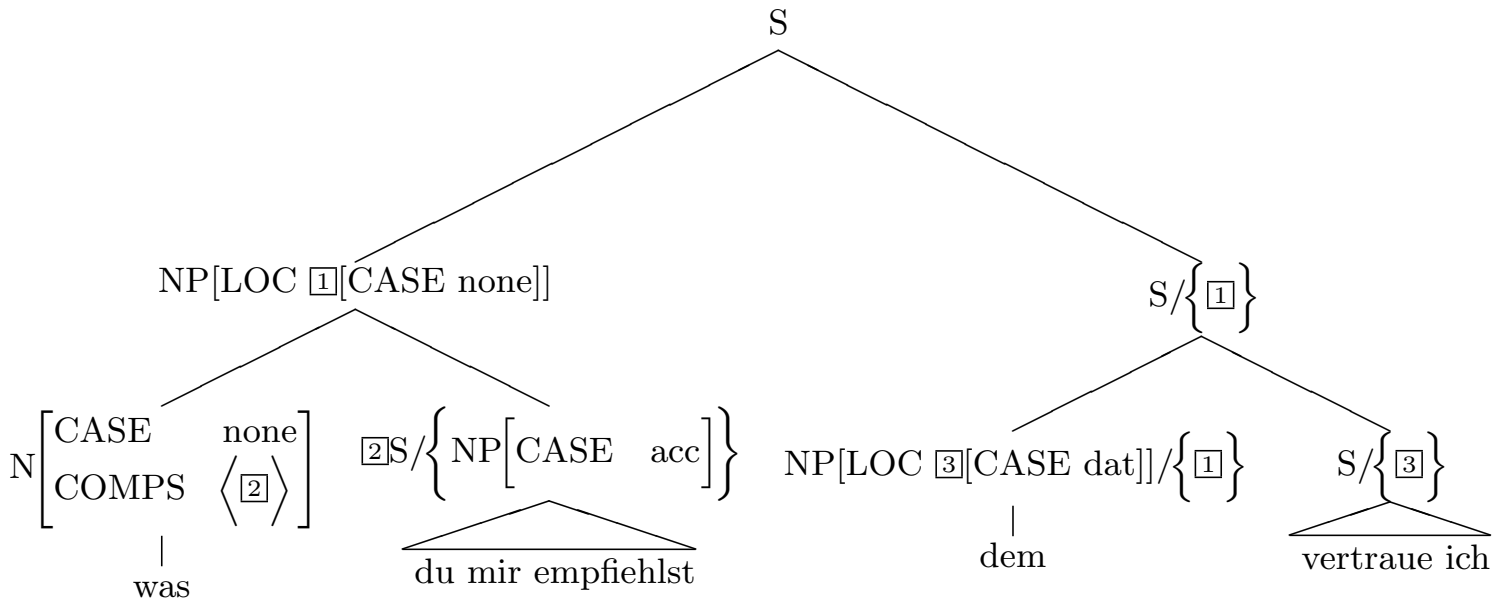
(15) lexical entry for *das*:

$$\left[ \begin{array}{l} \text{LOC} \left[ \begin{array}{l} \text{CAT} \left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \textit{noun} \\ \text{CASE} \quad \textit{nom} \vee \textit{acc} \end{array} \right] \\ \text{CONT} | \text{INDEX} \quad \boxed{1} \left[ \begin{array}{l} \text{PER} \quad 3 \\ \text{NUM} \quad \textit{sg} \\ \text{GEN} \quad \textit{neut} \end{array} \right] \end{array} \right] \end{array} \right] \\ \text{NONLOC} | \text{INHER} \left[ \begin{array}{l} \text{SLASH} \left\{ \text{NP}_{\boxed{1}} \left[ \begin{array}{l} \text{FR} \quad + \\ \text{CASE} \quad \textit{none} \end{array} \right] \right\} \\ \text{TOPIC} \left\{ + \right\} \end{array} \right] \end{array} \right] \end{array} \right]$$

- Left dislocation is triggered by d-pros (lexically SLASHed).
- D-pro is marked as [TOPIC {+}].
- The SLASHed NP of the d-pro is marked as [FR +] (i.e. free relative clause).

- D-pro satisfies the case requirement from the matrix clause.
- Left dislocated FRs are case-marked as ‘none’.

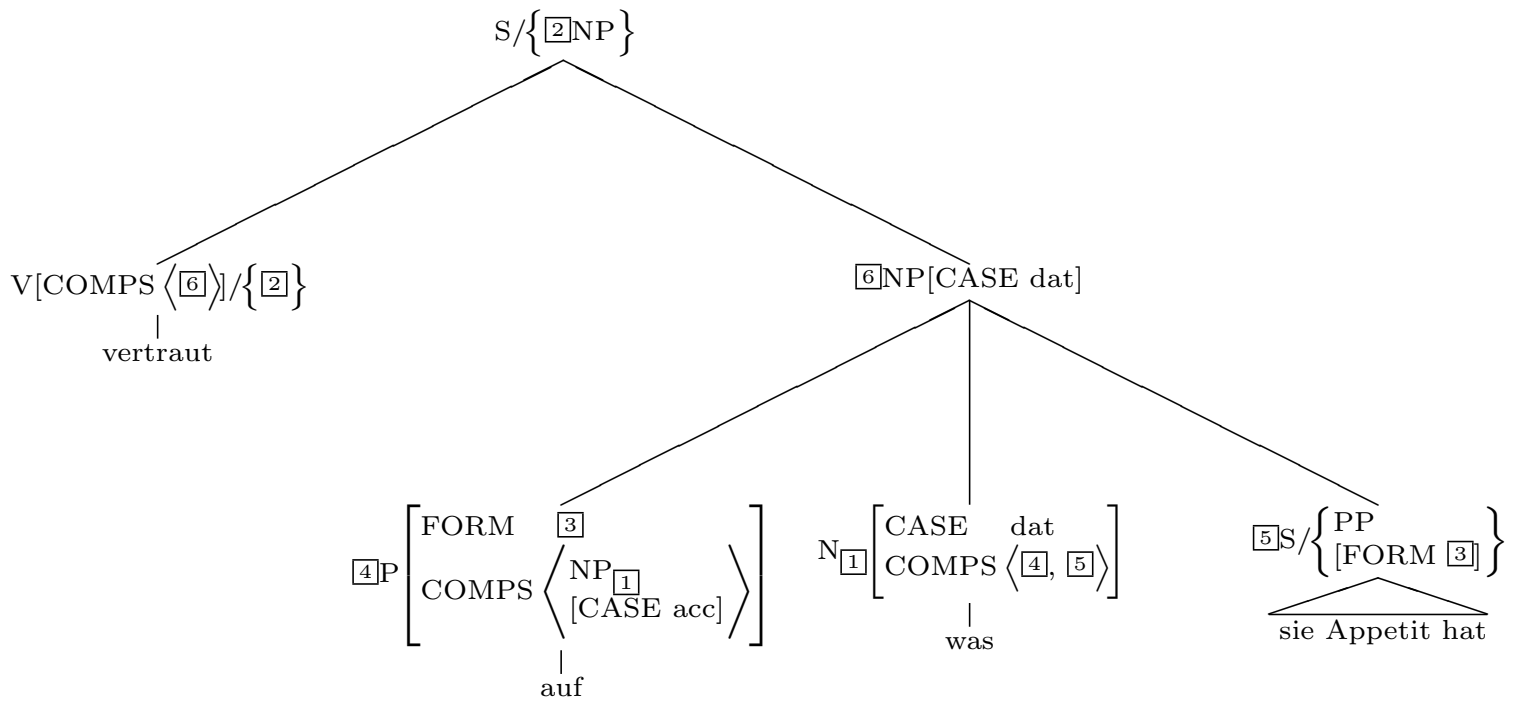
(16) tree for (2b)



- SLASH value 3 of the matrix clause is canceled by the d-pro.
- SLASH value 1 of the d-pro inherited to the intermediate S is canceled by the FR.
- Successive application of the head-filler rule in this order. (No left dislocation if d-pro is absent.)



(18) tree for (5d)



## 4 Conclusion

- FRs in German can best be analyzed as NPs headed by the free relative pronouns.
- No need for ad hoc unary-branching structure.
- Unification crash is a superficial illusion; the view cannot be borne out by closer look at the empirical facts.
- Left dislocation can be given a lexical account. (No special structural mechanism is required.)

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