

Non-local case assignment and agreement relations in German?

(Meurers, 2000, ch. 10)

Course on "Locality of grammatical relations"
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Overview

- The empirical challenge: Subjects in fronted non-finite projections
- The failure of local case assignment
- The discovery of a lexical trigger: raising verbs
- Exploring the empirical domain:
 - Lexical triggers: Subject-to-subject and subject-to-object raising
 - Is it always the subject? A look at passives
 - Extending the domain further: Multiple raising verb occurrences
- Two theoretical interpretations:
 - Theory 1: All arguments are equal
 - Theory 2: Subjects are special

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Subjects in fronted non-finite projections

Haider (1990) pointed out that under certain conditions it is possible in German to realize a subject as part of a fronted non-finite verbal constituent:

- (1) [Ein Fehler unterlaufen] ist ihr noch nie.
an_{nom} error crept-in is her still never.
'So far she has never made a mistake.'
- (2) [Ein Außenseiter gewonnen] hat hier noch nie.
an_{nom} outsider won has here still never
'An outsider has never won here yet.'

How does the subject realized as part of the fronted non-finite verbal constituent receive nominative case?

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The failure of strictly local case assignment

The subject of the non-finite complement can appear in nominative (3) or accusative (4) case, depending on the verb selecting the fronted constituent.

- (3) [Ein Außenseiter gewinnen] wird hier nie.
an_{nom} outsider win will here never
'An outsider will never win here'
- (4) [Einen Außenseiter gewinnen] läßt Gott hier nie.
an_{acc} outsider win lets god here never
'God never lets an outsider win here.'

⇒ Case cannot be determined within the fronted constituent.

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Empirical issues

- Are grammatical relations other than case extended as well?
- When do such apparently extended grammatical relations arise?
- Is it always the subject that takes part in such extended relations?

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Extended subject-verb agreement (II)

Real number and person agreement has to be captured (Höhle, 1994, p. 5):

- (7) a. [Der Wein ausgegangen] ist uns diesmal nicht
the_{nom,sg} wine come to an end is for us this time not
'This time we didn't finish the wine.'
- b. [Die Argumente ausgegangen] sind/*ist uns diesmal nicht
the_{nom,pl} arguments come to an end are is for us this time not
'This time we had enough good arguments.'

⇒ Subject-verb agreement sometimes has to be ensured for subjects embedded in verbal complements, i.e., further than the local head domain.

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Extended subject-verb agreement (I)

- (5) [Ein Außenseiter gewonnen] hat / *hast / *haben hier noch nie.
an outsider won has have_{2,sg} have_{pl} here still never
'An outsider has never won here yet.'

Default third person singular, as in subjectless constructions?

- (6) Hier wurde / *wurden getanzt.
here was were danced
'Here people danced.'

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The discovery of a lexical trigger (I)

The construction appears to be restricted to raising verbs:

- (8) [Ein Außenseiter zu gewinnen] **scheint** hier eigentlich nie.
an outsider to win **seems** here actually never
'An outsider never actually seems to win here.'
- (9) * [Ein Außenseiter zu gewinnen] **versuchte** hier noch nie.
an outsider to win **tried** here actually never
'An outsider never actually tried to win here.'

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The discovery of a lexical trigger (II)

Verbs with two readings only show extended case relations in raising reading:

- (10) [Ein Außenseiter zu gewinnen] versprach hier noch nie.
an outsider to win promised here still never
a. * 'An outsider never promised to win here.'
b. 'It was never probable that an outsider wins here.'

- (11) [Ein Außenseiter zu gewinnen] drohte hier noch nie.
an outsider to win threatened here still never
a. * 'An outsider never threatened to win here.'
b. 'There was never the danger of an outsider winning here.'

⇒ The case assignment relation is extended only for elements which could be raised by a raising predicate.

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Case assignment in local domains and Acl verbs

Raising from subject to object establishes local grammatical relations for the object in head domain of raising predicate:

- (14) Gott läßt [einen Außenseiter] hier nie gewinnen.
god lets an_{acc} outsider here never win
'God never lets an outsider win here.'

Raising from subject to object takes place for some representation of the subject ('spirit') even when it is realized as part of the complement:

- (15) [Einen Außenseiter gewinnen] läßt Gott hier nie.
an_{acc} outsider win lets god here never
'God never lets an outsider win here.'

⇒ Case assignment remains a relation that is local to a head domain.

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Case assignment in local domains and raising verbs

Raising from subject to subject establishes local grammatical relations for the subject in head domain of raising predicate:

- (12) Hier wird [ein Außenseiter] nie gewinnen.
here will an_{nom} outsider never win
'An outsider will never win here'

Raising takes place for some representation of the subject ('spirit') even when it is realized as part of the complement:

- (13) [Ein Außenseiter gewinnen] wird hier nie.
an_{nom} outsider win will here never
'An outsider will never win here'

⇒ Case assignment remains a relation that is local to a head domain.

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Extending the domain further with multiple raising verbs

- (16) a. [Ein Außenseiter gewonnen zu haben] scheint hier noch nie.¹
an outsider won to have seems here still never
'An outsider seems never to have never won here yet.'

- b. [Ein Außenseiter gewonnen] scheint hier noch nie zu haben.¹
an outsider won seems here still never to have

- (17) [Der endgültige Vertrag unterzeichnet worden zu sein] scheint aber
the_{nom} final contract signed be to be seems but
erst nach langen Verhandlungen.
only after long negotiations
'The final contract was only signed after long negotiations.'

⇒ The distance between case assignment domain and case bearing element grows as far as lexically mediated by raising relation.

¹(Haider, 1990)

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Is it always the subject? A look at passives

The participle can be fronted together with the subject:

(18) [Zwei Männer erschossen] wurden während des Wochenendes.²
 two men shot were during the weekend
 'Two men were shot during the weekend.'

(19) [Der Führerschein abgenommen] wurde einem Autofahrer am
 the driving license taken away was a driver on
 Samstag bei Bonn.
 Saturday near Bonn
 'On Saturday, the driving license of a driver was taken away close to Bonn.'

²(Webelhuth, 1985, p. 210, cited after Müller, 1997, p. 23)

Towards a theoretical interpretation

- A raising verb represents the NP raised from the verbal complement in a way which establishes the ordinary local grammatical relations such as case assignment and subject-verb agreement.

- This is even the case if the NP which could be raised is actually realized as part of the verbal complement.

Raising then lifts the 'spirit' of the realized NP. A spirit needs to represent at least the case and agreement properties.

- What are the spirits that undergo raising?

The raising relation in HPSG is a lexically established relation between subcategorization requirements.

⇒ Spirits are realized subcategorization requirements.

Possible passive analyses

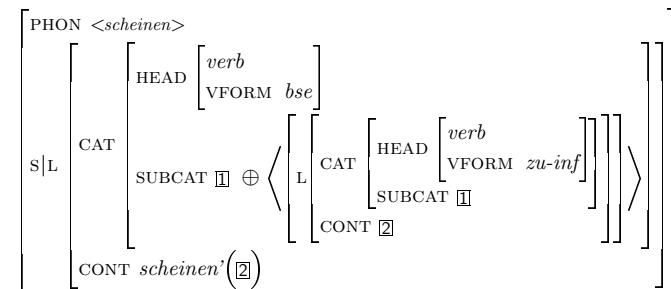
A. past participle + object-to-subject raising auxiliary
 (Kathol, 1994; Pollard, 1994; Müller, 1999)

B. passive participle (via lexical rule) + subject-to-subject raising auxiliary
 (Pollard and Sag, 1987; Heinz and Matiasek, 1994; Müller, 2001)

Conclusions:

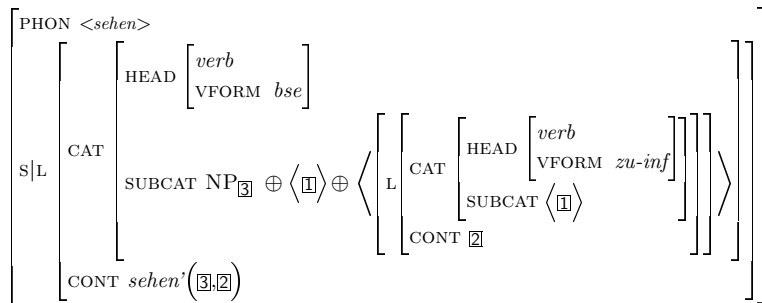
- Both analyses establish a raising relation, which is all we need for our analysis to go through.
- Analysis A postulates object-to-subject raising verbs so that not only subjects but also objects realized with a complement would have to be visible; i.e., in addition to subject spirits, object spirits exist and undergo raising.

Subject-to-Subject Raising in HPSG



- The subject valence requirement of the subject raising verb is identified with the subject of the verbal complement.
- The subject is not assigned a semantic role by the raising verb.

Subject-to-Object Raising in HPSG

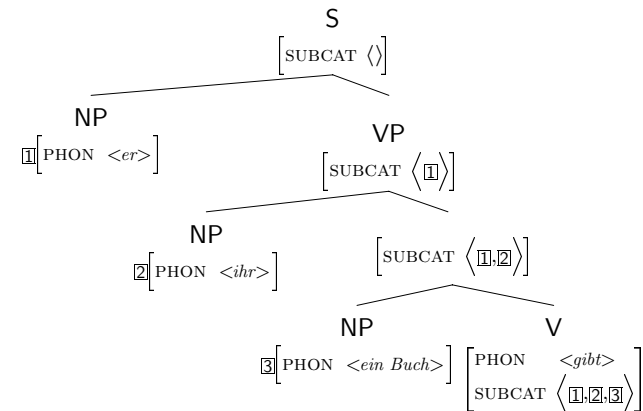


- The object valence requirement of the object raising verb is identified with the subject of the verbal complement.
- The object is not assigned a semantic role by the raising verb.

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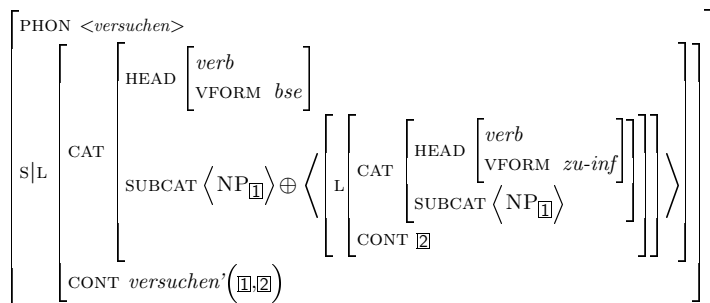
Realization of valence requirements in HPSG

(20) (daß) er ihr ein Buch gibt
that he her a book gives



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Equi in HPSG



- Semantic co-indexing of the subject valence requirement of the subject control equi verb with the subject of the verbal complement.
- The subject is assigned a semantic role by the subject control equi verb.

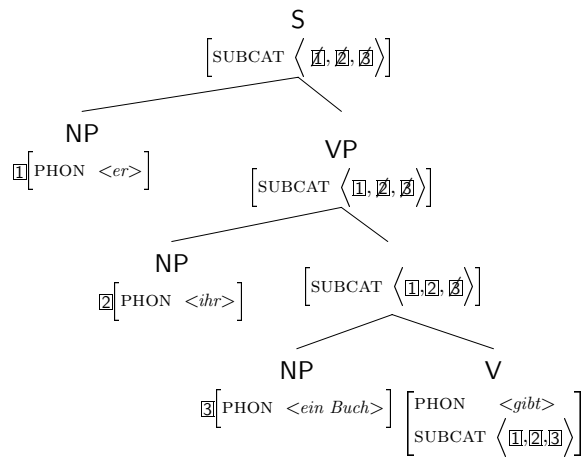
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Two ways of introducing spirits

- Idea 1: Subcategorization requirements are not eliminated from the SUBCAT list but only marked as realized.
- Idea 2: Subject are special and subject spirits arise only as a result of the special subject requirement encoding.

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Idea 1: Marking-off realized valence requirements



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Modified Subcategorization Principle

$$\begin{aligned}
 & \left[\begin{array}{l} \textit{phrase} \\ \text{DTRS } \textit{head-struct} \end{array} \right] \rightarrow \\
 & \left[\begin{array}{l} \text{SYNSEM|LOC|CAT|SUBCAT } \emptyset \oplus \textit{mark-realized}(\emptyset) \oplus \emptyset \\ \text{DTRS } \left[\begin{array}{l} \text{HEAD-DTR|S|L|C|SUBCAT } (\emptyset \oplus \emptyset) \circ \emptyset \textit{list}(\text{LOC realized}) \\ \text{COMP-DTRS } \textit{synsem2sign}(\emptyset) \end{array} \right] \end{array} \right] \\
 & \textit{mark-realized}(\emptyset) := \langle \rangle. \\
 & \textit{mark-realized} \left(\left\langle \left[\begin{array}{l} \text{LOC } \left[\begin{array}{l} \textit{unrealized} \\ \text{CAT } \emptyset \\ \text{CONT } \emptyset \end{array} \right] \mid \emptyset \right\rangle \right\rangle := \left\langle \left[\begin{array}{l} \text{LOC } \left[\begin{array}{l} \textit{realized} \\ \text{CAT } \emptyset \\ \text{CONT } \emptyset \end{array} \right] \mid \textit{mark-realized}(\emptyset) \end{array} \right] \right\rangle.
 \end{aligned}$$

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Traditional Subcategorization Principle

$$\left[\begin{array}{l} \textit{phrase} \\ \text{DTRS } \textit{head-struct} \end{array} \right] \rightarrow \left[\begin{array}{l} \text{SYNSEM|LOC|CAT|SUBCAT } \emptyset \\ \text{DTRS } \left[\begin{array}{l} \text{HEAD-DTR|SYNSEM|LOC|CAT|SUBCAT } \emptyset \oplus \emptyset \\ \text{COMP-DTRS } \textit{synsem2signs}(\emptyset) \end{array} \right] \end{array} \right]$$

$$\begin{aligned}
 & \textit{synsem2sign}(\emptyset) := \langle \rangle. \\
 & \textit{synsem2sign}(\langle \emptyset \mid \emptyset \rangle) := \langle \left[\text{SYNSEM } \emptyset \right] \mid \textit{synsem2sign}(\emptyset) \rangle.
 \end{aligned}$$

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Case assignment (for verbal environments)

Nominative case assignment: In an utterance, the least oblique argument with structural case of each verb unless that argument is raised (= appears on the same subcat list as the verb) is assigned nominative case.

Accusative case assignment: In an utterance, each of the more oblique arguments with structural case of each verb unless that argument is raised is assigned accusative case.

This is straightforwardly formalized in the *Relational Speciate Re-entrant Language (RSRL)* of Richter (1997, 1999, 2000) and Richter et al. (1999).

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Formalizing nominative case assignment

- a) In an utterance,
unembedded-sign \wedge
- b) the least oblique argument with structural case (3) of each verb (1)
- $$\forall 1 \left[L|C \left[\begin{array}{l} \text{HEAD } 2 \text{verb} \\ \text{SUBCAT|FIRST } 3 \left[L|C| \text{HEAD|CASE } \textit{struc} \right] \end{array} \right] \right] \wedge$$
- c) unless that argument is raised (= appears on same subcat list as verb),
- $$\neg \exists 4 \left[\text{SUBCAT } \textit{member}(3) \wedge \textit{member}([L|C|H \ 2]) \right]$$
- d) is assigned nominative case.
- $$\rightarrow 3[L|C|HEAD|CASE \textit{nom}]$$

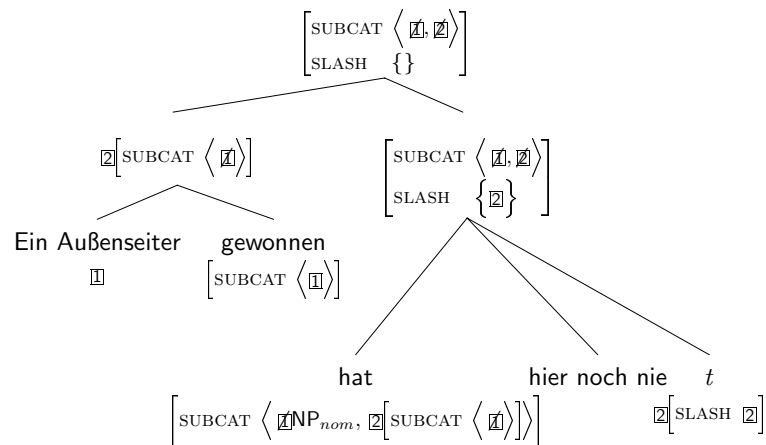
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Formalizing accusative case assignment

- a) In an utterance,
unembedded-sign \wedge
- b) each more oblique arguments with structural case (3) of each verb (1)
- $$\forall 1 \forall 3 \left[L|C \left[\begin{array}{l} \text{HEAD } 2 \text{verb} \\ \text{SUBCAT|REST } \textit{member}(3[L|C|HEAD|CASE \textit{struc}]) \end{array} \right] \right] \wedge$$
- c) unless that argument is raised (= appears on same subcat list as verb)
- $$\neg \exists 4 \left[\text{SUBCAT } \textit{member}(3) \wedge \textit{member}([L|C|HEAD \ 2]) \right]$$
- d) is assigned accusative case.
- $$\rightarrow 3[L|C|HEAD|CASE \textit{acc}]$$

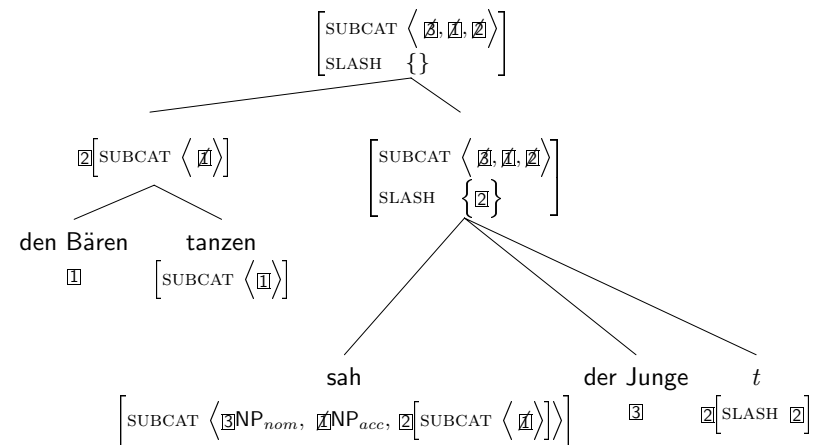
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Analysis sketch for nominative case assignment



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Analysis sketch for accusative case assignment



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Problems with idea 1 of introducing spirits

- Introducing spirits for all dependents is overkill: If one adopts a passive analysis with a passive participle, only subject spirits are needed.
- In a theory with argument attraction verbs, having spirits of all dependents makes the wrong prediction for the so-called remote passive:

(21) a. [*Der /Den Wagen zu reparieren] wurde lange Zeit versucht.
 the_{nom} the_{acc} car to repair was long time tried

 b. [Der /Den Wagen zu reparieren versucht] wurde lange Zeit.
 the_{nom} the_{acc} car to repair tried was long time

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Representing the subject requirement

- Properties of the proposal in Kiss (1995):
 - SUBJ a *head* feature, never realizable
 - A finitization lexical rule derives finite from non-finite verbs, adding the subject to the realizable dependents.
- Evaluation based on our issue:
 - subject visibility nicely captured by SUBJ as head attribute
 - too restrictive: subjects of non-finite verbs *can* sometimes be realized
- Revisions:
 - subjects of non-finite verbs can sometimes be realized
 - mark subject in *head* attribute SUBJ as to whether it is realized

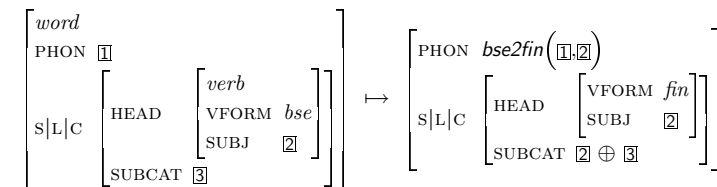
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Idea 2: Introducing only subject spirits How should the subject be represented?

- Pollard and Sag (1994, ch. 9) follow Borsley (1987, 1989) in proposing distinct valence attributes for subjects and complements.
- Alternative idea to re-use the DESIGNATED-ARGUMENT needed for the analysis of passives (Heinz and Matiassek, 1994; Haider, 1985) fails since different from the passive we need to include subjects of ergative verbs.
- For German, Pollard (1996) and Kiss (1995) suggest to encode the subject requirement of non-finite verbs separate from the other requirements (since the subject of a non-finite verb supposedly can never be realized).

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Allowing finite verbs to realize the subject Finitivization Lexical Rule³



³The lexical rules presented here and in the following are intended as relations between classes of words, i.e., description level lexical rules (Meurers, 1995, to appear).

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Allowing non-finite verbs to realize the subject Subject Integration Lexical Rule

$$\left[\begin{array}{l} \text{word} \\ \text{S|L|C} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM } \neg \text{fin} \end{array} \right] \\ \text{SUBJ } \textcircled{1} \\ \text{SUBCAT } \textcircled{2} \end{array} \right] \end{array} \right] \mapsto \left[\begin{array}{l} \text{S|L|C} \left[\begin{array}{l} \text{HEAD|SUBJ } \textit{mark-realized}(\textcircled{1}) \\ \text{SUBCAT } \textcircled{1} \oplus \textcircled{2} \end{array} \right] \end{array} \right]$$

The application domain of the rule can be restricted further, as soon as the relevant factors are determined.

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Revised subject-to-subject raising entry

$$\left[\begin{array}{l} \text{PHON } \langle \textit{scheinen} \rangle \\ \text{S|L} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM } \textit{bse} \end{array} \right] \\ \text{SUBJ } \textcircled{1} \end{array} \right] \\ \text{SUBCAT } \textcircled{3} \oplus \left\langle \begin{array}{l} \text{L} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM } \textit{zu-inf} \end{array} \right] \\ \text{SUBJ } \textcircled{1} \\ \text{SUBCAT } \textcircled{3} \end{array} \right] \\ \text{CONT } \textcircled{2} \end{array} \right] \end{array} \right\rangle \end{array} \right] \\ \text{CONT } \textit{scheinen}'(\textcircled{2}) \end{array} \right] \end{array} \right]$$

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Revised Traditional Subcategorization Principle

$$\left[\begin{array}{l} \text{phrase} \\ \text{DTRS } \textit{head-struct} \end{array} \right] \rightarrow \left[\begin{array}{l} \text{SYNSEM|LOC|CAT|SUBCAT } \textcircled{1} \\ \text{DTRS} \left[\begin{array}{l} \text{HEAD-DTR|SYNSEM|LOC|CAT|SUBCAT } (\textcircled{1} \oplus \textcircled{2}) \circ \textit{list}(\text{LOC } \textit{realized}) \\ \text{COMP-DTRS } \textit{synsems2signs}(\textcircled{2}) \end{array} \right] \end{array} \right]$$

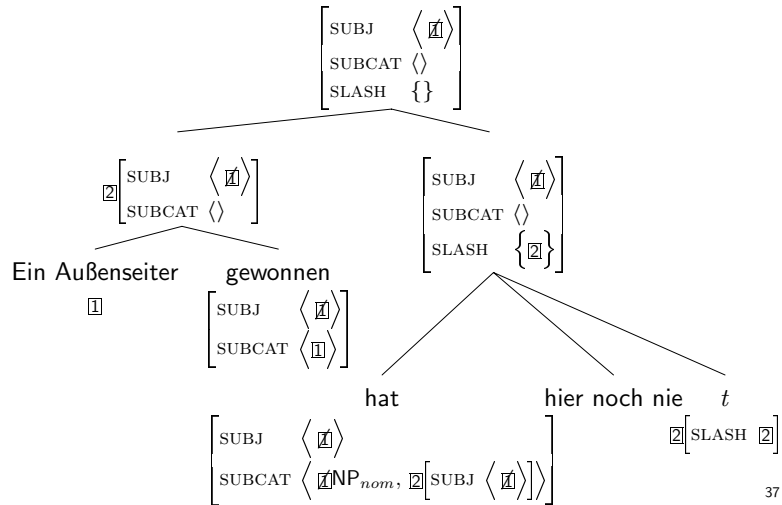
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Revised subject-to-object raising entry

$$\left[\begin{array}{l} \text{PHON } \langle \textit{sehen} \rangle \\ \text{S|L} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM } \textit{bse} \end{array} \right] \\ \text{SUBJ } \langle \text{NP } \textcircled{1} \rangle \\ \text{SUBCAT } \textcircled{2} \oplus \textcircled{3} \oplus \left\langle \begin{array}{l} \text{L} \left[\begin{array}{l} \text{CAT} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \text{verb} \\ \text{VFORM } \textit{bse} \end{array} \right] \\ \text{SUBJ } \textcircled{2} \\ \text{SUBCAT } \textcircled{3} \end{array} \right] \\ \text{CONT } \textcircled{4} \end{array} \right] \end{array} \right\rangle \end{array} \right] \\ \text{CONT } \textit{sehen}'(\textcircled{1}, \textcircled{4}) \end{array} \right] \end{array} \right]$$

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Revised analysis sketch for nominative case assignment



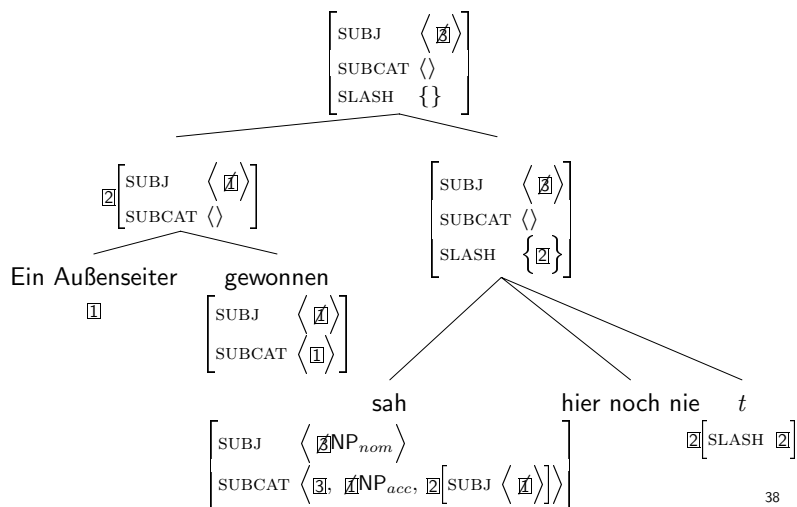
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What information should be represented by a spirit?

- Having spirits be entire synsem objects is empirically undermotivated (only evidence for case and subject-verb agreement).
- It is also problematic for the theory of non-finite complements:
 - Since the entire subject synsem is always visible, an equi verb can in principle refer to the index of an already realized subject.
 - Why does this case never arise empirically (spirits are restricted to raising contexts)?
- How about reducing the representation of spirits to syntactic information?

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Revised analysis sketch for accusative case assignment



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Outlook: Reducing spirits to syntactic information

- To obtain a reduced, syntactic representation for spirits, one has to separate subject verb agreement from the semantic index. Kathol (1999) convincingly argued on independent empirical grounds that such an AGR attribute should be introduced.
- By making sure a reduced representation can never be realized, this ideally would also eliminate the need for explicitly marking synsems as realized.
- The reduced representation would, however, have to serve like an ordinary synsem with respect to being raised so that case and agreement can be established by the standard local mechanisms.
- How much information needs to be present for raising in general?

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Summary

- Subjects in German sometimes appear as part of a fronted non-finite projection when selected by a raising predicate.
- Case assignment and subject-verb agreement is established between the realized subject and the highest verb it could be raised to.
 - Raising takes place even for NPs realized as part of the complement.
 - raising of spirits
 - Ordinary local case assignment and agreement is sufficient then.
- Two options worked out:
 - spirits arise for all dependents by modified Subcat Principle
 - only subject spirits by changing subject representation and integration

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