

Non Configurational Case Assignment in HPSG

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1 Introduction

Pollard and Sag (1994), p. 30 (bold font mine):

[A]signment of case to complements, including nominative case assignment to the subject of finite verbs, is simply treated as part of subcategorisation. ·· **There is no separate theory of case (or Case)**. Nominative case assignment takes place directly within the lexical entry of the finite verb.

However, they add in a footnote (fn. 25, p. 30):

We do acknowledge, however, that for languages with more complex case systems, some sort of distinction analogous to the one characterized in GB work as ‘inherent’ vs. ‘structural’ is required.

The aims of this talk:

- to show that structural vs. lexical case distinction, as well as a Case Principle resolving structural cases is useful (if not necessary) for some languages;¹
- to give a general non-configurational formalization of these notions compatible with the traceless dialects of HPSG.

2 German Data

2.1 Lexical Case Assignment Does Not Suffice

See (Pollard, 1994, p. 288):

- (1) *[Den Wagen (acc) zu reparieren] wurde versucht.*
{The car}_{acc} to repair PASS-PAST tried.
‘One tried to repair the car.’

In examples like (1), unlike in the example below (2), *versucht* doesn’t raise the arguments of *reparieren*.

- (2) *[Zu reparieren versucht] wurde der Wagen (nom) lange Zeit.*
To repair tried PASS-PAST {the car}_{nom} long time.
‘One has been trying to repair the car for a long time.’

The argument: What case should *reparieren* assign to its object? It can be neither nominative (see (1)) nor accusative (2). It also cannot be underspecified because it wouldn’t get resolved by *wurde* in (1) (the object is not raised there).

A solution (mentioned by Pollard (1994) and formalized by Heinz and Matiaszek (1994): a case principle saying that (in German) structural NPs which become complement daughters get accusative case, while the ones that become subject daughters get nominative.

2.2 Structural vs. Lexical Dichotomy

Intuitively, structural cases are these cases, which vary according to the syntactical environment and, hence, should be resolved in the grammar. Lexical cases are assigned in the lexicon. (The examples below come from (Pollard, 1994, p. 274), and (Haider, 1984, p. 68) cited after (Haegeman, 1991, p. 175).)

- (3) a. *Ich wasche den Wagen (str → acc).*
I wash {the car}_{acc}.
b. *Der Wagen (str → nom) wird gewaschen.*
{The car}_{nom} PASS washed.
‘The car is being washed.’
c. * *Den Wagen (acc) wird gewaschen.*
{The car}_{acc} PASS washed.
- (4) a. *Ich helfe dem Mann (dat).*
I help {the man}_{dat}.
b. * *Der Mann (nom) wird geholfen.*
{The man}_{nom} PASS helped.
c. *Dem Mann (dat) wird geholfen.*
{The man}_{dat} PASS helped.
‘The man is being helped.’
- (5) a. *Sie gedachte vergangener Freuden (gen).*
She remembered {past joy}_{gen}.
b. *Vergangener Freuden (gen) wurde gedacht.*
{Past joy}_{gen} PASS-PAST remembered.

A solution: lexical items specify their NP complements as either underspecified structural (*str*) or specific lexical (e.g., *dat*):

- (6) a. *waschen*: $\left[\begin{array}{l} \text{S}_{\text{UBJ}} \langle \text{NP}[\text{str}] \rangle \\ \text{COMPS} \langle \text{NP}[\text{str}] \rangle \end{array} \right]$
b. *helfen*: $\left[\begin{array}{l} \text{S}_{\text{UBJ}} \langle \text{NP}[\text{str}] \rangle \\ \text{COMPS} \langle \text{NP}[\text{dat}] \rangle \end{array} \right]$

¹This has been argued for within HPSG for Korean (cf. Yoo (1993), German (cf. Heinz and Matiaszek (1994), Pollard (1994) and Gerdemann (1994)), English (cf. ch. 2 of Grover (1995)) and Polish (cf. Przepiórkowski (1996)). Also the analysis of Icelandic case system of Sag *et al.* (1992) relies on a kind of structural vs. lexical distinction (encoded via features CASE and DCASE) and on a case principle (hard-wired into schema 1) assigning nominative case to structural subjects (p. 316).

3 Polish Data

The data presented in this section is based on Przepiórkowski (1996).

3.1 Genitive of Negation

Example (7) shows that a case principle is useful also in Polish. In this language all otherwise accusative complements of verbs in scope of negation change its case into genitive. Without a case principle this would have to be stated in the lexicon by postulating two lexical entries of each such verb (admittedly, possibly related by a lexical rule). On the other hand, examples (8)–(9) show that, unlike nominative, accusative and the genitive of negation (we remain agnostic as to the status of other occurrences of genitive), dative and instrumental are better off analysed as lexical cases; they are not affected by the GoN.

- (7) a. *Janek wspiera Marię*
John_{nom} supports Mary_{acc}.
'John is supporting Mary.'
- b. *Janek nie wspiera Marii*
John_{nom} not supports Mary_{gen}.
'John is not supporting Mary.'
- (8) a. *Janek pomaga Tomkowi.*
John_{nom} helps Tom_{dat}.
'John is helping Tom.'
- b. *Janek nie pomaga Tomkowi.*
John_{nom} not helps Tom_{dat}.
'John is not helping Tom.'
- (9) a. *Janek pogardza Tomkiem*
John_{nom} scorns Tom_{ins}.
'John scorns Tom.'
- b. *Janek nie pogardza Tomkiem*
John_{nom} not scorns Tom_{ins}.
'John doesn't scorn Tom.'

3.2 Nominalization

The examples below should be compared with (7)–(9) above. They independently confirm the observations we've made above.² (Similar facts can be observed in German, cf. (Heinz and Matiassek, 1994, p. 206).)

- (10) a. *Janek wspiera Marię*
John_{nom} supports Mary_{acc}.
'John is supporting Mary.'
- b. *wspieranie Marii (Janka)*
helping Mary_{gen} (John_{gen})
'the help for/from Mary (John)'

²In Przepiórkowski (1996) we actually argue against structurality of adnominal genitive.

- (11) a. *Janek pomaga Tomkowi.*
John_{nom} helps Tom_{dat}.
'John is helping Tom.'
- b. *pomaganie Tomkowi*
helping Tom_{dat}
'the help for/*from Tom'
- c. *pomaganie Janka*
helping John_{gen}
'the help from/*for John'
- (12) a. *Janek pogardza Tomkiem*
John_{nom} scorns Tom_{ins}.
'John scorns Tom.'
- b. *pogadzanie Tomkiem*
scorning Tom_{ins}
'the scorn for/*from Tom'
- c. *pogadzanie Janka*
scorning John_{gen}
'the scorn from/*for John'

3.3 Indefinite Numerals

In Polish, there is a class of indefinite numerals which are traditionally analyzed as having **only nominative and accusative** forms (cf. Doroszewski (1980), e.g., *dużo* ('a lot'), *mało* ('little'), *trochę* ('a little'), *sporo* ('quite a lot'), etc. The puzzle concerning these numerals is that they are grammatical in **some positions which normally require genitive case**, but not in others:³

- (13) a. *Nie mam w domu (zbyt) dużo chleba.*
Not have_{1st,sing} in home (too) a lot of_{nom/acc} bread_{gen}.
'I don't have (too) much bread at home.'
- b. *Nie mam w domu chleba.*
Not have_{1st,sing} in home bread_{gen}.
'I don't have bread at home.'
- c. * *Nie mam w domu chleb.*
Not have_{1st,sing} in home bread_{acc}.
'I don't have bread at home.'
- (14) a. *Nie lubię dużo osób.*
Not like_{1st,sing} a lot of_{nom/acc} people_{gen}.
'I don't like a lot of people.'
- b. *Nie lubię tych osób.*
Not like_{1st,sing} these_{gen} people_{gen}.
'I don't like these people.'
- c. * *Nie lubię te osoby.*
Not like_{1st,sing} these_{acc} people_{acc}.
'I don't like these people.'

³In these examples b. and c. show that the positions in question are true genitive positions (b.), i.e., that accusative cannot occur there (c.).

- (15) a. * *Boję dużo osób.*
 'I am afraid of a lot of people.'
Boję tych osób.
- b. *Boję te osoby.*
 'I am afraid of these people.'
- c. * *Boję tych osób.*
 'I am afraid of these people.'

With structural vs. lexical distinction in hand this behaviour of the *dużo*-phrases can be easily accounted for by postulating that *dużo* can bear only structural case:

$$(16) \left[\begin{array}{l} \text{word} \\ \text{PHON } \langle \text{dużo} \rangle \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{HEAD|AGR|CASE str} \\ \text{COMPS } \langle \text{NP[AGR|CASE gen]} \rangle \end{array} \right] \end{array} \right]$$

3.4 Cases in Polish

On the basis of the foregoing examples we postulate the following case hierarchy for Polish:⁴

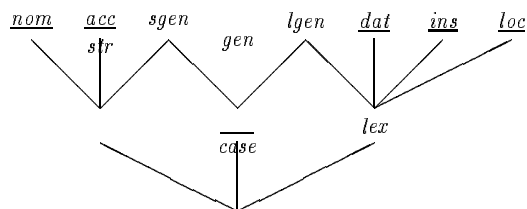


Figure 1: Case Hierarchy for Polish

4 Formalization

4.1 Summary of the Problems

The problems with the previous accounts are following:

- Pollard and Sag (1994): no account of case alternation;

⁴The underlined types correspond to the observable (distributional) cases in Polish with the exception of vocative, whose case status is doubtful (cf. Willim(1990)).

- Pollard (1994): uses structural vs. lexical case distinction but doesn't formalize structural case assignment;
- Heinz and Matiaszek (1994), Przepiórkowski (1996) and Grover (1995) assign case configurationally (via DTRS attribute);
- Heinz and Matiaszek (1994) and Przepiórkowski (1996) assume traces;
- Grover (1995): redundant case principle.

The aim of this section is to try to find a solution which would be non-configurational, non-redundant and traceless.⁵

4.2 Solution

Initial assumptions:

- UDCs via CELR and SELR, hence no traces;
- VALENCE features (SUBJ, COMPS and SPR) appropriate for *signs'* category, ARG-S appropriate for *words'* category.

4.2.1 In the Search of a Single Case Assignment Locus

There are four candidates for case assignment locus: SLASH, DTRS, VALENCE and ARG-S because values of these attributes contain relevant *synsems*.

SLASH Only extracted NPs appear there; in order to make SLASH a single domain of case assignment all complements would have to appear in SLASH at some point. This would be very non-intuitive and rather far-fetched.

DTRS Extracted complements appear in DTRS only in *head-filler-structures*. In order to assign case there, they would have to carry some local information, e.g., subject vs. complement status, whether in the scope of negation, etc. Such formalization would also be redundant.

VALENCE Extracted NPs not present in the VALENCE features, so this is not a good candidate.

ARG-S All arguments (according to some accounts, also adjuncts, cf. Kasper (1994), van Noord and Bouma (1994)) present here, but only at the lexical level.

4.2.2 Bringing Global Information to ARG-S

Structural case cannot be resolved on the basis of local information only, cf. e.g. (1)–(2). However, it can be resolved if the information is added whether a given complement has been 'cancelled' (realized) from the given lexical item.

The trick: let the values of ARG-S and of the VALENCE features be not lists of *synsems*, but lists of structures $\left[\begin{array}{l} \text{arg} \\ \text{ARG synsem} \\ \text{REALIZED bin} \end{array} \right]$, where *bin* has + and – as its maximal subtypes. In the lexicon, the value of REALIZED is normally underspecified.

⁵The non-configurational case assignment technique presented here is, however, compatible also with the traditional, 'traced', UDC account of Pollard and Sag (1994), as well as with the account of Avgustinova and Oliva (1996), which assumes neither traces nor lexical rules.

The way it is resolved is following:

1. SELR and CELR, which remove arguments from the VALENCE features mark these arguments as REALIZED+;
2. the (slightly modified) valence principle marks the arguments which are being cancelled as REALIZED+;
3. lexical items taking unsaturated complements mark all unrealized arguments of these complements as REALIZED-.

4.3 Two Examples

The examples below illustrate the foregoing considerations.

4.3.1 A Polish Example: Genitive of Negation

Formalizing the Case Principle for Polish In a *head-complement-structure* of category

...

- **verb[-neg]**: the structural object (if any) has a CASE value of *acc*,
- **verb[+neg]**: the structural object (if any) has a CASE value of *sgen*,

...

The above clauses of the Case Principle for Polish (cf. Przepiórkowski (1996)) can be formalized via the following constraints:

$$(17) \quad \left[\begin{array}{c} \text{cat} \\ \text{NEG -} \\ \text{ARG-S } \boxed{1} \text{ne_list } \oplus \left(\left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \oplus \boxed{2} \text{list} \right) \end{array} \right] \rightarrow \left[\text{ARG-S } \boxed{1} \oplus \left(\left[\begin{array}{c} \text{ARG NP[acc]} \end{array} \right] \oplus \boxed{2} \right) \right]$$

$$(18) \quad \left[\begin{array}{c} \text{cat} \\ \text{NEG +} \\ \text{ARG-S } \boxed{1} \text{ne_list } \oplus \left(\left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \oplus \boxed{2} \text{list} \right) \end{array} \right] \rightarrow \left[\text{ARG-S } \boxed{1} \oplus \left(\left[\begin{array}{c} \text{ARG NP[sgen]} \end{array} \right] \oplus \boxed{2} \right) \right]$$

The Example

- (19) Marii Janek nie lubi.
Mary_{gen} John_{nom} NEG likes.

$$(20) \quad \text{lubi (lexical entry):}^6 \quad \left[\begin{array}{c} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \boxed{2} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{ARG-S } \langle \boxed{1}, \boxed{2} \rangle \end{array} \right]$$

$$(21) \quad \text{lubi (lexical entry, after CELR):} \quad \left[\begin{array}{c} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \rangle \\ \text{ARG-S } \langle \boxed{1}, \boxed{2} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

⁶All the feature structures in these examples are partial and schematic.

$$(22) \quad \text{nie lubi:}^7 \quad \left[\begin{array}{c} \text{HEAD verb[fin]} \\ \text{NEG +} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

$$(23) \quad \text{Janek nie lubi:} \quad \left[\begin{array}{c} \text{HEAD verb[fin]} \\ \text{NEG +} \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

$$\text{lubi (inside the phrase):} \quad \left[\begin{array}{c} \text{NEG +} \\ \text{ARG-S } \langle \boxed{1} \left[\begin{array}{c} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{2} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \rangle \end{array} \right]$$

Now the constraint (18) applies resulting in the following *category* value of the embedded word:

$$\text{lubi (inside the phrase, partially resolved):}^8 \quad \left[\begin{array}{c} \text{NEG +} \\ \text{ARG-S } \langle \boxed{1} \left[\begin{array}{c} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{2} \left[\begin{array}{c} \text{ARG NP[sgen]} \\ \text{REALIZED +} \end{array} \right] \rangle \end{array} \right]$$

$$(24) \quad \text{Marii Janek nie lubi:} \quad \left[\begin{array}{c} \text{HEAD verb[fin]} \\ \text{NEG +} \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \} \end{array} \right]$$

4.3.2 A German Example

Since there are no AcI constructions in Polish, we illustrate the interactions between this phenomenon and case assignment with a German AcI example.⁹

Case Principle for German

$$(25) \quad \left[\begin{array}{c} \text{cat} \\ \text{ARG-S } \langle \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \oplus \boxed{2} \text{list} \rangle \end{array} \right] \rightarrow \left[\text{ARG-S } \langle \left[\begin{array}{c} \text{ARG NP[nom]} \end{array} \right] \oplus \boxed{2} \right] \right]$$

$$(26) \quad \left[\begin{array}{c} \text{cat} \\ \text{ARG-S } \boxed{1} \text{ne_list } \oplus \left(\left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right] \oplus \boxed{2} \text{list} \right) \end{array} \right] \rightarrow \left[\text{ARG-S } \boxed{1} \oplus \left(\left[\begin{array}{c} \text{ARG NP[acc]} \end{array} \right] \oplus \boxed{2} \right) \right]$$

The Example

- (27) Den Wagen (acc) lüßt sie (nom) ihn (acc) dem Hans (dat) geben.
{The car}_{acc} CAUS she_{nom} he_{acc} {the Hans}_{dat} give.
'She made him give the car to Hans.'

$$(28) \quad \text{geben (lexical entry):} \quad \left[\begin{array}{c} \text{HEAD verb[inf]} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \boxed{2} \left[\begin{array}{c} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right], \boxed{3} \left[\begin{array}{c} \text{ARG NP[dat]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{ARG-S } \langle \boxed{1}, \boxed{2}, \boxed{3} \rangle \end{array} \right]$$

⁷We don't commit ourselves to any particular analysis of negation in Polish here. We assume, though, that verbs in the scope of negation bear the NEG+ feature, while non-negated verbs are NEG-.

⁸Similar constraint (not stated here) resolves the case of the subject to *nom*.

⁹We don't commit ourselves to any particular grammar of German here.

$$(29) \quad \textit{geben} \text{ (lexical entry, after CELR): } \left[\begin{array}{l} \text{HEAD verb[inf]} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \boxed{3} \left[\begin{array}{l} \text{ARG NP[dat]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{ARG-S } \langle \boxed{1}, \boxed{2} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{3} \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

$$(30) \quad \textit{dem Hans geben: } \left[\begin{array}{l} \text{HEAD verb[inf]} \\ \text{SUBJ } \langle \boxed{1} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

$$\textit{geben: ARG-S } \langle \boxed{1}, \boxed{2} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{3} \left[\begin{array}{l} \text{ARG NP[dat]} \\ \text{REALIZED +} \end{array} \right] \rangle$$

$$(31) \quad \textit{laft} \text{ (lexical entry):}^{10} \left[\begin{array}{l} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \boxed{4} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \boxed{5} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED bin} \end{array} \right], \boxed{6} \left[\begin{array}{l} \text{ARG VP } \left[\begin{array}{l} \text{SUBJ } \langle \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED -} \end{array} \right] \rangle \\ \text{COMPS } \langle \rangle \end{array} \right] \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{ARG-S } \langle \boxed{4}, \boxed{5}, \boxed{6} \rangle \end{array} \right]$$

$$(32) \quad \textit{laft ihn dem Hans geben: } \left[\begin{array}{l} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \boxed{4} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED bin} \end{array} \right] \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

$$\textit{geben: ARG-S } \langle \boxed{1} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED -} \end{array} \right], \boxed{2} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{3} \left[\begin{array}{l} \text{ARG NP[dat]} \\ \text{REALIZED +} \end{array} \right] \rangle$$

$$\textit{laft: ARG-S } \langle \boxed{4}, \boxed{5} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{6} \left[\begin{array}{l} \text{ARG VP } \left[\begin{array}{l} \text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle \rangle \end{array} \right] \\ \text{REALIZED +} \end{array} \right] \rangle$$

$$(33) \quad \textit{laft sie ihn dem Hans geben: } \left[\begin{array}{l} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \boxed{2} \} \end{array} \right]$$

geben: as above

$$\textit{laft: ARG-S } \langle \boxed{4} \left[\begin{array}{l} \text{ARG NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{5} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED +} \end{array} \right], \boxed{6} \left[\begin{array}{l} \text{ARG VP } \left[\begin{array}{l} \text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle \rangle \end{array} \right] \\ \text{REALIZED +} \end{array} \right] \rangle$$

$$(34) \quad \textit{Den Wagen laft sie ihn dem Hans geben: } \left[\begin{array}{l} \text{HEAD verb[fin]} \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle \rangle \\ \text{INHER|SLASH } \{ \} \end{array} \right]$$

geben (with constraint (26):

$$\text{ARG-S } \langle \boxed{1} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[str]} \\ \text{REALIZED -} \end{array} \right], \boxed{2} \left[\begin{array}{l} \text{ARG NP[acc]} \\ \text{REALIZED +} \end{array} \right], \boxed{3} \left[\begin{array}{l} \text{ARG NP[dat]} \\ \text{REALIZED +} \end{array} \right] \rangle$$

laft (with constraints (25) and (26):

$$\text{ARG-S } \langle \boxed{4} \left[\begin{array}{l} \text{ARG NP[nom]} \\ \text{REALIZED +} \end{array} \right], \boxed{5} \left[\begin{array}{l} \text{ARG } \boxed{7} \text{NP[acc]} \\ \text{REALIZED +} \end{array} \right], \boxed{6} \left[\begin{array}{l} \text{ARG VP } \left[\begin{array}{l} \text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle \rangle \end{array} \right] \\ \text{REALIZED +} \end{array} \right] \rangle$$

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¹⁰For presentation reasons we assume here that *lassen* raises only the subject of the embedded verb (rather than all its arguments). Nothing hinges on this assumption.