To be presented at the *Sixth Int. Conference on HPSG*, 1999. Edinburgh, Scotland.

Argument raising meets adjuncts-as-dependents and traceless extraction

Kordula De Kuthy and W. Detmar Meurers
(Universität Tübingen)

1 The issue

Building on the rich literature on German partial-VP topicalization, De Kuthy and Meurers (1998, 1999) present an account of general partial constituent fronting in German. The core of their proposal is a lexical principle which introduces argument raising as a general possibility in the mapping from the argument structure to the valence attributes of verbal words. The principle thereby makes it possible to license partial complements of three different categories: partial APs, NPs, and VPs. Apart from providing a uniform approach to different kinds of partial constituents, the proposal is attractive since it also explains the seemingly non-local interaction in cases where a fronted (partial) VP topicalization contains a partial NP or AP on the basis of local lexical argument raising specifications.

A shortcoming of the proposal, however, is that it only deals with complements which are partial as a result of the complement lacking one or more *arguments*. As we will motivate below, there is a second possibility which deserves more attention, namely that a constituent is partial because it lacks one (or several) of its *adjuncts*. In the traditional HPSG framework of Pollard and Sag (1994) assumed by De Kuthy and Meurers this second possibility is problematic since adjunction is a syntactic process not reflected in the lexical argument or valence structure. Their generalized argument raising approach therefore cannot easily be extended to the cases in which partiality results from displaced adjuncts. On the other hand, following Miller (1992) and van Noord and Bouma (1994), a significant line of research in HPSG has argued for a lexicalization of adjunct selection parallel to the selection of arguments. While the early approaches employed lexical rules to add adjuncts onto the subcategorization list of the head, in the recent proposal of Bouma et al. (1998) a lexical principle mapping the argument structure to a dependents list is employed which in addition to the mapping of arguments adds a list of adjuncts to the dependents.

Address: Seminar für Sprachwissenschaft, Kl. Wilhelmstr. 113, 72074 Tübingen, Germany
Email: `kdk` or `dm@sfs.nphil.uni-tuebingen.de`
WWW: `http://www.sfs.nphil.uni-tuebingen.de/~kdk/` or `/~dm/`

The purpose of this abstract is to investigate how the generalized argument raising approach to partial constituents of De Kuthy and Meurers (1999) (henceforth: DKM) can be combined with the lexicalized treatment of adjuncts proposed by Bouma et al. (1998) (henceforth: BMS) to yield a more general theory of dependent realization including arguments, adjuncts and raised dependents of both kinds. Apart from extending the empirical coverage of argument raising approaches to partial constituents, such an integration of the two proposals is also interesting from a theoretical perspective: On the one hand, the core mechanisms of the two proposals, i.e., the lexical principles ensuring the relevant mappings, are very similar and a unified approach therefore promising. On the other hand, BMS include a traceless extraction as part of their lexical argument mapping while DKM rely on a trace-based unbounded dependency theory – which we will show to be crucial to obtain the intended structures. Attempting to integrate the two proposals on the theoretical side thus provides important feedback on the interdependence of some of the most widely employed mechanisms in HPSG: argument-raising, adjuncts as dependents, and traceless extraction.

In the following, we first deal with the integration of argument raising with adjuncts as dependents, before turning to the interaction of generalized argument raising and a traceless extraction theory.

2 "Argument" Raising of Adjuncts

2.1 The data: Constituents missing adjuncts

In their approach to partial fronting in German, DKM discuss examples where partial VPs, APs or NPs have been fronted, always leaving behind one or more *arguments*. Their discussion fails to mention that one also finds examples where *adjuncts* modifying the fronted constituent are left behind in the Mittelfeld. The following sentences illustrate this possibility with adjuncts of fronted verbal, adjectival, and nominal constituents.

(1) [Frieren] müssen sie deshalb aber *in der nächsten Woche* nicht.
freeze have to they therefore but in the next week not
'But they will not have to freeze next week because of this.'

(2) [Interessiert] ist er *vor allem* an den Umständen des Diebstahls.
interested is he before everything in the circumstances of the theft
'He is especially interested in the circumstances of the theft.'

(3) [Nur zwei Gemälde] werden *aus seinem Spätwerk* gezeigt.
only two paintings are from his late works shown
'Only two paintings were shown from the end of his career.'

In (1) the partially fronted VP *frieren* leaves behind the adjunct PP *in der nächsten Woche.* In (2) the fronted AP *interessiert* leaves behind the modifying adverbial particle *vor allem.* Finally, in (3) the adjunct PP *aus seinem Spätwerk* modifies the fronted partial NP *nur zwei Gemälde.* Note that in all three cases the adjunct in the Mittelfeld is interpreted as modifying the fronted constituent and not the finite verbs *müssen*, *ist*, or *werden*.

For the cases discussed by DKM, in which a complement of a fronted partial constituent remains behind in the Mittelfeld, they argue that these complements are raised and realized as the complements of the embedding verb. So the raising of arguments explains how it is possible to license the fronted partial element as a constituent. Since the above examples involving adjuncts appear to be parallel to the complement case, a partial constituent apparently cannot only result from raising of arguments but also from raising of adjuncts.

An alternative analysis for examples like (1) with a fronted partial VP and an adjunct in the Mittelfeld is proposed by Müller (1997). He analyzes this construction as an extraction of the head of a head-adjunct structure. While for German there are good arguments for allowing some kind of displacement of a finite verbal head to account for verb-second, it is much less clear whether movement of heads should be allowed in any other case. For example, the verb-second phenomenon is clause-bound, while the topicalization of partial VPs is not. And it is clear that generally allowing head extraction vastly overgenerates. In light of this problematic character of the only available analysis of the phenomenon in HPSG, it appears to be well motivated to in the following pursue our idea of generalizing argument raising to adjuncts as dependents.

2.2 Towards an integrated theory

At the heart of the adjuncts-as-dependents proposal of BMS are two lexical principles. The Argument Realization Principle shown in figure 1 specifies that the

$$\textit{verb(al-word)} \rightarrow \begin{bmatrix} \textsc{s} \mid \textsc{loc} & \begin{bmatrix} \textsc{cat} \mid \textsc{head} & \boxed{3} \\ \textsc{cont} \mid \textsc{key} & \boxed{2} \end{bmatrix} \\ \textsc{deps} & \boxed{1} \oplus \textit{list}\left(\begin{bmatrix} \textsc{l} & \begin{bmatrix} \textsc{cat} \mid \textsc{head} \mid \textsc{mod} & \begin{bmatrix} \textsc{l} \mid \textsc{c} \mid \textsc{head} & \boxed{3} \end{bmatrix} \\ \textsc{cont} \mid \textsc{key} \mid \textsc{arg} & \boxed{2} \end{bmatrix} \end{bmatrix} \right) \\ \textsc{arg-st} & \boxed{1} \end{bmatrix}$$

Figure 1: Argument Realization (BMS)

dependents of a verbal word, which are housed under a newly introduced feature DEPENDENTS, consist of the elements of the argument structure (ARG-ST) plus a (potentially empty) list of adjuncts.[1] The Dependent Realization Principle shown in figure 2 then defines how the arguments and adjuncts collected on DEPS are mapped to the valence attributes SUBJ and COMPS. The combined effect of these two principles is that adjuncts are realized as complements of a verb in a head-complement structure.

[1] Here and throughout we show the principles in an explicit form including the full paths. Also, the Argument Realization Principle provided in figure 1 corrects an error in the principle provided by BMS on p. 90 where instead of the intended semantic argument of the adjuncts themselves (L | CONT | KEY | ARG), the semantic argument of the elements modified by the adjuncts (L | MOD | L | CONT | KEY | ARG) is specified to be identical with the key relation introduced by the verb.

$$word \;\rightarrow\; \begin{bmatrix} \textsc{s}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{val} & \begin{bmatrix} \textsc{subj} & \boxed{1} \\ \textsc{comps} & \boxed{2} \end{bmatrix} \\ \textsc{deps} & \boxed{1} \oplus \boxed{2} \end{bmatrix}$$

Figure 2: Dependent Realization (BMS, preliminary)

To ensure that not only adjuncts of verbs but adjuncts in general can occur as dependents, as a first step towards adopting the BMS proposal to the data presented in section 2.1 we generalize the antecedent of the Argument Realization Principle to *word*.[2]

Turning to the heart of the second proposal to be integrated, the partial constituent approach of DKM, we show their Basic Lexical Argument Raising Principle in figure 3. The relevant part of the principle is that the COMPS list consists

$$\begin{bmatrix} \textit{word} & \\ \textsc{s}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{head} & \begin{bmatrix} \textit{verb} & \\ \textsc{vform} & \textit{bse} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textsc{s}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{v} & \begin{bmatrix} \textsc{subj} & \langle \boxed{1} \rangle \\ \textsc{comps} & \textit{raised}(\boxed{3}) \oplus \boxed{2} \end{bmatrix} \\ \textsc{arg-st} & \langle \boxed{1} \mid \boxed{2} \rangle \;\wedge\; (\boxed{3} \bigcirc \textit{indep}) \end{bmatrix}$$

Figure 3: Basic Lexical Argument-Raising Principle (DKM)

of elements of the argument structure plus possibly some elements raised from $\boxed{3}$. Whether something can be raised from a specific argument follows from the definition of the relation *raised* which we will come back to later on.

To combine this principle with the setup of BMS, one first needs to determine where argument raising should take place. Either it is integrated into the Argument Realization Principle mapping from ARG-ST to DEPS. Or it could be part of the mapping between DEPS and the valence features in the Dependent Realization Principle. Since the DEPS list contains adjuncts and arguments, integrating argument raising into the Dependent Realization Principle would allow argument raising from adjuncts in addition to the traditional argument raising from complements. We are not aware of empirical or theoretical evidence for such partiality of adjuncts. It therefore seems more appropriate to integrate argument raising into the mapping from ARG-ST to DEPS.

The argument realization principle extended to include argument raising is shown in figure 4. To see how this new principle manages to provide us with con-

$$word \;\rightarrow\; \begin{bmatrix} \textsc{s}|\textsc{loc} & \begin{bmatrix} \textsc{cat}|\textsc{head} & \boxed{3} \\ \textsc{cont}|\textsc{key} & \boxed{2} \end{bmatrix} \\ \textsc{deps} & \left(\textit{raised}(\boxed{3}.\boxed{4}) \oplus \boxed{1}\right) \bigcirc \textit{list}\left(\begin{bmatrix} \textsc{l} & \begin{bmatrix} \textsc{cat}|\textsc{head}|\textsc{mod} & [\textsc{l}|\textsc{c}|\textsc{head}\ \boxed{3}] \\ \textsc{cont}|\textsc{key}|\textsc{arg} & \boxed{2} \end{bmatrix} \end{bmatrix}\right) \\ \textsc{arg-st} & \boxed{1} \;\wedge\; (\boxed{4} \bigcirc \textit{indep}) \end{bmatrix}$$

Figure 4: Extended Argument Realization

[2]While the data presented in section 2.1 shows that at least some adjuncts of non-verbal heads should be treated as dependents, this clearly is not the case for all kinds of adjuncts. A more elaborate theory of adjunct realization will have to restrict the subclass of adjuncts which are intended to construct as dependents and which are not.

stituents that are partial due to missing adjuncts, we need to define the relation *raised* which parameterizes the principle by specifying from which arguments it is possible to raise elements. Since the antecedent of the principle in figure 4 covers all words, and not just the base form verbs for which argument raising is specified in the DKM principle in figure 3, a new argument has to be added to the original definition of *raised* to take the head value of the word into account. The otherwise unchanged definition is shown in figure 5. In essence, it specifies

$$raised\big(head, \langle\rangle\big) := \langle\rangle.$$

$$raised\left(\begin{bmatrix}\textsc{vform} & bse\end{bmatrix}, \left\langle \begin{bmatrix}\textsc{lex} & + \\ \textsc{l}\,|\,\textsc{c} & \begin{bmatrix}\textsc{head} & verb \vee adj \\ \textsc{v}\,|\,\textsc{comps} & \boxed{1}\end{bmatrix}\end{bmatrix} \right\rangle\right) := \boxed{1}\; list\Big(\begin{bmatrix}\textsc{lex} & -\end{bmatrix}\Big).$$

$$raised\left(\begin{bmatrix}\textsc{vform} & bse\end{bmatrix}, \left\langle \begin{bmatrix}\textsc{l}\,|\,\textsc{c} & \begin{bmatrix}\textsc{head} & noun \\ \textsc{v}\,|\,\textsc{comps} & \boxed{1}\end{bmatrix}\end{bmatrix} \right\rangle\right) := \boxed{1}.$$

Figure 5: Definition of possible argument-raising sources

that verbal, adjectival or nominal arguments of base form verbs can be partial constituents if they contribute their remaining COMPS elements. The important new aspect is that as a result of the Extended Argument Realization Principle and its interaction with the Dependents Realization Principle, the COMPS list also includes adjuncts. They can thus be raised just like ordinary complements and thereby leave a partial constituent behind.

To complete the picture, we have to show how the arguments and adjuncts collected on the DEPS structure are mapped to the valence features. The Dependent Realization Principle of BMS (figure 2) is not sufficient here for two reasons: Firstly, the principle does not specify what happens with the valence features of words that do not have a subject, as for example nouns, adjectives, or German subjectless verbs. In these cases all dependents should be mapped onto the COMPS list. Secondly, in case a dependent is raised from the first element on ARG-ST, i.e., the subject, the raised constituent will wind up as the first element on DEPS.[3] The Dependent Realization Principle of figure 2 would then map this raised dependent onto SUBJ instead of the real subject.

Regarding the first problem, every linguistic theory will have to provide a way of distinguishing those words which "assign a subject theta role" from those which do not – be it by lexical stipulation or derivable from other notions. For the purpose of this abstract it therefore is safe to assume that in the lexicon all words which require a subject are marked $\begin{bmatrix}\textsc{subj} & ne\text{-}list\end{bmatrix}$ while all other words bear a $\begin{bmatrix}\textsc{subj} & \langle\rangle\end{bmatrix}$ specification. To solve the two problems, it then is sufficient to relax the original Dependent Realization Principle of figure 2 to use shuffle ($\bigcirc$) instead of append ($\oplus$) and ensure identification of the subject with the help of the principle in figure 6.

[3]That raised arguments are specified to precede the argument raising source on the COMPS list is intentional. DKM use this formulation of argument raising to disallow the ungrammatical constructions in which an argument is realized lower in the tree than the argument raising source it was raised from.

$$\left[\textsc{s}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{val}\,|\,\textsc{subj}\ \left\langle \boxed{1} \right\rangle\right] \rightarrow \left[\textsc{arg-st}\,|\,\textsc{hd}\ \boxed{1}\right]$$

Figure 6: Subject Identification Principle

2.2.1 A short example

Now that the theory is complete, let us return to the example (1). The partially fronted constituent is licensed in the following way. The verb *frieren* in (1) has one argument (and accordingly one element on its ARG-ST list): the subject NP. According to the Extended Argument Realization Principle in figure 4 the occurrence of *frieren* in the example sentence has two elements on its DEPS list: its own argument and the PP adjunct *in der nächsten Woche*. The Dependent Realization Principle then ensures that the dependents are mapped onto the valence features as shown in the description of *frieren* in figure 7.

$$\begin{bmatrix} \textsc{phon} & \langle \textit{frieren} \rangle \\ \textsc{s}\,|\,\textsc{l}\,|\,\textsc{cat} & \begin{bmatrix} \textsc{head} & \boxed{3} \\ \textsc{val} & \begin{bmatrix} \textsc{subj} & \left\langle \boxed{1} \right\rangle \\ \textsc{comps} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \end{bmatrix} \\ \textsc{deps} & \left\langle \boxed{1}, \boxed{2}\left[\textsc{l}\,|\,\textsc{c}\,|\,\textsc{h}\,|\,\textsc{m}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{head}\ \boxed{3}\right] \right\rangle \\ \textsc{arg-st} & \left\langle \boxed{1}\text{NP} \right\rangle \end{bmatrix}$$

Figure 7: A description of *frieren* in sentence (1)

The finite verb *müssen* in (1) has two elements on its ARG-ST list: the subject NP and a verbal complement. According to the Extended Argument Realization Principle in 4 it raises all complements of this verbal argument onto its own DEPS list. The occurrence of *müssen* in (1) thus has three elements on its DEPS list, as shown in figure 8: its own two arguments, and the complement raised from the verbal argument *frieren*. By virtue of the Dependent Realization Principle

$$\begin{bmatrix} \textsc{phon} & \langle \textit{müssen} \rangle \\ \textsc{s}\,|\,\textsc{l}\,|\,\textsc{c}\,|\,\textsc{v}\,|\,\textsc{comps} & \left\langle \boxed{4}, \boxed{2}, \boxed{5} \right\rangle \\ \textsc{deps} & \left\langle \boxed{4}, \boxed{2}, \boxed{5} \right\rangle \\ \textsc{arg-st} & \left\langle \boxed{4}\text{NP}, \boxed{5}\text{VP}\left[\textsc{l}\,|\,\textsc{c}\,|\,\textsc{v}\,|\,\textsc{comps}\ \left\langle \boxed{2} \right\rangle\right] \right\rangle \end{bmatrix}$$

Figure 8: A description of *müssen* in sentence (1)

all the dependents are mapped onto the valence features.[4] The subject NP *sie*, the PP adjunct *in der nächsten Woche* and the trace of the topicalized verbal complement *frieren* can then all be realized in a head-complement structure.

[4] Note that in the tradition of Pollard (1996) we assume that the subject of finite verbs occurs as the first element on the COMPS list and not on the SUBJ list.

3 Traceless extraction

BMS provide a lexical account of extraction to replace the configurational nonlocal-feature theory included in Pollard and Sag (1994). A lexical principle, the SLASH Amalgamation Constraint, serves to collect the SLASH values of a word's dependents. A constraint on phrases, the SLASH Inheritance Principle, defines the SLASH inheritance on head-valence phrases (those phrases involving head, complement and/or subject daughters). Third, a constraint is introduced which ensures the correct binding of the SLASH values in head-filler phrases. Finally, BMS replace traces or lexical rules as mechanisms for introducing slashed dependents by an underspecification approach. Dependents in the lexicon are specified as *synsem* objects. Two subtypes of *synsem* are introduced: *canon-synsem* and *gap-synsem*, the latter of which cannot be realized as part of a word but introduces a slash as shown in figure 9. The Dependent Realization

$$\textit{gap-ss} \rightarrow \begin{bmatrix} \text{LOC} & \boxed{1} \\ \text{NONLOC} \mid \text{SLASH} & \boxed{1} \end{bmatrix}$$

Figure 9: Constraint of *gap-synsems*

Principle of BMS ensures that only objects of type *canon-synsem* occur on the COMPS list, as shown in figure 10.

$$\textit{word} \rightarrow \begin{bmatrix} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{2} \ominus \textit{list}\big(\textit{gap-ss}\big) \\ \text{DEPS} & \boxed{1} \oplus \boxed{2} \end{bmatrix}$$

Figure 10: Dependent Realization (BMS, complete version)

At first sight it looks as though we can simply integrate this traceless extraction theory into the account of dependent realization including argument raising which we developed in the last section. One would adopt the lexical nonlocal-feature percolation, assume the division of *synsem* objects into *canon-synsem* and *gap-synsem*, and extend our version of the Dependent Realization Principle such that it allows only *canon-synsem* objects to occur on the COMPS list of word.

Interestingly, such a combination of traceless extraction with argument raising in some cases results in different analyses than under a trace-based approach. Take for example the sentences shown in (4), where the complement of an element selected by an argument raising verb, has been topicalized.

(4) a. *Das Pferd* will er [verkaufen].
the horse wants-to he sell
'He wants to sell the horse.'

b. *Auf seine Kinder* ist er [stolz] gewesen.
of his children is he proud been
'He has been proud of his children.'

c. *Über Syntax* will er [ein Buch] ausleihen.
on syntax wants-to he a book borrow
'He wants to borrow a book on syntax.'

Under the trace-based analysis of DKM, the fronted constituent (in italics) in all three examples has been raised from the constituent in brackets before it is extracted. Figure 11 shows the analysis of example (4a) under the trace-based theory. The argument raising verb *will* raises the unrealized complement ($\boxed{3}$)

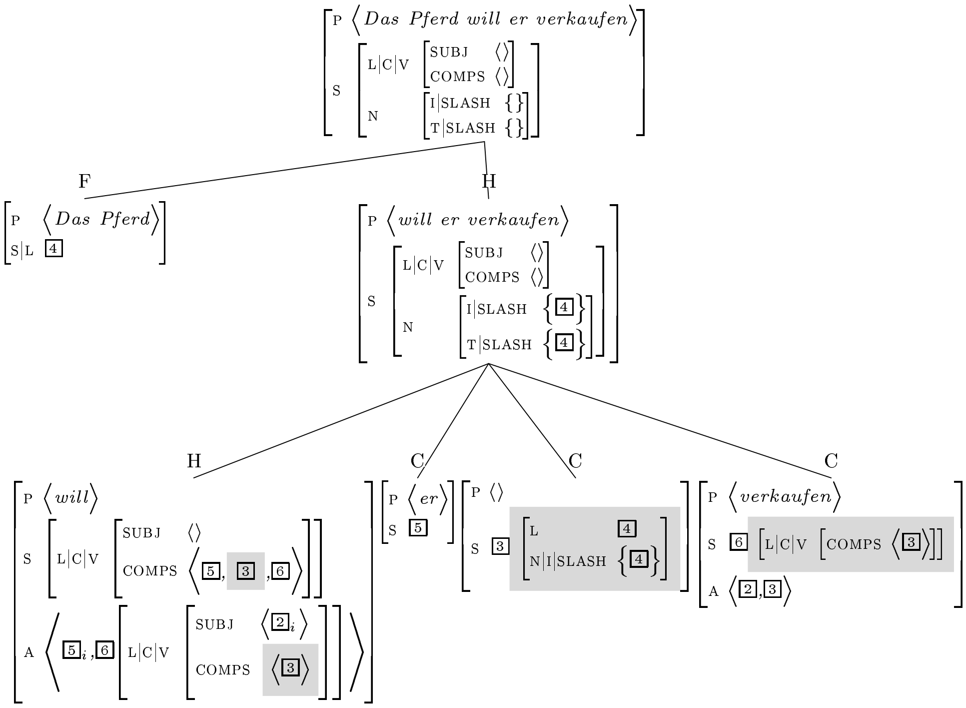

Figure 11: Trace-based analysis for (4a)

from its verbal argument *verkaufen* $\boxed{6}$ and realizes it as a trace, together with the subject NP ($\boxed{5}$) and the verbal argument ($\boxed{6}$).

Under the traceless approach of BMS the examples in (4) are analyzed differently. Figure 12 on p. 9 shows the sketch of an analysis tree for (4a) under our theory combining the argument raising approach of DKM and the traceless account of BMS. The complement ($\boxed{3}$) of *verkaufen* in the tree in figure 12 is of type *gap-ss* and, according to the Dependent Realization Principle in figure 10 it does not occur on the COMPS list. Instead, the SLASH value introduced by this *gap-ss* object is amalgamated by *verkaufen.* The argument raising verb *will* cannot raise any arguments from its verbal argument *verkaufen* since the COMPS list of *verkaufen* is empty. Instead, *will* amalgamates the SLASH value from *verkaufen.* The verb *will*, its subject NP *er*, and its verbal argument *verkaufen* are then realized in a head-complement structure.

The crucial difference between the two analyses thus is that under the traceless analysis the fronted constituent *das Pferd* is extracted from the verbal head

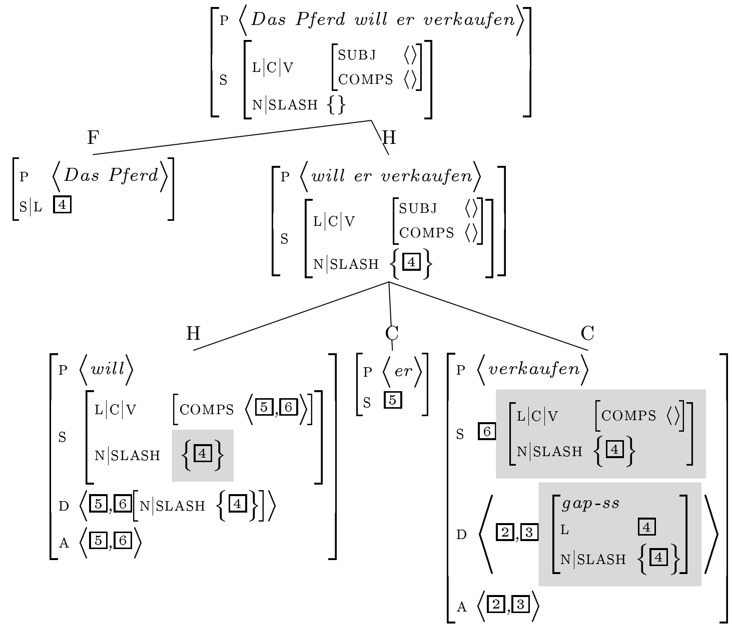

Figure 12: Traceless analysis for (4a)

verkaufen of which it is a semantic argument, whereas under the trace-based analysis the fronted constituent is extracted as a complement of the higher verb *will* to which the valence requirement had been raised. This rather subtle difference has a clear effect: Under the trace-based analysis one obtains the same analysis independent of whether the complement (*das Pferd*) of an element (*verkaufen*) selected by an argument-raising verb (*will*) is realized in the Mittelfeld or whether it is extracted and realized in a fronted position. In both cases the argument raising verb raises this NP onto its own COMPS list and either realizes the raised NP or the trace of the raised NP in a head-complement structure. On the other hand, the traceless approach licenses two different structures. For the Mittelfeld realization one obtains the same structure as under the trace based analysis: *das Pferd* is obligatorily raised. For the realization in fronted position the element is not raised since extraction always takes place from the lowest lexical head, i.e., the lexical head of which it is a semantic argument. This contradicts the standard HPSG analyses of obligatory coherence as obligatory argument raising. Future research has to show whether the two different structures licensed by the traceless approach can be independently motivated.

4 Conclusion

Based on a set of examples involving fronted constituents which are partial due to missing adjuncts, in this abstract we sketched how two recent lexicalist theories, the generalized argument raising approach of De Kuthy and Meurers (1999) and the adjuncts-as-dependents, traceless proposal of Bouma et al. (1998) can be integrated into a single theory. Empirically the combination of an argument raising with an adjuncts-as-dependents approach provides a uniform analysis of the full range of partial constituent phenomena since in the combined analysis adjuncts can undergo argument raising to empty a constituent just like complements can. Formally, the integration of the theories highlights the interdependence of argument raising and the methods for licensing unbounded dependencies: In the traceless analysis of BMS, no empty elements are available to undergo argument raising. As a result, depending on whether a partial constituent has been fronted or is realized in its base position, different structures are licensed.

References

Bouma, G., R. Malouf, and I. Sag (1998). A unified theory of complement, adjunct, and subject extraction. In G. Bouma, G.-J. Kruijff, and R. Oehrle (Eds.), *Proceedings of the Joint Conference on Formal Grammar, Head-driven Phrase Structure Grammar, and Categorial Grammar (FHCG-98)*, Saarbrücken, pp. 83–97.

De Kuthy, K. and W. D. Meurers (1998). Towards a General Theory of Partial Constituent Fronting in German. In G. Bouma, G.-J. Kruijff, and R. Oehrle (Eds.), *Proceedings of the Joint Conference on Formal Grammar, Head-driven Phrase Structure Grammar, and Categorial Grammar (FHCG-98)*, Saarbrücken, pp. 113–124.

De Kuthy, K. and W. D. Meurers (1999). On Partial Constituent Fronting in German. In E. Kordoni (Ed.), *Tübingen Studies in Head-Driven Phrase Structure Grammar*, Number 132 in Arbeitsberichte des SFB 340. Tübingen: Universität Tübingen.

Miller, P. H. (1992). *Clitics and Constituents in Phrase Structure Grammar.* New York: Garland. Published version of 1991 Doctoral dissertation, University of Utrecht, The Netherlands.

Müller, S. (1997). Yet another Paper about Partial Verb Phrase Fronting in German. Research Report RR-97-07, DFKI, Saarbrücken. (a shorter version appeared in *Proceedings of COLING 96*).

Pollard, C. (1996). On Head Non-Movement. In H. Bunt and A. van Horck (Eds.), *Discontinuous Constituency.* Berlin/New York: Mouton de Gruyter. (published version of a ms. dated January 1990).

Pollard, C. and I. A. Sag (1994). *Head-Driven Phrase Structure Grammar.* Chicago: University of Chicago Press.

van Noord, G. and G. Bouma (1994). The Scope of Adjuncts and the Processing of Lexical Rules. In *Proceedings of Coling 94*, Kyoto, pp. 250–256.