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ON PARTIAL CONSTITUENT FRONTING IN GERMAN

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Contents

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1. Introduction

The topicalization of partial constituents in German has received much attention in the literature since the phenomenon is a serious challenge to the theory of constituency. In the HPSG paradigm, the attention has focussed on the topicalization of partial verb phrases. But G. Müller (1993, 1996) and others noted that partial constituent fronting in German also occurs with nominal and adjectival phrases. A simple example for each of the categories is shown in (1).

(1) a. [Verkaufen] wird er *das Pferd*.
sell will he the horse
'He will sell the horse.'

b. [Ein Buch] hat Hans *über Syntax* ausgeliehen.
a book has Hans on syntax borrowed
'Hans borrowed a book on syntax.'

c. [Stolz] ist er *auf seine Kinder* gewesen.
proud is he of his children been
'He was proud of his children.'

In (1a), the transitive verb *verkaufen* has been fronted, leaving its complement, the NP *das Pferd*, behind. In (1b), the NP *ein Buch* is topicalized without its PP complement *über Syntax*. And in (1c), the AP *stolz* has been fronted, leaving its PP argument *auf seine Kinder* behind.

As for the theoretical consequences drawn from such data, two ideas pursued in the principles and parameters paradigm are that (i) the constructions involve movement of a constituent containing a trace, so-called *remnant movement* (Thiersch 1985, Webelhuth and den Besten 1987, G. Müller 1996) or that (ii) "small" constituents can be topicalized which are licensed with the help of special processes like *reanalysis* (Fanselow 1987, for partial NPs). Parallel to these two ideas, HPSG approaches to partial VP topicalization have proposed a remnant movement-like analysis (Hinrichs and Nakazawa 1994b) or employed *argument raising*, a lexicalized variant of functional composition which supports partial structures like those resulting from reanalysis (Pollard 1990; Hinrichs and Nakazawa 1994b; Nerbonne 1994; Kathol 1995, sec. 7.7; Meurers 1996; S. Müller 1996; Bouma and van Noord to appear, sec. 3.4). One of the arguments against reanalysis fielded by G. Müller (1991, p. 175) is that a reanalysis rule cannot properly be expressed in the GB framework. Therefore, an interesting aspect of the parallel development in the two frameworks is that the argument-raising approaches in HPSG give a formally precise rendering to a notion of reanalysis. Independent of the mechanisms used, we will use the term *reanalysis-like* to refer to any analysis licensing partial constituents as "small" constituents.

Given this state of affairs, the purpose of this paper, which integrates and extends our work presented in De Kuthy and Meurers (1998a, 1998b), is twofold: Firstly, we reevaluate the empirical basis of the choice between the two analysis ideas proposed in the literature, remnant movement and reanalysis. More specifically, we show that the empirical arguments that are presented by G. Müller (1996) in favor of an extraction analysis are not convincing, and we provide empirical evidence supporting a reanalysis-like approach. The second purpose of this paper is to provide an explicit theory licensing reanalysis-like structures for partial constituents of three different categories. In order to extend the empirical coverage of previous reanalysis-like theories in such a way, we first discuss and compare the partial constituents of the three different categories illustrated in (1) in order to highlight the similarities and the differences in the three sets of data. Finally, we provide a theory licensing reanalysis-like structures in an HPSG architecture.

2. Remnant Movement vs. Reanalysis: An Empirical Reevaluation

It is traditionally assumed that verb-second clauses in German are derived from verb-first structures by extracting an element and fronting it. A second assumption which is made in the principles and parameters paradigm is that the fronted element has to be a maximal projection, an assumption which follows from Chomsky's (1986) restrictions on movement and X-bar theory: movement is restricted to XPs and X^0-categories, every non-head is an XP, and the landing site of fronted elements is a non-head position.

Under these assumptions, the partial fronting phenomenon in German exemplified in (1) is a serious problem. One of the solutions to this problem is the *remnant-movement* approach, which assumes that the apparently partial, fronted constituents are in fact full XPs containing a trace of the argument left behind in the *Mittelfeld*, so-called *remnant categories*. While such an approach faces certain theoretical problems concerning the question of how a trace can be bound by a filler occurring configurationally lower in the tree, in the following we focus on the empirical arguments which G. Müller (1996) provided to justify the existence of remnant categories. We start our empirical reevaluation with nominal complements, a domain on which much of the remnant movement vs. reanalysis debate has focussed.

2.1. **Nominal complements.** Example (2) shows a sentence in which the PP argument of a noun has been topicalized.

(2) *Über Syntax* hat Hans sich [ein Buch] ausgeliehen.
on syntax has Hans himself a book borrowed
'Hans borrowed a book on syntax.'

Webelhuth (1992), G. Müller (1996), and others argued that in such sentences the PP has been extracted from the NP. But as pointed out by Fanselow (1987), sentences like (3) are problematic for this assumption, since the extraction source *ein Buch* and not the extracted element *über Syntax* has been fronted.

(3) [Ein Buch] hat Hans sich *über Syntax* ausgeliehen.
a book has Hans himself on syntax borrowed

For such examples, G. Müller (1996) proposes a remnant movement account in which the fronted NP contains a trace of the PP argument. The alternative reanalysis approach of Fanselow (1987) for the two kinds of examples in (2) and (3) is to employ a reanalysis rule that splits up the complex NP into a partial NP and a PP which are sisters in the VP.

2.1.1. *Aspects of a remnant-movement analysis.* G. Müller (1996) argues for a remnant-movement analysis by showing that the NP remaining in the *Mittelfeld* in (2) and the fronted NP in (3) obey the following restrictions to be expected from a constituent containing a trace.

Subject-object asymmetries. Firstly, he claims that fronting a PP argument of a subject NP and the reverse case of fronting an incomplete subject NP result in ungrammaticality, as is shown in (4). Since it is usually assumed that subjects in German may not contain a gap, this behavior would be predicted under a remnant-movement account.

(4) a. * *Worüber* hat [ein Buch] Karl beeindruckt?
about what has a book$_{NOM}$ Karl$_{ACC}$ impressed
'A book about what impressed Karl?'

b. * [Ein Buch] hat Karl *über Syntax* beeindruckt.
a book has Karl on syntax impressed

Haider (1993), however, presents examples like the ones shown in (5) which show that subject NPs can occur separate from their PP arguments.

(5) a. *Über Strauß* hat [ein Witz] die Runde gemacht.
about Strauß has a joke the round made
'A joke about Strauß went round.'

b. [Ein Witz] hat *über Strauß* die Runde gemacht.
a joke has about Strauß the round made

Specificity effect. Secondly, G. Müller (1996) uses examples like (6) to show that both fronting out of an NP and the reverse case exhibit the "Specificity Effect", a classical restriction on extraction.

(6) a. * *Über Syntax* hat Karl [**das** Buch] gelesen.
on syntax has Karl the book read
'Karl read the book on syntax.'

b. ?? [**Das** Buch] hat Karl *über Syntax* gelesen.
the book has Karl on syntax read

Again, it was already shown by Pafel (1993) that the specificity of an NP in German does not disallow fronting of its argument PP in general (7). As shown in (8), this is not even the case for the prime example of specificity, prenominal genitives.

(7) a. *Über Syntax* hat Karl nur **dieses**, aber nicht **jenes** Buch gelesen.
on syntax has Karl only this but not that book read
'Karl only read this book on syntax and not that one.'

b. [Nur dieses Buch] hat Karl *über Syntax* gelesen.
Only this book has Karl on syntax read
'Karl only read this book on syntax.'

(8) a. *Über Syntax* hat Karl [nur **Margas** Buch] gelesen.
on syntax has Karl only Marga's book read
'Karl only read Marga's book on syntax.'

b. [Nur Margas Buch] hat Karl *über Syntax* gelesen.
only Marga's book has Karl on syntax read

Freezing effect. Finally, G. Müller (1996) argues that a freezing effect can be observed: constituents appearing at the beginning of the *Mittelfeld* become opaque for extraction. He provides example (9) to show that this generalization carries over to the fronting of PP arguments of NPs – a claim which is falsified by examples like the one in (10) taken from Fanselow (1991).

(9) * *Worüber* hat [ein Buch] keiner gelesen?
about what has a book nobody read
'On what topic has nobody read a book?'

(10) *Worüber* kann [einen Südkurier-Artikel] selbst Peter nicht am Strand verfassen?
about what can a *Südkurier* article even Peter not at the beach write
'For which topic is it the case that even Peter cannot write an article about it for the Südkurier when he is at the beach.'

Summing up, none of the above arguments convincingly motivate the remnant-movement assumption that argument PPs are extracted out of NP. Next, we turn to the empirical claims made by the alternative hypothesis, the assumption that the complex NP is "reanalyzed" as two sister categories, a partial NP and a PP.

2.1.2. *Aspects of a reanalysis-like approach.* A reanalysis-like theory for the partial-NP phenomenon predicts that the partial NP and the PP can appear separate from each other as other sister constituents do. Regarding the word order possibilities in the *Mittelfeld*, example (11) illustrates that this prediction is correct. Both the partial NP and the PP can appear independently at the beginning of the *Mittelfeld* and (12) other material can appear in between the two constituents.

(11) a. Hans hat *über Syntax* während seines Studiums [nur drei Bücher] ausgeliehen.
Hans has on syntax during his studies only three books borrowed
'During his studies, Hans borrowed only three books on syntax.'

b. Hans hat [nur drei Bücher] während seines Studiums *über Syntax* ausgeliehen.
Hans has only three books during his studies on syntax borrowed

(12) a. Hans hat schließlich [drei Bücher] bei Osiander *über Syntax* gekauft.
Hans has finally three books at Osiander on syntax bought
'Hans finally bought three books on syntax at Osiander.'

b. Hans hat schließlich *über Syntax* bei Osiander [drei Bücher] gekauft.
Hans has finally on syntax at Osiander three books bought

Further support comes from an observation made by Grewendorf (1989, p. 46), who notes that independently of the PP, the NP can be included in the verbal complex in the so-called *Oberfeld* construction (cf., Bech 1955):

(13) Niemand hätte gedacht,
nobody would have thought

a. daß Hans *über Becker* würde [einen Sieg] erringen können.
that Hans against Becker would a victory win be able to
'Nobody would have thought that Hans could win against Becker.'

b. daß er über Syntax würde [ein Buch] ausleihen müssen.
that he on syntax would a book borrow have to
'Nobody would have thought that he would borrow a book on syntax.'

Under a reanalysis approach one would also expect that the reverse case, where the PP argument instead of the partial NP is included in the *Oberfeld*, should be grammatical. But the examples in (14) appear to be of questionable grammaticality.

(14) Niemand hätte gedacht,
nobody would have thought

a. ? daß Hans [einen Sieg] würde *über Becker* erringen können.
that Hans a victory win would against Becker be able to

b. ? daß er [ein Buch] würde über Syntax ausleihen müssen.
that he a book would on syntax borrow have to

However, Tilman Höhle (p.c.) points out that there appear to be more acceptable instances of such a construction, such as example (15).[1]

(15) Wenn ich derart informative Arbeiten hätte über Semantik finden können, hätte ich dir die auch noch mitgebracht.
if I such informative works would-have on semantics find be-able-to would-have I you these also still bring-with
'Had I been able to find such informative works on semantics, I would have brought you those as well.'

We therefore conclude that the prediction of the reanalysis approach that the PP and the partial NP behave like independent sister constituents appears to be on the right track.

2.2. **Verbal complements.**

2.2.1. *Aspects of a remnant-movement analysis.* It was established by Bech (1955) that for a certain class of verbs requiring an infinitival complement, the arguments of the head of an infinitival complement can be permuted with other elements in the *Mittelfeld*. The so-called *coherently* constructing verbs allow this permutation, the *incoherently* constructing ones do not.[2]

[1] In the discussion of the partial NPs embedded in fronted VPs in section 3.4, a different construction in which the partial NP actually does not behave parallel to the PP is discussed. As we will see, the ungrammaticality of that constructions can, however, be independently explained.

[2] A review of Bech's proposal from a principles and parameters perspective is provided in von Stechow (1984); a discussion in the context of HPSG can be found in Kiss (1992).

(16) a. daß *das Pferd* keiner [zu verkaufen] versucht hat.
that the horse$_{A''}$ nobody$_{N'}$ to sell$_{V''}$ tried$_{V'}$ has
'that nobody tried to sell the horse.'

b. * daß *das Pferd* keiner [zu verkaufen] abgelehnt hat.
that the horse$_{A''}$ nobody$_{N'}$ to sell$_{V''}$ disapproved$_{V'}$ has
'that nobody disapproved of selling the horse.'

Following an idea of Thiersch (1985), G. Müller (1996, p. 18) argues that this contrast can be derived if one assumes that coherently constructing verbs like *versuchen* allow scrambling out of their verbal complement, while obligatorily incoherent verbs like *ablehnen* do not. It is assumed that scrambling is an instance of movement so that the constituent *zu verkaufen* in (16a) is a remnant category containing a trace of the scrambled NP *das Pferd*.

A similar contrast arises with partial VP topicalization: Obligatorily coherent verbs like *werden* in (1a), repeated here as (17a), and optionally coherent verbs like *versuchen* in (17b) allow PVP topicalization, while obligatorily incoherent ones like *empfehlen* in (17c) do not.

(17) a. [Verkaufen] wird er *das Pferd*.
sell will he the horse
'He will sell the horse.'

b. [Zu verkaufen] versuchte er *das Pferd*.
to sell tried he the horse
'He tried to sell the horse.'

c. * [Zu verkaufen] empfahl er ihr *das Pferd*.
to sell advise he her the horse
'He advised her to sell the horse.'

Under the remnant movement idea sketched above, the explanation for these data is straightforward: A coherently constructing verb like *versuchen* in (17a) allows scrambling out of its verbal complement and the resulting remnant VP can then be topicalized. The verbal complement of an incoherently constructing verb like *empfehlen* in (17c) is not transparent for scrambling and thus the occurrence of a remnant VP is ungrammatical.

However, while the remnant movement analysis makes the correct predictions for the data presented above, certain word oder phenomena involving

coherent and incoherent infinitives are problematic for such an explanation. We mentioned at the beginning of this section that in the remnant movement approach the fronted element is always analyzed as a complete XP category. These categories can undergo topicalization (18), and they can also be scrambled to the beginning of the *Mittelfeld* (19).

(18) a. [Das Pferd zu verkaufen] wird er noch heute versuchen.
the horse to sell will he still today try
'He will try to sell the horse today.'

b. [Das Pferd zu verkaufen] wird er ihr noch heute empfehlen.
the horse to sell will he her still today advise
'He will advise her to sell the horse today.'

(19) a. Er wird [das Pferd zu verkaufen] noch heute versuchen.
he will the horse to sell still today try

b. Er wird [das Pferd zu verkaufen] ihr noch heute empfehlen.
he will the horse to sell her still today advise

It therefore comes as a surprise that scrambling of complete infinitival complements of obligatorily coherent verbs is not possible (20a) even though the infinitival complements of such heads can be topicalized (20b).

(20) a. * Er wird [das Pferd verkaufen] noch heute wollen.
he will the horse sell still today want to
'He will want to sell the horse today.'

b. [das Pferd verkaufen] wird er noch heute wollen.
the horse sell will he still today want to

A second problem for the remnant movement explanation develops from the assumptions that a coherent infinitive is transparent for scrambling and that PVP fronting is the result of topicalizing a remnant category emptied in this way. Why is it then that another instances of movement, namely scrambling of this remnant infinitival complement, is ungrammatical? As shown in (21), partial verbal constituent can never occur at the beginning of the *Mittelfeld*.

(21) a. * Er wird [verkaufen] *das Pferd* noch heute.
he will sell the horse still today

b. * Er versuchte [zu verkaufen] *das Pferd* noch heute.
he tried to sell the horse still today

c. * Er empfahl [zu verkaufen] ihr *das Pferd* noch heute.
he advised to sell her the horse still today

Finally, Haider (1993, pp. 281f.) remarks a related empirical problem of remnant movement. Since partial VPs are analyzed as complete VPs emptied by scrambling, it is predicted that elements which cannot undergo scrambling obligatorily have to surface as part of the fronted VP. The fact that German wh-indefinites cannot undergo scrambling in the *Mittelfeld* (23) but do not have be included in the fronted VP (24) contradicts this claim.

(22) daß hier selten wem was auf Anhieb gelungen ist
that here rarely somebody something at once succeed is
'that it was rarely the case here that someone succeeded with something right away'

(23) * daß hier selten was wem auf Anhieb gelungen ist
that here rarely something someone at once succeed is

(24) Gelungen ist hier selten wem was auf Anhieb.
succeed is here rarely someone something at once

2.2.2. *Aspects of a reanalysis-like approach.* Reanalysis-like argument-raising approaches like the ones developed in the HPSG framework can account for the above data. The distinction between coherent and incoherent verbs is captured by specifying coherent verbs as obligatorily raising all complements of their verbal argument so that they become the arguments of a head cluster, whereas the complement of an incoherently selecting verb is required to be a complete VP. As a result, in the case of a coherent verb there is no full VP that could be scrambled to obtain examples like (20a). In a sentence with an incoherently selected infinitive such a VP exists and it can thus occur at different positions in the *Mittelfeld* (19). Finally, for topicalized constituents, S. Müller (1996) and Meurers (1996) show how to relax the requirement that coherently selected verbal complements combine in a verbal cluster, as required for licensing (20b) but excluding (20a), (21a), and (21b).

3. Three Categories of Partial Constituents: A Comparison

3.1. **Verbal complements.** We start the comparison of the three categories of partial constituents with a recapitulation of the properties of verbal complements, many of which were introduced in the theoretically oriented section 2.2.

Topicalized partial VPs. The possibility of partial VP topicalization depends on the class of the governing verb. Obligatorily coherent verbs like *brauchen* and optionally coherent verbs like *versuchen* in (25) allow PVP topicalization, while obligatorily incoherent ones like *hoffen* do not.

(25) [Zu verkaufen] braucht / versucht / * hofft er *das Pferd* nicht.
to sell needs tries hopes he the horse not
'He does not need to / try to / hope to sell the horse.'

Topicalized complete VPs. Complete verbal complements can be topicalized independent of the embedding verb.

(26) a. [Das Pferd verkaufen] wird er noch heute wollen.
the horse sell will he still today want to
'He will want to sell the horse today.'

b. [Das Pferd zu verkaufen] wird er noch heute versuchen.
the horse to sell will he still today try
'He will try to sell the horse today.'

c. [Das Pferd zu verkaufen] wird er ihr noch heute empfehlen.
the horse to sell will he her still today advise
'He will advise her to sell the horse today.'

Scrambled complete VPs. Complete verbal complements can occur at the beginning of the *Mittelfeld*, but only when embedded by an incoherent verb as shown in example (27). The VP *das Pferd verkaufen* cannot occur at the beginning of the *Mittelfeld* when embedded by the obligatorily coherent verb *wollen*, but it can occur there when embedded by the optionally coherent verb *versuchen* or the obligatorily incoherent verb *empfehlen*.

(27) a. * Er wird [das Pferd verkaufen] noch heute wollen.
he will the horse sell still today want to

b. Er wird [das Pferd zu verkaufen] noch heute versuchen.
he will the horse to sell still today try

c. Er wird [das Pferd zu verkaufen] ihr noch heute empfehlen.
he will the horse to sell her still today advise

Scrambled partial VPs. Partial verbal complements can never occur at the beginning of the *Mittelfeld*. Thus, the occurrence of the partial infinitive *zu verkaufen* at the beginning of the *Mittelfeld* in example (28) is ungrammatical with all three verbs, the obligatorily coherent verb *scheinen*, the optionally coherent verb *versuchen* and the obligatorily incoherent verb *hoffen*.

(28) * Er scheint / versucht / hofft [zu verkaufen] *das Pferd*.
he seems tries hopes to sell the horse
'He seems to / tries to / hopes to sell the horse.'

Askedal (1983, p. 187) discusses the following set of examples with scrambled partial VP complements in the *Mittelfeld*, which seem to be significantly better than the ones presented above.[3]

(29) a. Den alten Wagen hat er [zu fahren] noch nicht gelernt.
this old car has he to drive still not learned
'He still has not learned to drive this old car.'

b. Nach dem Vornamen des Fremden hat er [sie zu fragen] niemals gewagt.
after the first name of the foreigner has he her to ask never dared
'He never dared to ask her for the first name of the foreigner.'

c. Zahlreiche Bedeutungen ist er [auszudrücken] nicht imstande.
many meanings he is to express not capable
'He is not able to express many meanings.'

Different from the ungrammatical examples in (28), the partiality of the VP in the *Mittelfeld* in the examples in (29) results from topicalization of the complement from the VP. If one analyzes such examples of partial VPs as full VPs containing a trace for the topicalized element, the grammaticality of the examples in (29) patterns nicely with that of examples showing scrambled complete VP complements of incoherently constructing verbs, which we showed in (27).

Scrambled complements of an infinitival complement. Finally, in sentences with a coherent verb, an argument of the verbal complement can occur at the beginning of the *Mittelfeld*.

[3]Askedal (1983, p. 187) himself marks these examples with a '?'.

(30) a. Noch heute wird *es* der Mann [verkaufen] wollen.
still today will it the man sell want to
'The man will want to sell it today.'

b. Noch heute wird *es* der Mann [zu verkaufen] versuchen.
still today will it the man to sell try
'The man will try to sell it today.'

c. * Noch heute wird *es* der Mann [zu verkaufen] empfehlen.
still today will it the man to sell advise
'The man will advise selling it today.'

Thus, the occurrence of the complement of the embedded infinitive *zu verkaufen*, the pronoun *es*, at the beginning of the *Mittelfeld* is only grammatical with the coherently constructing verbs *wollen* and *versuchen* in (30a) and (30b), whereas it is ungrammatical with the incoherent verb *empfehlen* in (30c).

3.2. **Adjectival complements.** After this sketch of the main properties of partial VPs on the basis of Bech's distinction between three classes of verbal complement taking verbs, partial APs can now straightforwardly be characterized as behaving like the partial verbal complements of obligatorily coherent verbs (cf., G. Müller 1993, S. Müller 1999). Firstly, a partial AP can be topicalized as shown in (31).

(31) a. [Stolz] ist er *auf seine Kinder* gewesen.
proud is he of his children been
'He was proud of his children.'

b. [Treu] will er *seiner Frau* für immer bleiben.
faithful wants to he his wife for ever remain
'He will forever remain faithful to his wife.'

Secondly, neither a partial (32a) nor a complete AP (32b) can occur at the beginning of the *Mittelfeld*. This is parallel to the behavior of the verbal complements of obligatorily coherent verbs shown in example (28) and (27).

(32) a. * Er ist [stolz] im letzten Jahr *auf seine Kinder* gewesen.
he is proud in the last year of his children been
'Last year he was proud of his children.'

b. * Er ist [stolz auf seine Kinder] im letzten Jahr gewesen.
he is proud of his children in the last year been

Finally, the complement of the AP can occur at the beginning of the *Mittelfeld* (33), just like the argument of the verbal complement of a coherently constructing verb which was shown in (30a).

(33) Er ist *auf seine Kinder* im letzten Jahr [stolz] gewesen.
he is of his children in the last year proud been
'Last year, he was proud of his children.'

Note that the PP complement *auf seine Kinder* is known to appear independently of its adjectival head *stolz* at the beginning of the *Mittelfeld* since the adverbial phrase *im letzten Jahr*, which intervenes between the adjective *stolz* and its complement *auf seine Kinder*, modifies the predicate *gewesen*. The alternative analysis of combining the adverbial phrase *im letzten Jahr* with the adjective *stolz* is not available, as is suggested by the fact that the combination of the adverbial with the adjective in attributive use is ruled out (34), whereas such a construction is possible for other adverbials like *immer* (35).

(34) * ein auf seine Kinder im letzten Jahr stolzer Vater
an of his children in last year proud father
'a father who was proud of his children last year'

(35) ein auf seine Kinder immer stolzer Vater
an of his children always proud father
'a father always proud of his children'

The facts presented in this section make it plausible to analyze APs analogously to the verbal complements of coherently constructing verbs in that the arguments of the adjectival head are obligatorily raised to become the arguments of a head cluster.

3.3. **Nominal complements.** The third kind of partially occurring constituents we are interested in, nominal complements selecting a PP argument, in some respects behave like verbal complements of optionally coherent verbs. Firstly, the nominal complements can be partially topicalized as we saw in (1b) repeated here as (36), which is parallel to the verbal complements of coherently constructing verbs in (25).

(36) [Ein Buch] hat Hans *über Syntax* ausgeliehen.
a book has Hans on syntax borrowed
'Hans borrowed a book on syntax.'

And like the verbal complements of incoherently constructing verbs (27b), the complete NP can occur at the beginning of the *Mittelfeld* as exemplified in (37).

(37) Er hat [ein Buch über Syntax] heute ausgeliehen.
he has a book on syntax today borrowed
'Hans borrowed a book on syntax today.'

However, unlike the other partial constituents discussed so far, even a partial NP can occur at the beginning of the *Mittelfeld* (38).

(38) Er hat [kein einziges Buch] während seines Studiums *über Syntax*
he has not a single book during his studies on syntax
ausgeliehen.
borrowed
'During his studies, he did not borrow a single book on syntax.'

Finally, parallel to the behavior of arguments of verbal complements selected by a coherently constructing verb as in (30a), the complement of the NP can occur at the beginning of the *Mittelfeld* (39).

(39) Er hat *über Syntax* während seines Studiums [kein einziges Buch]
he has on syntax during his studies not a single book
ausgeliehen.
borrowed

The conclusion we want to draw from these facts is that a partial NP and its PP argument should be analyzed as two independent sister constituents. Thus, when a PP argument is raised from an NP, the remaining partial NP complement needs to be treated by its verbal head like any other saturated complement.

Before we now turn to partial constituents embedded in VPs, it remains to be mentioned that the occurrence of partial NPs discussed above is subject to certain lexical restrictions. A discussion of these restrictions and how they can be integrated into our account is provided in De Kuthy (1998). That paper also situates the empirical phenomenon discussed here in the context of other phenomena involving "partial NPs", such as the so-called Split NPs and *Was-für* Split.

3.4. **Partial constituents embedded in (partial) VPs.** An interesting aspect of partial constituents is that they can occur embedded inside of fronted verbal constituents.

(40) a. [Verkaufen müssen] wird er *das Pferd.*
sell have to will he the horse
'He will have to sell the horse.'

b. [Stolz gewesen] ist er *auf seine Kinder.*
proud been is he of his children
'He was proud of his children.'

c. [Ein dickes Buch ausleihen] will niemand *darüber.*
a thick book borrow wants to nobody on-this
'Nobody wants to borrow a thick book on this topic.'

In example (40a), the partial VP *verkaufen*, leaving behind its complement *das Pferd*, is fronted together with its governor *müssen.* In (40b), the partial AP *stolz* is fronted within a VP and in (40c) the NP *ein Buch* is fronted as part of a VP without its complement *über Syntax.*

The example in (41) illustrates that such interaction is also possible with a partially fronted VP, in this case including a partial NP complement.

(41) [Ein Buch ausleihen] will er *ihr darüber* aber nicht.
a book lend wants to he her on-this but not
'But he does not want to lend her a book on this topic.'

Finally, one can observe that the reverse case, namely a topicalization including an argument of the complement instead of the partial complement, is always ungrammatical (42).

(42) a. * [Das Pferd müssen] wird er *verkaufen.*
the horse have to will he sell

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

c. * [Über Syntax ausleihen] will er *ihr ein Buch.*
on syntax lend wants to he her a book

The ungrammaticality of the examples is independent of the category of the complement, i.e., verbal (*verkaufen*) in (42a), adjectival (*stolz*) in (42b), and nominal (*ein Buch*) in (42c). Instead, we believe that

an explanation of the ungrammaticality must result from a general restrictions on how embedded complements reanalyzed as co-arguments of their head can be realized. If as the result of a reanalysis process (argument raising) a head selects both a complement and a complement of this complement then it can only combine with the indirect complement if the direct complement is realized in the projection of this head as well. This generalization correctly rules out the ungrammatical examples above. And, independent of whether a flat or binary branching *Mittelfeld* structure is assumed, it does not overgeneralize in a way which would rule out the grammatical examples with partial NPs at the beginning of the *Mittelfeld*, which were shown in (11b) on p. 6.

A superficially similar set of examples is shown in (43). However, while in the examples in (42) each topicalized constituent contains the argument of its complement, in (43) only a verbal head has been fronted, leaving behind its entire verbal (43a), adjectival (43b), or a nominal complement in the grammatical example (43c).

(43) a. * [Müssen] wird er *das Pferd verkaufen.*
have to will he the horse sell

b. * [Gewesen] ist er *auf seine Kinder stolz.*
been is he of his children proud

c. [Ausleihen] will niemand *ein dickes Buch darüber.*
borrow wants to nobody a thick book on-this

The pattern of grammaticality in (43) becomes transparent as soon as one realizes that it is the class of the verb that has been fronted and not the category of complement which determines grammaticality in such examples. The verb *müssen* in (43a) obligatorily constructs coherently and, as we showed in section 3.2, constructions with an adjectival complement as in (43b) behave parallel to obligatorily coherent ones. Verbs with nominal complements as in (43c), on the other hand, do not pattern with verbs in coherent constructions.

That coherence is the relevant factor is supported by the existence of grammatical examples which are parallel to the ungrammatical (43a) except for the class of the fronted verb. In (44a), the optionally coherent verb *versuchen* and in (44b) the obligatorily incoherent verb *empfehlen* has been topicalized.

(44) a. [Versuchen] wird er *das Pferd zu verkaufen.*
try will he the horse to sell

‘He will try to sell the horse.’

b. [Empfehlen] wird er ihr *das Pferd zu verkaufen.*
advise will he her the horse to sell
‘He will advise her to sell the horse.’

4. An HPSG Proposal

On the basis of the empirical discussion in the last two chapters, we propose to generalize the argument-raising approach to partial VP fronting of Pollard (1990) to partial constituent fronting in general. The idea is to introduce argument raising as a general option for verbal heads with different kinds of complements. To formalize this option, we define a lexical principle in the style of Meurers (1997a, 1997b) which introduces argument raising as a generalization in the mapping between the argument structure and the valence specifications of verbs.

4.1. **The lexicon.** In the lexicon, the argument structure is specified under the ARG-ST attribute, as shown in the lexical entries for the three different kinds of verbs selecting non-finite complements in figure 1.[4] The three kinds of entries differ with respect to the LEX property required of the verbal complement. Following Kiss (1992) and Hinrichs and Nakazawa (1994a) we want to enforce a verbal cluster for coherently constructing verbs. In our setup, obligatorily coherent verbs like *wollen* mark their verbal complement as [LEX +], whereas obligatorily incoherent verbs like *empfehlen* require it to be [LEX −]. The lexical entry of an optionally coherent verb like *hoffen* is underspecified and enforces no LEX restrictions on its complement.

A different kind of encoding for the three classes of verbs is proposed by Kathol (1995) and S. Müller (1999). They employ a special valence attribute (GOV or VCOMP) for complements of coherently constructing verbs. This, however, results in two lexical entries for each optionally coherent verb instead of the underspecified single entry in the LEX encoding we propose here.

[4] The ARG-ST attribute is specified explicitly or derived by some kind of a linking theory. We assume argument raising to take place only with respect to the valence attributes, not on ARG-ST. The idea behind this is that ARG-ST, which is appropriate for *word* only, serves as a strictly lexical interface between the semantic roles of a predicate and their syntactic realization. The valence features SUBJ, SPR, and COMPS, on the other hand, play the traditional role of encoding syntactic selection requirements.

obligatorily coherent verbal complement:

$$\begin{bmatrix} \text{PHON} & \langle \textit{wollen} \rangle \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{L}\,|\,\text{C}\,|\,\text{HEAD} & \textit{noun}\end{bmatrix}, \begin{bmatrix} \text{L}\,|\,\text{C}\,|\,\text{HEAD} & \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{bse}\end{bmatrix} \\ \text{LEX} & + \end{bmatrix} \right\rangle \end{bmatrix}$$

obligatorily incoherent verbal complement:

$$\begin{bmatrix} \text{PHON} & \langle \textit{empfehlen} \rangle \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{L}\,|\,\text{C}\,|\,\text{HEAD} & \textit{noun}\end{bmatrix}, \begin{bmatrix} \text{L}\,|\,\text{C}\,|\,\text{HEAD} & \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{zu-inf}\end{bmatrix} \\ \text{LEX} & - \end{bmatrix} \right\rangle \end{bmatrix}$$

optionally coherent verbal complement:

$$\begin{bmatrix} \text{PHON} & \langle \textit{hoffen} \rangle \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{L}\,|\,\text{C}\,|\,\text{HEAD} & \textit{noun}\end{bmatrix}, \begin{bmatrix} \text{L}\,|\,\text{C}\,|\,\text{HEAD} & \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{zu-inf}\end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Figure 1. Lexical entries for verbs with infinitival complements

Intuitively, requiring a complement to be [LEX −] in our setup corresponds to the X-bar theory condition that non-heads have to be completed projections.[5] But while the X-bar theory is a condition on structures, the LEX attribute lexicalizes the “trigger” for this restriction, which makes it possible to relax the requirement for the class of verbal heads which construct coherently with their non-finite complement. Introducing the requirement on the complement via such a lexical specification appears to be the proper way to capture the data, since the coherence of a construction depends solely on the lexical class of the verbal head.

In a coherent construction, the verbal head directly combines with the head of its complement in order to form a verbal cluster. This is achieved by requiring the complement of verbs constructing coherently to be [LEX +];

[5] Note that we do not assume that words in the lexicon have to be [LEX +]. This makes it possible to license simple words as specifiers, subjects or complements without requiring an otherwise unmotivated unary tree to project these elements. Regarding our particular topic, it allows us to license words as incoherent complements in sentences like (i).

(i) Sie empfiehlt zu gehen.
she recommends to go

in case of obligatorily coherent verbs this is specified in the lexical entry, for the optionally coherent ones in a coherent construction it follows from the argument-raising principle discussed below.

Finally, as a result of the feature geometry explained at the end of section 4.2, LEX requirements are relaxed for long distance relations like topicalization, so that different projections of (partial) VP complements of obligatorily coherent verbs can be topicalized.

In section 3.2 we discussed that adjectival complements of verbs behave parallel to verbal complements of obligatorily coherent verbs. We therefore make use of the same LEX mechanism as in the coherent case and require the adjectival complement in the lexical entry shown in figure 2 to be [LEX +].

$$\begin{bmatrix} \text{PHON} & \langle \textit{sein} \rangle \\ \text{S}\mid\text{L}\mid\text{C}\mid\text{HEAD} & \textit{verb} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{L}\mid\text{C}\mid\text{HEAD} & \textit{noun}\end{bmatrix}, \begin{bmatrix}\text{L}\mid\text{C}\mid\text{HEAD} & \textit{adjective}\\ \text{LEX} & +\end{bmatrix}\right\rangle \end{bmatrix}$$

FIGURE 2. Lexical entry for a verb selecting an adjectival complement

Finally, we need to provide an entry for verbs with nominal complements. We saw in section 3.3 that the occurrence of complete or partially saturated nominal complements is not subject to the restrictions holding for verbal or adjectival complements. The lexical entry shown in figure 3 therefore does not impose a restriction regarding the LEX value of its nominal complement.

$$\begin{bmatrix} \text{PHON} & \langle \textit{ausleihen} \rangle \\ \text{S}\mid\text{L}\mid\text{C}\mid\text{HEAD} & \textit{verb} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{L}\mid\text{C}\mid\text{HEAD} & \textit{noun}\end{bmatrix}, \begin{bmatrix}\text{L}\mid\text{C}\mid\text{HEAD} & \textit{noun}\end{bmatrix}\right\rangle \end{bmatrix}$$

FIGURE 3. A lexical entry for a verb selecting a nominal complement

4.1.1. *The lexical argument-raising principle.* The lexical principle shown in figure 4 expresses how the argument structure specified in the ARG-ST list of the lexical entries of base form verbs determines the values of the valence attributes (SUBJ and COMPS). The first element ($\boxed{1}$) of the argument structure is assigned to be the subject and the rest of the

$$\begin{bmatrix} \textit{word} \\ \text{S}\mid\text{L}\mid\text{C}\mid\text{HEAD} \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{bse}\end{bmatrix}\end{bmatrix} \rightarrow \begin{bmatrix} \text{S}\mid\text{L}\mid\text{C}\mid\text{V} \begin{bmatrix}\text{SUBJ} & \langle \boxed{1}\rangle \\ \text{COMPS} & \textit{raised}(\boxed{3}) \oplus \boxed{2}\end{bmatrix} \\ \text{ARG-ST} \;\; \langle \boxed{1} \mid \boxed{2}\rangle \;\wedge\; (\boxed{3} \bigcirc \textit{indep})\end{bmatrix}$$

FIGURE 4. The basic lexical argument-raising principle

arguments ($\boxed{2}$) are specified to surface on the COMPS list. To concentrate on the relevant issues, we here ignore subjectless and subject-raising verbs and return to the issue on p. 24 when we introduce a more complete principle in figure 7.

Appended ($\oplus$) to the beginning of the COMPS list are the arguments possibly raised from an element on list $\boxed{3}$. The list $\boxed{3}$ can only contain an element, the so-called *argument-raising source*, if it satisfies the requirements specified in the relation *raised* discussed below.[6] For many of the verbs, $\boxed{3}$ will thus simply be the empty list from which no arguments can be raised.

To the right of the conjunction ($\wedge$) in the specification of ARG-ST, a second restriction on the argument structure is formulated. The arguments on ARG-ST are required to be *indep(endent)*, a notion encoding that these arguments have realized their own complements, which formally is expressed by a unary relation in functional notation introduced below. The only exception is a possibly occurring argument-raising source on list $\boxed{3}$. This list is shuffled ($\bigcirc$) into the list of independent arguments. The list $\boxed{3}$ is either an empty list or a singleton list containing an argument-raising source. In the latter case, shuffling corresponds to inserting the argument-raising source at any place in the list. Note that any argument can be an argument-raising source, including the subject. This correctly licenses the occurrence of partial subjects in examples like the ones we showed in (5) on p. 4.

The *indep(endent)* relation is defined in figure 5. An argument is indepen-

$$\textit{indep} := \langle\rangle.$$
$$\textit{indep} := \left\langle \begin{bmatrix}\text{L}\mid\text{C}\mid\text{V}\mid\text{COMPS} & \langle\rangle \\ \text{LEX} & -\end{bmatrix} \;\middle|\; \textit{indep} \right\rangle.$$

FIGURE 5. Definition of independence

[6] Here and throughout the paper relations are written in the functional notation traditionally used in HPSG.

dent if it includes all of its complements and is [LEX −]. The argument thus cannot contribute its complements to an argument-raising process and it cannot construct as part of a lexical head cluster. The intuition behind calling such arguments independent thus is that they independently take care of realizing their own complements.

The relation *raised* defined in figure 6 parameterizes the argument-raising

$$
\begin{aligned}
&\textit{raised}\big(\langle\rangle\big) := \langle\rangle.\\
&\textit{raised}\left(\left\langle\begin{bmatrix}\text{LEX} & + \\ \text{L}\,|\,\text{C} & \begin{bmatrix}\text{HEAD} & \textit{verb} \vee \textit{adj}\\ \text{V}\,|\,\text{COMPS} & \boxed{1}\end{bmatrix}\end{bmatrix}\right\rangle\right) := \boxed{1}\ \textit{lex-minus-list}.\\
&\textit{raised}\left(\left\langle\begin{bmatrix}\text{L}\,|\,\text{C} & \begin{bmatrix}\text{HEAD} & \textit{noun}\\ \text{V}\,|\,\text{COMPS} & \boxed{1}\end{bmatrix}\end{bmatrix}\right\rangle\right) := \boxed{1}\ \textit{prep-list}.
\end{aligned}
$$

FIGURE 6. Definition of possible argument-raising sources

principle with respect to the different kinds of argument-raising sources. The first clause specifies that if there is no argument-raising source, no arguments can be raised.

The second clause of the definition of *raised* deals with adjectival and verbal argument-raising sources, which are restricted to be [LEX +]. The relation *raised* returns the complements which were not realized by the argument-raising source itself (and thus still occur on its COMPS list) in order for them to become complements of the embedding verb to which the argument-raising principle applied. The raised complements are required to be [LEX −] by the relation *lex-minus-list*.[7] Taken together, the two LEX specifications — adjectival and verbal argument-raising sources are [LEX +] and raised complements [LEX −] — ensure that verbal or adjectival heads from which arguments have been raised cannot be raised themselves. As a result, in a sentence like (45) with several coherently constructing verbs functioning as argument-raising sources, no spurious structural ambiguities arise since only the indicated binary verbal-complex structure can be licensed and not a flat one.

(45) daß er sie [ansehen$_3$ können$_2$] muß$_1$
that he her see can must
'That he must be able to take a look at her.'

The obligatorily coherent verbs *können* and *muß* have a lexical entry like *wollen* in figure 1. The verb *muß* cannot raise the verbal complement *ansehen* of its verbal complement *können* because *ansehen* would then have to be [LEX −] but the lexical entry of an obligatorily coherent verb like *können* requires its verbal complement to be [LEX +]. Instead, in our analysis of example (45), *können* raises the object *sie* of *ansehen*. The finite verb *muß* then raises *sie* from the verbal cluster [*ansehen können*] and realizes the subject *er*, the object *sie*, and the verbal cluster *ansehen können* in a flat structure.

Finally, the third clause of the definition of the *raised* relation in figure 6 deals with nominal argument-raising sources. In this case, we restrict the elements which can be raised to prepositional arguments (*prep-list*).[8] No restriction on the argument-raising source is imposed since a partial NP and its PP complement are supposed to occur as two ordinary sister constituents in the *Mittelfeld*. To license them as independent sister constituents in sentences with a verbal complement, we need to allow nominal heads from which a PP argument has been raised to be raised as well — a case which is excluded for the verbal and adjectival complements via the LEX specifications in the second clause.

The use of the LEX attribute and its interaction with argument raising introduced above for different kinds of complement selecting verbs in German bears an interesting similarity to the approach of Abeillé and Godard (1997) dealing with French word order phenomena. They distinguish between phrasal complements occurring freely to the right of the head and bare complements immediately following the head. Examples for such

[7] The relations *lex-minus-list* and *prep-list* have the following straightforward definitions:

$$
\begin{aligned}
&\textit{lex-minus-list} := \langle\rangle. && \textit{prep-list} := \langle\rangle.\\
&\textit{lex-minus-list} := \big\langle [\text{LEX}\ -] \,|\, \textit{lex-minus-list}\big\rangle. && \textit{prep-list} := \big\langle [\text{L}|\text{C}|\text{HEAD}\ \textit{prep}] \,|\, \textit{prep-list}\big\rangle.
\end{aligned}
$$

It might appear nicer to use a generic, two place list relation to impose such requirements on every list element, e.g., to use $\textit{list}\big([\text{LEX}\ -]\big)$ and $\textit{list}\big([\text{L}|\text{C}|\text{HEAD}\ \textit{prep}]\big)$ instead of *lex-minus-list* and *prep-list*. However, defining such a relation in the way shown below would incorrectly require all elements to be structure shared.

$$
\begin{aligned}
&\textit{list}\big(\boxed{1}\big) := \langle\rangle.\\
&\textit{list}\big(\boxed{1}\big) := \big\langle \boxed{1} \,|\, \textit{list}\big(\boxed{1}\big)\big\rangle.
\end{aligned}
$$

[8] We have only considered prepositional arguments of nominal heads in this paper. Other kinds of complements of nouns, like verbal or genitive-NP complements, cannot be separated from their head in the way described for PP complements. Further research is needed to investigate whether this difference can be deduced from independent properties in order to eliminate the *prep-list* stipulation in the definition of the argument-raising sources in figure 6.

bare complements, which are referred to as *lite*, are bare nominal complements in light-verb constructions, past participles after tense auxiliaries, and infinitives in causative constructions. A verb lexically specifies whether it selects a lite or a non-lite complement via a WEIGHT attribute similar to the LEX attribute we employ. Verbs selecting a lite complement are lexically specified to inherit the arguments of its complement. The similarity of the techniques used in the approach of Abeillé and Godard (1997) to French and our approach to German provides interesting cross-linguistic support for the elaborate use of an argument-raising technique. As far as we see, our theoretical setup, which minimizes idiosyncratic lexical specification by introducing argument raising as a generalization over all verbs and enforces an obligatory form of argument raising that avoids spurious ambiguities, could be fruitfully applied to the approach to French of Abeillé and Godard (1997).

Extensions for subjectless constructions. Returning to the issue of distributing the argument structure to the different valence attributes in a general way including the case of subjectless and subject-raising predicates, we provide an extended version of the argument-raising principle in figure 7. This principle is identical to the basic principle we showed in

$$\begin{bmatrix} \textit{word} \\ \text{S}\,|\,\text{L}\,|\,\text{C}\,|\,\text{HEAD}\ \boxed{4}\begin{bmatrix} \textit{verb} \\ \text{VFORM}\ \ \textit{bse}\end{bmatrix}\end{bmatrix} \rightarrow \begin{bmatrix} \text{S}\,|\,\text{L}\,|\,\text{C}\,|\,\text{V} & \begin{bmatrix}\text{SUBJ} & \boxed{1} \\ \text{COMPS} & \textit{raised}\Big(\boxed{3}\Big) \oplus \boxed{2}\end{bmatrix} \\ \text{ARG-ST} & \textit{distrib-args}\Big(\boxed{4},\boxed{1},\boxed{2}\Big) \wedge \Big(\boxed{3} \bigcirc \textit{indep}\Big)\end{bmatrix}$$

FIGURE 7. An extended lexical argument-raising principle

figure 4 except for the way in which the ARG-ST is related to the COMPS and SUBJ values. Instead of the simple first/rest division used in the basic principle, the more complicated task is now taken over by a separate relation *distrib(ute)-arg(ument)s* which parameterizes the argument-raising principle depending on the lexical subclass of verb. Every linguistic theory will have to provide a way of distinguishing those verbs which require a subject from those which do not. Either this can be derived from other lexical properties or it has to be explicitly encoded in the verbal lexical entry itself. For the purpose of this paper, it is sufficient to assume the existence of such a distinguishing property. As a simple way of making this property explicit, we encode this subclassification of verbs in the form of subtypes of the head type *verb*. The definition of the *distrib-args* relation based on such a subclassification of verbal head types is shown in figure 8.

$$\begin{aligned}
&\textit{distrib-args}\Big(\textit{subj-less-verb}, \langle\rangle, \boxed{2}\Big) &&:= \ \boxed{2} \\
&\textit{distrib-args}\Big(\textit{subj-raising-verb}, \boxed{1}, \boxed{2}\Big) &&:= \ \boxed{2}\Big\langle\Big[\text{L}\,|\,\text{C}\,|\,\text{V}\,|\,\text{SUBJ}\ \boxed{1}\Big]\Big\rangle \\
&\textit{distrib-args}\Big(\textit{subj-verb}, \Big\langle\boxed{1}\Big\rangle, \boxed{2}\Big) &&:= \ \Big\langle\boxed{1}\,|\,\boxed{2}\Big\rangle
\end{aligned}$$

FIGURE 8. Mapping argument structure to valence

The first clause deals with subjectless predicates such as psych verbs like *frieren* (‘*freeze*’). It maps the entire argument structure to the third argument, which the argument-raising principle identifies with the COMPS value. The second argument is set to be the empty list, so that no subject can be selected via SUBJ.

The second clause deals with subject-raising verbs like *scheinen* (‘*seem*’). First, it identifies the single element on ARG-ST with the third argument of the relation, which in the argument-raising principle is appended to COMPS. Second, it identifies the SUBJ value of that single ARG-ST element with the second argument of the relation, which in the argument-raising principle is identified with SUBJ. Note that this includes the possibility of returning an empty list in cases where a subject-raising verb selects a subjectless predicate.

Finally, for all other verbs the third clause performs the first/rest division which was used in the basic argument-raising principle in figure 4. A list with the first element of the argument structure is returned as the subject valence, and the other elements are returned to be identified with the COMPS list.

Deriving finite verbs. Before we turn to the principles licensing constituent structure, we should focus on a detail that has not yet been discussed, namely how the lexical argument-raising principle in figure 4, which applies to base form verbs, becomes effective for finite ones. Finite verbs are assumed to be derived from their base forms by a lexical rule which among other things removes the subject from SUBJ and encodes it together with the complements on COMPS in the tradition of Pollard (1990). In order to be explicit, a simple instance of such a finitivization lexical rule is provided in figure 9. Relevant in our context is that the subject of finite verbs is encoded as the first argument of the COMPS valence. If no such subject exists, $\boxed{2}$ is the empty list, and thus the COMPS list contains only the complements. Finally, the relation *bse2fin* transforms the base form into

$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \boxed{1} \\ \text{S}\,|\,\text{L}\,|\,\text{C} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{bse}\end{bmatrix} \\ \text{VAL} & \begin{bmatrix}\text{SUBJ} & \boxed{2} \\ \text{COMPS} & \boxed{3}\end{bmatrix}\end{bmatrix}\end{bmatrix} \mapsto \begin{bmatrix} \text{PHON} & \textit{bse2fin}\left(\boxed{1},\boxed{2}\right) \\ \text{S}\,|\,\text{L}\,|\,\text{C} & \begin{bmatrix}\text{HEAD} & \begin{bmatrix}\text{VFORM} & \textit{fin}\end{bmatrix} \\ \text{VAL} & \begin{bmatrix}\text{SUBJ} & \langle\rangle \\ \text{COMPS} & \boxed{2}\oplus\boxed{3}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

FIGURE 9. A simple finitivization lexical rule

a finite form agreeing with the person and number of the subject, if there is one, and with the third person, singular in subjectless constructions.

4.2. **Constituent structure.** Constituent structure is licensed by the ID Principle in figure 10. The Cluster-Formation Schema (CF) licenses head-complement structures marked [LEX +] which consist of a *word* and a single [LEX +] complement. The Head-Complement Schema (HC), on the other hand, allows head-complement structures in which a *word* combines with any number of complements to form a [LEX −] constituent. To abstract over the nature of verb-second and the structure of the *Mittelfeld* we thus follow Pollard (1990) in assuming a flat *Mittelfeld* and obtain verb-second by simple linearization in this local tree.

To license nominal structures, we adopt the Head-Specifier Schema (HSPR) and the Head-Adjunct Schema (HA) of Pollard and Sag (1994). In the style of chapter 9, determiners are selected by the valence feature SPR. As was shown in figure 6, argument raising only affects elements on COMPS, i.e., complements, so that determiners cannot undergo argument raising. In addition to the original formulation of the two schemata, our versions bear appropriate LEX specifications: head-specifier structures are always [LEX −], and in a head-adjunct structure, the LEX value of the mother is identified with that of the head daughter.[9] While these two schemata are sufficient for our purpose of analyzing partial constituent fronting including the interaction of partial NPs with VP topicalization, naturally a full theory of German nominal constituents is more complicated. The reader interested in more details at this point is referred to Netter (1996, sec. 4.9.2), who discusses how the Pollard and Sag (1994) theory we rely on here can be modified to account for the full range of German NP data.

[9] Viewing adjunction as an identity operator applicable to categories of different complexity in this way has its roots in the GB literature of the early 90s (see, e.g., Kolb and Thiersch 1991, p. 273), where it is introduced as an extension of the classical X-bar theoretic view of adjunction as modification of X'.

$$\begin{bmatrix}\textit{phrase} & \\ \text{DTRS} & \textit{headed-struc}\end{bmatrix} \rightarrow$$

$$\begin{bmatrix}\text{S}\,|\,\text{LEX} & + \\ \text{DTRS} & \begin{bmatrix}\textit{head-comps-struc} & \\ \text{HEAD-DTR} & \textit{word} \\ \text{COMP-DTRS} & \left\langle\begin{bmatrix}\text{S}\,|\,\text{LEX} & +\end{bmatrix}\right\rangle\end{bmatrix}\end{bmatrix} \qquad \text{(CF)}$$

$$\vee \begin{bmatrix}\text{S}\,|\,\text{LEX} & - \\ \text{DTRS} & \begin{bmatrix}\textit{head-comps-struc} & \\ \text{HEAD-DTR} & \textit{word}\end{bmatrix}\end{bmatrix} \qquad \text{(HC)}$$

$$\vee \begin{bmatrix}\text{S}\,|\,\text{LEX} & - \\ \text{DTRS} & \textit{head-spr-struc}\end{bmatrix} \qquad \text{(HSPR)}$$

$$\vee \begin{bmatrix}\text{S}\,|\,\text{LEX} & \boxed{1} \\ \text{DTRS} & \begin{bmatrix}\textit{head-adj-struc} & \\ \text{ADJ-DTR}\,|\,\text{S} & \begin{bmatrix}\text{L}\,|\,\text{C}\,|\,\text{H}\,|\,\text{MOD} & \boxed{2}\end{bmatrix} \\ \text{HEAD-DTR}\,|\,\text{S} & \boxed{2}\begin{bmatrix}\text{LEX} & \boxed{1}\end{bmatrix}\end{bmatrix}\end{bmatrix} \qquad \text{(HA)}$$

$$\vee \begin{bmatrix}\text{S}\,|\,\text{LEX} & - \\ \text{DTRS} & \begin{bmatrix}\textit{head-filler-struc} & \\ \text{FILLER-DTR}\,|\,\text{S} & \begin{bmatrix}\text{LEX} & - \\ \text{LOC} & \boxed{1}\end{bmatrix} \\ \text{HEAD-DTR}\,|\,\text{S} & \begin{bmatrix}\text{LOC}\,|\,\text{C} & \begin{bmatrix}\text{HEAD} & \begin{bmatrix}\textit{verb} & \\ \text{VFORM} & \textit{fin}\end{bmatrix} \\ \text{VAL} & \begin{bmatrix}\text{SUBJ} & \langle\rangle \\ \text{COMPS} & \langle\rangle\end{bmatrix}\end{bmatrix} \\ \text{NLOC} & \begin{bmatrix}\text{I}\,|\,\text{SLASH} & \left\{\boxed{1}\right\} \cup \textit{set} \\ \text{T}\,|\,\text{SLASH} & \left\{\boxed{1}\right\}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix} \qquad \text{(HF)}$$

FIGURE 10. The ID Principle

Finally, unbounded dependencies are bound off in a head-filler structure (HF). For this purpose, we use the standard schema of Pollard and Sag (1994) and add the appropriate LEX specifications. The resulting construction is [LEX −] since it does not constitute a lexical cluster. The filler daughter is required to be [LEX −] as well, which eliminates otherwise possible spurious ambiguities. Empirical support for assuming that the fronted constituent is [LEX −] comes from the fact that, as mentioned by Haider (1993, p. 282), a partial fronted constituent is a possible site for extraposition (46a) whereas this is not possible in the *Mittelfeld* (46b). This shows that the fronted constituent must have a different status than any projection of *empfehlen* in the *Mittelfeld*.

(46) a. [Ein Buch empfehlen, das sie nicht auch selbst gelesen hat,]
a book recommend that she not also herself read has
würde dir Maria nie
would you Maria never
'Maria would never recommend a book to you which she has not read herself.'

b. * daß Maria dir kein Buch empfehlen, das sie nicht auch selbst
that Maria you no book recommend that she not also herself
gelesen hat, würde
read has would

As usual in HPSG, in an unbounded dependency construction only the *local* information is shared between the filler and the trace. Following S. Müller (1996) and Meurers (1996) we define LEX as an attribute of *synsem* objects. The fronted constituent and the trace therefore do not have to agree on the LEX specification so that fronted constituents are exempt from a LEX requirement lexically imposed by a head in base position. More concretely, any projection of a (partial) VP complement can be fronted even when selected by obligatorily coherent verbs which require the complement trace to be [LEX +].

4.2.1. *Other principles restricting phrases.* Regarding the other principles, we assume the traditional HPSG architecture of Pollard and Sag (1994, ch. 9). In particular, the SPEC-Principle applies to head-specifier structures to ensure identity of the SPEC value of the non-head with the head. And in headed structures, the different valences are realized according to the Valence Principle shown in figure 11. Note that this principle

> In a headed phrase, for each valence feature $\mathcal{F}$, the $\mathcal{F}$ value of the head daughter is the concatenation of the phrase's $\mathcal{F}$ value with the list of SYNSEM values of the $\mathcal{F}$-DTRS value.

FIGURE 11. The Valence Principle of Pollard and Sag (1994)

requires the elements occurring last on a valence list to be realized first. This requirement makes it impossible to combine an argument with a head in a tree that does not also include all of the more oblique arguments.[10] In particular, since the argument-raising principle adds raised arguments in front of the argument-raising source, these raised arguments cannot be realized before the argument-raising source is removed from the COMPS list, i.e., realized as well.[11]

5. Examples

Now that the relevant machinery has been introduced, let us look at some analyses of the examples we discussed in section 3.

5.1. **Partial Topicalization.**

5.1.1. *Partial APs.* We start the discussion with a very simple case of a topicalized partial AP, the example shown in (47).

(47) Stolz ist er *auf seine Kinder*
proud is he of his children
'He is proud of his children.'

The structure licensed for this sentence is shown in figure 12. A lexical entry for the copula *sein* with an adjectival complement was shown in figure 2. As motivated in the section 3.2 on partial APs, the entry for such a verb is like that of an obligatorily coherent verbal complement taking verb in that it requires its complement to be [LEX +]. As a result of the interaction of this specification with the mapping to the valence attributes enforced by the argument-raising principle, the occurrence of *ist* in the tree in figure 12 raises the PP-complement *auf seine Kinder* ($\boxed{2}$) from (the trace of) its adjectival complement *stolz* ($\boxed{4}$). Therefore, the partial AP *stolz* can be fronted independently of its PP-complement.

[10] While the data are not very clear, partial VP topicalization with ditransitive verbs in German seems to be possible with either of the two complements. Kathol (1995, p. 269) suggests to lexically under-determine the order of such complements in order to allow for either realization.

[11] Note that what we have encoded here is a more restrictive variant of the empirical generalization we reached at the end of section 3.4. It is more restrictive in that it requires a complement to be realized before its complements are, instead of only requiring both to be realized as part of the same head projection. While for our flat analysis of the *Mittelfeld* this makes no difference, it excludes some possibly more appealing binary branching analyses of the Mittelfeld of examples like the ones with partial NPs at the beginning of the *Mittelfeld* we showed in (11b) on p. 6.

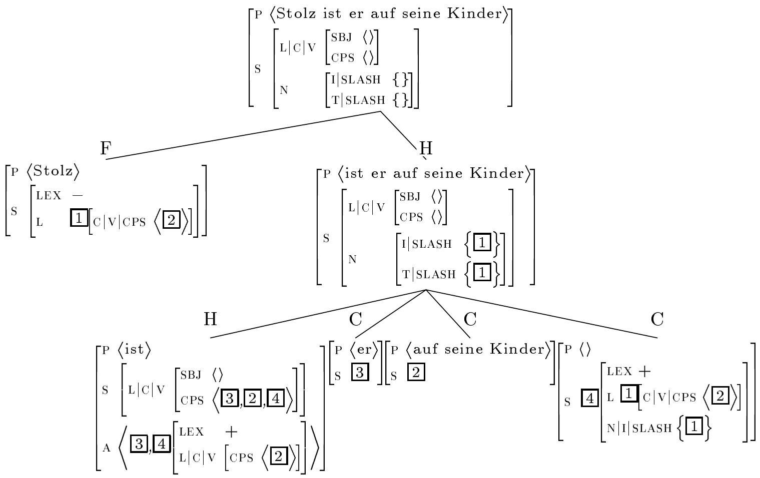

FIGURE 12. Simple topicalization of a partial AP

The finite verb *ist* then realizes the raised PP, the subject *er*, and the trace of the fronted AP in a flat head-complement structure. Note that since LEX requirements are not mediated in a non-local dependency, it is unproblematic that the trace of the fronted AP is required to be [LEX +] by the lexical entry of *sein* whereas the fronted AP is [LEX −] as specified in the Head-Filler ID Schema.

5.1.2. *Partial VPs.* A slightly more complex case of a topicalized partial constituent is illustrated by the partial-VP example in (48).

(48) [Eine Vase schenken] will er *ihr*
a vase donate wants-to he her
'He wants to give her a vase for a present.'

The verbal head *schenken* is fronted with one of its objects *eine Vase*, while its second object *ihr* remains behind in the *Mittelfeld*. Figure 13 shows the analysis tree assigned to this example. In figure 1, we showed a lexical entry for *wollen*. It is similar to that of the copula discussed in the previous section in that it requires a [LEX +] complement. In addition, following Pollard and Sag (1994) the control relation between the subject

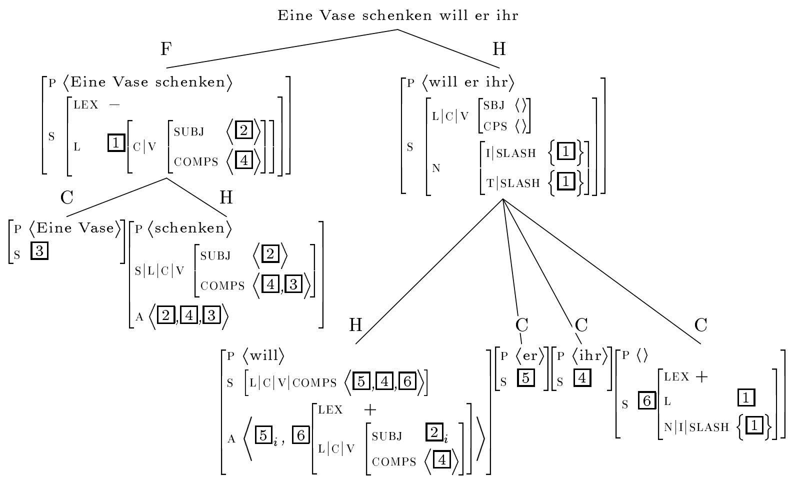

FIGURE 13. Topicalization of a partially saturated VP

of *will* (5) and the subject of *schenken* (2) is included in the lexical entry by semantic coindexation (index i).

The occurrence of *will* in the tree in figure 13 raises all complements of the trace of its verbal argument. This is only one NP, *ihr*, because the fronted verbal head *schenken* already combined with its other NP complement, *eine Vase*. Although the combination of a verbal head and its NP complement results in a [LEX −] constituent, just like in the last example this does not conflict with the [LEX +] specification imposed by the complement of *will* since the unbounded dependency relaxes the LEX requirement. In its base position in the *Mittelfeld*, however, the constituent [*eine Vase schenken*] would not be licensed.

5.1.3. *Partial NPs.* Next, we turn to the analysis of a sentence with a topicalized partial NP, the example shown in (49), which in addition to the simple case (1b) discussed in the introduction includes a verbal complex.

(49) [Ein Buch] hofft jeder *darüber* ausleihen zu dürfen.
a book hopes everyone on-this borrow be-allowed-to
'Everyone hopes to be allowed to borrow a book on this topic.'

The analysis tree for this example is shown in figure 14. The interesting

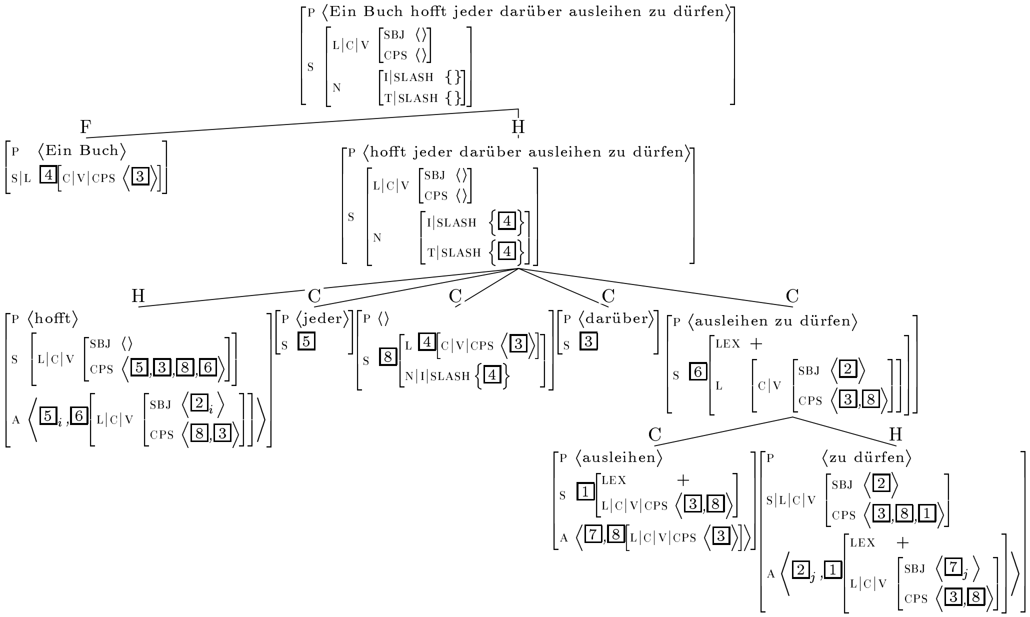

FIGURE 14. Topicalization of a partial NP

details are how the fronted partial NP *ein Buch* and the verbal complex *[ausleihen zu dürfen]* are licensed. The argument-raising principle applies to *ausleihen*, the lexical entry of which we saw in figure 3, so that the NPs on ARG-ST can be argument-raising sources as defined in figure 6. The occurrence of *ausleihen* ($\boxed{1}$) in the tree in figure 14 can therefore raise the PP argument *darüber* ($\boxed{3}$) from its nominal complement.

The verb *dürfen* belongs to the obligatorily coherent verbs; so it has a lexical entry like *wollen* in figure 1 and requires its verbal complement to be [LEX +]. The argument-raising principle therefore has to raise the (trace of the) NP *ein Buch* ($\boxed{8}$) and the PP *darüber* ($\boxed{3}$) from the verbal complement *ausleihen* ($\boxed{1}$) onto the COMPS requirements of *zu dürfen*.

The verb *hoffen* belongs to the optionally coherent verbs, for which a lexical entry was shown in figure 1. The argument-raising principle ensures that the occurrence of *hofft* in the tree in figure 14 raises all independent complements from its verbal complement: the PP *darüber* ($\boxed{3}$) and the

(trace of the) NP *ein Buch* ($\boxed{8}$). But it cannot raise the verbal complement *ausleihen*, since *ausleihen* is [LEX +]. Instead, *ausleihen* and *zu dürfen* form a verbal complex licensed by the VC schema. The verbal complex, the trace of the fronted NP *ein Buch*, the PP *darüber*, and the subject NP *er* are then all realized in a flat head-complement structure.

5.1.4. *Some ungrammatical cases.* In section 3.4, we observed that a verb coherently selecting a verbal complement cannot be topicalized without this verbal complement, as shown in example (50):

(50) a. * [Das Pferd müssen] wird er *verkaufen*.
the horse have to$_{V2}$ will$_{V1}$ he sell$_{V3}$

b. * [Müssen] wird er *das Pferd verkaufen*.
have to$_{V2}$ will$_{V1}$ he the horse sell$_{V3}$

In the following we want to show how examples of the form of (50a) and (50b) are ruled out by our theory. The example (50a), of which the most promising structure is shown in figure 15, is not licensed by our theory for two reasons. Firstly, a conflict arises in the topicalized constituent. The obligatorily coherent verb *müssen* raises the NP argument *das Pferd* ($\boxed{3}$) from its verbal complement *verkaufen* ($\boxed{1}$). The realization of this raised NP ($\boxed{3}$) as a complement of *müssen* in the fronted position is, however, ruled out by the Valence Principle since $\boxed{3}$ precedes the complement ($\boxed{1}$) on COMPS and that complement is not realized in this tree.

The second conflict in this example arises in the *Mittelfeld*: Similar to the verb *will*, the verb *wird* in figure 15 obligatorily raises all complements from its verbal argument ($\boxed{6}$). Thus it has to raise the remaining verbal valence requirement ($\boxed{1'}$) from this verbal argument. The occurrence of the verb *verkaufen* ($\boxed{1}$) in the tree is unsaturated because it has not realized its nominal complement *das Pferd*. Furthermore, the obligatorily coherent verb *müssen* requires *verkaufen* to be [LEX +]. But according to the argument-raising principle, the raised complement ($\boxed{1'}$) has to be [LEX −]. This conflicts via the Valence Principle with the different specifications of *verkaufen* ($\boxed{1}$).

For example (50b) three potential structures are shown in figures 16—18. All three structures are correctly ruled out by our theory. In the first structure in figure 16, the verb *verkaufen*, selected by the topicalized *müssen*, realizes its own complement *das Pferd* ($\boxed{3}$) in a head-complement structure and the finite verb *wird* raises the resulting VP from its verbal complement ($\boxed{6}$). The conflict here arises because the VP *das Pferd*

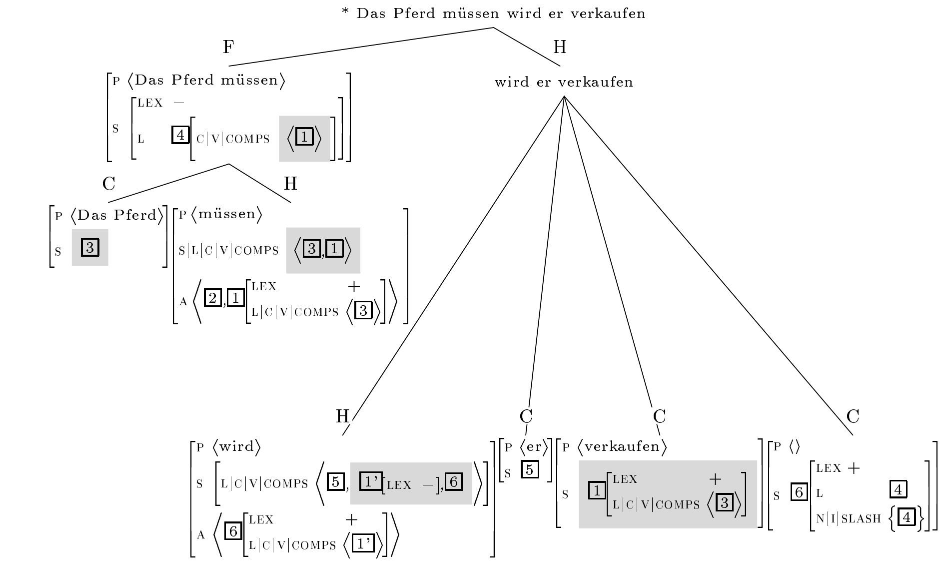

FIGURE 15. Topicalizing a verb and an argument of its complement

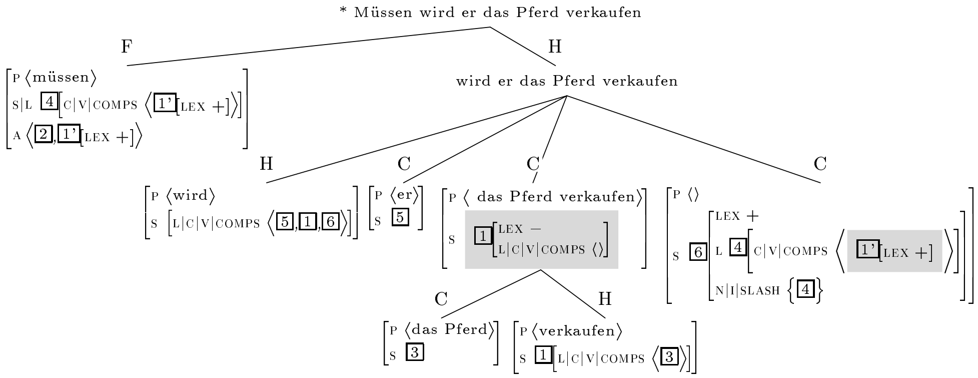

FIGURE 16. Topicalizing a verb without its verbal complement (I)

verkaufen ($\boxed{1}$) is [LEX −], as required by the head-complement schema, but the obligatorily coherent verb *müssen* requires its verbal complement ($\boxed{1'}$) to be [LEX +].

In the second tree in figure 17, a similar conflict arises as in the tree in

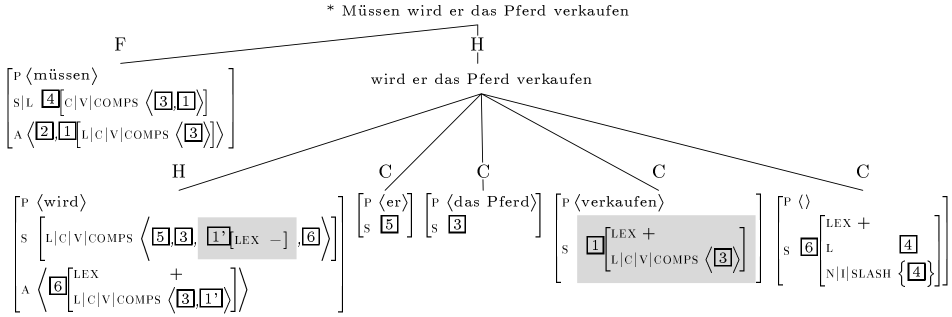

FIGURE 17. Topicalizing a verb without its verbal complement (II)

figure 15: To obtain the totally flat *Mittelfeld* the verb *wird* has to raise all complements ($\boxed{3}$, $\boxed{1'}$) from its verbal argument ($\boxed{6}$). These complements have to be [LEX −] due to the argument-raising principle. But the verb *verkaufen* ($\boxed{1}$) is [LEX +] as required by its governor *müssen*.

The third possibility, the tree in figure 18, is that the embedded verb

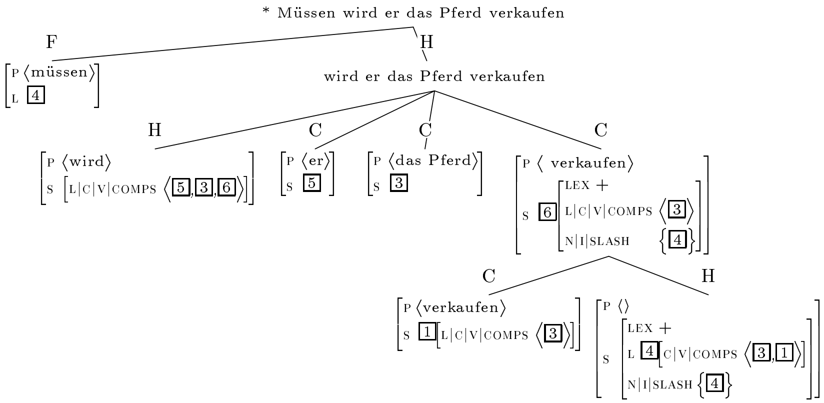

FIGURE 18. Topicalizing a verb without its verbal complement (III)

verkaufen and its governor, the trace of *müssen* form a verbal cluster. The conflict here arises because the trace of *müssen* is the head of this verbal cluster. This conflicts with a standard restriction on unbounded dependencies, the Trace Principle of Pollard and Sag (1994), which states that traces have to be subcategorized for.

As an alternative to the LEX encoding of coherence requirements one might be tempted to rule out examples like (50) by making reference to valence specifications alone, e.g., by stating that only saturated arguments can be raised. However, examples like (50) are also ungrammatical if the embedded verb which is left in the *Mittelfeld* is an intransitive verb, as the examples in (51) show.

(51) a. * Müssen wird er lachen.
have to will he laugh
'He will have to laugh.'

b. * Müssen wird getanzt werden.
have to will danced be
'There will have to be dancing.'

Under our theory with the LEX encoding, the most promising structure for example (51a) is the one shown figure 19. Just like in the transitive verb

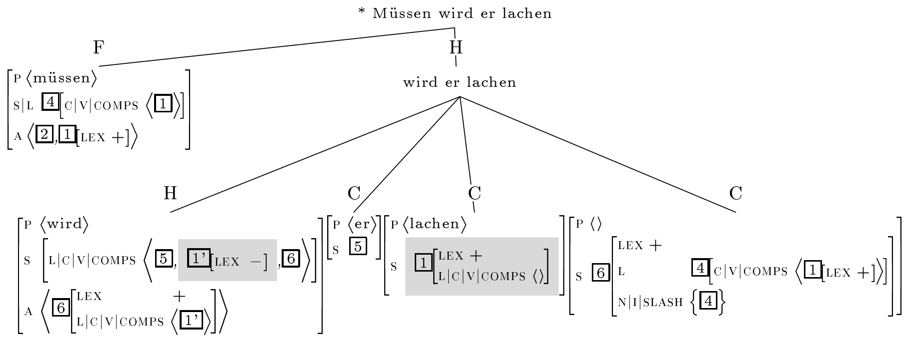

FIGURE 19. Topicalizing a verb without its intransitive verbal complement

case discussed above, the explanation building on the LEX requirement as coherence encoding is sufficient to explain the ungrammaticality of this structure: the coherently construction verb *müssen* requires its verbal complement *lachen* ($\boxed{1}$) to be [LEX +]. To obtain the flat *Mittelfeld*, the verb *wird*, on the other hand, has to raise the verbal complement ($\boxed{1'}$) from its verbal argument ($\boxed{6}$). The argument-raising principle requires

this complement ($\boxed{1'}$) to be [LEX −] which conflicts with the LEX value of the occurrence of *lachen* ($\boxed{1}$) in the the tree.

Sentence (51b) is an example for a subjectless construction. Because the embedded verb *getanzt* is intransitive, there are no NP complements at all in the whole clause. But since our explanation of the ungrammaticality is independent of the valence specifications, this sentences is ruled out by the theory just like the previous one.

5.2. **Interaction of Partial Constituents with VP Topicalization.**

5.2.1. *Partial APs and VP Topicalization.* The next analysis we want to show in detail is an example for a VP topicalization including a partial AP, namely the example (40b) discussed in section 3.4, repeated as (52) below.

(52) [Stolz gewesen] ist er *auf seine Kinder.*
proud been is he of his children
'He was proud of his children.'

In this example, argument raising from an adjectival complement has to interact with argument raising from a topicalized verbal complement in which it is embedded. The structure for this example as licensed by our theory is shown in figure 20. The important detail is how the topicalized constituent with its partial AP *stolz gewesen* is licensed. Just like in the example shown in figure 12, the lexical entry of the copula *sein* shown in figure 2 comes into play. The occurrence of *gewesen* in the tree in figure 20 raises the argument *auf seine Kinder* ($\boxed{3}$) from its adjectival complement *stolz* ($\boxed{1}$). The remaining partial complement is then realized in a head-complement structure. The resulting VP *stolz gewesen* is [LEX −] and has one element left on its COMPS list, the raised PP *auf seine Kinder* ($\boxed{3}$).

The tense auxiliary *ist* occurring in verb-second position belongs to the obligatorily coherent verbs and requires its complement to be [LEX +], as was shown in the lexical entry in figure 1. The argument-raising principle ensures that the occurrence of *ist* in the tree in figure 20 raises the PP *auf seine Kinder* ($\boxed{3}$) from (the trace of) its verbal complement *stolz gewesen* ($\boxed{6}$). Having raised the PP *auf seine Kinder* ($\boxed{3}$) to the COMPS requirements of *ist*, one can license a flat head-complement structure with *ist* as head daughter and the NP *er*, the trace of the fronted VP, and the raised PP as complement daughters. The PP *auf seine Kinder* has thus

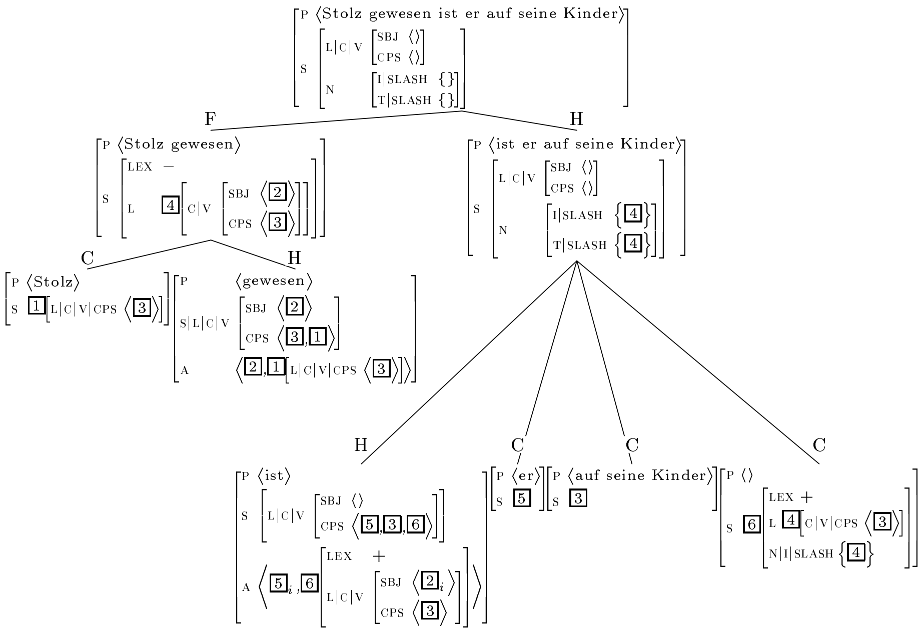

FIGURE 20. Topicalization of a VP including a partial AP

been raised twice and is realized independent from its original head *stolz*, as a complement of the verb *ist*.

5.2.2. *Partial NPs and VP Topicalization.* We now take a closer look at the two examples for an interaction of partial NPs with VP topicalization which we discussed in section 3.4. The observation was that topicalization including a partial NP is possible (53a), whereas topicalization of the VP including only the PP argument of an NP is ungrammatical (53b).

(53) a. [Ein dickes Buch ausleihen] will niemand *darüber*.
a thick book borrow wants-to nobody on-this
'Nobody wants to borrow a thick book on this topic.'

b. * [Darüber ausleihen] will niemand *ein dickes Buch*.
on-this borrow wants-to nobody a thick book

The structure for the grammatical example (40c), is shown in figure 21. We first focus on how the partial topicalized constituent *ein dickes Buch*

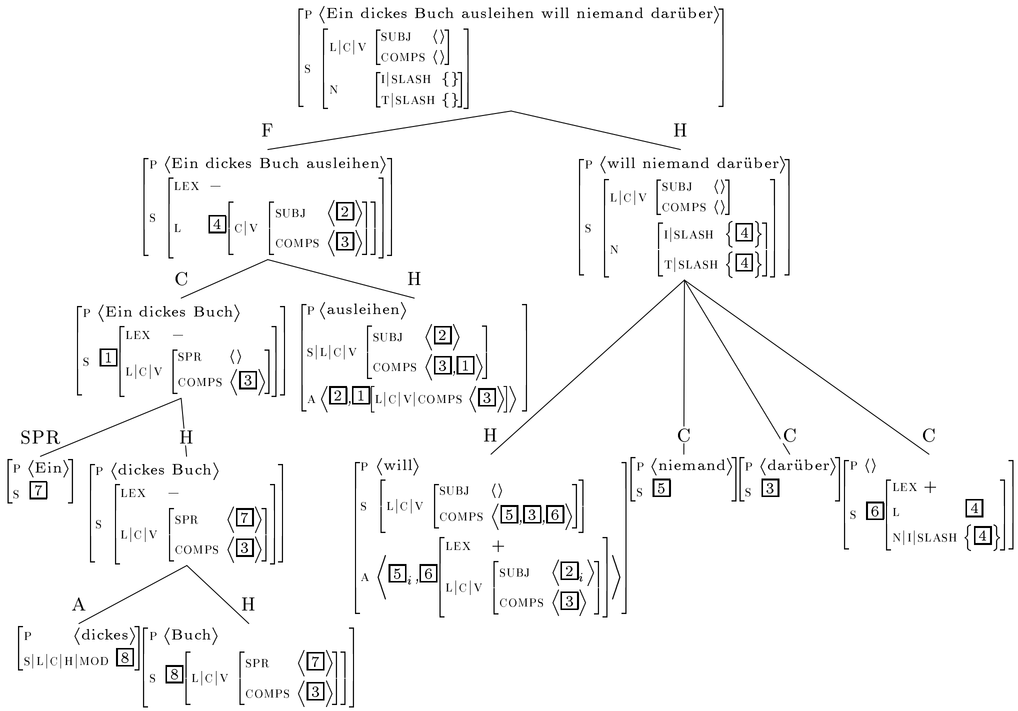

FIGURE 21. Topicalization of a VP including a partial NP

ausleihen is licensed. The structure of the NP *ein dickes Buch* is licensed by the Head-Specifier and the Head-Adjunct Schema. Relevant for the following is that the PP complement ($\boxed{3}$) of the noun *Buch* is never saturated and thus appears on the COMPS list of the NP ($\boxed{1}$). As the lexical entry of the verb *ausleihen* shown in figure 3 interacts with the argument-raising principle of figure 4, the occurrence of *ausleihen* in the tree in figure 21 raises the PP argument *darüber* ($\boxed{3}$) from its nominal complement ($\boxed{1}$). The remaining partial-NP complement *ein dickes Buch* ($\boxed{1}$) is then realized in a head-complement structure. The resulting VP *ein dickes Buch ausleihen* is [LEX −] and has one element left on its COMPS list, the raised PP *darüber* ($\boxed{3}$).

The verb *will* belongs to the obligatorily coherent verbs and requires its verbal complement to be [LEX +], as was shown in its lexical entry in figure 1. The argument-raising principle ensures that the occurrence of *will* in the tree in figure 21 raises the PP *darüber* ($\boxed{3}$) from (the trace of) its verbal complement *ein dickes Buch ausleihen* ($\boxed{6}$). Again, as in the tree of figure 20, for this to be possible, the trace must be [LEX +], which does not conflict with the [LEX −] specification on the topicalized VP. The subject NP *niemand*, the raised PP *darüber*, and the trace of the partial-VP complement are then all realized in a flat head-complement structure. Parallel to the first interaction example discussed above, the PP ($\boxed{3}$) has thus been raised twice and is realized separate from its original head *Buch*, as a complement of the verb *will*.

The ungrammatical example (53b) involves a PP argument that has been topicalized with the VP, leaving the NP behind. The most promising structure for this example is shown in figure 22. The example is interesting

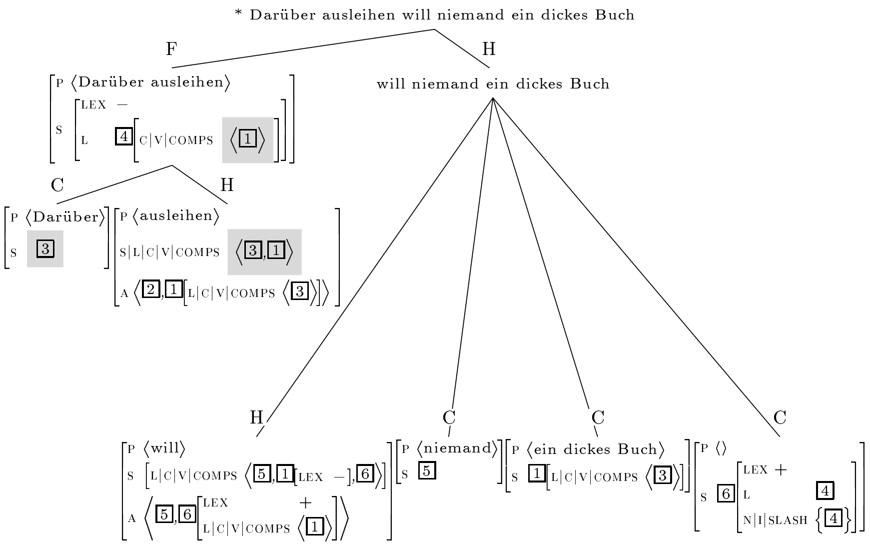

FIGURE 22. Topicalization of a VP including a raised PP

since in the *Mittelfeld* both the NP and the PP can appear separately. This is reflected in our theory by allowing the PP to raise and become a sister of the NP. So why is the example (53b) ungrammatical?

The conflict in this example arises in the topicalized constituent: The verb *ausleihen* in the example in figure 22 can raise the PP argument *darüber* ($\boxed{3}$) of the NP *ein dickes Buch* ($\boxed{1}$). To build the topicalized constituent *darüber ausleihen*, the raised PP has to be realized in a head-complement structure before its governor *Buch* is realized. But according to the Valence Principle shown in figure 11, more oblique complements have to be realized first. The argument-raising principle defined in figure 4 adds the raised complements to the beginning of the COMPS list, i.e., as less oblique than the other complements. One of these complements is the raising source, which therefore has to be realized before (or together with) any of the arguments raised from it. As a result, the head-complement structure *darüber ausleihen* cannot be licensed by our theory.

5.3. **Scrambling.** While our discussions of analyses so far focussed on topicalization examples, our theory also provides an explanation for the patterns of grammaticality arising with (partial) VP and AP complements in the *Mittelfeld* which we discussed in sections 3.1 and 3.2.

Complete complements. Scrambling of full VP complements is possible when selected by incoherently constructing verbs, as illustrated again in (54).

(54) a. Er wird [das Pferd zu verkaufen] noch heute versuchen.
he will the horse to sell still today try

b. Er wird [das Pferd zu verkaufen] ihr noch heute empfehlen.
he will the horse to sell her still today advise

Our theory correctly predicts this since incoherently constructing verbs select a [LEX −] constituent. Since the argument-raising principle can only raise complements from [LEX +] constituents, complements of incoherently constructing verbs always have to be full VPs, which like other fully saturated complements can occur in different positions of the *Mittelfeld*.[12]

Scrambling of full VP complements of coherently constructing verbs, as displayed again in example (55), is correctly predicted not to be possible, since our theory does not license full VP complements of coherently constructing verbs in the *Mittelfeld* at all.

[12] A theory further restricting German *Mittelfeld* word order naturally is needed but is a topic of its own outside the scope of this paper.

(55) * Er wird [das Pferd verkaufen] noch heute wollen.
he will the horse sell still today want to

This follows from the interaction of the argument-raising principle and the [LEX +] requirement which coherently constructing verbs impose on their complement. This explanation also covers the AP complements in (56), which are selected coherently as well.

(56) * Er ist [stolz auf seine Kinder] im letzten Jahr gewesen.
he is proud of his children in the last year been

Partial complements. The examples (57) and (58) remind us that partial verbal and adjectival complements can never occur at the beginning of the *Mittelfeld*.

(57) * Er scheint / versucht / hofft [zu verkaufen] *das Pferd.*
he seems tries hopes to sell the horse
'He seems to / tries to / hopes to sell the horse.'

(58) * Er ist [stolz] im letzten Jahr *auf seine Kinder* gewesen.
he is proud in the last year of his children been
'Last year he was proud of his children.'

For incoherently selected verbal complements this follows from the fact that, as explained above, our theory never licenses partial verbal complements for incoherently constructing verbal heads.

Coherently selected verbal and adjectival complements combine with their verbal head as part of a head cluster. Different from ordinary complements, these [LEX +] complements are licensed by the binary Head-Cluster Schema, from which we assume no linearization into the *Mittelfeld* to be possible. To ensure the proper order of the head-cluster (or single [LEX +] element) to the right of all other elements in the flat head-complement structure, it suffices to specify the simple LP statement shown in figure 23.

$$\left[\textsc{synsem}\,|\,\textsc{lex}\ -\right] < \left[\textsc{synsem}\,|\,\textsc{lex}\ +\right]$$

FIGURE 23. Linearization according to lexical status

6. OUTLOOK

We have tried to include a wide range of data in the discussion of the previous chapters. There are, however, a number of topics which are relevant to an investigation of partial constituent fronting that were not included. In the following we want to mention some of these open issues.

6.1. Subjects in fronted non-finite constituents. It was noted by Haider (1982, 1990) that under certain conditions it is possible to realize a subject as part of a fronted, non-finite constituent, i.e., in the notation of Bech (1955), that it is possible to front the constituent [N'(= N") V"]. While this option is generally available for ergative subjects (59), the occurrence of unergative subjects is significantly more restricted, but nonetheless possible as shown by Haider's example (60).

(59) Ein Fehler unterlaufen ist ihr noch nie.
an error crept-in is her still never.
'So far she has never made a mistake.'

(60) Ein Außenseiter gewonnen hat hier noch nie.
an outsider won has here still never
'An outsider has never won here yet.'

At least two questions arise from this observation: First, under what conditions can unergative subjects be included in fronted non-finite verbal constituents and how can a theory like the one presented above be extended to account for the occurrence of subjects under these conditions? And second, how does the subject included in the fronted non-finite verbal constituent receive nominative case? While the first, more general question, has to be left to future research, in Meurers (1998) an attempt is made to provide an answer for the second one.

6.2. Coherently selecting adjectives. Askedal (1989, p. 103) argues on the basis of examples like (61) that adjectival heads can select coherently.

(61) da man Eiweiß auf Gift nicht mehr zu
because one$_{N'}$ white of egg$_{A''}$ on poison$_{P''}$ not$_{Neg'}$ anymore to
reimen gewohnt war. (Zauberberg, S.801)
rhyme$_{V''}$ used to was$_{V'}$
'Because one was no longer used to rhyme white of egg with poison.'

The negation *nicht* is interpreted as belonging to the outer predicate *gewohnt sein*. But it intervenes between the inner predicate *zu reimen* and its complements *Eiweiß* and *auf Gift*. The possibility to perform such permutations of elements belonging to different heads is one of the tests of Bech (1955) for coherence.

On the other hand, the examples in (62) show that the full VP complement of the adjective can be fronted in the *Mittelfeld* (62a) and it can also be pied-piped (62b), which are two tests for an incoherent construction.

(62) a. da Eiweiß auf Gift zu reimen man $\text{nicht}_{Neg'}$
because white of $\text{egg}_{A''}$ on $\text{poison}_{P''}$ to $\text{rhyme}_{V''}$ $\text{one}_{N'}$ not
mehr gewohnt war.
anymore used to $\text{was}_{V'}$

b. das ist die Substanz, die auf Gift zu reimen man
this is the substance $\text{which}_{A''}$ on $\text{poison}_{P''}$ to $\text{rhyme}_{V''}$ $\text{one}_{N'}$
nicht mehr gewohnt war.
$\text{not}_{Neg'}$ anymore used to $\text{was}_{V'}$

The adjective *gewohnt* thus seem to pattern with optionally coherent verbs. More research is needed to determine which adjectives fall into this category. On the basis of such a classification, the argument-raising principle we presented in figure 4 could then be extended to also apply to the appropriate class of adjectives.

6.3. **Lexical restrictions and context effects.** In this paper, we have focussed on the occurrence of partial constituents and how they are restricted by syntactic factors. In section 3.3 we already mentioned, however, that the occurrence of partial NPs is also subject to additional lexical restrictions. It has, for example, often been observed that grammatical examples containing a partial NP like the ones presented in (63a) become ungrammatical when the embedding verb is replaced by a verb which has the same syntactic properties but a different semantics.

(63) a. *Über Syntax* hat er [ein Buch] **ausgeliehen**.
on syntax has he a book borrowed
'He borrowed a book on syntax.'

b. * *Über Syntax* hat er [ein Buch] **geklaut**.
on syntax has he a book stolen
'He stole a book on syntax.'

The only difference between the two sentences in (63) is that the verb *ausleihen* is replaced by the verb *klauen*. De Kuthy (1998) takes a closer look at the lexical semantic properties of this contrast and shows, how such lexical restrictions can be integrated into an argument-raising approach.

De Kuthy (1998) also shows that the acceptability of ungrammatical examples like the one in (63b) can be significantly improved by adding an appropriate context. Thus, (63b) is much improved if it occurs in the context of a discussion about different books that were stolen at the library. How a theory of these context effects can be formulated and integrated into the presented syntactic theory is another open issue.

6.4. **Topicalization of adjuncts.** In our discussion of partial NPs in this paper, we were solely concerned with PP arguments. But, similar to verbs, nouns can be modified by a PP, as example (64) shows, where the noun *Freundin* is modified by the PP *mit roten Haaren*.

(64) Peter hat eine neue Freundin mit roten Haaren.
Peter has a new girlfriend with red hair
'Peter has a new, red-haired girlfriend.'

It is generally stated in the literature that such adjunct PPs cannot occur separate from the noun they modify. The following ungrammatical example, where an adjunct PP has been topicalized without the NP it modifies, illustrates this.

(65) * *Mit roten Haaren* hat Peter [eine neue Freundin].
with red hair has Peter a new girlfriend

However, as discussed in De Kuthy (1998), it had gone unnoticed that there are grammatical examples in which an adjunct PP occurs separate from the NP it modifies. To support this claim, she provides the following two grammatical sentences from the "Frankfurter Rundschau".

(66) a. *Aus dem 17. Jahrhundert* erklangen in dynamisch
from the 17th century sounded in dynamically
differenziertem Spiel [Tanzsätze von Johann Sebastian Bach].
differentiated manner dances by Johann Sebastian Bach
'Some dances from the 17th century by Johann Sebastian Bach were played in a dynamically differentiated manner.'

b. *Aus dem "English Theater"* stehen [zwei Modelle] in den Vitrinen.
of the English Theater are two models in the display
'There are two models from the English Theater on display.'

Furthermore, De Kuthy (1998) observes that the context again plays an important role. The example (67) shows that a sentence like the one that was judged ungrammatical in (65) is in fact grammatical when accompanied by the right kind of context.

(67) Auf einer Show in Düsseldorf wurden die neuesten Frisurmodelle vorgestellt.
a. *Mit kurzen Haaren* wurden dabei nur [drei Modelle] gezeigt.
with short hair were there only three models presented
'The newest haircuts were presented during a show in Düsseldorf. Only three of the models shown had short hair.'

In De Kuthy and Meurers (1999) we show that the argument-raising architecture developed in this paper can be combined with an adjuncts-as-dependents approach along the lines of Bouma, Malouf, and Sag (1998) to account for such data involving adjuncts.

7. Conclusion

Investigating the nature of partial fronting phenomena in German, we contrasted two approaches: the remnant-movement analysis and a reanalysis-like approach. We showed that the empirical arguments discussed in the literature for preferring remnant movement are not convincing and that certain word order phenomena support a reanalysis-like approach to partial constituents.

We then compared three different kinds of partially occurring complements: verbal, adjectival, and verbal ones. We discussed the different behavior of coherently and incoherently selected verbal complements and showed that adjectival complements behave parallel to the coherently selected verbal complements. Nominal complements, on the other hand, were shown not to be subject to the restrictions holding for the verbal or adjectival complements.

We captured the empirical insights in a reanalysis-like theory formalized in the HPSG paradigm. The account extends the empirical coverage of previous HPSG proposals in a way which accounts for the similarities and

the differences between three different kinds of partial constituents. The similarities derive from a generalization of the argument-raising approach to partial VPs: a lexical principle which introduces argument raising as a general possibility for verbal heads. The differences result from the different requirements with respect to the lexicality (LEX) of the complements as specified in the lexical entries and a relation (*raised*) parameterizing the lexical principle. As additional support for the analysis, we showed that the approach predicts the observable interaction between (partial) VP topicalization and partial NPs or APs.

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