

'Phantoms' and German fronting: poltergeist constituents?*

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'What is divinity if it can only come
In silent shadows and in dreams?'
Wallace Stevens, 'Sunday Morning'

Abstract

In categorial grammar (CG), required complements such as dative and accusative objects, prepositional phrases, predicatives, and adverbials are added one at a time to lexical verbs. This leads to a question about the significance of phrases generated as intermediate steps in CG derivations. That is, while verbs (with NO included complements) and verb phrases (with ALL included complements) are clearly significant units, what about partial verb phrases: that is, verbs with one of two (or more) required complements? Dowty (1982) and Bach (1982) adduce evidence for English partial verb phrases, showing that positing them leads to a good characterization of passivization and transitive purpose clauses.

The present paper notes that partial verb phrases count as constituents of German sentences by virtue of the fact that they may appear fronted — that is, before the finite verb. We then formulate a GPSG treatment employing the CG principle of adding complements one at a time to verbs. The GPSG formulation of this principle is preferable in a subtle point: it allows that one-at-a-time addition of complements to verbs NOT be rigorously reflected in syntactic structure. The formulation accommodates the data and spawns a CG/GPSG hybrid with possible survival value.

The phenomenon

It is well known that matrix assertion clauses in German begin with a single constituent, followed by a finite verb, followed by other complements and modifiers, etc. Thus the pattern illustrated in (1):

- (1) (a) *Er* kann seiner Tochter ein Märchen erzählen.
 SUBJ FIN
 he can his daughter a story tell
 'He can tell his daughter a story.'
- (b) *Seiner Tochter* kann er ein Märchen erzählen.
 IND OBJ FIN
- (c) *Ein Märchen* kann er seiner Tochter erzählen.
 DIR OBJ FIN
- (d) *Erzählen* kann er ihr es.
 INF FIN
- (e) **Er* *ein Märchen* kann seiner Tochter erzählen.
 SUBJ DIR OBJ FIN
- (f) **Er* *seiner Tochter* kann ein Märchen erzählen
 SUBJ IND OBJ FIN

These fronted constituents may appear with focusing adjuncts (2), modifiers (3), and certain conversational particles (4).

- (2) *Nur seiner Tochter* kann er ein Märchen erzählen.
 only his daughter
- (3) *Gut 'gezielt'* hatte auch die iranische Regierung (Hoberg 1981: 181).
 well aimed FIN
- (4) *Seiner Tochter aber* kann er kein Märchen erzählen.
 his daughter however FIN

Hoberg (1981) lists examples of the above sorts as superficial counterexamples to the generalization that only single constituents appear in fronted position. But it is not hard to see how to save the generalization in these cases: we regard the focusing *nur* as a daughter of NP in (2); *gut* as a VP adverb in (3); and *aber* in (4) as the sort of parenthetical that appears in breaks between constituents. We needn't, therefore, regard these cases as genuine counterexamples to the rule that a single constituent is fronted, even if they show that some refinement in its formulation will be required. I won't pursue this here. Nor will I be concerned with another class of exceptions to the generalization — namely, those single constituents which cannot be fronted, for example the enclitic *es* (pronoun) and the conversational particles, such as *wohl*, *denn*, and *ja*; see Hoberg (1981: 159) for a longer list.

Instead, I propose that we examine another class of cases which Hoberg (1981: 181) and others have regarded as counterexamples to the generalization that only SINGLE constituents may appear fronted. In addition to the pattern in (1), certain SEQUENCES of constituents may appear, such as those in (5):

- (5) *Ein Märchen erzählen* kann er ihr.
 DIR OBJ INF FIN
Seiner Tochter ein Märchen erzählen kann er.
 IND OBJ DIR OBJ INF FIN

Such sequences always include a nonfinite verb, as (6) might suggest, and as Hoberg (1981: 181) notes:

- (6) **Seiner Tochter ein Märchen* kann er erzählen.
 IND OBJ DIR OBJ FIN

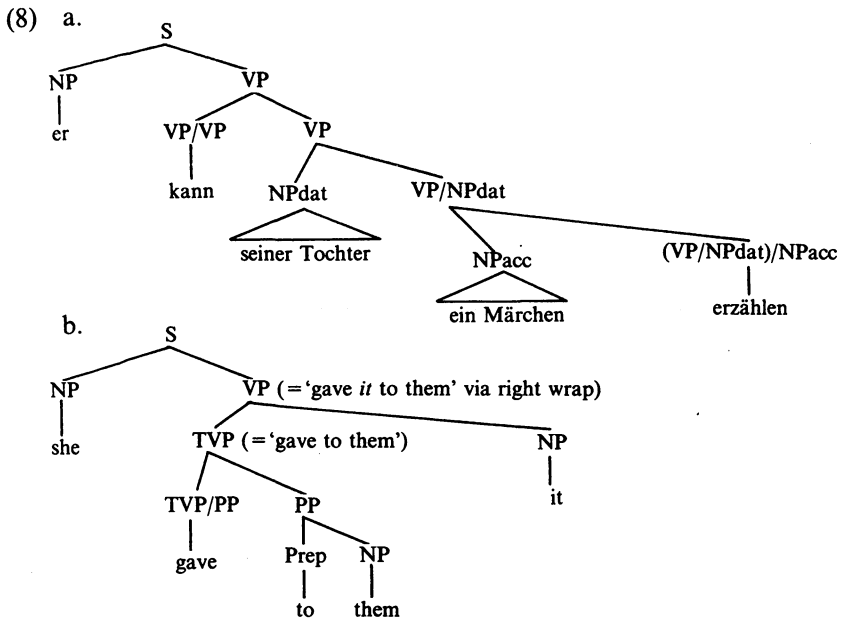
Furthermore, not just any complement may appear with the nonfinite verb in fronted position:

- (7) **Seiner Tochter erzählen* kann er es (Heidolph et al. 1981: 721).
 IND OBJ INF FIN

The analysis

Exceptio regulam probat — the exception tries the rule. With this in mind, let us analyze these sequences of fronted constituents as genuine constituents, albeit ones of a peculiar sort.

In categorial grammar, derivations proceed from the verb, to which complements and modifiers are added, usually one at a time. This process may be represented in derivation trees such as those in (8):



Dowty (1982) and Bach (1982) have shown that there is syntactic and semantic motivation for this means of description, including the unusual-looking element 'TVP' in (8b). TVP is a constituent in (b), but because the 'right-wrap' operation squeezes another element into it, it appears as a discontinuous constituent in the sentence *She gave it to them*. This obscures the application of the usual tests for constituency, which TVPs fail.

Gazdar and Sag (1980) reconstruct the notion TVP rather felicitously in their own theory, generalized phrase structure grammar. GPSG allows that there may be a rule such as (9), which defines membership in a category never exploited in the language:

$$(9) \quad <43, [{}_{\text{TVP}} V NP], V'(\text{NP}')>$$

There may be no rule introducing a TVP node in the entire grammar. This doesn't render rule 43 in (9) otiose, however, since GPSG allows that rules may be generated from other rules via metarules (henceforth MRs), such as (10):

$$(10) \quad <n, [{}_{\text{TVP}} V, X], \mu> \rightarrow <n, [{}_{\text{VP}} V, NP, X], \mu(\text{NP}')>$$

β β

Metarule (10) says that for every rule of the form specified on the left side of the arrow, in this case one admitting TVP nodes, there is also one of the form specified on the right, in this case admitting VP nodes. Rule (9) defines membership in a category which NEVER appears in the structural descriptions of sentences. For this reason, Gazdar and Sag (1980) suggest the term 'phantom category'. The elements in such categories might derivatively be referred to as 'phantom constituents', except, of course, that they never occur.

I suggest that a similar approach be applied to German syntax. Proceeding from rules such as the following,

$$(11) \quad <6, [\begin{array}{l} \text{PVP} \\ -\text{fin} \\ -\text{NPacc} \\ -\text{NPdat} \end{array}]V, V'>: \text{erzählen, verschreiben, beweisen, ...}$$

we allow a category of PARTIAL verb phrases lacking accusative and dative complements to exist.¹

The verbs at the right are lexical elements of this category. Rule 6 (in [11]) is subject to a general MR which allows that complements be added one at a time to verbs, just as in categorial grammar:

Flat adding of complements (FAC)

$$\langle n, [\left[\begin{array}{c} (P)VP \\ (+X_a) \\ \vdots \\ (+X_i) \\ -X_j \\ \vdots \\ -X_m \end{array} \right] Y, F \rangle \rightarrow \langle n, [\left[\begin{array}{c} (P)VP \\ \alpha_{agr} \\ \vdots \\ +X_j \\ \vdots \\ -X_m \end{array} \right] Y, X_{j\alpha_{nom}}, \alpha_{agr}, F(X_j) \rangle$$

This assumes that $X_a \dots X_m$ exhaust the complements required, and it allows that these be rigidly ordered; here X_j has been added. Note that complement features are listed vertically in the order in which they are added. In general, we assume that complements are added in a fixed order. (But there is a need for some flexibility here. See Nerbonne 1985: 150ff. for a discussion of the extent to which an ordering is required. Of course, if there were NO required order, this would simplify the MRs above, since we then wouldn't have to require that all complement features above the one to be added have to be marked [+comp].) We may also require that complements be added in a fixed order, so that we allow that *ein Märchen erzählen* (NPacc V) but not *seiner Tochter erzählen* (NPdat V) be generated, in accordance with Heidolph et al. (1981: 720–721).²

The subscript 'PVP' on the rule stands for PARTIAL VERB PHRASE, which is any verb or phrase lacking the complements required to constitute a VP. The new term is introduced to cover not only verbs such as *erzählen* 'tell' and VPs such as *den Kindern eine Geschichte erzählen* 'tell the children a story', but also phrases with an intermediate number of complements such as *eine Geschichte erzählen* 'tell a story'. It is probably worth noting that the designation is redundant, since missing complements are marked explicitly on all verbs and phrases, but since it is customary to provide a shorthand category label in rules of this type, it is included. By the same token, the designation 'VP' is redundant, standing for [-NPnom] (and otherwise [+COMP_i]); similarly 'CVP' or COMPLETE VERB PHRASE is simply 'S', and is [+COMP_i] throughout. The category labels are superfluous, but (I hope) mnemonically helpful. (They are also a bit unorthodox — but this allows rules generalizing over them to be written somewhat more neatly.)

The result of applying FAC to a PVP rule may result in another PVP rule, if further complements are still lacking. If no further complements are lacking, we derive a VP rule. Thus the parenthetical 'P' on the right side of the arrow in FAC.

Note that FAC also provides for subject-verb agreement in case the complement being added is nominative.³ The feature [$_agr$] is dormant

until it takes a positive value (in above rule, when the complement being added is [+nom]). The positive value of [$_agr$] triggers the values of person and number to agree throughout the rule in which it appears. We suppose a rule to the effect that

$$+agr \Rightarrow \beta pers. \\ \Delta num.$$

Of course, this assumes that the nominative NP complement, the subject, has no distinguished status among complements. (We don't list [-NP-nom] in the lexicon, however, regarding it as present by default.)

Applying FAC to (11), we obtain

$$(12) \quad <6, \left[\begin{array}{l} \text{PVP} \\ -fin \\ -NPdat \end{array} \right] \text{NPacc, V], V'(NPa')>$$

Thus we allow that a category of PARTIAL verb phrases lacking dative complements exists. Normally, the elements of this category do not appear as constituents, because other rules make no normal mention of the category. But the category functions in the grammar because the rule that generates it is subject to the same metarule, FAC. Reapplying FAC, we obtain (13):

$$(13) \quad <6, \left[\begin{array}{l} \text{VP} \\ -fin \end{array} \right] \text{NPdat, NPacc, V], V'(NPa')(NPd')>$$

in which there is no NPacc + V constituent. This is the normal course of affairs. The derived rule (13) may be used to expand the VP node in trees such as (8a). (The order of elements in the VP will be specified independently.)⁴

Fronting of the more common sort, which we saw in (1a)–(1d), is not difficult to handle in this system. Such sentences consist of two main constituents — the fronted element and the rest of the sentence. This rule admits the latter:

Derived categories metarule (DC)

$$<n, [\alpha \dots \pi \dots], F> \rightarrow <n, [\alpha/\beta \dots \pi/\beta \dots], \lambda X^*_{T(\beta)} F>$$

We eliminate category nodes β/β via a trace introduction metarule (see Sag 1982).

Trace introduction metarule (TIM)

$$<n, [\alpha/\beta \beta/\beta], \mu> \rightarrow <n, [\alpha/\beta t], \mu>, \text{ where } \alpha \neq \beta.$$

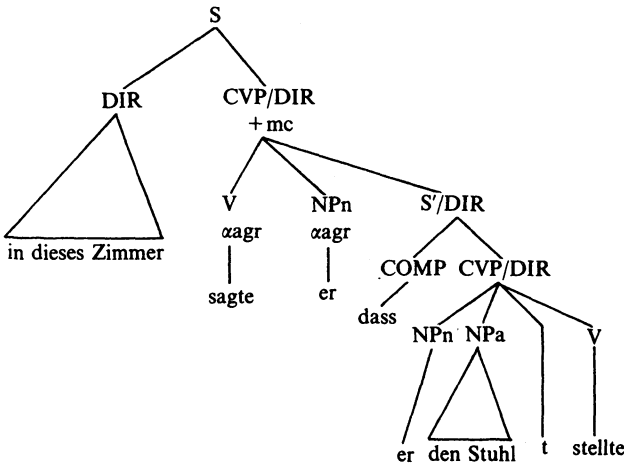
The traces are phonologically null and interpreted by the distinguished variables $X^*_{T(\beta)}$. Finally, we provide a linking rule to add the topicalized elements to sentences:

Linking

$$\langle 100, [s \quad X \begin{matrix} -fin \\ -clitic \\ -pref \\ \alpha nom \\ \alpha agr \end{matrix}], CVP/X \begin{matrix} +fin \\ \alpha agr \end{matrix}], CVP/X'(X') \rangle$$

Several of the details of this treatment merit further discussion. First, fronting is at least normally limited to main clauses, as Fourquet (1971: 159) pointed out. This is reflected in the feature [+ac] on the linking rule. Second, note that elements from subordinate clauses may be fronted to this matrix-initial position because the system of derived categories automatically provides for configurations such as the one below:

(14)



The details of (14) are not included in the fragment in Nerbonne (1985) (nor is complementation of any sort), but the tree illustrates the principle formalized in the derived categories metarule that slash categories admit further slash categories, potentially extending the length between the topicalized element in first position and its expected untopicalized position beyond a single clause. The example is Hans Uszkoreit's; to my knowledge, Uszkoreit (1982) was first to note the potentially unbounded range of German fronting.

Third, there are nonfrontable elements, most notably finite verbs, clitics (such as the pronoun *es*), and the conversational particles *denn*, *doch*, *schon*, and *ja*. Separable prefixes likewise do not undergo fronting. This is likewise reflected in features in the linking rule.⁵

Fourth, the formulation of the semantics in the derived rule presupposes that the semantic place of the constituent to be fronted, β , has been

filled by a variable of the appropriate type, $X^*_{T(\beta)}$. 'T(β)' denotes the semantic type of the syntactic term ' β '.

Fifth, this analysis accommodates the well-known fact that only single constituents may be fronted. Hoberg (1981), a large corpus study, confirmed this most recently. Apparent sequences of constituents which may be fronted, such as in (5) *Ein Märchen erzählen*, are analyzed as genuine constituents and therefore spurious counterexamples. The fact that only single constituents may be fronted arises first from the fact that the linking MR attaches SINGLE constituents to otherwise complete clauses. There is furthermore no provision in the derived categories MR for categories missing more than a single element — so that repeated application is impossible.

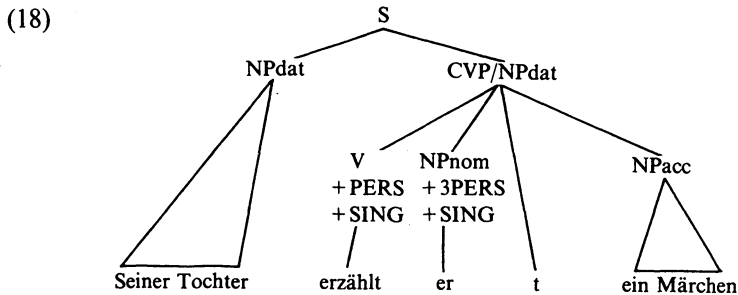
Let's turn to an illustration of the rules. Beginning with (13), we reapply FAC to add the (tacitly) required nominative complement. We then apply the derived categories MR and the trace introduction MR:

- (15) $\langle 6, \left[\begin{array}{l} \text{CVP} \\ -\text{fin} \\ +\text{agr} \end{array} \right] \text{NPnom, NPdat, NPacc, V}, V'(\text{NPa}') (\text{NPd}') (\text{NPn}') \rangle$
- $\langle 6, \left[\begin{array}{l} \text{CVP/NPd} \\ -\text{fin} \\ +\text{agr} \end{array} \right] \text{NPnom, NPd/NPd, NPacc, V} \lambda x^*V'(\text{NPa}') (x^*) (\text{NPn}) \rangle$
- (16) $\langle 6, \left[\begin{array}{l} \text{CVP/NPd} \\ -\text{fin} \\ +\text{agr} \end{array} \right] \text{NPnom, } t, \text{ NPacc, V} \lambda x^*V'(\text{NPa}') (x^*) (\text{NPn}) \rangle$

Given appropriate specifications of tense and number, (16) allows the generation of such VP-like constituents as *erzählt er ein Märchen*. We need only linking, which combines these VP-like constituents with the fronted elements. The linking rule allows any constituent X to be combined with a CVP lacking X in order to form a sentence. In fact this is a rule schema; one of its instances is (17):

- (17) $\langle 100, [\text{S NPdat, CVP/NPdat}], \text{CVP/NPd}'(\text{NPd}') \rangle$
+mc

This, together with (16), allows the generation of (18):



Ignoring details, this treatment of German topicalization is that proposed in Uszkoreit (1982). I should now like to add an account of how the fronting of sequences of constituents may be treated: that is, how the sentences in (5) may be generated.

As argued already, these are elements of categories which are not (normally) found in the structural descriptions of German sentences. We might, following Gazdar and Sag (1980), have regarded them as 'phantom categories'. It would now appear that what we first regarded as phantoms are not entirely creatures of the shade, will-o'-the-wisps that flee when sought. Rule (19) sanctions their transcending from the noumenal into the phenomenal world:

(19) *Contoured adding of complements (CAC)*

$$\langle n, [\left[\begin{array}{c} (P)VP \\ (+X_a) \\ \vdots \\ (+X_i) \\ -X_j \\ \vdots \\ -X_m \end{array} \right] Y], F \rangle \rightarrow \langle n, [\left[\begin{array}{c} (P)VP \\ mc \\ (+X_a) \\ \vdots \\ (+X_i) \\ +X_j \\ \vdots \\ -X_m \\ \alpha agr \end{array} \right] X_{j \text{ 'nom' }}, \left[\begin{array}{c} (P)VP \\ -clitic \\ (+X_a) \\ \vdots \\ (+X_i) \\ -X_j \\ \vdots \\ -X_m \end{array} \right]], F(X_j) \rangle$$

The feature [-mc] is required to prevent the application of this rule to create a constituent consisting of the finite matrix verb and one or more of its complements. Other mechanisms function here as they did in the FAC MR.

(19) is best understood as an alternative to (12). Where (12) adds an element into a 'flat' constituent, (19) adds an element while preserving the original 'demiphantom', creating a more contoured VP. (19) is strong; it recognizes the constituent *ein Märchen erzählen* in both (20) and (21).

(20) *Ein Märchen erzählen kann er ihr.*
 NPacc INF FIN
 a story tell can he to her.

(21) *Er kann ihr ein Märchen erzählen.*

(21), of course, has another analysis as well, in which *ihr, ein Märchen,* and *erzählen* are sisters under the VP node. The existence of the alternative analysis makes this one less noticeable. But it is entirely plausible nonetheless.⁶

The CAC metarule (19) may be applied to rule (12) to derive (22):

$$(22) \langle 6, [_{VP} NPdat, PVP \quad], PVP'(NPd') \rangle$$

$$\left[\begin{array}{c} -fin \\ -clitic \\ -NPd \\ +6 \end{array} \right]$$

To (22) we apply the FAC MR to derive the CVP rule below:

$$(23) \langle 6, [[\text{CVP}] \text{ NPnom, NPdat, PVP }], \text{ PVP}'(\text{NPd}') (\text{NPn}') \rangle$$

$$\begin{array}{l} \left[\begin{array}{l} - \text{fin} \\ - \text{clitic} \\ - \text{NPd} \\ - 6 \end{array} \right] \end{array}$$

This rule is not directly subject to the linking rule, which forms the VP-like constituent lacking an element to be fronted: there is no place for the finite verb in (23), and so the linking rule cannot apply. Rule (23) may be manipulated by a further metarule adding modals (which will not be formulated here); this yields (24) to which the DC and linking rules may be applied.

$$(24) \langle 6, [[\text{CVP}] \text{ MOD, NPnom, NPdat, PVP }], \text{ MOD}'((\text{PVP}') (\text{NPd}') (\text{NPn}')) \rangle$$

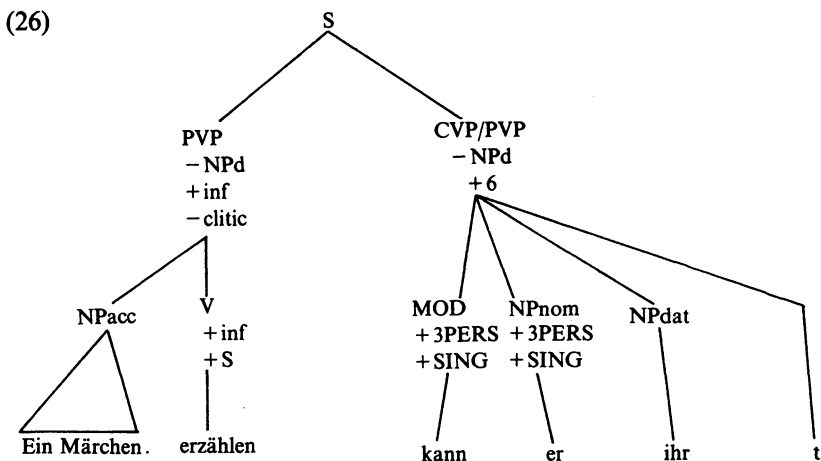
$$\begin{array}{l} \left[\begin{array}{l} + \text{fin} \\ + \text{agr} \end{array} \right] \begin{array}{l} + \text{fin} \\ + \text{agr} \end{array} \end{array} \quad \begin{array}{l} \left[\begin{array}{l} + \text{inf} \\ - \text{clitic} \\ + 6 \end{array} \right] \end{array}$$

$$(25) \langle 6, [\text{CVP/PVP} \text{ MOD, NPnom, NPdat, PVP/PVP}],$$

$$\begin{array}{l} + \text{fin} - \text{NPd} + \text{fin} \\ + \text{agr} + 6 + \text{agr} \end{array} \quad \begin{array}{l} - \text{NPd} - \text{NPd} \\ + 6 \end{array}$$

$$\lambda \chi_{\text{T}(\text{PVP})} \text{MOD}'(\tau \text{NPd}') (\text{NPn}') \rangle$$

And (25), together with the TIM and the linking rule, allows the generation of the tree in (26):



Advantages of this analysis

There are several advantages to this analysis. Since it assumes that partial verb phrases are formed by adding one complement at a time to verbs, it

explains the generalization noted by Hobert (1981: 181), that every SEQUENCE of fronted elements must contain a verb.⁷

Second, the analysis makes a number of testable predictions about partial verb phrases, especially about their conjoinability.

Third, the analysis is reasonably parsimonious about fronting. According to this analysis, nonfinite partial verb phrases are fronted by the same mechanism that other constituents are, namely rule 100, the linking rule. The present treatment preserves not only the generalization that only single constituents may be fronted, but also the unified nature of fronting. Treatments which don't analyze sequences of preverbal elements as constituents would lose at least the first, but more likely both, of these generalizations.⁸

Could one gain these generalizations without employing the demiphantom categories of partial verb phrases? Yes, in at least one way. One could employ a 'restructuring transformation', which could create the frontable constituents from flat VP structures. This would give up the generalization that transformations don't create structure, and, in order to block, for example, (7) (repeated here for convenience), it would require both a rigid underlying order of elements and an ordering of transformations:

- (7) **Seiner Tochter erzählen kann er es.*
IND OBJ INF FIN
his daughter tell can he it
Er kann es *seiner Tochter erzählen.*

This is hardly attractive.

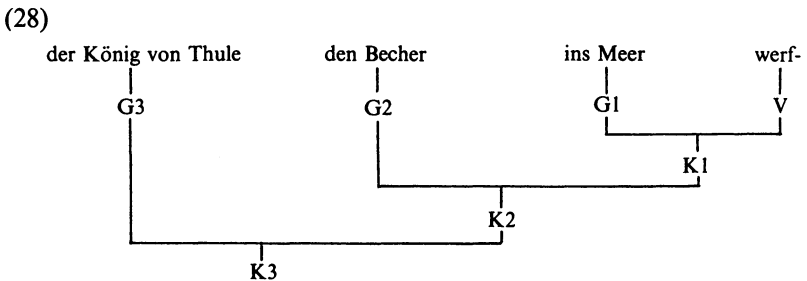
Equally well, one might generate trees with 'phantoms', such as those in (8), but employ a restructuring transformation to create flat VPs out of these. This would obviate the need for the metarule in (12), but would essentially repeat the present analysis in a less restrictive framework. The 'demiphantoms' remain.

Finally, we might consider (within GPSG) a departure from the categorial step-by-step addition of complements. We might stand categorial grammar on its head, begin with full VP rules, and derive rules for partial verb phrases by SUBTRACTING complements (and adjuncts) from those specified in the input rule. This may first sound radically different from the proposal advanced here in at least the following respect: the proposal here allows a highly structured, completely right-branching VP, while the counterproposal being advanced wouldn't seem committed to any such elaborate structure. I think the counterproposal would have to admit such structures, however, once the full range of data is taken into consideration. For example, the infinitive may form a constituent with a directional to the exclusion of two complements/adjuncts:

- (27) *Ins Haus geschickt habe ich sie dir.*
 in house sent(prt) AUX I them you
 'I sent them into the house for you.'

Since the partial verb phrase lacking only one complement/adjunct may also be fronted, this indicates that complement subtracting would have to be formulated to operate on VP rules either recursively or in some other complicated fashion. If we opt for a recursive formulation, we again obtain the highly contoured VPs we found in the treatment employing the standard complement-adding mechanism of categorial grammar. In this case I don't see how to distinguish the complement-subtracting and the complement-adding treatments. If, on the other hand, we complicate the rule in another way, say by allowing that more than one complement be omitted, then we may obtain a genuinely different analysis, but this possibility is orthogonal to the issue of whether rules ought to be formulated as complement-adding or complement-subtracting. We could just as easily formulate the complement-adding treatment so that more than one complement might be added at any one step.

One can find a very near parallel to the present conception of German clause structure in the work of the French Germanist, Jean Fourquet. One of his structures is repeated in (28) for comparison:



(See Fourquet 1971: 139.)

Conclusion

Poltergeists spend most of their existence as phantoms, shunning the light of day and seldom rearing their hoary visages even on the blackest of winter nights. Like most supernatural beings, however, this is a matter of choice, not destiny. They are fully capable of passing from their phantom realm into our physical universe.

Partial verb phrases are poltergeists. They are not normally to be found in the analysis of German grammar, but they CAN — and DO — appear in

isolation in a rare sort of fronted construction. We dare not exorcise them from the linguistic ontology.

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Notes

- * This paper was delivered to the Winter Meeting of the Linguistics Society of America, December, 1982, in San Diego. I have updated the formulation of rules in the paper so that it uses the rules in the fragment in Nerbonne (1985) but have otherwise changed little. The later work improved immeasurably under David Dowty's criticism. My thanks to him, to an anonymous referee, who pointed out a technical flaw in the formalization below, and to Carl Pollard, who has discussed these matters further with me. The arguments for a robust constituent structure within the verb phrase might have been strengthened, if one attempted to incorporate Den Besten and Edmondson (1983)'s novel analysis of the verb complex. Correspondence address: Hewlett-Packard Labs, 1501 Page Mill Road, Palo Alto, CA 94394, USA.
1. The (basic) rules are marked [-finite] because tense marking is introduced by MR at the VP level. This is required if temporal semantics is to remain compositional. See Nerbonne (1985: 175-187) for this argument. Note that once the feature [+finite] is introduced on the higher level node, it finds its way to the lexical head of the verb phrase via conventions on features shared by phrasal nodes and their heads.
 2. Pollard (1984), who proposes a similar incorporation of syntactic information into features on lexical items and phrases, proposes a STACK-VALUED FEATURE that is 'popped' to indicate the next required complement.
 3. Gazdar et al. (1985: 83ff.) present the more current treatment of agreement in GPSG.
 4. Here I allude to the ID/LP format, but without explication. See Gazdar and Pullum (1981) for details.
 5. These restrictions do not hold for entire finite clauses, which MAY be fronted. *Dass er's ahnen würde, wollten wir verhindern*. This may be handled, for example, by simply disallowing the features on *dass* clauses. That is, we might regard *es* as [+clitic], and likewise *es ahnen*, thus blocking the appearance of both in fronted position. But if [\pm clitic] simply isn't a feature on the *dass* S, then its appearance in this position will not be blocked.
 6. It is difficult to prove that *ein Märchen erzählen* might be analyzed as a constituent in (21). It may be conjoined with like sequences of constituents (cf. *Er hat ihr ein Buch geschenkt und ein Märchen erzählt*), but this might be regarded as a case of nonconstituent conjunction.
 7. Hoberg (1981: 181) notes apparent counterexamples to this generalization, but these appear to be cases of lexicalization or implicit (and stylistically marked) conjunction.
 8. Any such treatment would have to add conditions to the rule for fronting a second time, in order to allow, for example, (1b) and (1c), but block (6).

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