

Linearization and Coordination in German*

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Abstract

This paper attempts a novel approach to certain coordination constructions in German and other Germanic languages. It will be shown that virtually all previous attempts at describing such constructions involve asymmetric conjuncts, in violation of the general like category constraint on coordination. While independent evidence for the kinds of mechanisms that license such asymmetry is weak, these analyses in addition are incapable of reflecting the close relationship of the constructions in question with another type of coordination. Since the reason for the asymmetry is essentially the insistence on phrase structure as the sole means of describing syntactic structure (i.e. by relating structure and surface representation in terms of the terminal yield of a tree), we will develop an alternative analysis that is empirically adequate and respects the like category constraint necessitating a different relation between structure and surface string which we will call "Linearization".

1 Introduction

Consider the sentence in (1):

- (1) In den Wald ging der Jäger und lief der Junge.
into the forest went the hunter and ran the boy
'The hunter went, and the boy ran, into the forest.'

On the commonly held assumption that coordination requires that elements involved constitute likes of some sort, it is easy to see why this sentence should be grammatical. One way in which the likeness manifests itself is by virtue of the fact that both conjuncts can be used to extend the initial string in *den Wald* to yield the well-formed German sentences *in den Wald ging der Jäger* and *in den Wald lief der Junge*. Let us refer to this diagnostic of likeness as the "String Continuation Criterion". Contrast this now with sentences such like (2):

- (2) In den Wald ging der Jäger und fing einen Hasen.
into the forest went the hunter and caught a hare
'The hunter went into the forest and caught a hare.'

Here, this criterion will not apply because although *in den Wald ging der Jäger* is a well formed sentence, there is no initial substring of the material before the conjunction particle that could be extended by the second conjunct. Thus, *in den Wald fing einen Hasen* is not any kind of constituent in German, let alone phrase. Yet the sentence is perfectly grammatical in that language and corresponding examples can be found in virtually all Germanic languages, including English (cf. Kathol and Levine 1992).

In this paper, we will attempt a novel way of analyzing sentence as in (2). We will refer to constructions like these, following the usage employed by Wunderlich 1988, as "SGF coordination", for "subject gap in finite/fronted clauses". Wunderlich coined his terminology after the one used in the first careful study of the phenomenon, Höhle 1983, who calls them "SLF Koordinationen". It will become clear shortly why the authors chose this term although, as we will see later, the assumption that a gap is involved here will turn out to be questionable.

The present study is organized as follows: first some of the properties of the SGF coordination construction will be outlined, drawing heavily on the exposition found in Höhle 1983. Next, it will be shown how the various formal treatments proposed up to date try to account for this construction type and in what respects they are inadequate. This will prompt another, closer look at the data which reveals a fundamental parallelism with coordination constructions in which regular (= "surface") VPs are coordinated. To capture this similarity the alternative analysis proposed here will be cast in terms of "linearization" which represents a novel way of relating syntactic structure with surface representations in the general framework of HPSG.

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The implications of the account developed here will lead to a novel look at the relationship between SGF coordination and what we will refer to as "symmetric coordination". It will also cast some critical light on the kinds of devices that have commonly been assumed for deriving verb-second clauses in German. The paper concludes with an appendix exploring some of the implications of an alternative account that does not employ mechanisms of syntactic dislocation of the initial constituent.

2 A first look at the data

What is striking about sentences as in (2) is that they seem to violate the widely held assumption (cf. Williams 1981) that the participants in a coordination construction should be "like categories" of some sort. The above mentioned String Continuation Criterion is one way of making this notion explicit in terms of (possible) surface manifestations of likeness. The sentence in (2) consists of an initial string that is analyzable as a V2 (i.e. verb-second) clause and a subjectless, verb-initial finite second conjunct. In standard terms, this would have to be taken as a conjunction of a sentence and a VP, which are not like categories by anyone's definition.

The presence of an initial topic¹ is not obligatory. As Höhle 1983 points out, SGF constructions are also found with initial V1 (i.e. verb-first) clauses, as in (3): (Höhle 1983:12)

- (3) a. [Stehen da schon wieder welche rum] und verteilen Flugblätter?
stand there yet again some around and distribute leaflets?
'Are there again some [people] standing around distributing leaflets?'
b. [Nimmt man den Deckel ab] und rührt die Füllung um,
takes one the lid off and stirs the filling around
steigen überriechende Dämpfe auf
rise nauseating vapors up
'If one takes off the lid and stirs the filling, nauseating vapors will rise.'
c. [Gehen Sie lieber nach Hause] und bringen Ihre Angelegenheiten in Ordnung!
go you rather home and get your affairs in order
'You had better go home and get your affairs in order.'

The three sentences exemplify the main contexts in which V1 clauses are found in German: (3 a) is a polarity question, (3 b) a conditional, and (3 c) an imperative. Other contexts licensing V1 clauses also allow SGF coordinations, for instance after the subordinating particle *als* ('as'):

- (4) Er tut so als [sei sie un aufmerksam gewesen] und habe den Unfall verursacht.
he acts so as if she had unattentive been and have the accident caused
'He is acting as if she had been unattentive and caused the accident.'

It is clear that the topicness cases are just as much a problem for accounts based on a (surface) like-category constraint as V2 clauses: what follows the finite verb crucially contains a subject in the first conjunct yet this argument is obligatorily missing in the second.

A common assumption (cf. Höhle 1990, Wesche 1991) is that SGF coordinations—whether with initial V1 or V2 clauses—belong to a larger class of asymmetric coordination constructions that include sentences such as the one in (5) where where the initial part is a Vfin (verb-final) clause:²

- (5) [Wenn jemand nach Hause kommt] und sieht da den Gerichtsvollzieher, ...
when someone to home comes and sees there the bailiff
'When someone comes home and sees the bailiff there, ...'

¹I will, as is common practice, use the term "topic" and "topicalization" throughout the paper to refer to the initial constituent in V2 clause although, as Arnold Zwicky and David Dowty have pointed out to me, this might invite confusion with other usages such as in the context of information structure in opposition to "comment" or "focus". Occasionally I will use the term "Vorfeldbesetzung" as a less loaded equivalent of "topicalization".

²Another kind of asymmetric coordination involves conjunction of a Vfin clause with a V2 clause, which is interpreted as under the scope of the initial conditional complementizer *wenn*:

- (i) [Wenn jemand nach Hause kommt] und da steht der Gerichtsvollzieher vor der Tür, ...
when someone to home comes and there stands the bailiff in front of the door
'When someone comes home and the bailiff is standing in front of the door, ...'

However, as convincingly argued by Wunderlich 1988, there is reason to believe that such instances actually have to be distinguished from the V1/2 cases. We will come back to this in more detail in section 4.

For expository purposes let us assume for now that the way to describe SGF coordination constructions is by reference to a "subject gap" in the second conjunct (hence the name "subject-gap in finite clauses").

The motivation behind such a device is the fact that the subject is contained in the *Mittelfeld*³ of the first conjunct. This suggests that the subject and the second conjunct are related to one another in a way that is different from the one involved in sentences like (6). In those examples, which for ease of reference will be referred to from now on as "surface VP coordination" (SVPC), the subject is in the topic position, which is arguably higher than the conjoined VPs, hence construal with both VPs is not problematic.

- (6) Der Jäger [[ging in den Wald] und [fing einen Hasen]].
 the hunter went into the forest and caught a hare
 'The hunter went into the forest and caught a hare.'

Thus it seems that in SGF sentences, the subject and the second conjunct seem to be related to one another by means other than the ones at play in SVPC coordination. Yet, they must clearly be linked very closely: as (7) shows, agreement has to hold between the subject and both conjuncts:

- (7) a. In den Wald gingen die Jäger und fingen einen Hasen.
 into the forest went[PL] the hunters and caught[PL] a hare
 'The hunters went into the forest and caught a hare.'
 b. *In den Wald gingen die Jäger und fing einen Hasen.
 into the forest went[PL] the hunters and caught[SG] a hare

The assumption of a subject gap allows the statement of certain generalizations that hold with SGF constructions. First, no arguments other than subjects can be "gapped" in the second conjunct, as in the following example containing an accusative object gap which is illicitly linked to a previous object (cf. Höhle 1983:15). In analogy to SGF, let us refer to such a constellation as "OGF", for "object gap in finite clauses":

- (8) *Gestern zeigte Hans die Briefmarken_i dem Onkel
 yesterday showed Hans[nom] the stamps[acc] the uncle[dat]
 und verkaufte Otto _{OBJ-GAP_i} der Tante
 and sold Otto[nom] the aunt[dat]

Moreover the subject gap cannot cooccur with the trace of a topic that has been extracted out of both conjunct, or, in more common parlance, which has been ATB-extracted (for "Across-the-Board", cf. Williams 1978):

- (9) *Die Briefmarken_i zeigte Hans_j dem Onkel _{t_i}
 the stamps[acc] showed Hans[nom] the uncle[dat]
 und verkaufte _{SUBJ-GAP_j} _{t_i} der Tante
 and sold the aunt[dat]

However, as one might expect, the sentence becomes perfectly grammatical if the subject gap is replaced by an overt subject, as this gives rise to an ordinary ATB extraction:

- (10) Die Briefmarken_i zeigte Hans dem Onkel _{t_i}
 the stamps[acc] showed Hans[nom] the uncle[dat]
 und verkaufte Otto _{t_i} der Tante
 and sold Otto[nom] the aunt[dat]
 'Hans showed the stamps to the uncle and Otto sold them to the aunt.'

The sentence in (9) also increases markedly in acceptability if the fronted constituent cannot be construed as an argument of the predicate in the second conjunct, as is the case for instance if the latter is already saturated:

³This is the term commonly used to refer to the string of constituents between the complementizer or the finite verb on the left and the verbal complex on the right.

- (11) (?) Die Briefmarken_i zeigte Hans_j dem Onkel _{t_i}
 the stamps[acc] showed Hans[nom] the uncle[dat]
 und verkaufte SUBJ-GAP_i die Bilder der Tante
 and sold the pictures[acc] the aunt[dat]
 'Hans showed the stamps to the uncle and sold the pictures to the aunt.'

A similar effect is obtained if the fronted element is the argument of neither predicate, as in the case of temporal adverbials:

- (12) Gestern zeigte Hans die Briefmarken dem Onkel
 yesterday showed Hans[nom] the stamps[acc] the uncle[dat]
 und verkaufte SUBJ-GAP die Bilder der Tante
 and sold the pictures[acc] the aunt[dat]
 'Yesterday, Hans showed the stamps to the uncle and sold the pictures to the aunt.'

To summarize, the first two properties that an account of SGF constructions or a general theory of coordination in which an analysis of SGF is couched have to capture are:

1. Impossibility of object-gap constructions
2. Impossibility of SGF cooccurring with ATB extractions

The next section will discuss four approaches to SGF constructions and how the two properties above are captured (if they indeed are).

3 Approaches to SGF

3.1 Approaches in Government-Binding Theory

There are a number of approaches to SGF coordination in the GB framework, in particular Höhle 1990, Heycock 1991, Heycock and Kroch 1993, Fanselow 1991, Zwart, . . . Since we cannot discuss all of them in detail in this study, we will concentrate on the first two as representatives of the kinds of problems that essentially all of these accounts encounter.

3.1.1 Höhle 1990

The first formal account of SGF constructions to be discussed here is that of Höhle 1990. A detailed discussion of his proposal would require assessment of many theory-internal assumptions which we are not prepared to engage in here. Thus, we only want to focus here on the main thrust of his theory and highlight the most obvious drawbacks.

Höhle adopts an analysis for German sentence structure in which V2 structures are derived by verb movement into INFL and movement of a phrasal category into the sentence-initial SPEC,IP position. This constitutes a deviation from the generally assumed analysis of German V2 where the movement is into head and SPEC of CP respectively.⁴ He proposes the following revisions of case and theta theory (p. 231):

- (13)
1. A position can only be θ -marked if it is case-marked.
 2. If in a given constituent a θ -role R cannot be assigned, R must be externalized.
 3. A constituent can assign at most one external theta role.
 4. Assignment of structural case is optional

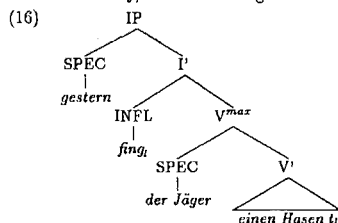
Nominative case assignment by INFL to the subject position to its right is a case of structural case assignment in German. Given optionality, there are then two things that can happen in a configuration as in (14), depending on whether or not INFL assigns case to the subject position, here marked as Δ :

- (14)
-

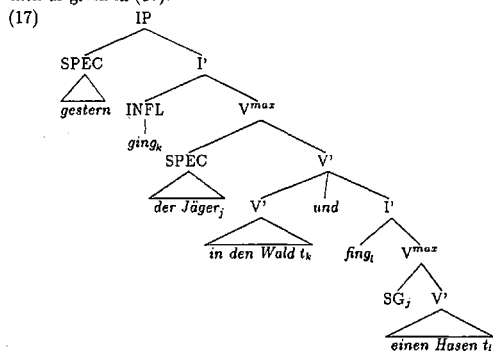
⁴But cf. for instance Kathol 1989 and Travis 1991 for related proposals.

If the position is assigned (nominative) case, it will also receive a θ -role, hence there will have to be some lexical NP that can bear that role. This will then allow sentences as in (15) to be analyzed as in (16):

- (15) *gestern fing der Jäger einen Hasen*
 yesterday caught the hunter a hare
 'Yesterday, the hunter caught a hare.'



On the other hand, if no case is assigned, the position will not be able to bear the θ -role assigned to it (presumably by the verb), and according to clause 2 above, this role will then have to be externalized. Externalization of a θ -role has the effect of turning an I' into a predicative category. Because Höhle considers "degree of saturation" as the crucial factor for determining likeness of category (pp. 229-31), this means that V' and (predicative) I' are now eligible categories for coordination. The structure for an SGF sentence is then as given in (17):⁵



Because only the first of the two conjuncts is the syntactic head of the conjunction, the second is exempted from the requirement that extraction has to affect all conjuncts. This is how Höhle can account for the fact that initial constituents in V2 SGF clauses cannot be construed as extracted out of the second conjunct. Also, since only subjects can be the recipients of external θ -roles, a situation in which any argument other than the subject is shared among the conjuncts, such as the hypothetical OGF case in (8), cannot arise. Finally, although Höhle does not make this explicit, it seems plausible that this coindexation via externalization of the θ -role ensures that agreement information is shared among the relevant elements.⁶

Unfortunately, Höhle does not tell us much about how this process of externalizing a θ -role is supposed to work. For instance, in a case such as (18), in which an accusative object (*ihn*) is scrambled to the left of

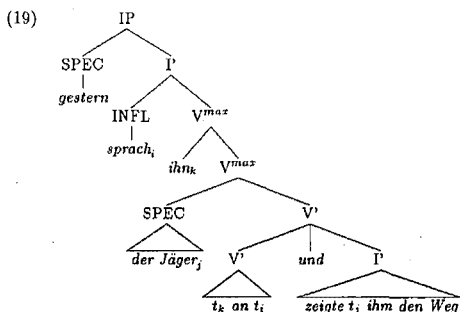
⁵Höhle uses a different example; however, the one used here is isomorphic in its relevant structural properties. Note also that the example used here is slightly different from the one in (2) in that the initial position is occupied by an adjunct rather than an argument. This is to avoid any complication that might arise in connection with the initial V' conjunct having all of its constituents (i.e. verb and PF) removed in the case of an initial argument. Nothing hinges on this distinction, though.

⁶Höhle does not relate the status of the empty category in subject position created by externalization to other empty categories assumed in GB theory, so it is not clear whether, given the taxonomy in terms of binding properties, this category will match any of the others proposed in GB.

the subject *der Jäger*, it is not immediately clear what prevents the externalized θ -role from being assigned to the structurally higher accusative NP.⁷

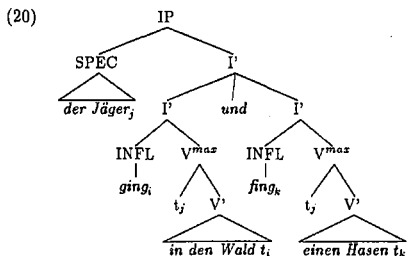
- (18) *Gestern sprach ihn der Jäger an und zeigte ihm den Weg.*
 yesterday spoke him[acc] the hunter PART and showed him[dat] the way
 'Yesterday, the hunter spoke to him and showed him the way.'

As the following structure for (18) indicates, not only *Vorfeldbesetzung*, but also scrambling must be assumed to be a process that can only affect head conjuncts:



Let us now take a closer look at what appear to be two major problems with Höhle's treatment, both independent of the technicalities of his proposal.

The first problem becomes apparent in connection with SVPC constructions. Based on standard assumptions in GB on ATB-extraction (cf. Williams 1978), the following is the analysis one would get for the SVPC version of (8):



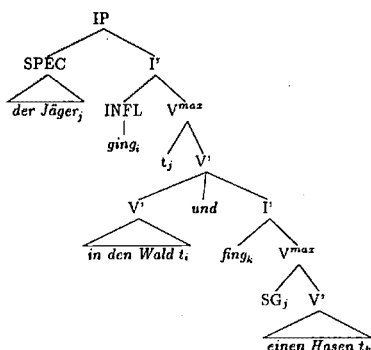
However, nothing in an SGF construction would block the subject from moving into the initial position leaving behind a coindexed trace which would give rise to a structure as in (21):

⁷Examples such as the following are another potential class of counterexamples to biuniqueness of role-assignment:

- (i) *Otto fing einen Hasen und wurde vom Förster bestraft*
 Otto caught a hare and was by-the ranger punished
 'Otto caught a hare and was punished by the ranger.'

Here, the subject appears to receive two roles at once, presumably agent and patient, in analogy to the illicit double role assignment in (18). However, as pointed out to me by Bob Levine (p.c.), this is only the case if one does not assume some version of coordination reduction, so that the two roles can be assigned to two distinct syntactic representatives of the subject, the second of which is inaudible.

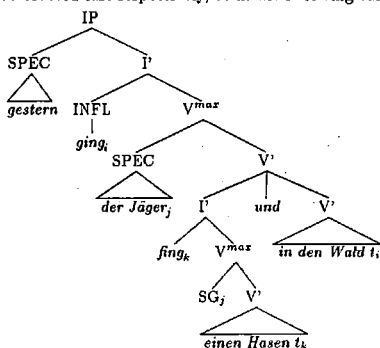
(21)



If this second analysis is legitimate, one would expect that either it has an interpretation distinct from that associated with (20) or that there is independent syntactic evidence for it. However, as far as we have been able to determine, neither seems to be the case, and as the discussion of alternative accounts will show, the same criticism applies to Wunderlich 1988 and, to a lesser degree, to Heycock and Kroch 1993. We can therefore conclude that the ambiguity is spurious in the sense that the grammar gives rise to an ambiguity which does not seem motivated.⁸ Furthermore, there is no immediate way to prevent fronting of the subject in the problematic cases, as it is precisely this kind of dislocation that Höhle assumes to be responsible for subject-initial simplex sentences.

Secondly, note that Höhle never explicitly makes reference to any ordering of the V' and I' conjuncts. We can take that to mean either that any order should be allowed, or, second, that the order is in consonance with the commonly held principles governing the position of heads in German, in which case the head should come last. These two possible assumptions then imply that by virtue of being the head—Höhle makes it clear that he considers only the V' conjunct (p. 233) the head in SGF sentences—the V' conjunct *can* or *must* be ordered last respectively, as in the following variation of the structure in (17).⁹

(22)



However, such orders are ungrammatical to the point of being uninterpretable as shown in (23):

⁸Of course, it is difficult to assess how damaging multiple analyses really are—after all, it abounds in other frameworks such as Categorical Grammar. However, the fact that in the case at hand, the alternative analysis does not arise due to GENERAL rules of the grammar such as CG's type-raising and functional composition which are motivated by a multiplicity of constructions (cf. for example Dowty 1988), but because of exactly the assumptions in (13) for which Höhle gives no motivation other than to account for SGF constructions, appears to be quite disturbing.

⁹For expository reasons, the sentence below is slightly different from the example in (17). Nothing hinges on this difference.

- (23) *gestern ging der Jäger fing einen Hasen und in den Wald
 yesterday went the hunter caught a hare and into the forest

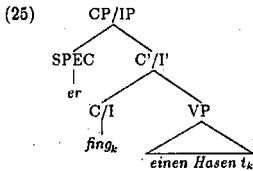
This suggests that not only will some amount of asymmetry with respect to the order of the conjuncts have to be provided for, but also, as the problem with Höhle's analysis shows, it is questionable whether this asymmetry should be linked to a difference in head status among the conjuncts.

3.1.2 Heycock & Kroch 1993

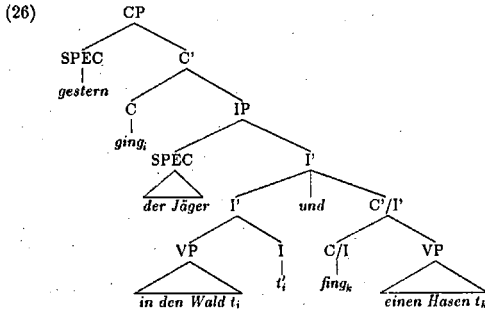
A second GB-based approach to SGF coordination is offered in Heycock and Kroch 1993.¹⁰ Adopting the more standard approach to German clause structure in terms of final INFL, the authors pursue the idea—originally suggested in Heycock 1991—that categories can sometimes “conflate”, in particular, COMP and INFL to C/I. This, so the authors claim, is a consequence of their general **Licensing Principle**: (p. 5)

- (24) A licensing relation that can be satisfied by the head of a chain is necessarily so satisfied.

amended with the assumption that “each licensing relation is uniquely instantiated”. This means that in the case of verb movement from I to C, and movement of the subject into SPEC, CP the SPEC-head relation between I and SPEC, IP will be “duplicated” at the C level. Because the licensing relation is satisfied by the head in C already, the trace in I can, so to speak, do no more licensing work. As a result, this trace is deleted together with the category it is dominated by and the properties of the deleted category are inherited by the mother category. As a result, C' inherits all the properties of I', and similarly for the CP projection, indicated by C'/I' and CP/IP respectively. A subject-initial V2 clause will then be analyzed as follows:

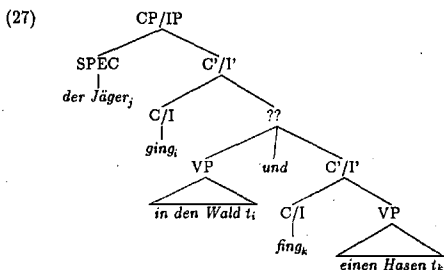


Because I' and C' are now nondistinct categories, they can be coordinated with a structurally higher subject shared among them. This will give rise to an analysis of SGF sentences along the lines illustrated in (26):



Heycock and Kroch's analysis represents an improvement over earlier approaches in the GB framework. Specifically, there is no longer any need for dubious empty categories such as Heycock's C-category or Höhle's subject gap. However, again there seems to be an alternative analysis for SVPC sentences, apart from ATB extraction, as shown in (27). Here, however, it is not clear what effect the fronting of the subject has on the conflation of C and I. In particular it is not obvious whether it is possible to delete t'_i inside the initial I' conjunct and subsequently delete the dominating I' node as well. If so, this would seem to lead to the conjunction of VP with C'/I', and all bets are off what the result of that coordination should be.

¹⁰Because this analysis is in essence a refinement of the one proposed in Heycock 1991, we will not discuss the latter here.



Moreover, however, Heycock and Kroch implicitly admit that their theory does not explain why extraction in SGF contexts can (and in fact, must) be out of the initial conjunct alone. While they note that superficially similar ATB violations are possible with topicalizations in English too, cf. (28), it is not clear that the two phenomena are as closely related as they suggest.

(28) This advice the committee decided to follow and proceeded to set up a new subcommittee.

Note that in the SGF case, ATB violations are not restricted to topicalization, but, on their analysis, also come about via verb movement from the first conjunct alone.¹¹ Assuming, as is common, movement of a maximal category for the former and head movement for the latter, we have two *prima facie* independent instances of Move- α , yet there is no obvious logical connection to the effect that in BOTH cases, only the first conjunct may be affected. Furthermore, the analogy with the English CSC violations does not seem to hold up in light of examples such as the following, based on data in Lakoff 1986, where the extraction crucially only affects NONINITIAL conjuncts.¹²

(29) Sam, you can't just sit there, listen to and not want to punch in the nose.

Of course, no such thing is ever possible in SGF contexts, which shows that the latter is a fundamentally different phenomenon from asymmetric topicalization (and relativization) constructions in English.

It seems then that the prohibition of extraction from noninitial conjuncts can only be stipulated, but does not follow from more general principles. If no such stipulation is made, not only would it then be possible to extract from noninitial conjuncts in general, but the necessary ordering between I' and C'/I' would no longer be predicted. As a consequence, the same problems with illicit order variation as noted before in connection with Höhle's analysis would arise. We conclude that with one of the hallmarks of the SGF construction, namely the severely restricted extraction possibilities, unaccounted for, Heycock and Kroch's solution falls short of a satisfactory account.

3.2 An Approach in Generalized Phrase Structure Grammar: Wunderlich 1988

Another attempt to come to terms with SGF construction, in the framework of GPSG, is undertaken by Wunderlich 1988. His main idea is that SGF constructions have to be analyzed in terms of a metarule that provides additional rules introducing exactly the kind of categories needed for the SGF cases. In particular, he assumes the following set of rules to describe clausal structures in German, which owe much to the analysis developed in Uszkoreit 1987:

- (30) Immediate Dominance rules:
- a. $VP \rightarrow H^0 [i], \dots$
 - b. $V^n \rightarrow XP[+TOP], H^n/XP[-SC]$
- Metarule (1st version):
- c. $VP \rightarrow W \Rightarrow V^n[-SC] \rightarrow NP[NOM], W$

What is noteworthy about the ID rules in (30) is that in simplex finite clauses, VP is in effect a phantom category, for it is only as the output of the metarule in (30) that a subject is supplied, but then, concomitantly,

¹¹We will see later that scrambling too gives rise to similar discontinuity effects.

¹²One objection that may be raised against this argument is that the conjuncts in (29) contain nonfinite verb forms, whereas in the typical SGF examples, the conjuncts are finite. However, as will be shown in section 7, nonfinite constructions in German show the same kinds of violations of the String Continuation Criterion as do normal SGF sentences, which we will take as evidence that both cases are instances of the same syntactic phenomenon.

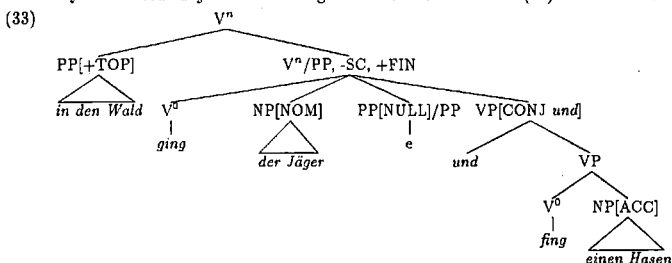
the VP node is "liberated" (cf. Zwicky 1986), so that it does not end up being part of the syntactic structure of such a clause. The rule in (30 b) is based on the assumption that Vorfeldbesetzung in German should essentially be taken to be an instance of syntactic dislocation. While, as we saw earlier, in transformational theories, this involves an instance of move- α , the corresponding mechanism in GPSG is slash cancellation. The dislocated constituent is then also assigned the feature +TOP (for "topic, cf. Uszkoreit 1987) to ensure proper placement via linear precedence (LP) statements as in (31), while "-SC" (for "subordinated clause") is Wunderlich's equivalent to Uszkoreit's +MC or Pollard's +INV (cf. Pollard in press). Together with the feature cooccurrence restriction (FCR) in (31 d), they account for the right ordering of the finite verb.

- (31) Feature Cooccurrence Restriction:
 d. -SC \Rightarrow +FIN
 Linear Precedence statements:
 e. +TOP $<$ X
 f. X $<$ V[+SC]
 g. V[-SC] $<$ X
 h. X $<$ [CONJ α_2] $\alpha_2 \in \{ \text{und, oder, ...} \}$

Wunderlich is able to account for SGF constructions by modifying the metarule in (30) in the following fashion:

- (32) i. $VP \rightarrow W \Rightarrow V^n[-SC] \rightarrow NP[NOM], W, (HP [CONJ \alpha_2])$

What (32) in effect does is allow an optional verb phrase marked as containing an element of a certain class of conjunction particles to occur as the sister of the original daughters of VP (including the verb itself) and the newly introduced subject. This then gives rise to structures like (33) for the sentence in (2):



While getting the surface word order right, this analysis is able to account for three of the properties of SGF constructions in a fairly straightforward manner. First, since both the lexical verb as well as the coordinated VP are sisters of the subject, the Control Agreement Principle (CAP, cf. Gazdar et al. 1985:89) should ensure that agreement holds in both cases.¹³ Second, no objects can be shared across conjuncts—either in an OGF construction or as an ATB-extracted topic—because the only constituents that VPs lack are subjects and only VPs are licensed by the output of the metarule in (32).

Note that Wunderlich is also able to capture the asymmetry between the two conjuncts; i.e. unlike Höhle, he does not predict the alternative permutation of the conjuncts to be grammatical because that would lead to a violation of the LP statement in (31).

Yet, one has to be skeptical whether the use of ID rules in Wunderlich's analysis conforms with the way such rules are generally interpreted. As Wunderlich himself admits, it is not obvious in which sense the metarule in (32) outputs rules that conform to the general conjunction schema in GKPS (Gazdar et al. 1985:171).¹⁴

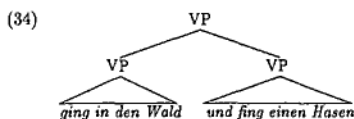
¹³However, as Bob Levine (p.c.) has pointed out to me, given the definition of control in Gazdar et al. 1985:88, the subject actually does not control V^0 here because of a type mismatch, which would be a prerequisite for the CAP to apply. Thus, we have another instance of a problem first noted in Hukari and Levine 1986 in connection with English inversion constructions where, according to GKPS's analysis, we also find the subject as the sister of a lexical verb.

¹⁴He proposes to rewrite the output of the metarule in (32) as:

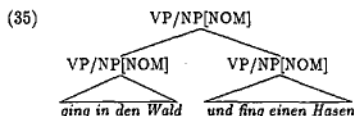
(i) $V^n \rightarrow V^0[CONJ \alpha_1] \dots VP[CONJ \alpha_2]$

Moreover, in the original system of Gazdar et al. 1985, phrasal sisters to a lexical head in a local tree are commonly understood as this head's arguments.¹⁵ But only by a long stretch of imagination can the conjunctive VP be conceptualized in that way. Note, for example, that VPs with the feature CONJ α_2 are never selected directly as arguments of lexical verbs in rules of the type in (30 a). On the other hand, if instead these VPs are conceived of as adjuncts, this would still be at odds with the assumed two-headedness of the output rules in (32). In short, the output rules of this rule do not fit into any of the general patterns in the grammar of German for the distribution of heads, arguments, or adjuncts. It can be argued then that if the sole purpose of such an idiosyncratic rule is to account for SGF constructions, it would seem more likely that there is something quite wrong with the whole analysis than to conclude that we should reconsider our understanding of such notions as head and complement in order to find a more comfortable place in the grammar for the rule in (32).

Comparing SGF and SVPC cases, it turns out that—perhaps surprisingly—Wunderlich's system as it is outlined above is incapable of providing the obvious analysis in the latter case, viz. to conjoin the two VPs as in (34) and to combine the result with the subject.



Since the subject is only provided by applying the metarule in (32) to rules expanding SINGLE VPs, the rule that produced the conjoined VP in (34) simply fails to meet the input requirements. This means that the only way to supply a subject is to conjoin not the original VPs, but the outputs of the metarule in (32) and treat the subject as slashed out of both conjuncts:



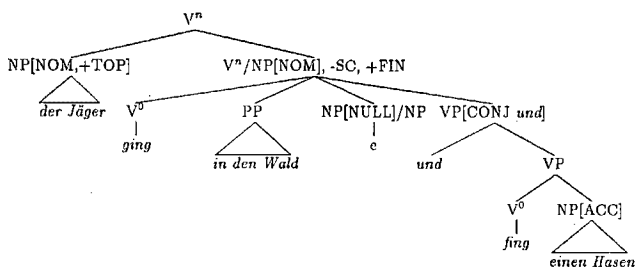
But this means that the syntactic structure of *fing einen Hasen* depends on whether it occurs in SGF or SVPC: while in the former case, there is a VP node, there is no such constituent in the latter. While there is no prima facie reason to exclude this possibility, it would seem incumbent upon Wunderlich to motivate this difference in structure, especially since, as we will see below, there is essentially no difference in behavior between noninitial VPs in SGF vs. SVPC constructions.

Moreover, Wunderlich's analysis shares one of the defects of Höhle's, namely the emergence of spurious ambiguities. Since the ID rule in (30 b) accounts for the fronting of any constituents including subjects, there does not seem to be any reason why in (33), the subject is fronted instead of the PP. But this gives rise to an alternative analysis of the SVPC sentence in (6) which looks as follows:

However, it is far from obvious in which way this formulation makes the rule conform any more closely to the conjunction schema because the is still a mismatch in Head features, in particular, with respect to the value of BAR.

¹⁵In particular this view suggests itself if the metarule in (32) is conceived of as one that changes the subcategorization frame of a lexical class, cf. Pollard 1985.

(36)



This structure owes its existence to nothing other than the mechanisms that were introduced into the grammar to account for SGF constructions because Wunderlich does little in the way of independently motivating his crucial metavarule, either by syntactic or semantic evidence. Such unwanted byproducts cast some doubt on the correctness of the analysis of the latter which motivated the additions in the first place.

Finally, Wunderlich's suggestion that the lexical verb and the VP[CONJ] are both heads does not yield the desired effect on closer inspection either. He claims that the biheadedness explains why the initial constituent in V2 SGF sentences cannot be construed as ATB-extracted out of both conjuncts because that would lead to a violation of GPSG's Head Feature Convention (HFC). His reasoning is that given a phrasal as well as a lexical head, an ATB-extracted element would have to be missing not only from the phrasal head but also from the lexical one, because as a head feature, SLASH would have to be shared by all heads. But then, Wunderlich concludes, since there is no sense in which a lexical verb could be lacking a constituent, the second, phrasal, head must not contain a gap either. However, the problem with this analysis is that Wunderlich does not appear to notice that the HFC as conceived of in Gazdar et al. 1985 is only a DEFAULT principle.¹⁶ This means that the HFC requires features to be shared among heads only if they can be shared. But of course, because SLASH is inappropriate for lexical categories, the relevant feature cooccurrence restriction overrides the HFC. However, so long as head features are shared among the mother and the phrasal head, the HFC does not disallow free instantiation of SLASH on the phrasal conjunct. As a result, Wunderlich cannot exclude ungrammatical examples such as (9) above, in which the initial constituent corresponds to a gap in the second conjunct.

3.3 An Approach in Categorical Grammar: Steedman 1990

Among all the approaches to be discussed here, Steedman devotes the least effort to an elaborate analysis, as his solution for SGF constructions is essentially a byproduct of his treatment of gapping in Categorical Grammar.¹⁷

The central feature of Steedman's approach to gapping is his introduction of a new rule into the categorial calculus which he calls "Left Conjunct Revealing Rule" (notated as "< decompose"):

$$(37) \quad X \Rightarrow Y X \setminus Y \\ \text{where } X = S \\ \text{(and } Y = \text{given}(X))$$

The effect of this rule is that a sentence *S* that has been obtained by the combination of other categories (in the usual ways, i.e. via Functional Application) can be decomposed into two categories, different from the original parts of *S* as long as these categories are possible elsewhere in the grammar and, if combined, yield a sentence again. In addition, the condition that the category *Y* in (37) be "given" captures the requirement that this revealed category be contextually supported or accommodated, hence comply with certain pragmatic constraints which, however, will not concern us here further. For a sentence containing a verbal gap we then get an analysis of the following sort:

¹⁶Thanks to Bob Levine for pointing this out to me.

¹⁷Although he demonstrates his proposal with a Dutch sentence, the general idea carries over unchanged to the case of German.

(38)

```
Harry [will buy] bread,      and Barry, potatoes
-----
          S                      [S\((S\NP)/NP)]&
=====<decompose
(S\NP)/NP  S\((S\NP)/NP)
-----<&
                      S\((S\NP)/NP)
-----<
          S
```

The Left Conjoint Revealing Rule makes it possible to "extract" categories (such as the transitive verb, *will buy*) which were originally embedded in the sentence and let the other part of the sentence conjoin with the remnants on the right before the whole is put together to form a sentence again. This rule then in effect permits combinations of categories that before were not possible because of the relative positions of the original categories in the surface string. It should also be noted as a minor point about (38) that Steedman assumes a syncategorematic treatment of the conjunction particle *and*. This is done via the introduction of two new rules:

(39) a. Forward Coordination Rule: (> &)

conj X \Rightarrow [X]&

b. Backward Coordination Rule: (< &)

X [X]& \Rightarrow X'

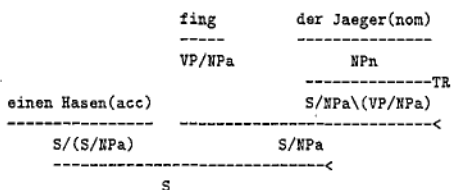
Now, for cases of SGF coordination, Steedman proposes to treat the subject as the gapped element, instead of the verb as in (38). The sentence in (2) will then be given the following categorial analysis:

(40)

```
in den Wald ging der Jaeger      und fing einen Hasen
-----
          S                      [(S\NP)]&
=====<decompose
NP      S\NP
-----<&
                      S\NP
-----<
          S
```

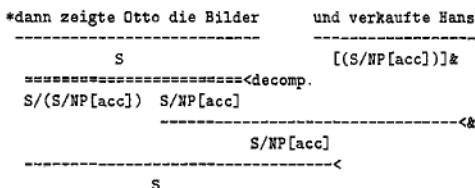
It is easy to see that Steedman's proposal straightforwardly ensures that the subject agrees with the verbs in both conjuncts. The backward coordination rule in (39 b) requires that both conjoined categories be identical, hence they must require the same agreement features of the (subject) NP they select. Next, Steedman's system correctly predicts the impossibility of SGF coordination cooccurring with ATB extraction. Intuitively, what would have to be allowed in order for this to be possible is that a category missing an object be decomposed with the subject being "extracted" out of the Mittelfeld of the first conjunct and that the object then be combined to yield a sentence. However, the constraint in (37) to the effect that only sentences qualify as decomposable categories rules this possibility out. What is not ruled out is that categories other than subjects could be extracted by the rule in (37) giving rise to OGF constructions which, as we saw in (8) are ungrammatical. To see this, assume that something like the following derivation (using type-raising on the subject and a special category assignment for fronted constituents) is needed to yield an object-initial sentence:

(41)



Then, crucially, the category for fronted objects will be one that "the grammar itself makes available" (p. 246), hence a sentence can be legitimately decomposed into any such fronted constituent and something else, regardless of the initial placement of the derived fronted element. But this means that objects in the Mittelfeld too can be extracted via (37) and following derivation of an ungrammatical sentence is allowed:

(42)



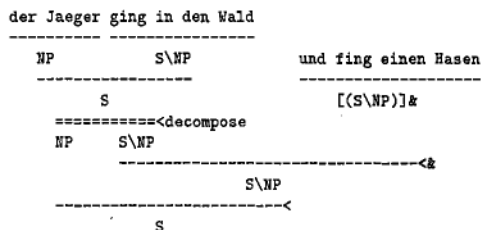
One way to rule out this type of overgeneration is to add a restriction to the rule in (37) restricting gapped NPs to subjects, that is, bearing nominative case:

- (43) $X \Rightarrow Y X \setminus Y$
where $X = S$,
and $Y \dots$, such that if $\text{cat}(Y) = \text{NP}$, then $Y = \text{NP}[\text{nom}]$

This will get the facts right; however, it does have the flavor of mixing fairly unrestricted apples (verbal gapping) with very specific oranges ("missing" nominative arguments), in other words, it is not clear that the elements effected by the rule in (43) really form a natural class of some sort. Along those lines it should be noted that Gapping is generally considered to be a phenomenon of higher registers and requires a specific intonation in the gapped sentence. This contrasts sharply with SGF sentences which neither are restricted in occurrence (at least in German) nor exhibit special intonational properties.

Yet, it should be noted that there are some desirable features of Steedman's approach. In particular, he does not face the problem of spurious ambiguity in the case of SVPC sentences. The reason for this is that the only way that we could have more than one analysis would be to have (37) apply in such a way that the revealed categories are the same as in the original categorial assignment. In the case of SVPC, this means that the only way to try to give an additional analysis for the sentence would be to split the initial sentence into the same kinds of categories that the derivation starts out with, as in (44):

(44)



However, according to Steedman, such cyclic derivations are ruled out by general principle, hence there will be only one analysis for SVPC. Moreover, Steedman's account makes explicit a fundamental similarity between surface VP coordination and SGF constructions: both are instances of the general coordination schema manifested as conjunction of two constituents of category S\NP, i.e. two VPs. We will see shortly that there is strong empirical evidence in favor of this view.

4 A second look at the data

Let us now take a closer look at the facts about SGF constructions with particular focus on the properties that they share with surface VP coordination constructions.¹⁸ Besides the parallelism already mentioned above about subject-verb agreement, both constructions also allow quantificational subjects. Examples are given in (45) and (46):

- (45) a. Gestern gingen wenige Jäger in den Wald und fingen einen Hasen.
 yesterday went few hunters into the forest and caught a hare
- b. wenige Jäger gingen gestern in den Wald und fingen einen Hasen.
 few hunters went yesterday into the forest and caught a hare
 'Yesterday, few hunters went into the forest and caught a hare (= caught hares)
- (46) a. Gestern ging niemand in den Wald und fing einen Hasen.
 yesterday went nobody into the forest and caught a hare
- b. Niemand ging gestern in den Wald und fing einen Hasen.
 nobody went yesterday into the forest and caught a hare
 'Yesterday, nobody went into the forest and caught a hare.

Thus, in the context of an SGF construction, a quantified subject is interpreted as if it were in a position such as the initial topic position where it can be construed as the binder for bound variables in the two conjuncts. Clearly, this situation differs greatly from one in which we try to bind a variable expressed as an overt pronoun across sentence boundaries, as in (47), which gives rise to uncompromising ungrammaticality, no matter where the pronoun is placed in the second conjunct:

- (47) *Gestern gingen wenige Jäger_i in den Wald und (sie_i) fingen (sie_i) einen Hasen.
 yesterday went few hunters into the forest and they caught they a hare
- (48) *Gestern ging niemand_i in den Wald und fing er_i einen Hasen.
 yesterday went nobody into the forest and caught he a hare

These facts constitute clear evidence against any account that tries to treat SGF in terms of the second conjunct containing an empty pronominal of the sort familiar from languages like Italian. As is well-known, in those languages, quantificational NPs cannot function as the antecedents for *pro* either.

Quantificational subjects also provide evidence that examples like (5), repeated here as (49), should not count as instances of SGF-coordination:

¹⁸Again, I will draw heavily on Höhle 1983. Although he suggests the similarity between SGF and SVPC, the discussion his later work shows that he obviously did not think that the parallelism would yield a worthwhile point of departure toward a satisfactory account.

- (49) [Wenn jemand nach Hause kommt] und sieht da den Gerichtsvollzieher, ...
 when someone to home comes and sees there the bailiff
 'When someone comes home and sees the bailiff there, ...'

Wunderlich (p. 313) observes that this kind of "asymmetric" coordination is impossible with "true" quantificational subjects (i.e. which do not allow accommodation of a discourse referent):

- (50) *[Wenn uns keiner willkommen heißt] und schließt uns in die Arme, ...
 when us nobody welcome calls and takes us in the arms
 'When nobody welcomes us and embraces us, ...'

On the other hand, SGF-coordination is perfectly legitimate in this case:

- (51) Uns hieß keiner willkommen und schloß uns in die Arme.
 us called nobody welcome and took us in the arms
 'Nobody welcomed us and embraced us.'

Moreover, the pattern in (49) is limited to only a few subordinating conjunctions, hence *daß*, which does not belong to this set, yields an ungrammatical sentence:

- (52) *Ich weiß daß er nach Hause kam und sah dort den Gerichtsvollzieher
 I know that he home came and saw there the bailiff

We have nothing to say about how to actually account for sentences like (49), but the prohibition against quantificational subjects and the lack of productivity across different verb-final contexts presents strong enough evidence for excluding them from the domain that a theory of SGF coordination would have to be able to cover.

The next piece of evidence for a fundamental parallelism in structure between SGF and surface VP coordination comes from the scopal behavior of adverbials. As Höhle notes, temporal adverbials, for instance, tend to take wide scope if they are in the first SGF conjunct. However, they don't have to and it is possible to have another temporal adverbial in the second conjunct (cf. (53 a)). The interpretation is precisely the same as if the subject were initial and both adverbials were placed in the Mittelfeld of each conjunct, as in (53 b):

- (53) a. Gestern haben alle ihre Sachen gepackt und wollen heute ausziehen.
 yesterday have all their things packed and want today to-move-out
 b. Alle haben ihre Sachen gestern gepackt und wollen heute ausziehen.
 all have yesterday their things packed and want today to-move-out
 'All packed their belongings yesterday and want to move out today.'

Contrast this now with the example in (54) where two V1 sentences have been conjoined that share the fronted element which can only be construed in terms of an ATB-extracted topic:

- (54) *Gestern [hat Otto seine Sachen gepackt] und [will Karl heute ausziehen]
 yesterday has Otto his things packed and want Karl today to-move-out

Here, the occurrence of another adverbial in the second conjunct is perceived to give rise to a contradictory statement, viz. that Karl wants to move out both today and yesterday.

Höhle points out the ability to take scope over both conjuncts can be observed with other kinds of adverbials and negation too. This is illustrated below in (55) with the negation particle *nicht* ('not'). Again, the position of the subject does not make any difference.

- (55) a. Deshalb hörten viele Teilnehmer nicht zu und schrieben mit
 therefore listened many participants not PART and wrote along
 (sondern bohrten in der Nase).
 (but were picking their noses)
 b. Viele Teilnehmer hörten deshalb nicht zu und schrieben mit
 many participants listened therefore not PART and wrote along
 (sondern bohrten in der Nase).
 (but were picking their noses)
 'Therefore, many participants didn't listen and take notes, but ...'

Furthermore, as shown in (56), contrastive contexts, as for instance induced by *stattdessen* ('instead') come with a preferred narrow scope reading; that is, only the first conjunct is understood as negated. Here, too, there is no significant difference correlated with the placement of the subject.

- (56) a. Deshalb hörten viele Teilnehmer nicht zu
 therefore listened many participants not PART
 und malten stattdessen in ihren Heften herum.
 and doodled instead in their notebooks PART
- b. Viele Teilnehmer hörten deshalb nicht zu
 many participants listened therefore not PART
 und malten stattdessen in ihren Heften herum.
 and doodled instead in their notebooks PART
- 'Therefore, many participants didn't listen and instead were doodling in their notebooks.'

SGF and SVPC also show similar behavior with respect to extraposition from subjects. The data in (57) show that certain restrictive relative clauses can be extraposed from subjects to the right periphery of the sentence:¹⁹

- (57) a. All diejenigen, die Hans eingeladen hatte, kamen zur Feier.
 all those whom Hans invited had came to-the party
 'All those whom Hans had invited came to the party.'
- b. All diejenigen kamen zur Feier die Hans eingeladen hatte.
 all those came to-the party whom Hans invited had
 'All those came to the party whom Hans had invited.'

Moreover, the following examples show that this extraposition can cross a VP conjunct regardless of the position of that subject that the relative clause depends on:

- (58) a. All diejenigen kamen und amüsierten sich königlich,
 all those came and amused themselves royally
 die Hans eingeladen hatte.
 whom Hans invited had
 'All those came and had a good time whom Hans had invited.'
- b. Dann kamen all diejenigen und amüsierten sich königlich,
 then came all those and amused themselves royally
 die Hans eingeladen hatte.
 whom Hans invited had
 'Then all those whom Hans had invited came and had a good time.'

Contrast this now with the extraposition from nonsubjects in medial position across conjuncts, which is markedly worse in grammaticality:²⁰

- (59) *Dann warf mein Freund ein Spielzeug weg und verließ den Raum,
 then threw my friend a toy away and left the room
 welches kaputt war.
 which broken was

Intended reading: 'Then my friend threw away a toy that was broken and left the room.'

The next piece of evidence has to do with the placement of certain conjunction particles. Here, the argumentation is actually less for a symmetry of the first conjuncts in SGF and surface VP coordination, but rather for the second ones. Wunderlich's theory is one where the noninitial conjuncts do not receive identical structural descriptions, hence it is not immediately obvious whether in such a system the parallelism can be made to follow.

As Höhle 1983 observes, the conjunction particle *aber* ('however') is odd at the beginning (as opposed to second position) of the second conjunct in SGF sentences, cf. (60 a-b):

¹⁹ A similar point is made in Höhle 1983:16.

²⁰ This fact is pointed out with an example from Dutch in Heycock and Kroch 1993.

- (60) a. Da standen ein paar Leute rum, rührten aber keinen Finger.
 there stood a few people around, moved however no finger
 'A few people were standing around there, but didn't move a finger.'
 b. *Da standen ein paar Leute rum, aber rührten keinen Finger.
 there stood a few people around, however moved no finger

Precisely the same thing happens if the subject is initial:

- (61) a. Ein paar Leute standen da rum rührten aber keinen Finger.
 there stood a few people around, moved however no finger
 'A few people were standing around there, but didn't move a finger.'
 b. *Ein paar Leute standen da rum, aber rührten keinen Finger.
 a few people stood there around, however moved no finger

Finally, Höhle notes that certain bipartite conjunctions such as *weder ... noch* ('neither ... nor') and *sowohl ... als auch* ('both ... and') are ungrammatical in SGF contexts:

- (62) *Gestern trankte Karl weder den Ochsen noch fütterte den Hund.
 yesterday watered Karl neither the ox nor fed the dog
 'Yesterday, Karl neither watered the ox nor fed the dog.'

But the same holds true for surface VP coordination:

- (63) *Karl trankte gestern weder den Ochsen noch fütterte den Hund.
 Karl watered yesterday neither the ox nor fed the dog

The badness of (62) and (63) might be due to a requirement to the effect that the strings following *weder* and *noch* be analyzable in terms of the same category labels.²¹ Thus, in order to match the VP *noch fütterte den Hund* in the second conjunct in (62), one would have to place *weder* before a finite VP in the first parts of (62) and (63). But crucially, in (62) there is no string that could be assigned the category label "VP" because of the subject occurring in the Mittelfeld, whereas in (63), placement of *weder* at the beginning of the finite VP is incompatible with the occurrence of the subject in the initial position which can only hold one constituent. By contrast, the strings preceded by *weder* and *noch* in the following examples can be assigned matching category labels: sentences in (64) and VPs in (65):

- (64) Weder trankte Karl gestern den Ochsen noch fütterte Otto den Hund.
 neither watered Karl yesterday the ox nor fed Otto the dog
 'Yesterday, Karl neither watered the ox nor did Otto feed the dog.'
 (65) daß Karl gestern weder den Ochsen trankte noch den Hund fütterte.
 that Karl yesterday neither the ox watered nor the dog fed
 'that Karl neither watered the ox nor fed the dog yesterday.'

Thus, it turns out that both SGF and SVPC sentences—albeit for somewhat different reasons—fail to meet the conditions on parallelism imposed by the conjunctions particles *weder ... noch*. Notice, incidentally, that the explanation given here accounts for the ungrammaticality of the examples in (62–63) in a more principled way than the solution given by Wunderlich, who simply stipulates that the value for the feature CONJ on V⁰ in the output rules of (32) be set to NIL.

Having looked at the evidence for the fundamental parallelism between SGF and surface VP coordination, let us now turn to asymmetries in behavior between the two constructions. "Left deletion" is the term Höhle uses to describe cases of coordination in which the right string of the left conjunct is left out, somewhat similar to, but more general than, Right Node Raising in English. As noted by Höhle, left deletion is only possible with surface VP coordination, but not with SGF constructions. Hence, in (66 b), the direct object *den Lautsprecher* is missing in the left conjunct, but if the same constituent is left out as in (66 a), the result sounds fairly bad:

- (66) a. ??Morgen überprüft sie _ und repariert den Lautsprecher.
 tomorrow checks she and repairs the loudspeaker
 b. Morgen überprüft sie _ und repariert sie den Lautsprecher.
 tomorrow checks she and repairs she the loudspeaker
 'She'll check and repair the loudspeaker tomorrow.'

²¹This was suggested to me by Hee-Rahk Chae (p.c.).

There is reason to believe, though, that this contrast does not indicate a fundamental difference in structure, but rather is due to some surface constraint on parallelism that is at work in left deletion.²² Höhle himself points out that the following surface VP coordination example is ungrammatical, where the two conjuncts differ in the number of arguments:

- (67) *Karl erblickte _ und Heinz zeigte der Tante etwas ganz besonderes.
 Karl saw and Heinz showed the aunt[dat] something very special
 'Karl saw, and Heinz showed to the aunt, something very special.'

Left deletion seems to be constrained in such a way that not only the material missing in the first conjunct must have a match in the second (such as *der Lautsprecher* above), but there also has to be a correspondence between the conjuncts with regard to other elements preceding the shared material. Thus, for instance in (68), *überprüft/repariert*, *sie/sie*, and *kleine/große* form matching pairs, while the N constituent *Lautsprecher* is missing from the first conjunct:

- (68) Morgen überprüft sie kleine _ und repariert sie große Lautsprecher
 tomorrow checks she small and repairs she large loudspeakers
 'Tomorrow she'll check small loudspeakers and repair large ones.'

Already the intrusion of an adverb such as *danach* ('thereafter') in the sequence of adjacent matched constituents severely decreases acceptability:

- (69) *?Morgen überprüft sie kleine _ und repariert sie danach große Lautsprecher
 tomorrow checks she small and repairs she thereafter large loudspeakers
 'Tomorrow she'll check small loudspeakers and afterwards repair large ones.'

It then becomes obvious why left deletion should always be worse with SGF coordination than with surface VP coordination. In the former, the conjoined sequences will always differ at least in the number of arguments: whereas the string corresponding to the first conjunct contains that subject, the second conjunct crucially does not. It is also important to note that the subject cannot be "skipped" (i.e. if the sequence of matched constituents were to include only material following the subject in the first conjunct) because finite main verbs appear to obligatorily be part of the matching sequences.²³

5 An Alternative Approach to Syntactic Structure and SGF Coordination

There have recently been two interesting proposals that challenge the dominant paradigm in current syntactic theory which essentially treats word order variation as a derivative notion. These are David Dowty's proposal for a theory of "Minimalist Syntax"²⁴ (Dowty in press) and Mike Reape's introduction of the notion of "word order domain" into Head-driven Phrase Structure Grammar²⁵ (Reape in press, Reape 1993).

Instead of deriving the string representation from the yield of the tree encoding the syntactic structure of that sentence (as, for instance in GPSG, LFG, and—as far as the relationship between S-structure and PF, discounting operations at PF, is concerned—CB), Dowty and Reape propose to derive the sentential string via a recursive process that operates directly on encodings of the word order of the subconstituents of the sentence. These representations are what Dowty, adopting a term originally proposed by Haskell Curry (Curry 1963), calls the "phenogrammatcs" of a sentence while the equivalent information in Reape's proposal is called "word order domain". As a convenient cover term we will refer to the family of frameworks that share this basic philosophy as "Linearization Grammar", as suggested in Kathol and Levine 1992.

²²Wunderlich comes to a similar conclusion.

²³Auxiliaries behave differently in this regard, as the following example shows:

- (i) vielleicht hat sie gestern kleine _ und heute große Lautsprecher repariert
 maybe has she yesterday small and today large loudspeakers repaired
 'Maybe yesterday she repaired small loudspeakers and today, large ones.'

But sentences like these do not constitute counterexamples to the claims above because here, the nonfinite main verb is part of the deleted material, hence we are not dealing with an instance of an SGF sentence here.

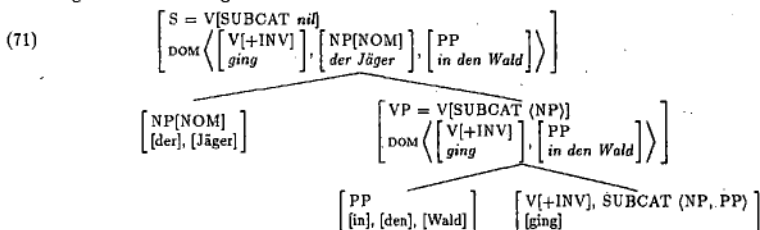
²⁴Although Dowty's notion of minimalism could hardly be more different from the one developed independently in Chomsky's recent work (cf. Chomsky 1992), it may be interesting to note that—beyond the similarity in terminology—there are, after all, some striking resemblances in the goals that each is striving toward. Thus, by relying on constraints associated with the interfaces to the conceptual and the phonetic component to rule out ungrammatical derivations, Chomsky's abandoning of distinct S- and D-structures is reminiscent of Dowty's distrust of phrase structure in favor of the two elements of linguistic information we know best, i.e. what a sentence's surface form is and what it means. Of course, though potentially of great value, an in-depth comparison of the two approaches is well beyond the scope of this paper.

²⁵See Pollard and Sag 1987 and Pollard and Sag 1993.

In the version adopted here, word order is represented in terms of ordered lists—the details of which will be discussed below.

The derivation of the surface string itself, i.e. the categories that have contributed to the ultimate string and the functor-argument relations holding among them is what Dowty calls a sentence's "tectogrammatical" structure, again borrowing from Curry. For the sake of concreteness let us now look at how a V1 sentence, i.e. a question or conditional clause, is derived in such a system.

- (70) Ging der Jäger in den Wald
 went the hunter into the forest
 E.g.: 'Did the hunter go into the forest?'



Details of the informational structure involved in derivations will be discussed below. However, let us at this point make a few remarks how such a representation is to be interpreted.

Ignoring the internal structure of NPs and PPs for now, we can see how the derivation involves a number of word order domains along the head projection of the clause. Each time two categories are combined, a new domain is formed from the domains of the daughters of that node. Word order domains associated with a node in a derivation are given in angled brackets as the value of the new feature "DOM". While the nodes themselves—modulo some changes in the featural architecture, including new features such as DOM—correspond to *signs* in the HPSG sort hierarchy, the elements in the word order domain contain a part of that information. As we will see below, they do contain information relevant for ordering constraints as well as a representation of the phonological properties of that domain element. For reasons that will become apparent shortly, we will assume that the derivation will at least involve one level of projection in which all arguments save the subject have been cancelled from the valence list(s). While there are a number of ways to ensure this, the simplest one, and the one we will adopt for the purposes of this study, is by assuming that all selector-argument combinations are binary. Note, however, that the VP will lose its phenogrammatic integrity once its domain is "merged" into that of the resulting clause. This effect has been likened by Reape to "bracket erasure". Now, linear order within word order domains is treated by LP statements of the sort employed in GPSG and HPSG. In this way, it is possible to express ordering relations that hold among elements that are not tectogrammatical sisters. Thus, word order domains constitute an elegant way of implementing the idea of "liberation", which in its earlier formulations used metarules produced from ID rules (Pullum 1982, Zwicky 1986).²⁶ Crucially, in our system, there are no reordering operations such as *move-α*. Once an element is combined with an existing order domain, the constituents can be placed anywhere in the new domain, subject to the requirement that the resulting domain comply with the LP statements and that the order that held in the originally smaller domains be preserved. This latter constraint can be enforced by means of a "persistence condition" of the following sort: (cf. Pollard et al. 1993)

- (72) All \prec relations between two domain elements in a DOM list must obtain in all DOM lists in which both domain elements appear.

Another way of forming phenogrammatical structure is in terms of what Dowty calls "bounding domains", which means that the word order domain of some sign is treated as a single domain element in the domain of its mother category and in any subsequent derivation. This has the effect that the phonological string corresponding to the original domain becomes impenetrable for interleaving of outside constituents. We will shortly see how this intuition can be built directly into the modified feature architecture of HPSG that

²⁶Note, also, that in the system proposed here, it is not necessary to make reference to ID rules and hence one will not have to worry about producing a possibly infinite number of ID rules as the output of recursively applying liberation metarules.

we will assume in this study. As can be seen in (72), NPs—modulo extraposition which will be discussed below—give rise to bounding domains, but VPs do not, hence the appearance of flat structure of the S level.

We will follow the treatment of Pollard in press for the placement of finite verbs in the different clause types of German in terms of a feature named "INV" for 'inverted'. In V1 and V2 clauses, the verb is specified as [+INV], while it bears the feature [-INV] in verb final clauses. Thus, unlike in current GB-based analyses, V1 and V2 clauses are not derived via head movement. The LP statements that will determine the right placement of the verb with respect to the other constituents is given in (73):

- (73) $V[+INV] \prec X$
 $X \prec V[-INV]$

One brief comment is also in order about the informational structure underlying the representation in (72). Dowty's original idea behind his "Minimalist Syntax" is that word order should be derivable with reference to little more than the "pure" string representation at each node of the derivation. But it can easily be seen that at the very least, information about the syntactic valence of a given node must also be accessible; otherwise, a derivation along the lines of the combinatorics given in the syntactic types would not be possible. On the other hand, Reape assumes that the elements in his word order domain are full-fledged HPSG-style "signs" (cf. Pollard and Sag 1993), i.e. informational structures containing a vast array of linguistic knowledge including syntax, semantics, phonology, and internal phrase structure. However, this seems like more information than should be available for expressing constraints on ordering within word order domains; in particular, it is not desirable to be able to make reference to the internal phrase structure (in HPSG, encoded in the "DTRS" attribute of a sign) of a domain element. We will therefore adopt a somewhat different informational architecture than that used by Reape in his system, in which only the kind of information relevant for ordering constraints is associated with domain elements; in particular, the information that a given sign will be able to contribute to a word order domain is packaged into a new feature, "DOM-OBJ" (for "domain object"). Word order domains will then consist of a list of elements of sort *domobj*, each of which in turn contain information about its phonology—which is then mapped into the phonological representation for the whole sign it is part of—as well as information about its syntax and semantics, in HPSG conveniently bundled in the value of the feature "SYNSEM":²⁷

- (74)
$$\left[\begin{array}{l} \textit{sign} \\ \text{DOM-OBJ} \left[\begin{array}{l} \textit{domobj} \\ \textit{PHON} (\textit{phonological information}) \\ \textit{SYNSEM} (\textit{morphosyntactic, valence, and semantic content information}) \end{array} \right] \\ \text{DOM} (\textit{a list of domain objects}) \\ \text{DTRS} (\textit{tectogrammatical information about daughter signs}) \end{array} \right]$$

The notation chosen in (72) is then to be understood as a convenient shorthand in which only the relevant parts of the informational structure above are made explicit. Thus, if a sign ends up as a single domain element, as for instance the NPs and PPs in the example in (72), the domain elements of that sign—which play no role in the subsequent derivation, except to contribute to the mother category's phonology—are indicated by square brackets. Yet, because all internal structure is lost when the sign's DOM-OBJ value is projected into the mother's word order domain (i.e. when the DOM-OBJ value becomes part of the of the mother's DOM value), only the phonological string is left, represented by italics. The phonology of the whole sign (i.e. its PHON value) is just the concatenation of the PHON values of its domain elements, strung together isomorphically to the order in which the domain elements appear in the order domain. Only the phonology of the domain elements is represented here in the interest of succinctness. Note that DTRS, the feature that encodes the tectogrammatical structure of a sign in terms of its daughter constituents, does not form part of the information gathered in DOM-OBJ. As a result, the value of DTRS is no longer available once that sign's DOM-OBJ value becomes part of a larger order domain. Note that from such an architecture the boundedness condition, i.e. the prohibition against interleaving material into domain elements falls out automatically: since only its phonology, not its internal structure, is represented in a domain element, such interleaving would have to break up what only exists as a phonological string with no reference to internal constituency left. But any such operation could only be defined in violation of (a sufficiently precise formulation of) the principle of phonology-free syntax (cf. for instance Pullum 1988).

This said, it is now possible to attempt a new approach to SGF constructions. From the previous

²⁷This particular architecture was suggested to me by C. Pollard; see also Pollard et al. 1993.

discussion of its properties, it should have become clear that there are at least three intuitions that should be captured more or less directly by the analysis:

1. What are conjoined in SGF sentences are in fact VPs.
2. We have to acknowledge—in whatever way—a certain asymmetry to avoid the kind of criticism that applied to Höhle's analysis.
3. The initial string that gives the appearance of a sentence should be derived on the basis of the same principles that apply in the case of simplex clauses.

In addition, we of course want an analysis with as few stipulations and additions to the general theory of grammar as possible. The way we want to meet these desiderata is by assuming that something special happens when the word order domains of VPs combine in coordination. All other things being equal, one would probably expect that in coordination, the resulting order domain consists simply of the conjuncts ordered by some LP statement. However, it seems that that is not the case in SGF coordination. Instead, we want to argue that only noninitial VPs are mapped into a single element of the resulting conjunctive domain. The initial VP, on the other hand, simply passes on its domain elements to the mother unchanged. In other words, the domain of the whole coordinated VP will consist of all the domain elements of the initial VP with one domain element containing the value of DOM-OBJ of the noninitial VP added:²⁸

$$(75) \quad \left[\begin{array}{l} \text{VP} = \text{V}[\text{SUBCAT}(\text{NP})] \\ \text{DOM} \langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \text{in den Wald} \end{array} \right], \left[\begin{array}{l} \text{VP}[\text{CONJ}] \\ \text{und fing einen Hasen} \end{array} \right] \rangle \end{array} \right]$$

$$\left[\begin{array}{l} \text{VP} \\ \text{DOM} \langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \text{in den Wald} \end{array} \right] \rangle \end{array} \right] \quad \left[\begin{array}{l} \text{VP}[\text{CONJ}] \\ \text{DOM} \langle \left[\begin{array}{l} \text{CONJ} \\ \text{und} \end{array} \right], \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{fing} \end{array} \right], \left[\begin{array}{l} \text{NP} \\ \text{einen Hasen} \end{array} \right] \rangle \end{array} \right]$$

We will refer to this particular way of projecting a word order domain from coordinated constituents as "Asymmetric Conjunctive Domain Formation" (ACDF). As we will see later, there might be reason to believe that something very similar is actually also going on in the case of coordination that would normally be thought of as "symmetric". The crucial effect of ACDF in our example is that if now a subject combines with the coordinated VP, its placement will depend only on the elements of the originally initial VP domain. To put in another way, for the purposes of word order, the subject is treated as though it only were a subject of the original initial VP domain, although in terms of tectogrammatcs and semantics, it is the subject of BOTH VP conjuncts; the resulting word order domain in a V1 environment can be seen in (76)—a somewhat different implementation, yet in the same spirit, will be offered in section 7:

$$(76) \quad \left[\begin{array}{l} \text{S} = \text{V}[\text{SUBCAT} \text{ nif}] \\ \text{DOM} \langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{ging} \end{array} \right], \left[\begin{array}{l} \text{NP}[\text{NOM}] \\ \text{der Jäger} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \text{in den Wald} \end{array} \right], \left[\begin{array}{l} \text{VP}[\text{CONJ}] \\ \text{und fing einen Hasen} \end{array} \right] \rangle \end{array} \right]$$

$$\left[\begin{array}{l} \text{NP}[\text{NOM}] \\ \text{[der] [Jäger]} \end{array} \right] \quad \left[\begin{array}{l} \text{VP} = \text{V}[\text{SUBCAT}(\text{NP})] \\ \text{DOM} \langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \text{in den Wald} \end{array} \right], \left[\begin{array}{l} \text{VP}[\text{CONJ}] \\ \text{und fing einen Hasen} \end{array} \right] \rangle \end{array} \right]$$

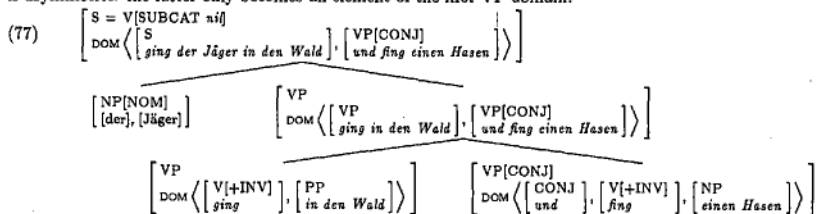
$$\left[\begin{array}{l} \text{VP} \\ \text{DOM} \langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \text{in den Wald} \end{array} \right] \rangle \end{array} \right] \quad \left[\begin{array}{l} \text{VP}[\text{CONJ}] \\ \text{DOM} \langle \left[\begin{array}{l} \text{CONJ} \\ \text{und} \end{array} \right], \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \text{fing} \end{array} \right], \left[\begin{array}{l} \text{NP} \\ \text{einen Hasen} \end{array} \right] \rangle \end{array} \right]$$

The resulting phenogrammatical representation bears some resemblance to the output of Wunderlich's metarule—yet without the kinds of technical and conceptual problems that riddle his solution. Linearization Grammar thus provides us with exactly the right kind of "division of labor" that we need to account for SGF coordination: while on a par semantically and tectogrammatically, the two VPs display an asymmetry in the way they relate to each other in the phenogrammatcs.

At this point, let us briefly consider a possible alternative to the ACDF analysis of (75). Rather than creating an asymmetric word order domain at the level at which the two VPs are conjoined, we could assume

²⁸As Peter Culicover points out to me (p.c.), a similar idea is suggested in Wexler and Culicover 1980 for the analysis of English Right-node-raising constructions; yet there it is the right-peripheral constituent whose integrity is left undisturbed by the presence of the other conjunct.

that the VP domains are in fact intact when they combine. However it is the placement of the subject which is asymmetric: the latter only becomes an element of the first VP domain.²⁹



Although this version embodies essentially the same intuitive idea and meets the desiderata above equally well, there are a number of reasons to reject it. First, it is not clear how this kind of analysis can be made compatible with the boundedness constraint that (with Dowty and Reape) we want to impose on domain construction. That is, if the VP domains are put together in the way suggested in (77), they in effect are treated as two distinct domain elements in the domain of the conjoined VP. But as mentioned before, one of the crucial constraints on domain formation is that one cannot go "back inside" a domain element in the course of the derivation.

Aside from this technical issue, there actually seems to be empirical evidence that argues against the solution in (77) and supports the analysis presented in (76). As we saw earlier, German permits certain relative clauses to be extraposed from subjects to the right periphery of the sentence. However, it is not possible to extrapose a relative clause across a sentential boundary, hence if two sentences are coordinated, one cannot place the extraposed constituent to the very right periphery of the conjoined sentence:

- (78) *All diejenigen kamen zur Feier,
 all those came to-the party
 und es kam schnell Stimmung auf, die Hans eingeladen hatte.
 and there was soon a good mood whom Hans invited had

Yet, as we saw earlier in (58 b), repeated as (79), extraposition from subject in SGF contexts is indeed possible, as shown in (78):

- (79) Dann kamen all diejenigen
 then came all those
 und amüsierten sich königlich, die Hans eingeladen hatte.
 and amused themselves royally whom Hans invited had
 'Then all those whom Hans had invited came and had a good time.'

If in the phenogrammatical representation, this sentence indeed consisted of an initial sentential domain (as indicated in (77)), this would come as a puzzle because this sentence then would essentially be identical to the example in (78) with respect to the kinds of domain elements that intervene between the subject and its dependent relative clause.³⁰ On the other hand, on the analysis proposed here, no such problem arises because given that extraposition can be analyzed simply as placement to the extreme right periphery WITHIN a sentential domain (as in Reape in press) the extraposed relative clause will never have to "leave" its original clausal domain. Thus the different parts of the subject will then end up wrapped around the second VP conjunct, as outlined in (80):



²⁹This particular implementation was indeed suggested in Kathol 1992. Thanks to Bob Levine for bringing the alternative analysis pursued here to my attention.

³⁰Actually, an alternative solution is conceivable in which the left element in the domain of the mother node does not change its categorial status from VP to S when the subject is placed into that domain. On such a scenario, no sentential domain boundary would intervene between the subject and the material extraposed from it. However, not only would we be faced with the quite unusual situation that a sentence is built up from two conjoined VPs. Crucially, as we will see later, the placement of the initial element in V2 clauses involves reference to SENTENTIAL domains. This would mean that the identical behavior of initial VPs in SGF sentences and simplex V2 sentences could only be derived on the basis of mere stipulation.

Notice, incidentally, that the above facts about extraposition constitute additional evidence against configurational analyses in which the SGF sentences are analyzed as coordinations of two sentential categories (i.e. IP or CP) with an empty subject in the second conjunct.

There are a number of facts that immediately fall out from the asymmetric domain formation outlined in (76). First, note that the category VP is understood strictly in terms of the combinatorial properties of a verbal projection; i.e. by "VP" we mean those projections that need one and only one NP[nom] to yield a sentence.³¹ This predicts that impersonal predicates in German, such as *schlecht werden* ('become sick to the stomach') or the passive of *helfen* ('help'), which arguably do not contain a subject cannot be construed in an SGF fashion. This prediction is in fact borne out:

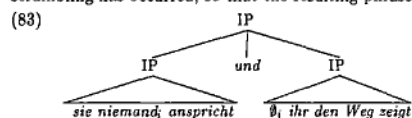
- (81) *Daher war dem Mann schlecht und mußte sofort geholfen werden.
 therefore was the man[dat] sick and had-to immediately helped be
 'Therefore, the man was sick to the stomach and had to be helped immediately.'

There is a certain amount of evidence for equating the notions of "subject" with NP[NOM] in German, as for instance argued in Reis 1982. Assuming this we are forced to the conclusion that there is no subject present in the example above—pace Chomsky's Extended Projection Principle. On the other hand, in any theory in which grammatical relations are identified in terms of the (semantically-motivated) order in which the verb combines with its arguments (cf. Dowty 1982), "true" (nominative) subjects are indistinguishable from nonnominative arguments that accidentally end up as least oblique. In such theories, the dative NP above, in virtue of it being the highest argument, would falsely be predicted to allow SGF coordination. We can therefore take the behavior of lexical impersonals as evidence that the domain formation in (81) crucially has to make reference to SYNTACTIC combinatorial properties that for instance includes reference to case and cannot be correctly described on the basis of semantic functor-argument structure alone.

Let us now turn to the question of domain formation with verbfinal VPs. None of the proposals we saw earlier makes reference to such constructions. In fact, Höhle's original terminology (subject gaps in finite/FRONTED (i.e. V1 or V2 clauses)) makes it clear that he did not think there was any connection between the conjunction of verb-initial and verb-final VPs. As the following example shows, however, we get a discontinuity effect in connection with verb-final VPs as well. Here, it is not verb placement that is responsible for a violation of the String Continuation Criterion, but instead the effect comes about via "scrambling" of, for instance, a pronominal object past the subject:

- (82) daß sie niemand anspricht und ihr den Weg zeigt
 that her[acc] no one approaches and her[dat] the way shows
 'that no one approaches her and shows her the way'

The fact that we have a quantificational subject NP again shows that there cannot be a phonologically empty subject for the second conjunct. It seems clear that such examples raise immediate problems for any account that analyzes scrambling in terms of movement: one possibility is that the two conjuncts combine only after scrambling has occurred, so that the resulting phrase marker combines with the second conjunct, as in:



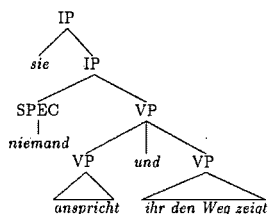
However, that would mean that the subject NP is in a structural position from which it no longer c-commands the second conjunct, yet there is ample evidence that this would conflict with GB binding theory, cf.:

- (84) daß sie niemand; anspricht und sich_i entschuldigt
 that her no one approaches and self apologizes
 'that no one approaches her and apologizes.'

Alternatively, we could assume that scrambling occurs after the two conjuncts have combined, as outlined in:

³¹Hence, with the notion of VP assumed here, there cannot be such things as "VP-internal" subjects; cf. also Wunderlich 1988:311-2 on this issue.

(85)



However, it would be somewhat of a mystery why this movement can only affect the first conjunct.³²

On the treatment proposed here, however, nothing further needs to be said about the placement of the subject. Since in a linearization framework, "scrambling" will arise from underdetermination of linear precedence, a pronominal object will not only be permitted to be placed before the subject, but with LP statements of the sort proposed in Uszkoreit 1987, this will end up as the preferred order. Again, the second conjunct will itself be one domain element, hence it will not interfere with the placement of the subject with respect to the material originating from the first conjunct:

$$(86) \left[\begin{array}{l} S \\ \text{DOM} \langle [\text{NP}[\text{ACC}]], [\text{NP}[\text{NOM}]], [\text{V}[-\text{INV}]], [\text{VP}[-\text{INV}, \text{CONJ}]] \rangle \end{array} \right]$$

There is reason, however, to believe that in the verbfinal case, asymmetric domain formation is possible with more than just VPs. Consider the following example:

- (87) daß ihr das Hans gezeigt hat und später an Otto verkauft hat
 that her[dat] that[acc] Hans shown has and later to Otto sold has
 'that Hans showed it to her and later sold it to Otto.'

Here, the dative pronominal object *ihr* is scrambled past the subject as well as the accusative object *das*, which has to be understood as shared among BOTH conjuncts. This sentence can be derived in a straightforward way if we assume that with [-INV] conjuncts, any level of saturation can be conjoined asymmetrically, including transitive projections as in (87). The corresponding derivation is sketched in (88):

$$(88) \left[\begin{array}{l} S \\ \text{DOM} \langle [\text{NP}], [\text{NP}], [\text{NP}], [\text{V}], [\text{V}[\text{SBCT}(\text{NP}, \text{NP})]] \rangle \end{array} \right]$$

Diagram (88) shows a derivation tree for the sentence "daß ihr das Hans gezeigt hat und später an Otto verkauft hat". The root node is S, with a domain containing [NP], [NP], [NP], [V], and [V[SBCT(NP, NP)]]. The tree branches into [NP[NOM]] [Hans] and [VP DOM...]. The [VP DOM...] node branches into [NP[ACC]] [das] and [V[SBCT(NP, NP)]]. The [V[SBCT(NP, NP)]] node branches into [V[SBCT(NP, NP)], -INV] and [V[SBCT(NP, NP)], -INV]. The first [V[SBCT(NP, NP)], -INV] node branches into [NP] [ihr] and [V] [gezeigt hat]. The second [V[SBCT(NP, NP)], -INV] node branches into [ADV] [später] and [V] [verkauft hat].

There might be reason to believe that the kind of verbal projections that can be coordinated asymmetrically in Vfinal context does not even have to correspond to those that arise from iteratively cancelling arguments off the SUBCAT list, starting from more to less oblique. Instead, it appears as if the verb can combine with any subset of its arguments, independent of the obliqueness ordering among them. Thus, while the conjuncts in (89) lack a dative argument in addition to the subject, the conjuncts in (90) share an accusative object:

³²As we will see shortly, this is a problem quite similar to that raised by V2 SGF constructions. Since for V2 we will not completely rule out the case that a certain amount of valence asymmetry between the two VP conjuncts is permitted, one could argue that we are dealing with a similar situation here. However, note that it is anything but clear why both the movement involved in Vorfeldbesetzung and the one in scrambling should converge in that they are both permitted to violate the CNC here, and moreover, that this violation is confined to the first conjunct, for it is absolutely impossible to topicalize or scramble out of a noninitial conjunct.

- (89) ... daß ihm Hans die Bilder zeigte
 that him[dat] Hans[nom] the pictures showed
 und die Briefmarken verkaufte.
 and the stamps sold
 'that Hans showed him the picture and sold him the stamps.'
- (90) ... daß sie Hans dem Onkel zeigte
 that them[acc] Hans[nom] the uncle[dat] showed
 und der Tante verkaufte.
 and the aunt[dat] sold
 'that Hans showed them to the uncle and sold them to the aunt.'

While we have nothing of great insight to say about this, it would seem though that this might be another example where coordination does not exploit preexisting constituency, but rather "forces" it upon the elements put into conjuncts. While it is not immediately obvious how to integrate this intuition—if it is indeed the right way of looking at the phenomena—into an HPSG based approach, the kind of flexibility attained in Categorical Grammar by using Type Raising and Functional Composition seems to be well-suited to accommodate such data. We'll leave this problem to further research.

6 SGF and V2

Let us now turn to the question of how in the approach offered here, SGF sentences in which the initial string is a verb-second clause can be analyzed. Verb-second is commonly thought to derive from some kind of syntactic dislocation process, either via move- α , usually into SPEC, CP, as in transformational theories, or by means of an (unbounded) filler-gap dependency mediated by a SLASH feature, as in nontransformational approaches. Applied to the SGF case, this means that we would have to allow a certain amount of asymmetry in terms of the categories that are coordinated. In particular, we would have to allow a VP/XP category to be conjoined with a VP containing no slash. There may exist evidence that this occurs in English, when wh-movement or topicalization only affects one of multiple coordinated VPs, as in the following examples from Goldsmith 1985, Lakoff 1986, and Heycock and Kroch 1992, respectively.³³

- (91) a. How many counterexamples can the Coordinate Structure Constraint sustain and still be considered empirically correct?
 b. Sam is not the sort of guy you can just sit there, listen to and not want to punch in the nose.
 c. This advice the committee decided to follow and proceeded to set up a new subcommittee.

However, if we are to base our treatment of V2 SGF sentences on a similar kind of asymmetry arising via Vorfeldbesetzung, we end up in the somewhat embarrassing situation that our account will fare no better with respect to spurious ambiguities than Höhle's and Wunderlich's. This is so because we will then have no principled way of ruling out ATB analyses for SVPC sentences, hence we are stuck—again—with two analyses.³⁴ Moreover, even if we were to bite the bullet and accept the fact that linearization might not be superior to the other accounts proposed in terms of the ambiguity issue, there are even more unsettling questions associated with the coordination of asymmetric conjuncts. First of all, it is not clear from what it would follow that the slash can NEVER go into the second conjunct. Thus it would be only by stipulation, as seen before with Heycock and Kroch 1993, that we could prevent illicit linkages between a nonsubject and a gap in a noninitial conjunct. On the other hand, as we observed earlier, examples such as (91b) suggest that in English, extractions from noninitial conjuncts are indeed possible to the exclusion of the initial conjunct, which is strong evidence that SGF coordination and asymmetric wh-frontings in English are really very distinct phenomena.

Second, we would have to provide for an exception to the general coordination scheme that not only allows for the conjunction of dissimilar categories, but also makes sure that the result is of the right category, i.e. VP/XP rather than VP. Note that this would be a statement about combinatorial properties of categories,

³³It is well known (see for instance Goldsmith 1985) that such violations are in general only permitted if certain semantic factors are involved. As was pointed out to me by David Dowty (p.c.), the kind of relationship between the conjoined predicates required bears a striking resemblance to the one observed in serial verb constructions.

³⁴Alternatively, we could try to mark VP domains that have arisen through asymmetric domain formation and bar Vorfeldbesetzung of the subject from ever applying to a thus marked domain. But this appears as much ad hoc as any way of avoiding spurious ambiguities in Höhle's and Wunderlich's analyses.

that is, tectogrammar. This, however, seems logically independent from the special kind of domain formation that we have proposed for SGF sentences. It is not clear whether this "conspiracy" across different aspects of linguistic structure can be motivated in any more principled way, and hence would seem suspicious.

In the following section we will therefore begin to explore an alternative treatment of V2 (and, V2 SGF) which does not rely on syntactic dislocation of the initial constituent. It should be clear that the proposal is somewhat speculative.

6.1 V2 Without Dislocation

The treatment of verb second word order in German adopted here is somewhat of a refinement of the one proposed in Kathol 1992 and the one proposed for English main verb inversion in Kathol and Levine 1992. The central idea is to treat the placement of the initial element in terms of a special feature, there called "FIRST" which gives rise to a perfectly flat sentential domain. For reasons that will become apparent later, the feature responsible for *Vorfeldbesetzung* will be called "CI" (for "clause initial"). Extending the informational architecture presented above somewhat, it will reside inside a new feature, appropriate for domain elements, named "TOPOLOGY":

$$(92) \left[\begin{array}{l} \text{sign} \\ \text{DOM-OBJ} \\ \text{DOM} \\ \text{DTRS} \end{array} \left[\begin{array}{l} \text{domobj} \\ \text{TOPOLOGY} \\ \text{PHON} \\ \text{SYNSEM} \end{array} \right] \right]$$

The name "topology" is supposed to reflect the tradition amongst grammarians of German to think of the word order constraints in that language in terms of topological "fields" (cf. Höhle 1986 and references therein). Another candidate for a topology feature is Reape's "EXTRA" which he uses for the placement of right-extrapolated constituents. In a way, we can think of such topological features as an attempt to take the topological theory at face value, rather than trying to derive it from, say, movement into specific "slots" such as HEAD or SPECIFIER of different categories supposedly provided by Universal Grammar as in current GB theory.³⁵ For the different clausal word order patterns of German, we will then assume here that verb-second word order simply comes about via interaction of two features, one for the placement of the verb (INV) and one for the placement of the initial element. Leaving aside for the purposes of this study how a domain element is to be specified with a positive value—or negative, for that matter—of CI,³⁶ V2 word order is then a consequence of the ordering imposed by the following LP statements:

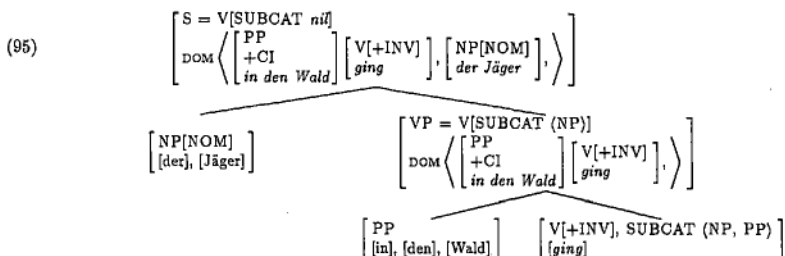
$$(93) \begin{array}{l} X[+CI] \prec V[+INV] \\ V[+INV] \prec X[-CI] \end{array}$$

As a result of treating V2 in terms of a topological feature, it is now possible to treat both subject-initial as well as nonsubject-initial V2 sentences in terms of the same tectogrammatical structure, which is incidentally the same as in (71):

$$(94) \begin{array}{c} \left[\begin{array}{l} \text{S} = \text{V}[\text{SUBCAT } \textit{nil}] \\ \text{DOM} \left\langle \left[\begin{array}{l} \text{NP}[\text{NOM}] \\ +\text{CI} \\ \textit{der Jäger} \end{array} \right], \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \textit{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \textit{in den Wald} \end{array} \right] \right\rangle \end{array} \right] \\ \left[\begin{array}{l} \text{NP}[\text{NOM}] \\ +\text{CI} \\ \textit{[det, [Jäger]} \end{array} \right] \\ \left[\begin{array}{l} \text{VP} = \text{V}[\text{SUBCAT } \langle \text{NP} \rangle] \\ \text{DOM} \left\langle \left[\begin{array}{l} \text{V}[\text{+INV}] \\ \textit{ging} \end{array} \right], \left[\begin{array}{l} \text{PP} \\ \textit{in den Wald} \end{array} \right] \right\rangle \end{array} \right] \\ \left[\begin{array}{l} \text{PP} \\ \textit{[in, [den], [Wald]} \end{array} \right] \\ \left[\begin{array}{l} \text{V}[\text{+INV}], \text{SUBCAT } \langle \text{NP, PP} \rangle \\ \textit{[ging]} \end{array} \right] \end{array}$$

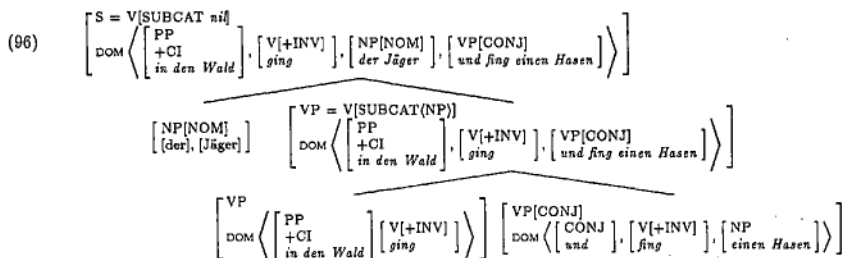
³⁵ It should be clear, however, that nothing prevents the adoption of such "slots" to fix certain aspects of word order in a linearization-based framework—provided that the filling of such slots is not subject to the same constraints as movements in transformational grammar, that is, does not have to proceed in an ATB fashion in the presence of coordinated constituents.

³⁶ This question is interrelated with that of what kinds of constituents, in particular, what kinds of *partial* constituents can occur in the *Vorfeld*.

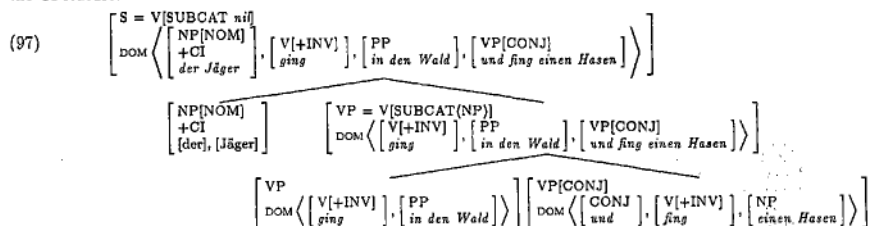


On the other hand, if one counts SLASH as affecting the valence of a syntactic category, dislocation-based accounts will inevitably involve different syntactic categories—in particular, there is nothing in the subject-initial case that would correspond to the valence of an S/PP category. Moreover, in theories such as CG where the operations corresponding to SLASH also affect the semantic type of the involved constituent, a dislocation-based treatment would have to assume that the derivation in both cases involves different semantic constituents. (But intuitively, it is not clear that in (95) above, we really have to form the property of being such that the hunter went in that direction.)

What, now does this heretic account of verb-second word order in German buy us? Primarily, it now allows us to treat SGF coordination entirely in terms of an asymmetry at the phenogrammatical level. Because Vorfeldbesetzung is no longer derived from the combinatorial properties of a clausal constituent, all we need to say is that a sentence such as (2), is derived in terms of the coordination of two VPs, i.e. two $V[\text{SUBCAT } (\text{NP})]$ projections and the rest follows. In particular it follows that the placement of the initial element will happen without reference to any element in the second conjunct—and this situation is in fact quite similar to scrambling-induced discontinuities in $V[-\text{INV}]$ coordinations. So, the derivation of (2) is as given in:



Note also that with the treatment of V2 advocated here, the corresponding SVPC sentence is analyzed in terms of precisely the same tetragrammatics, while the linearization is induced by a different assignment of the CI feature.



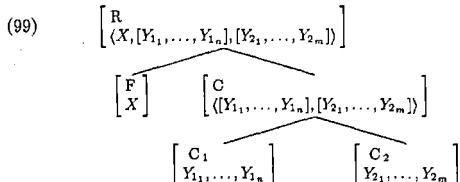
Another consequence of this treatment is that there cannot be anything missing from the second conjunct. As we will show shortly, if the second conjunct contained, say a SLASH, it would no longer meet the conditions on when asymmetric conjunctive domain formation can happen, hence the only way left is to construe the conjunction in terms of symmetric domain formation which requires the object to be construed in an ATB fashion with both conjuncts (see below.) However, what our treatment does not automatically rule out (given that we have essentially put no constraints on the occurrence of +CI) is that there could be an element in the second conjunct that bears the feature specification +CI. Yet, a sentence like:³⁷

- (98) in den Wald ist der Jäger gegangen und einen Hasen hat gefangen.
 into the forest is the hunter gone and a hare has caught

is utterly ungrammatical: there must not be any +CI constituent in the noninitial VP. Now while at this point, we cannot claim to have an elegant solution to this problem, so we will simply assume for the time being that it can built into the constraint on ACDF. Ultimately, though, the impossibility of a +CI domain element here should be derivable from the fact that CI by virtue of referring to word order in CLAUSES can only be appropriate for CLAUSAL domains. But since the noninitial VP conjunct essentially gets "closed off" once it enters into the larger domain as one domain element, any +CI elements inside would have missed their chance of occurring in a clausal domain.³⁸

7 Symmetric and Asymmetric Coordination

One issue we have been avoiding so far is a comparison of the derivation of asymmetric word order domains with that of symmetric ones, such as in the derivation of sentences like (1) in which the initial PP is related to both conjuncts in an ATB fashion. The basic intuition has been that symmetric coordination, unlike its asymmetric counterpart, conforms to the String Continuation Criterion. Given this, let us assume then that in order for a symmetric coordination to be legitimate, the shared constituent, i.e. the "factor" must be linearizable with each conjunct in the same fashion. Schematically, in (99), such a factor F with domain X must "in principle" be linearizable with the domain Y_1, \dots, Y_n of each of the conjuncts C_i .



However, it is immediately apparent this implementation would violate the boundedness condition imposed by the particular feature architecture assumed here. To see this, remember that everything enclosed in square brackets in (99) is a single domain object; hence there is no longer a word order domain with respect to which the factor domain could be linearized, only a phonological string.³⁹ For this reason, it seems that the assumption that there is an intermediate conjunct category with a word order domain associated with it might have to be given up. Instead we want to propose yet another departure from widely-held beliefs; this time with regard to the structure of coordination.⁴⁰ Let us assume that shared-constituent coordination is handled by a ternary (or n-ary, in the case of more than two conjuncts) operation, involving the factor

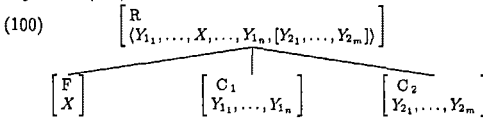
³⁷Here, I use perfect tense to make sure that the second conjunct cannot be mistaken for a V[-INV] projection, as in *einen Hasen fing*, which would be bad for independent reasons (INV is a head feature, so both conjuncts must agree in their values).

³⁸To express formally the intuition that +CI elements must end up in a clausal domain without having access to the whole derivation is a nontrivial matter.

³⁹This particular problem could be circumvented if the domain corresponding to the conjunct category is built up from its daughter's domains via "distributive attachment", i.e. by linking all elements of a domain by means of Dowty's "attachment operation" (cf. Dowty in press). This would then yield a domain for the mother category which looks like $Y_1 + \dots + Y_n, Y_2 + \dots + Y_m$. While this implementation would have the advantage of preserving "transparency" for linearization purposes, it also comes with a number of severe problems, chief among them the fact that LP statements would have to allow for multiple occurrences of categories with the same feature specification (e.g. [+INV]) in a SINGLE domain, viz. one corresponding to each conjunct.

⁴⁰The ideas developed in this section have been greatly inspired by conversations with Carl Pollard.

and each conjunct simultaneously.⁴¹ The general schema for coordination, be it symmetric or asymmetric, is given in (100):



The constraints associated with this scheme are as follows:

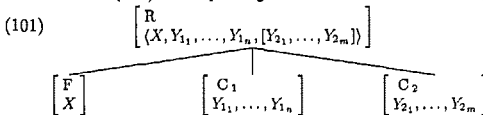
1. The combination of *F* with each *C_i* yields *R*
2. All *C_i* are "like categories"
3. *X* and *Y_{1_j}* are linearized to *Y_{1₁}*, ..., *X*, ..., *Y_{1_n}* (such that *X* can be initial, but does not have to).

The first two conditions can be seen as capturing precisely the constraints ordinarily assumed for coordination. Where we get a difference is in the way that word order domains are projected from the combination of a factor with the conjuncts. Thus, the third condition essentially states that all coordinations involving a factor constituent are asymmetric in that only the elements of the initial conjunct⁴² are projected into the mother's domain, while the domains of the noninitial conjuncts (or nonfinal for that matter) are "frozen" into domain objects and cannot further be manipulated in the subsequent course of the derivation.

Interestingly, one consequence of this view of coordination is that now it is symmetric, rather than asymmetric coordination, that has to be regarded as a special case of the general coordination scheme in (100). Because no constraint is placed on where the factor domain object occurs in the domain of the resulting category *R*, both initial and noninitial occurrences are allowed, as long as they conform to the other linearization constraints. On the other hand, in symmetric coordination, peripheral placement in the resulting word order domain is obligatory, enforced by the following additional constraint:

4. *X* bears the same relationship to *Y_{1_j}* and *Y_{2_k}*
(i.e., *X* is peripheral in *Y_{1₁}*, ..., *X*, ..., *Y_{1_n}*, [*Y_{2₁}*, ..., *Y_{2_m}*])

The domain behind the requirement on peripheral placement is that if the factor were to occur amongst the domain elements of the initial domain, it could not at the same time bear the same relationship (i.e. medial occurrence) to the other conjuncts. Only the (left/right) periphery allows a factor to precede/follow all conjuncts at the same time. The effect of this additional constraint is that for symmetric coordination, the schema in (100) ends up being instantiated as indicated in (101):



Turning now to the conditions under which shared-constituent coordination instantiates either the less restrictive (i.e. only conditions 1-3) above) or more restrictive (i.e. with the addition of condition 4)) schema, we propose that the latter option be in effect unless the conjuncts match one of the following two specifications:

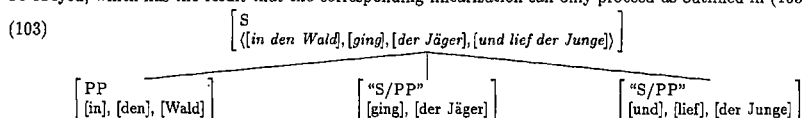
- (102) a. $\left[\begin{array}{l} V, \text{ SUBCAT } \{ \text{NP} \{ \text{NOM} \} \} \\ \text{INV } + \\ \text{SLASH } \emptyset \end{array} \right]$
 b. $\left[\begin{array}{l} V, \text{ SUBCAT } \{ \text{NP} \{ \text{NOM}, \dots \} \} \\ \text{INV } - \end{array} \right]$

Thus, if the verb is "inverted" (i.e. either initial or in second position), only the subject may be missing. On the other hand if the verb occurs phrase-finally, other levels of saturation are permitted with the more liberal schema too.

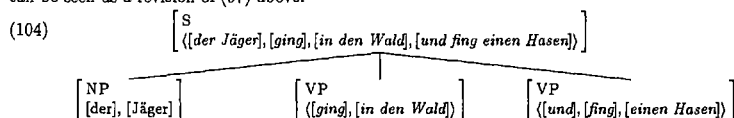
⁴¹There is no claim that this scheme of combination is involved when there is no constituent shared by the conjuncts, thus there does not seem to be a need to depart from the traditional analysis in the case of conjunction of simple sentences or group-forming coordination of NPs.

⁴²Cases where the factor combines at the right periphery, such as in Right Node Raising, represent the exact mirror image to the left-peripheral factors investigated here.

Another way of interpreting the schema in (100) together with the constraints in (1-3) is that every instance of conjunction either satisfies the additional restriction (4) or one of the constraints in (102). This automatically makes the right predictions with respect to the linearization of ATB constructions. Suppose, for instance, we were to treat ATB topicalization of a PP out of two conjuncts in terms of SLASH.⁴³ Then the coordinated categories are [+INV] sentences, i.e. of category V[SUBCAT *nil*], which crucially do not match either of the two descriptions in (102). But then to be a valid conjunction, the restriction in (4) must be obeyed, which has the result that the corresponding linearization can only proceed as outlined in (103):



Another welcome consequence of the set of constraints proposed here follows from the fact that the fourth restriction and the category specification in (102) do not form an exclusive disjunction. Thus, when the latter constraints are met, it does not follow that the structure must disobey restriction 4, i.e. result in a violation of the String Continuation Criterion. Instead, it is perfectly legitimate for conjuncts to meet the description in (102) while ordering the factor peripherally. As a consequence, the analysis proposed here circumvents the spurious ambiguity problem arising in connection with SVPC constructions noted with Höhle's, Heycock & Kroch's, and Wunderlich's solutions. Consider the derivation of such an example, given in (104), which can be seen as a revision of (97) above.



The categories involved here (VP) match the description in (102 a) and at the same time the linearization is in accordance with the restriction in (4). But clearly, while this linearization is, so to speak, "doubly licensed", there is no alternative analysis that would emerge on the basis of what licenses SGF coordination in our system.

Not only does limiting exceptions to the fourth condition on conjunctive domain formation to the cases listed in (102) handle the linearization of ATB extraction and SVPC constructions quite nicely, it also makes the right prediction in the case of interaction of phrasal coordination with SGF. It is well-known that in German, not only the subject, but essentially the whole initial string including a governing verb can be shared across conjuncts. Thus in the following example, both *die Kommission* and *will* have to be construed with both conjuncts.

- (105) Die Kommission will diesem Vorschlag folgen und eine neue Unterkommission einsetzen.
 the commission wants-to this suggestion follow and a new subcommission set-up
 'The commission wants to follow this suggestion and set up a new subcommission.'

Note, however, that the verbal projections conjoining with the factor auxiliary *will* instantiate [-INV], albeit with a nonfinite verb form, but no reference to morphology is made in (102). This predicts that we should be able to get SGF-like discontinuity effects. As the following example (from Heycock and Kroch 1993) shows, this is in fact the case, as it is possible to prepare an object belonging to the initial conjunct, thus violating the String Continuation Criterion once again:

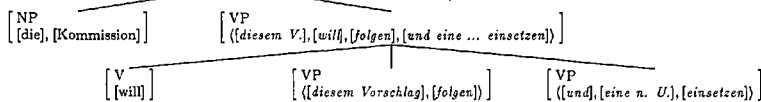
- (106) Diesem Vorschlag will die Kommission folgen und eine neue Unterkommission einsetzen.
 this suggestion wants-to the commission follow and a new subcommission set-up
 'The commission wants to follow this suggestion and set up a new subcommission.'

The following outlines a derivation of this sentence:⁴⁴

⁴³No claim is made here that this is to be thought of as the right analysis. In particular, we will not get into the problem here of how to properly restrict the occurrence of SLASH so as to prevent an alternative analysis of topicalization. One way to achieve this may be by restricting SLASH in German to occur only in coordinated contexts (long-distance dependencies in simplex clauses notwithstanding, cf. Appendix.)

⁴⁴For the sake of simplicity, we assume here that all the arguments of the nonfinite verb *safe* its subject have been cancelled before it combines with the auxiliary verb. Alternatively, one could assume with Hinrichs and Nakazawa 1990 and Kiss 1992

(107) [S ([*diesem V.*], [*will*], [*die Kommission*], [*folgen*], [*und eine ... einsetzen*])]



Before closing this section, let me briefly discuss a phenomenon that Höhle points out in his original paper but which, to the best of my knowledge, has not been addressed in any subsequent formal account of SGF constructions. He notices that while it is possible to topicalize an argument in an SGF construction, Wh fronting leads to significantly decreased grammaticality:

- (108) a. (?) Die Tasche ließ er fallen und rannte zum Hinterausgang.
 the bag let he drop and ran to-the back exit
 'He dropped the bag and ran for the back exit.'
 b. ??Was ließ er fallen und rannte zum Hinterausgang?
 what let he drop and ran to-the back exit
 'What did he drop and run for the back exit?'

Contrast this now to the case of Wh fronting with nonargument Wh phrases such as *wann* ('when'), which appear to be markedly better:

- (109) Wann hat jemand einen Einfall und sagt uns die Lösung?
 when has someone an inspiration and tells us the solution
 'When will someone have an inspiration and tell us the solution?'

It is not entirely clear how to correctly assess the significance of the data here; after all, at least to the author, SGF sentences with topicalized arguments (as in (108 a) above) tend in general to be somewhat more marginal than if some adjunct fills the initial position, as in:

- (110) Dann ließ er die Tasche fallen und rannte zum Hinterausgang.
 then let he the bag drop and ran to-the back exit
 'Then he dropped the bag and ran for the back exit.'

Thus, the marginality of (108 b) might be subsumed under whatever accounts for a reluctance to topicalize arguments in general. Evidence for this assumption can be seen in the fact that, as pointed out in Heycock and Kroch 1993, the Dutch example corresponding to (108 a) is judged to be quite marginal.⁴⁵

- (111) ??De baggage liet hij vallen en rennde naar de achteruitgang.
 the bag let he drop and ran to-the back exit
 'He dropped the baggage and ran for the back exit.'

Note also that, as the example of an ATB violation from Lakoff 1986, repeated below, shows, asymmetric Wh fronting of arguments is not universally bad.

- (112) How many counterexamples can the Coordinate Structure Constraint sustain and still be considered empirically correct?

At this point, we have nothing insightful to offer to account for the different grammaticality patterns involving violations of the String Continuation Criterion induced by Wh fronting. However, it seems plausible that the difference between (108 b) and (109) above is related to the phenomenon, noted earlier, that adverbials can take wide scope over all conjuncts even if they are not syntactically related to the second. On the other hand, a tighter connection, i.e. a syntactic linkage appears to be needed in the case of arguments. If we now assume that argument Wh phrases are, for whatever reason, necessarily construed with the more restrictive coordination scheme, i.e. in a "symmetric" way, it would follow that initial argument Wh phrases are obligatorily construed in an ATB fashion, hence the marginality of (108 b) is predicted.

that the auxiliary "attracts" all the arguments of the embedded verb. Nothing seems to hinge on this difference with respect to the linearization effects we are interested here.

⁴⁵Unfortunately, no information is given on what the status of the Dutch equivalent to (108 a) is. Presumably it is judged as equally bad, if not worse, than the German sentence.

A Appendix: V2 as Linearization and Long Extraction

While the idea that V2 is essentially a (local) linearization effect has obvious advantages for an elegant treatment of SGF constructions, there is nevertheless a price to pay in that certain phenomena which have previously been thought to be accountable in structural terms need to be reevaluated in light of the present assumptions. For instance, to account for the fact that preposing of Wh phrases normally⁴⁶ triggers interrogative interpretation one would have to refer to word order properties rather than structural conditions (such as occurrence of a +WH element in the SPEC,CP). While this is not the place to go into details of such a word order based account, it is worthwhile pointing out that since Wh phrases do get an interrogative interpretation *in situ* when they occur in multiple Wh constructions (with initial Wh), it is clear that interrogative interpretation cannot always be tied to occurrence in certain structural positions anyway. It is therefore conceivable that an account based on word order will lead to an overall simpler theory of how syntax and interpretation are related in the case of Wh questions.

Another price that the analysis of SGF sentences proposed here has to pay is that it necessitates an alternative treatment of long-distance movements out of embedded V2 clauses. As is well-known, if the matrix sentence contains a bridge verb, i.e. allows embedding of a V2 clause in addition to a *daß*-clause, the topic (including WH elements)—and only the topic—of the embedded clause can be moved into the topic position of the matrix clause. This would seem to follow more or less naturally on a theory such as the one proposed in Grewendorf 1988 where V2 is analyzed in terms of movement into SPEC,CP so that long-distance extraction could be seen as an instance of extending that movement in a COMP-to-COMP fashion. If we were forced to accept that analysis, we would be faced with the dilemma that while rejecting syntactic dislocation for nonembedded clauses, we nevertheless have to admit it for long-distance topicalization. But then it is not clear how to rule out dislocation from verb-initial domains in the nonembedded cases. In other words, simplex V2 clauses would then receive an alternative analysis in which the topicalized element has been placed there via local dislocation, rather than by means of linearization, as suggested here. However, we believe that there might be a different way of looking at extraction from embedded V2 clauses that avoids the above-mentioned dilemma.

It has been observed that there is a certain similarity between long-distance topicalization as in (113 a) and a sentence as in (113 b) containing a parenthetical: (cf. Mrotzek 1991 and references therein):

- (113) a. Gestern meint Karl, sei Lisa nach Hamburg gefahren
 yesterday says Karl is Lisa to Hamburg driven
 b. Gestern, so hat mir Karl erzählt, sei Lisa nach Hamburg gefahren
 yesterday so has Karl me told is Lisa to Hamburg driven

While there is little doubt that there is a syntactic relationship in (113 a) between what for the sake of exposition we want to refer to here as the "quasi"-parenthetical *meint Karl* and the rest of the sentence—namely that the first subordinates the latter—it is not clear that there is any syntactic linkage between the parenthetical and the rest of the sentence in (113 b); not only is the parenthetical itself a full V2 sentence, it also can occur in places other than right after the initial constituent:

- (114) Gestern sei, so hat mir Karl erzählt, Lisa nach Hamburg gefahren
 yesterday is so has Karl me told Lisa to Hamburg driven

No such thing is possible in long-distance topicalizations: a V2 matrix clause (such as *Karl meint* in (115) a) is completely impossible, and V1 matrix clauses are marginally acceptable if there is a noticeable intonation break around it, indicated as "#", in which case it is probably to be classified as a parenthetical:

- (115) a. *Gestern Karl meint, sei Lisa nach Hamburg gefahren
 yesterday Karl says is Lisa to Hamburg driven
 b. Gestern sei *(#) meint Karl, *(#) Lisa nach Hamburg gefahren
 yesterday is says Karl Lisa to Hamburg driven

⁴⁶This, however, is not necessarily so as pointed out by Brandt et al. 1992:30 (cf. also Reis and Rosengren 1991) citing examples such as:

- (i) Wieviel schätz mal, daß das Kleid gekostet hat.
 how much estimate PART that the dress cost has
 'Estimate how much the dress cost me.'

Here, with imperative morphology on the verb, no interrogative interpretations arises despite the initial occurrence of the Wh phrase.

Nevertheless the two construction types share an important feature of their intonational properties: there has to be an intonational break after the (quasi)parenthetical. In the case of real subordination, this break precedes the embedded sentence, while for true parentheticals it seems to indicate that the material following belongs to the main sentence again. What we want to propose here is that the similarity in intonation might have to do with a similarity in the phenogrammatical structure in both instances, namely that in both, elements of a word order domain are "split up" by the (quasi)parenthetical. This means that for the case of long-distance topicalization, the embedding under the matrix verb results in the topic of the embedded clause becoming part of the matrix domain. As a consequence, this topic, due to its +CI specification, will have an impact on the ordering of the matrix domain, i.e. it forces the [+INV] verb to be placed second and the subject after that verb. The derivation of the matrix VP, i.e. before the subject joins the domain, is outlined below:

$$(116) \quad \left[\text{VP} = \text{V}[\text{SUBCAT NP}] \right. \\ \left. \text{DOM} \left\langle \begin{array}{c} \text{ADV} \\ +\text{CI} \\ \text{gestern} \end{array} \right\rangle, \left[\text{V}[\text{+INV}] \right], \left[\text{S} \right. \right. \\ \left. \left. \left[\text{V}[\text{+INV}] \right], \left[\text{S} \right. \left[\text{sei Lisa nach H. gefahren} \right] \right] \right] \right\rangle$$

$$\left[\text{V}[\text{+INV}] \right] \quad \left[\text{S} \right. \\ \left. \text{DOM} \left\langle \begin{array}{c} \text{ADV} \\ +\text{CI} \\ \text{gestern} \end{array} \right\rangle, \left[\text{V}[\text{+INV}] \right], \left[\text{NP} \right. \left[\text{Lisa} \right], \dots \right] \right]$$

Thus, the intuition is that the topic of the embedded clause is "passed up" into the matrix clause, without actually involving a change in the combinatorial properties of the embedded clause (i.e. a syntactically missing constituent). Prima facie, this may appear to be an operation which is incompatible with our persistence and boundedness conditions on domain formation. However, remember that we have to make a strict distinction between *signs* containing order domains, that is, nodes in a tectogrammatical derivation, and domain *elements*. Because the embedded clause in (116) is not itself a domain element, it is then possible to split that domain into a head and a tail as long as the order among the elements in the tail remains undisturbed. In the case of true parentheticals, on the other hand, no such interaction takes place because such a parenthetical never actually becomes part of the domain it is inserted into.

Assuming that the above represents a reasonable alternative to treating long-distance topicalization out of V2 clauses in terms of a phenogrammatical operation such as the domain split suggested above, our treatment would predict that long-distance topicalization should be able to occur in SGF contexts as well. This seems to indeed be borne out by the facts, as the following examples show:

- (117) a. Gestern meint Karl, sei Lisa nach Hamburg gefahren und habe sich eine Mikrowelle gekauft.
 yesterday says Karl is Lisa to Hamburg driven and has self a microwave bought
 'Karl says that Lisa drove to Hamburg yesterday and bought herself a microwave'
- b. ?Ihrer Tante behauptet Otto, habe Lisa das Familienbuch gezeigt
 her aunt[dat] claims Otto has Lisa the family book shown
 und wolle es jetzt ihrem Onkel geben
 and wants-to it now her uncle geben
 'Otto claims that Lisa has shown the family book to her aunt and now wants to give it to her uncle.'

The argument extraction in (117) appears to be a little worse, but that is to be expected as there is a slight difference in the non-SGF cases as well. Note, incidentally, that there seems to be a marked difference in the behavior of topic extractions out of V2 clauses as above and Vfinal clauses. For speakers that can get the latter kind of construction (the author is not one of them), it is possible to construe the initial topic with a gap in the noninitial conjunct:⁴⁷

- (118) Ihrer Tante_i meint Otto, daß Lisa _{t_i} das Familienbuch gezeigt habe
 her aunt says Otto that Lisa the family book shown has
 und _{t_i} es jetzt schenken wolle
 and it now give wants
 'Otto says that Lisa showed the family book to her aunt and now wants to give it to her'

This is what one would expect given that extraction out of a Vfinal clause—if possible at all—cannot be

⁴⁷Thanks to Susanne Riehemann for conducting a little survey among speakers of various German dialects.

thought of as a phenogrammatical operation on a par with domain split in the V2 case. On the assumption that it instead involves some genuine syntactic dislocation of the type usually captured by UDC mechanisms like SLASH, such sentences could then be analyzed as extraction applied in an ATB fashion. This assumption also implies that in the case of verb-final environments, if long distance topicalization is possible at all, it MUST affect both conjuncts: if only the first one contains a gap, the result should be less acceptable. Again, the relevant group of speakers appears to confirm this prediction:

- (119) *?Ihrer Tante_i meint Otto, daß Lisa _{t_i} das Familienbuch gezeigt habe
 her aunt says Otto that Lisa the family book shown has
 und es jetzt ihrem Onkel schenken wolle
 and it now her uncle give wants

On the other hand, the situation is different in the V2 case as the majority of the speakers that accept extraction from Vfinal clauses in general and the example in (118) in particular, find its V2 equivalent bad (traces are to indicate where the extraction site *would* presumably be if topicalization were to be analyzed as a filler-gap dependency here):

- (120) *?Ihrer Tante_i meint Otto, habe Lisa _{t_i} das Familienbuch gezeigt
 her aunt says Otto has Lisa the family book shown
 und wolle _{t_i} es jetzt geben
 and wants-to it now give

The sentence is in clear contrast to the one in (117 b) above in which the dative object in the second conjunct has been provided overtly (*dem Onkel*), hence the preposed *der Tante* CANNOT be syntactically linked to the second conjunct.

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