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## **Projective Economy**

On the minimal functional structure of the German clause

### **Abstract**

'But there is also a lot of things in our theories that do not occur between heaven and earth' is Georg Christoph Lichtenberg's reply to Hamlet's sigh. Elegant theories do not necessarily meet the reality they might deserve. In this paper, it is claimed that the empirically attestable sentence structure of German shows manifest disrespect for the functionally enriched structures proposed in current generative literature on theoretical grounds. The cascade of functional projections in a German clause - as shall be argued - is of a trivial size, namely one functional projection per single clause.

The organization of the paper is as follows:

1. Introduction
2. F-heads for the verb?
3. F-specs for case marked phrases?
4. Negation as F-projection?
5. Adverbs as spec-residents?
6. Summary

### **1 Introduction**

The human language processing capacity enables us to acquire and use a cognitive computing function: As competent speakers/listeners of a given language we are able to instantly and effectively compute the syntactic box-in-box structure for any given string of terminals, that is, a concatenation of terminals of this language. The computing function maps the one-dimensional morphonological concatenation structure onto an at least two-dimensional box-in-box structure, namely on the syntactic phrase structure. The grammar of a language is the knowledge system that enables the listener/speaker to perform this function. It determines the possible structures for any given concatenation. The syntactic phrase structure is on the one hand the target of checking operations for syntactic well-formedness, on the other hand it is the interface-structure for the mapping between the one-dimensional morphonological organization of terminals and the higher-dimensional semantic representation, which is the basis for the computation of knowledge representations and inferences.

Grammar theory seeks to model this specific human cognitive capacity. Thus, an adequate theory of grammar should provide an insightful theory of the string-to-structure computation capacity. The range of the function is the set of strings of terminals. The value is the set of pairs consisting of a string and its syntactic structure. The proper syntactic structure is the

minimal convergent structure, that is, the minimal structure that passes the checking operations for well-formedness. The theory of grammar should guarantee that strings are mapped on the minimal convergent structure, that is, it should guarantee an economic choice of representations for given strings.

Unlike Chomsky's notion of representational economy, that is to forbid uninterpretable elements in a syntactic structure (cf. Chomsky 1991:437, 1992:37), the economy notion for representations invoked here is a more general one, one that is in fact captured in Chomsky's framework under derivational economy.<sup>1</sup> The principal difference between a derivational notion of economy and a representational one is easy to locate if the issue of optionality is at stake (cf. Haider 1996), as for instance in the distribution of auxiliaries in English (auxiliaries in subjunctive constructions) and French (auxiliaries in infinitival constructions).

The optional raising of the auxiliary in English subjunctive constructions (cf. Fiengo 1980: 80) and in French infinitival constructions (cf. Pollock 1989: 373f.) is a problem for derivational economy because a derivation without the extra raising step is more economic:

- (1) a I demanded that he not have left before I return  
 b I demanded that he have<sub>i</sub> not e<sub>i</sub> left before I return  
 c ne pas avoir eu d'enfance heureuse ...  
 'NEG-clitic not have had a happy infancy'  
 d n'avoir<sub>i</sub> pas e<sub>i</sub> eu d'enfance heureuse ...

The extra step is unnecessary if the structure is already well-formed. In a representational approach, the structures with and without raising are each minimal convergent structures for the given linear arrays. Strict derivational economy should forbid (1b) and (1d), however. In the representational view, an element that is compatible with either of two independently required structural positions is free to occur in either of these positions, if both structures are convergent ones.

Representational economy as a restrictive factor comes into play if a given array could be mapped on a family of structures. In this case, representational economy guarantees the choice of the minimal convergent structure. For instance, if scrambling is the result of movement, representational economy will rule out (2c), because (2a) is the minimal convergent structure for the same array. (2c) would result from scrambling the subject across the scrambled object of (2b). The outcome is the same word order as in the unscrambled structure. (2c) is a convergent structure, but there is a simpler convergent structure, namely the structure for (2a) without chains. So (2c) is ruled out in favor of (2a) on representational grounds.

- (2) a daß [Biber Dämme bauen]  
 'that beavers dams build'  
 b daß [Dämme<sub>i</sub> [Biber e<sub>i</sub> bauen]]  
 c daß [Biber<sub>j</sub> [Dämme<sub>i</sub> [e<sub>j</sub> e<sub>i</sub> bauen]]]

<sup>1</sup> The merge-operations, that build structure, are constrained by derivational economy. The preferred phrase structure is the structure that, ceteris paribus, needs the fewest number of applications of the merge-operation.

Finally, representational economy restricts the projection of empty structures of a special kind, namely additional, empty functional shells on convergent structures (cf. Speas 1994: 14f.). For example, a subject initial unembedded clause in English is adequately characterized as an IP rather than as an empty CP with IP as the complement of the empty C-head.

From the point of view sketched above, some current and widely held assumptions about German clause structure in the generative framework need to be questioned. It will be argued that the structures currently proposed for the German clause do not qualify as the adequate characterization of a minimal convergent structure for a German clause: The wealth of empty structures (empty heads and/or empty Specs) is not sufficiently justified, at least on empirical grounds.

The following paper is organized as follows: In section 2, the need for a cascade of functional projections that take care of the functional features of the verb is disputed. Section 3 questions the empirical justification of assigning case marked arguments to Spec-positions that go together with functional heads. Section 4 reopens the examination of potential F-heads in order to show that Neg is unlikely to be associated with an F-head on the extended projection of the VP. In section 5, the quest for potential F-heads is continued in the realm of adverbials, again with negative results.

## 2 Redundant F-heads as potential positions for the verb?

There is robust evidence for the following empirical claim: The position of the finite verb in the final position in a German or Dutch clause is not a derived position, that is, a functional head position associated with finiteness features like agreement or tense (cf. Haider 1993: 62ff.). It simply is the position of the lexical head of the VP. Like an English finite main verb (cf. 3a), the finite verb in German stays in its head position as the head of the V-projection. For verb final clauses, there is neither evidence of overt movement of the finite verb to the right nor for movement to the left, and there is positive counter evidence for the assumption that a finite Verb in German or Dutch is situated in a functional head position. An overt V-to-F-movement analysis for the position ing of the finite Verb — either to an F-head that follows (cf. 3b) or to a preceding F-head (3c) — is in conflict with evidence that bears directly on V-movement:

- (3) a [C [...[F1-e [F2-e [V .....]]]]] [VO, e.g. English]  
 b \*[C [[... V] F2-e] F1-e .....]] [OV + final functional heads]  
 c \*[C [...F1-e [F2-e [... V]]]] [OV + preceding functional heads]

As noted by Höhle (1991) and discussed in Haider (1993:62f.), finite denominal verbs derived from complex nouns occur in verb-final clauses in German, but not in V2- or V1-clauses (cf. 4). The corresponding case of Dutch (cf. Koopman 1995) is the case of complex verbs (cf. 6) with a separable prefix (eg. *op-* as in (5a,b)), preceded by an inseparable one (*her-* as in (5c,d)).

- (4) a daß sie es uraufführten  
that they it *ur*-performed (ur = 'as a premiere')
- b \*Uraufführen<sub>i</sub> sie es e<sub>i</sub>?  
'*ur*-perform they it?'  
Do they *ur*-perform it?
- c \*Führen<sub>i</sub> sie es e<sub>i</sub> urauf?
- (5) a Hij herlas het zeker niet  
'he re-read it surely not'
- b \*Hij las het zeker niet her
- c Hij bouwde het op  
'he built it up-'
- d \*Hij opbouwde het
- (6) a dat hij<sub>i</sub>het heropbouwde  
'that he it re-up-built'
- b \*Hij bouwde het herop
- c \*Hij heropbouwde het

The fact that fronting the finite verb to the root functional head of the clause is blocked implies that the finite verb does not move to intermediate functional heads either. If it moved to a lower head, it could not be blocked from moving higher up. The verb stays in its finite position because it cannot be moved. Thus, the clause-final position of the finite verb is the base position of the verb and not a position of a functional head. If there are functional heads in between the root position and the base position, they obviously must remain empty.

There is additional evidence against assigning the clause final finite verb to a functional head position, either following as in (3b), or preceding the VP as in (3c). Let us start with evidence against (3b): If the finite verb has moved out of VP to a clause final F-position, any constituent that may be preceded by the verb in the VP will appear between the VP-internal verb position and the finite verb.

The example (7a) is representative for VP-fronting with postverbal PPs. The fronted constituent is indeed a VP and not a higher F-projection, as can be verified with (7f): Since the fronted constituent must not contain the trace of the finite verb, fronting of a functional projection with a functional head targeted by V-movement is ruled out. The grammatical reason is a crossing violation: The finite verb in the #-position does not find its trace in the c-command domain if the VP or FP that contains the trace is fronted.

What (7) is meant to show is this: The finite verb *anfangen* (= 'begin'; lit. 'on-catch') is a verb with a separable prefix, as illustrated by the contrast between (7b) and (7c). Moving the verb to an F-position strands the prefix. Stranding the prefix by putative movement to the right is ungrammatical, however (cf. 7e). Thus, (7e) contradicts the hypothesis that the clause final finite verb is moved out of its base position in the VP. Note that movement to the right in (7e), unlike VP- or FP-fronting in (7f), would yield a legitimate antecedent-trace configuration.

- (7) a [Anfangen mit dem Rauchen] hat er noch nicht  
'started (lit. 'on-caught') with the smoking has he yet not'  
He has not yet started to smoke
- b Er fing<sub>i</sub> mit dem Rauchen an-e<sub>i</sub>
- c \*Er *anfing* mit dem Rauchen

- d daß er *anfing* mit dem Rauchen  
 e \*daß er [*an-e<sub>i</sub>* mit dem Rauchen] *fing<sub>i</sub>*  
 f \*[*An-e<sub>i</sub>* mit dem Rauchen] *fing<sub>i</sub>* er

Let us check now the consequence of (3c): If the clause final finite verb has moved out of VP to a functional head to the left (cf. Zwart 1993), the particle would be stranded again. The consequence would be the ungrammatical order in (8).

- (8) \*daß er mit dem Rauchen *fing<sub>i</sub>* *an-e<sub>i</sub>*  
 'that he with the smoking caught<sub>i</sub>-on e<sub>i</sub>' (cf. 7a)

Since particles do not move together with the verb (cf. 7c) and since they do not move separately (cf. (7e), if interpreted as the result of particle movement to the left, there is no way to avoid (8) if the finite verb in German or Dutch is moved to an F-position to the left, outside VP. So, (3c) does not fare better than (3b) as a potential surface structure for German clauses.

In the current generative approach, it is assumed that there is a cascade of functional projections on top of VP. The verb raises to these positions either by overt or covert movement, depending on the hypothesis that movement is triggered by the language-specific parametrization of feature-strength: In English, the finiteness features must be weak, otherwise any finite verb would have to be raised. The fact that finite auxiliaries are raised irrespective of the weakness of the finiteness features is blamed on an independent factor.<sup>2</sup> This independent factor, if correct, would apply to Dutch and German also, but it does not. Finite auxiliaries do not differ from finite main verbs in terms of their overall distribution as finite verbs.<sup>3</sup> Since any finite verb in Dutch or German stays in its base position unless it is raised to the root functional head position, the functional morphosyntactic features of the finite verb must be considered to be weak, like in English.

But, here comes the difference: A verb that does not raise to an intermediate F-head in English, cannot be raised to the top F-head (cf. 9a,b). Once licensed, the element is immobile. However, in German and Dutch as well as in any other V2-language, a finite verb may and must be raised to the top functional head position:

<sup>2</sup> Chomsky (1992:43f.) claims that auxiliaries, lacking semantically relevant features, are not visible to LF rules. Therefore they raise before spell-out. This cannot be correct, however, because modals are semantically contentful and nevertheless they raise. They cannot be treated as base-generated in the functional head-position because they interact with scope sensitive adverbs in contexts of reconstruction (cf Ernst 1992:139).

<sup>3</sup> They do differ in a special construction ('Ersatzinfinitiv'): An auxiliary that combines with a past participle of a verb that selects a bare infinitive (modal, causative, perception verb) is fronted in the verbal complex with an infinitival form of the dependent verb, instead of the participle:

- a ?daß er es nicht sehen *gekonnt hat*  
 'that he it not see can+Pst.Part. has  
 that he has not been able to see it  
 b daß er es nicht *hat* sehen *können*  
 'that he it not has see can+Inf.'

- (9) a \*It not works  
 b \*Works, it e,<sub>i</sub>?  
 c Funktioniert, es e,<sub>i</sub>?  
    'works it?'  
 d Es funktioniert, nicht e,<sub>i</sub>  
    'it works not'

Why should the verb raise to the top position, but not to any of the intermediate positions in the Germanic OV-languages? If the verb is licensed in the base position, it should not move. The verb itself cannot have a strong feature that triggers movement. A strong feature would forbid clauses with the finite verb in its base position. Let us assume that the C-position has a strong feature, let's say clausal mood.<sup>4</sup> In this case, the structure crashes unless the feature is checked:

- (10) a \*Es nicht funktioniert  
       b daß es nicht funktioniert  
       c was nicht funktioniert (\*?) [*\* root*]  
       d [e [PRO nicht zu funktionieren]] [*\* root*]

(10a) is ungrammatical because the root F-head position would not be filled and thereby checked. In (10b), the complementizer represents the F-head. (10c) is grammatical as an indirect question or a free relative, though not as a matrix question. Hence, there is a wellformed structure with an empty F-head, though not as a root clause. If the German sentential infinitive (cf. 10d) has a root-head, it is obligatorily empty. So, there is apparently a way to check the root F-feature without V-movement. This is blocked, however, for unembedded clauses.

This state of affairs is a challenge for the premises of Chomsky's Minimalist Program: If the verbal features do not trigger movement, there is no trigger for verb movement at hand: Altruistic movement, that is, movement for the sake of a wellformed C-projection is explicitly ruled out by the economy principle *greed* (Chomsky 1993:30). So, this system is unable to derive clauses with the finite verb in the root F-position in a V2-language if there are intermediate empty F-positions.

In recent work (cf. Chomsky 1995), the concept of the trigger for movement has been modified. Now the trigger is taken to be an unchecked feature of the F-head targeted by the element that moves. The featured F-head 'attracts' a moveable element with the appropriate checking features. But, the reinterpretation of the trigger for movement in terms of feature attraction does not solve the above-mentioned problems in connection with empty, intermediate F-heads, for more than one reason:

First, if the top F-head is to attract the finiteness features, it thereby attracts features of a lower functional head. This is exactly the situation of English I-to-C constructions with main verbs. Despite the fact that for English, I-features are assumed to be weak (cf. 11a), I-to-C

<sup>4</sup> The values of the feature 'clausal mood' (= German "Satzmodus") are: declarative, interrogative, imperative.



yields ungrammaticality (11b,c) if the I-features that are attracted by C are not spelled-out. In (11d), an expletive auxiliary serves as the spell-out substitute:

- (11) a [It [<sub>i</sub> [<sub>e</sub> [fails]]]  
 b \*[Fails<sub>i</sub> [it [<sub>e<sub>i</sub>] [<sub>e<sub>i</sub>]]]]?  
 c \*[<sub>e<sub>i</sub></sub> [it [<sub>e<sub>i</sub></sub> [fails]]]]?  
 d Does it fail?</sub></sub>

The main verb with its weak verbal I-features does not move overtly (11b). In addition, the structure resulting of I-to-C must qualify as non-convergent so that the insertion of the expletive auxiliary is triggered (11d): Let's assume that a strongly attracting F-head - in this case C - turns the attracted weak features into strong features, that is, features that need to be checked before spell-out. The result would be (11c), and it crashes because there is no element moved to C that checks the features.

It is essential to realize that the crucial assumption is this: The verbal F-features are weak in English, so the main verb does not move. If the verbal F-features are weak in German - an assumption that could not be avoided if there were empty F-shells between C and the VP - German and in fact all Germanic languages are bound to employ expletive auxiliaries in the structures that are equivalents of (11a,d). This prediction is uncontroversially false, however.

Second, feature attraction by an empty C-head must be blocked in embedded clauses, both in English and in V-2-languages, if Spec-C hosts a wh-phrase (cf. 12ab). In non-embedded wh-clauses, feature attraction must be made obligatory, however (cf. 12c,d):

- (12) a \*[What has<sub>i</sub> he e<sub>i</sub> claimed] is not uncontroversial/clear  
 b \*[Was hat<sub>i</sub> er behauptet e<sub>i</sub>] ist nicht unumstritten/klar  
 c \*What he has claimed?  
 d \*Was er behauptet hat?

Given this state of affairs, the primary factor for turning an F-head into an 'attractor' for verbal F-features in this case cannot be the relation between the F-head and the wh-item in its spec but must be a relational property of the clause: A dependent clause with a wh-element in its root-spec (relative, interrogative, or dependent declarative clause<sup>5</sup> in a multiple wh-construction) does not admit V-movement to the root F-head.<sup>6</sup> Since the restriction holds

<sup>5</sup> In the complement clause of a verb that admits V-2-clauses as complements as in example (a), the spec-position must not be filled with a wh-item, like in example (b).

- a) Wer hat gesagt, [sie habe wo gewohnt]?  
 b) \*Wer hat gesagt [wo habe sie gewohnt]?  
 c) \*Was<sub>i</sub> hat er gesagt, [wo<sub>i</sub> habe sie gewohnt]?

Note that this restriction against V-2 extends to wh-construction with chain-extension, as in example (c).

<sup>6</sup> In Haider (1993:98) it is argued that the relational property of being a wh-clause is checked on the functional head of the clause. Hence the F-head must inherit the wh-feature by means of spec-head agreement. This feature is a nominal feature and incompatible with a verbal head. So V-movement is blocked. Root clauses by definition are not relational. The clausal typing, that is, the identification as a wh-clause, is the result of the interpretation of the wh-phrase as an interrogative operator.

both for subcategorized clauses (e.g. *wh*-clause as an argument of a verb) and for non-subcategorized clauses (e.g. relative clause), the blocking of *v*-attraction cannot be the result of feature checking by subcategorization. Of course, a technical solution could be formulated for this problem, but this would be merely a technical restatement of the facts, because the notion of a uniform feature-checking mechanism would be fragmented into formally different, independent operations.

In sum, the empirical evidence against, in combination with the absence of compelling theoretical grounds for, the assumption of empty, intermediate *F*-heads for the structure of a German clause calls for Occam's razor: If there is no justification for empty, intermediate *F*-heads, there is no need to postulate them for the German sentence structure. Consequently, the corresponding *spec*-positions must not be made available. Hence, the minimal convergent structure for a German clause is a *VP* with a single functional shell.

### 3 *F*-specs for case marked phrases?

German does not provide compelling evidence for, but displays considerable evidence against, the contention that case-checking obligatorily requires a functional head in the *spec*-position of which case-features are checked, overtly or covertly (cf. Haider 1993, Abraham 1996).

In this section, three issues will be addressed: First, if there is a functional *spec*-position for subjects, this *spec*-position would license clause internal expletives. But, clause internal expletives are ungrammatical in German, which cannot be attributed to *pro*-drop. Second, subjects in *spec*-positions are predicted to be opaque for extraction. This prediction is incorrect. Third, covert movement can be ruled out, since the *LF* resulting from *LF*-raising out of fronted *VPs* is ill-formed.

In German, unlike English, all argument-positions are *VP*-internal in surface structure (cf. Haider 1993:142-175). This accounts for the ungrammaticality of expletive subjects in the middle field. It is instructive to compare Dutch and German in this respect:

- (13) a Meestal werd \*(er) gelachen  
 b Meistens wurde (\*es) gelacht  
 c Er werd meestal gelachen  
 d Es wurde meistens gelacht

In Dutch, the expletive subject in the clause internal position in (13a) is obligatory,<sup>7</sup> in German it is obligatorily missing (13b), although the respective elements appear as expletives

<sup>7</sup> Like in English, it may be replaced by a locative *PP*:

- a) In deze hoek werd (er) volgens mij gefluisterd  
 b) On this spot (there) will stand a huge tower

The fact that locative preposing does not trigger *do*-support (cf. *On which screen appeared a message?*) is evidence that the *PP* is in relation with the subject position and not just a preposed *PP*.



in the spec-C position (13c,d). If German had a clause-internal spec-position for the subject, the expletive would have to appear in this position just like in Dutch. The fact that in Dutch but not in German there is a structural subject position (arguably either as a spec-VP or as a functional spec-position) finds support in the distribution patterns of fronted pronouns: In German and in Dutch, pronouns are fronted to the left edge of the VP. In Dutch, this is a position following the spec-position that hosts the subject. Hence fronted pronouns in Dutch but not in German must not precede the subject, if the subject occurs in the spec-position (cf. Kieft 1967: 301).

- (14) a Toen vond mijn broer het opeens tussen oude kranten (= 14c)  
       'then found my brother it suddenly between old newspapers'  
       b \*Toen vond het mijn broer opeens tussen oude kranten  
       c Damals fand es mein Bruder plötzlich zwischen alten Zeitungen  
       d Nog nooit had de jongen zich meer ingespannen dan dit jaar (= 14f)  
       'never ever had the boys REFL more struggled than this year'  
       e \*Nog nooit had zich de jongen meer ingespannen dan dit jaar  
       f Noch nie hatte sich der Junge mehr angestrengt als in diesem Jahr.

The contrast in (14) is easy to account for if the absence of an expletive subject in German is a function of the absence of a functional subject-position: If there is a spec-position for the subject, on the other hand, this position legitimates and triggers the presence of an expletive. The obligatory absence of a subject-expletive in intransitive passives and in presentative constructions (cf. 15) in German calls for a structural explanation (cf. Haider 1993, 1990). Invoking a language-specific pro-drop option is an ad-hoc patch-up strategy that does not adequately capture the empirical situation.

- (15) a dat (er) gisteren iemand vertrokken is  
       'that (there) yesterday someone left has'  
       b daß (\*es) gestern jemand abgereist ist

Accounts in terms of pro-drop as an independent parametric difference disregard an important fact: There are semantically vacuous subjects in German (cf. 16) which must not be dropped. If German were pro-drop, pronominal subjects in these constructions are expected to be dropped.

- (16) a daß \*(es) sich dabei um einen Irrtum handelt  
       'that (it) REFL. it-by at an error deals'  
       It is a mistake  
       b daß \*(es) sich in dieser Stadt gut lebt  
       'that (it) REFL. in this city well lives' [intr. middle construction]  
       c daß \*(es) zu gefährlich ist, diese Route zu benutzen  
       'that is too dangerous is this route to take'  
       that it is too dangerous to take this route

The verb *handeln* in the construct in (16a) takes two semantically empty arguments, namely *es* (= *it*) as a subject and a reflexive as an object, plus PPs. Semantically, the verb establishes a predication relation between the DPS of the PPs. (16b) is the intransitive middle construc-

tion with the verb *live*. In German, the middle of an intransitive verb introduces an expletive subject and a reflexive object. (16c) is an extraposition construction. Dropping the pronominal subject that goes together with the extraposed subject clause is optional for some predicates but not for all, as the predicate in (16c) illustrates. A pro-drop-account that treats German as a semi-pro-drop language, which drops non-referential pronouns, would wrongly predict that the pronominal subject should drop in these constructions.

If, on the other hand, there are no medial spec-positions, there is no room for an expletive subject and consequently no need for invoking an exceptional type of pro-drop (cf. Haider 1990).

Further corroborative evidence for exclusively VP-internal subjects in German is the lack of opacity effects for subjects in German: There are no structural subject-objects asymmetries for extraction or wh-in-situ constructions. If a subject were moved to a spec-position, this would render it an opaque domain for extraction out of this phrase.

- (17) a \*What<sub>i</sub> would [to discuss e<sub>i</sub> with him] be worthwhile?  
 b What<sub>i</sub> would it be worthwhile [to discuss e<sub>i</sub> with him]?  
 c Was<sub>i</sub> würde [mit ihm e<sub>i</sub> zu besprechen] sich denn noch lohnen?

Since the subject clause in (17c) is not opaque for extraction, it cannot be assigned to a spec-position.<sup>8</sup> So, if there were a medial spec-position in (17c), its status would be that of a pronominal empty category. Fronting the clause across this empty pronominal element in (18b) should produce the same effect as fronting a clause across an overt pronominal antecedent in (18a). In addition, the empty pronominal in the spec-I position would force extraposition. (18c,d) illustrates the contrast between extraposed and non-extraposed complements in the presence of a pronominal antecedent:

- (18) a \*[Alles mit ihm zu besprechen]<sub>i</sub> würde es<sub>i</sub> sich nicht lohnen  
 b [Alles mit ihm zu besprechen]<sub>i</sub> würde e<sub>i</sub> sich nicht lohnen  
 c daß es sich nicht lohnen würde [alles mit ihm zu besprechen]  
 d \*daß es sich [alles mit ihm zu besprechen] nicht lohnen würde

The contrasts in (18) follow immediately if the embedded subject clause is not in relation with an empty pronominal in an IP-spec of the matrix clause. The empty category in (18b) is the single trace of the fronted clause and there is no other empty category the clause is coindexed with.<sup>9</sup>

Finally, the fact that VP-topicalization with a VP-internal unergative subject is grammatical in German (cf. 19) is clear and sufficient evidence: There is no need in German for overt movement to a functional spec-position, that is, movement to Agr-S.

<sup>8</sup> Note that this clause contains a modal particle, namely *denn*, which, according to Diesing (1992), marks the left VP-boundary. Obviously, this cannot be correct. These particles do not mark a unique phrasal boundary but a variable domain of interpretations (existential closure).

<sup>9</sup> The fact that Dutch infinitival subject clauses are obligatorily extraposed supports the assumption of an IP-shell, which is supported by the German-Dutch contrast in the distribution of sentence internal expletive subjects, discussed above.

- (19) a [Ein Wunder ereignet]<sub>i</sub> hat sich hier noch nie e<sub>j</sub>  
 'a miracle occurred has REFL here never ever'  
 A miracle has never ever occurred here  
 b [Wunder ereignet]<sub>i</sub> haben sich hier noch nie e<sub>j</sub>  
 'miracles occurred have REFL here never ever'

VP-topicalization in (19) cannot be reanalyzed as the topicalization of a functional projection in order to save the claim that nominative are overtly moved to a functional spec-position: If the topicalized projection in (19) contains the functional head in whose spec-position the nominative occurs, this functional head is a head-position touched by the finite verb on its way to the verb-second position. So, the topicalized constituent would have to contain the trace of the finite verb as well. Clear instances of this structure are ungrammatical however. In German, the topicalized constituent cannot contain the trace of the finite verb. It must be analyzed as VP and not as a more complex functional projection containing the VP (cf. the discussion of example 7, above):

- (20) a [Ein Schiff<sub>NOM</sub> untergegangen]<sub>i</sub> ist<sub>i</sub> hier noch nie e<sub>j</sub> e<sub>i</sub> [Ger.]  
 '[a boat down-went] has here yet never'  
 A boat did not yet sink here  
 b \*[Ein Schiff<sub>NOM</sub> unter-<sub>i</sub>]<sub>j</sub> ging<sub>i</sub> hier noch nie e<sub>j</sub>  
 '[a boat down-e<sub>i</sub>] went<sub>i</sub> here yet never'  
 c Ein Schiff ging<sub>i</sub> hier noch nie unter-e<sub>i</sub>  
 'a boat went<sub>i</sub> here yet never down-e<sub>i</sub>'

(20a) is compatible with the standard analysis, that is, VP-topicalization, as well as with the alternative analysis as a topicalized functional projection. If it were a functional projection, however, (20b) would be structurally parallel to (20a) - both would contain the trace of the finite verb - and therefore both should be grammatical or ungrammatical. That the topicalized constituent in (20b) contains the trace of the finite verb is signalled by the stranded verbal prefix "ein", because "einstürzen" is a verb with a separable prefix (cf. 20c). The prefix is stranded in the base position of the verb. The standard analysis correctly predicts (20b) to be ungrammatical because the trace of the topicalized VP is not lexically head-governed. In (20a), the topicalized VP is a complement of the copular verb.<sup>10</sup>

Having established that there is no overt movement of the subject to Agr-A, we have to check the possibility of covert movement. Again, VP-topicalization with a subject is a suitable testing ground: The topicalized VP as a wh-moved phrase in a spec-position is opaque for extraction. So, covert movement, that is, extracting the subject out of the topicalized VP, is

<sup>10</sup> The very same ECP-effect can be seen with English VP-topicalization:

- a) ... and [found a solution]<sub>i</sub> he has e<sub>i</sub>  
 b) \*... and [found a solution]<sub>i</sub> he e<sub>i</sub>

In (b), the trace of the topicalized VP would be governed only by an empty functional head. ECP requires a lexicalized head.

ruled out. Reconstruction of the VP plus subsequent extraction would violate the cycle. So, there is no covert movement either.<sup>11</sup>

Recent theorizing, following Kayne (1994), assumes for an OV-language like German that all argument phrases are to be situated in spec-position in what used to be called surface structure. This hypothesis entirely neglects the immediate consequence, namely the prediction that in this case all argument positions become as opaque as the English subject position: So, in German all arguments would have to be predicted to be opaque domains for extractions. But this is evidently wrong. In German, all argument positions, subject included, are transparent if the necessary conditions (e.g. the bridge-verb factor for a given argument) are met. For a detailed discussion of shortcomings of the general approach see Haider (1997).

#### 4 Negation as F-projection?

In the current literature (cf. Pollock 1989, Haegeman 1995:107, Hornstein 1995), negation is claimed to be inherently associated with a functional projection: An empty negation-head takes TP as a complement and provides a spec-position for the negation expression:

(21) [ ..... [NEG-OP [No [TP ..... [VP ..... ]]]]]

Invoking a functional projection amounts to postulating a structure with two positions (i.e. head and spec), in order to cover a single element, namely the negation expression. Therefore it is justified to ask why the more economical approach, which projects a single position, should be dismissed. The counter proposal with respect to the structural analysis is this: A negation particle is a particle that occurs in a licit particle position in the given language. For German it is easy to see that the negation particle shares the distributional properties of a wider class of particles: These particles, for instance modal particles like *denn*, *ja*, *doch* cannot be topicalized (22a), and they do not precede fronted pronouns (22b). Like modal particles, the negative particle may occur at the left edge of the middle field (cf. 22c).

- (22) a \**Ja/nicht* ist er gekommen  
       'PRT/not has he come'  
       b \**daß ja/nicht* sich alle gut benommen haben  
       'that PRT/not themselves all well behaved have'  
       c *Hat denn/nicht* jemand protestiert?  
       'has PRT/not someone protested?'

<sup>11</sup> Quantifier Raising confirms the opacity of a fronted VP for covert extraction with or without reconstruction:

- a) *Jeden* Passagier hat er zweimal befragt [wide scope universal Q]  
    every passenger he questioned twice  
   b) [*Jeden* Passagier befragt] hat er zweimal [narrow scope universal Q]  
    every passenger questioned has he twice

The restriction against topicalization is an indication for the head-status of particles, but does not necessarily prove it. For instance, a reflexive pronoun in the function of an inherent reflexive cannot be topicalized (23), although there is no general restriction against topicalizing a reflexive pronoun:

- (23) a. \*Sich hat er gut benommen  
           himself he behaved well  
       b. Sich hat er damit gemeint  
           Himself he has that-with meant

Haegeman's analysis rests on a semantically based contention: Sentence negation - a semantic notion - is tied to the syntactic structure by the projection of a functional head with the negation-feature. This implies that whenever a sentence is negated, there is a functional projection with a negation-head involved. There are, however, data that do not match this implication, namely sentence negation by means of negative indefinites.

- (24) a. daß etwas fehlt  
           'that something lacks'  
       b. daß nichts fehlt  
           'that nothing lacks'  
       c. It is not the case that something is missing  
       d. \*daß nicht etwas fehlt  
           'that not something lacks'  
       e. daß etwas nicht fehlt  
       f. There is something that is not missing

In German, the negation of a clause that contains at least one indefinite argument (cf. 24a) is a clause with the negative indefinite form of the indefinite (24b). (24b) can be paraphrased as (24c). Negation with the negation particle is inappropriate: If the negation particle precedes the indefinite (24d), the result is illformed. If the indefinite precedes (24e), the interpretation is different, because the indefinite gets a wide scope interpretation. So, the paraphrase of (24e) is not (24c), but (24f).

The syntactic structure of (24b) in a functional projection of negation that treats the negative indefinite as a specifier of the phonetically silent NEG-head is sketched in (25). The negation-feature of the negative indefinite is checked by the functional head, which is the semantically relevant locus of sentence negation. The negative indefinite is the spell-out of an indefinite in the scope of a negation-head.

- (25) daß [nichts, [NEG [e, fehlte]]]

What is the alternative in the system of projective economy? The alternative is a structural analysis in which (24a) and (24b) are structurally indistinct. Both clauses are simple clauses with a single argument. The fact that in one clause the subject is indefinite and that in the other clause it is negative indefinite is a syntactically irrelevant, semantic property. It is the

semantic interpretation of the negative indefinite as a negated existential, as paraphrased in (26a), that is truth-functionally equivalent to a paraphrase of negation as in (26b):<sup>12</sup>

- (26) a [there is no x] such that [x is missing]  
 b [it is not the case] [[there is an x] such that [x is missing]]

The NEG-head in (25) would get the interpretation that is paraphrased in (26b) with the expression "there is no x". The raising of the indefinite to the spec of NEG is quantifier raising. Keeping the quantifier in the spec-of-NEG position is to guarantee that NEG has scope over the quantifier.

It is easy to decide which of the competing analyses is empirically adequate if sentences with more than one negative indefinite are taken into consideration. In the NEG-projection analysis, two NEG-heads with the function of sentence negation must be projected for a sentence like (27a), hence the two occurrences of negation will cancel each other at LF (cf. 27b). (27d) would be the expected paraphrase. In the negative indefinite analysis the negative indefinites will be interpreted as negated operators (27c). (27e) can be deduced from (27c) by equivalence transformations.

- (27) a Niemand bestellte nichts  
 nobody ordered nothing  
 b [not [not [there is an x] [there is a y] [x ordered y]]]  
 c [there is no x] [there is no y] [x ordered y]  
 d Someone ordered something  
 e Everybody ordered something

Since the correct paraphrase of (27a) is (27e) and not (27d), the negative heads the negative indefinites are paired with obviously do not function as independent negators. The straight forward account in terms of negated existential quantifiers yields an adequate interpretation.

Of course, the NEG-projection analysis could be modified and weakened to the extent that the NEG-head is considered as semantically empty, with the only function of providing a spec-position for the negated quantifier. In this case, the original justification (cf. Haegeman's (1995:107) Neg-criterion) for the assumption of a negating functional head is lost, of course. But even the weakened version would still fail in English because of the lack of do-support:

- (28) a He *does* not agree  
 b \*He not agrees  
 c \*He *does* never agree - \*Nobody *does* agree  
 d He never agrees - Nobody agrees

If the negative indefinite in (28c,d) goes together with a NEG-projection like the negation particle in (28a), the covert NEG-head in (28c) should trigger do-support just like the overt one in (28a). The lack of do-support with negative indefinites militates against the assumption of NEG-heads that go together with negative indefinites.

<sup>12</sup> Technically, the negated indefinite can be treated as denoting a set with negation on the membership relation (Hans Kamp, p.c.).



Do-support is evidence for the head-status for the negation particle: Since the main verb in English does not raise to I, the I-features have to be checked relationally. Relational checking is strictly local. The I-features are matched with the features of the head of the sister of I. In (28a), the head of the sister of I is the negation particle as the head of a categorially neutral particle phrase. Hence, relational checking is not feasible. In (28d), however, the sister of I is the VP, with the frequency adverbial as an adjunct. So, the head of the sister of I is the finite verb and local relational checking works out.

In general, the syntactic position of the negation particle is determined by its scoping requirement: Sentence negation must have scope over the event variable. So, in the syntactic structure, the negation particle must c-command the clausemate verb that bears the relevant I-features or its trace. The features that are material for situating the event variable are tense and aspect. In finite clauses (29), the negation particle must c-command the finite verb or its trace. In infinitival clauses, the particle must c-command the head verb of the infinitival VP (29).

- (29) a Ich darf<sub>i</sub> nicht lachen e<sub>i</sub>  
       'I may not laugh'  
       I must not laugh [marg. 'I am allowed not to laugh']  
       b [Nicht lachen]<sub>j</sub> darf<sub>i</sub> ich e<sub>j</sub> e<sub>i</sub>  
       'not laugh may I'  
       I am allowed not to laugh  
       c [Lachen]<sub>j</sub> darf<sub>i</sub> ich nicht e<sub>j</sub> e<sub>i</sub>  
       'laugh may I not'  
       I must not laugh [What I must not do is laughing]

In (29a), the finite verb is in the scope of negation because its trace is c-commanded by the negation particle. The clause can be interpreted as negated. (29b), however, with the negation particle contained in the fronted VP, is not a negated clause. The negation particle does not c-command the finite verb. Its scope is confined to the fronted VP. (29c) is negated like (29a). But unlike (29a), it does not have the marginal secondary reading of (29a), which is the only reading of (29b). This indicates that only the finite verb, not the topicalized phrase, can be scoped under reconstruction.

- (30) a daß er es nicht zu zerstören  
       'that he it not to destroy tried'  
       that he tried not to destroy it  
       that he did not try to destroy it  
       b Zu zerstören versucht hat er es nicht  
       He did not try to destroy it

The ambiguity of (30a) is a reflex of the structural ambiguity of certain infinitival constructions: The infinitival verb in (30) can be either part of an infinitival clause or part of a clause-union construction. In the latter case, the negation is part of the matrix clause, c-commands the finite verb and is interpreted as negation of the matrix clause.

Negative indefinites differ from negation particles in a predictable way: Since negative indefinites introduce the semantic effect of negation by virtue of a negated operator, the

c-command relation between the negative indefinite and the *t*-marked verb is not as crucial a prerequisite for achieving sentence negation as it is for particle negation. The particle must c-command the element that binds the event variable in order to be translatable into sentence negation, whereas the negative indefinite is independently translated as a negated expression, that is, a negated quantifier:

- (31) a [Keinem Menschen begegnet] bin ich dort  
 'no human being encountered have I there'  
 I did not encounter any human being there  
 b [Einem Menschen begegnet] bin ich dort nicht  
 'a human being encountered have I there not'  
 I did not encounter any human being there  
 c [Nie ein Wort darüber verloren] hat er bisher  
 'never a word it-about uttered has he until-now'  
 He has never uttered a word about it until now  
 d ?[Je ein Wort darüber verloren] hat er bisher nicht  
 'ever uttered it-about a word has he not until-now'

The deviance of (31d) is due to the polarity property of *je* (= ever). It is an element of negative polarity. The topicalized VP is not in the scope of the negation particle. The fact that sentence negation is possible with negative indefinites as part of a topicalized VP, but not with the negation particle (cf. 29b), confirms their different syntactic status.<sup>13</sup>

In a typological perspective, the distribution of negation particles as sentence negators is determined by the c-command requirement, that is, the requirement that the finite verb or its trace be in the domain of the negator.<sup>14</sup> This condition must be seen in combination with the OV/VO-parameter:

<sup>13</sup> A syntactical difference between negative indefinites as negators and particle negation becomes manifest with indefinites: An indefinite must not occur in the scope of particle negation (ex. a) but it may occur in the scope of a negative indefinite (ex. b):

- a) \*daß er nicht eine Ahnung hatte  
 'that he not an idea had'  
 that he did not have the slightest idea  
 b) daß keiner eine Ahnung hatte  
 'that no one an idea had'  
 c) \*daß er eine Ahnung nicht hatte

Fronting the indefinite across the negation particle as in (ex. c) does not help in the particular case above, because the resulting interpretation of the indefinite would be as a specific indefinite, which is not available here. Note that this scoping property of indefinites w.r.t. sentence negation does not leave room for a Neg-projection in (ex. b).

<sup>14</sup> Ouhalla (1991:138) formulated a Neg-parameter according to which NEG either c-selects VP or AGR/TNS. This parameter could be reduced to the parameter that triggers headmovement of the finite *V* to a functional head: NEG c-commands the verbal head associated with the features that bind the event variable (e.g. tense-features). So the parametrization is as follows:

- a) NEG c-commands the verbal head in the relevant F-position  
 b) NEG c-commands a link of the chain of the verbal head in the relevant F-position  
 The parametrization is an epiphenomenon of the availability of chain connectivity.

- (32) a ... [Neg [V ---]]  
 b ... [--- Neg (...) V]]

In a VX-language with the finite verb in situ in the VP, the negation position closest to the verb is the position preceding the VP. In an XV-language, however, the negation particle may appear closer to the verb. In German, the negation particle for sentence negation normally<sup>15</sup> occurs in the particle position closest to the verb:

- (33) a daß er seine Arbeit nicht/ja/doch gut macht  
 'that he his work not/PRT well did'  
 b \*daß er seine Arbeit gut nicht/ja/doch macht  
 'that he his work well not/PRT did'

In the typological survey of Dryer (1988:96), the position close to the verb turns out as one of two most frequent patterns in terms of languages and language families. The other frequent pattern is cliticized negation, that is, encliticization of the negation affix to the finite verb. In a few XV-languages, the negation element occurs in clause initial position. In sum, the distribution of the elements involved in sentence negation in German does not warrant the assumption of a specific functional projection for negation.

## 5 Adverbs as Spec-residents?

It is a legitimate question to ask in the context of structural economy as to whether adverbs are structural adjuncts or residents of a spec-position. In Kayne's (1994) LCA-based phrase structure theory, for instance, adjunction positions are highly constrained: Multiple adjunctions are ruled out. Thus, the standard structural analysis for adverbs, namely as multiple adjuncts of VP, cannot be applied to a construction with more than one adverb, as in (34):

- (34) daß man [bis jetzt [vergeblich [verzweifelt [eine Lösung sucht]]]]  
 'that one [until now [in vain [desperately [a solution seeks]]]]'

In the standard analysis, the three adverbials in (34) are adjoined to the v-projection. If a theory rules out multiple adjunction to a phrase, there are two alternative options left: Either there is a cascade of functional projections in (34) and each adverbial is adjoined to a different projection, or the adverbials project their own functional projection with an empty functional head and the adverbial element in the spec-position. The latter option is explicitly

<sup>15</sup> In conditional and interrogative clauses, the negation particle may appear in initial position, that is, in the position following the root functional head position:

- a) Wenn nicht jemand die Tür geöffnet hätte, wären wir erstickt  
 'if not someone the door opened would have, would we have choked'  
 If someone had not opened the door, we would have choked.  
 b) Ich frage mich, ob nicht jemand die Tür öffnen sollte  
 'I wonder myself whether not someone the door should open'

argued for by Cinque (1995). If this analysis proves successful, Kayne's restriction on adjunction gains valuable empirical support. For ease of reference in the following paragraphs, this hypothesis will be referred to as the projection hypothesis.

From the point of view of string-to-structure mapping the same question arises as in connection with negation: Is there reliable empirical support for projecting two positions (i.e. spec and head) rather than one (i.e. the adjoined position)? At the present stage of discussion, it seems to me that crucial obstacles for this approach have not been removed yet. These obstacles are formal problems as well as empirical ones.

A formal as well as an empirical problem for the projection hypothesis is the integration of adverbial F-projections into the F-projection system of the verbal features. Adverbial projections are sandwiched between functional projections of the clause. For instance, what used to be analyzed as a VP-adjoined adverbial would have to be reanalyzed as an adverbial projection with the VP as complement of the functional head. A relevant case is the following contrast, noted by Baltin (1982:32f.):

- (35) a \*Those people will/did, after the party, not go home  
 b Those people, after the party, will/did not go home  
 c \*Will, after John comes home, Sally take a shower?  
 d Will Sally, after John comes home, take a shower?

The grammaticality contrast between (35a) and (35b) indicates that the PP interpreted as a temporal adjunct cannot be sandwiched in between an F-position and the negation, but the PP may appear between the subject in the spec-position and the corresponding functional head-position. Analogously, in the ungrammatical (35c), the adverbial is excluded from the position immediately preceding the IP. At first glance, this seems to support the projection hypothesis: In (35a), the F-head of the finite auxiliary wants to c-select a V-projection, not an adverbial projection and in (35c), the C-head wants to c-select an IP. The problematic cases for the projection hypothesis are the grammatical patterns (35b,d): In (35b) and by analogy in (35d), the adverbial F-head seems to select a partial projection, namely AGRS-s'. This would be an unacceptable consequence, of course, since selection operates on complete phrases. So, contrary to appearance, the adverbial projection in (35b) must select the IP. But in this case, the subject would have to raise to a higher projection. Unfortunately, it is unclear what this projection might be and what might trigger this movement.

The preceding discussion highlighted a facet of a broader issue: C-selection is a general formal problem for the projection hypothesis. This problem comes in two versions. First, if the adverbial projection is integrated in the projection structure of the clause, the adverbial projection must be selectable by higher projections. This is illustrated by the case discussed above. Second, the head of the adverbial projection must select a complement.

Here is the second problem: On one hand, an adverbial can be modified by an adverbial, as in (36a). If these adverbials have to be analyzed as functional projections, an adverbial projection must be adjoined to another adverbial projection. On the other hand, an adverbial projection must be able to c-select another adverbial projection, as in (36b).

- (36) a Er drank<sub>i</sub> [zweimal [zuviel]] e<sub>i</sub>  
 'he drank [twice too much]'  
 he drank two times too much  
 b Er trank<sub>i</sub> [zweimal [zuviel e<sub>i</sub>]]  
 on two occasions he drank too much  
 c [Zweimal zuviel getrunken] hat fast jeder [ambiguous]  
 'two times too much drunk has almost everyone'

In the adjunction analysis of (36b) and (36c), two adverbials are adjoined to a VP. Under the projection hypothesis, one adverbial projection c-selects the other adverbial projection which in turn c-selects the VP. The formal problem is this: VP-adverbials do not select adverbials unless the cascade of selected adverbials terminates in a VP. This non-local selection requirement presupposes additional technical measures. The technical solution could be sought in head-chaining: The verbal head of the complement is raised to the functional head position of the adverbial projection. This would not only have to apply to verbs but also to adjectives. (37b) is the standard adjunction structure, (37c) is the raising structure:

- (37) a This is nice  
 b This is [<sub>NP</sub> really [<sub>NP</sub> nice]]  
 c This is [really [nice<sub>i</sub> [<sub>NP</sub> e<sub>i</sub>]]]

Empirical problems come to mind immediately. In German, raising would have to be covert. Neither a verb nor an adjective displays the distribution patterns of overt raising. But the assumption of a functional head as target for overt or covert head movement runs into the class of problems discussed above in connection with covert V-movement in section 2. VP-topicalization would be ruled out if the topicalized VP is in the domain of an adverbial:

- (38) [Laut gelacht]<sub>i</sub> hat er [sehr fröhlich e<sub>i</sub>]  
 'loudly laughed he has very happily'  
 He has happily laughed very loudly

(38) is, contrary to facts, predicted to be ungrammatical for at least two reasons. First, the trace of VP movement is the complement of an empty functional head. This trace leads to an ECP-violation, like in English (cf. Fn. 10): The VP-complement of an empty F-head cannot be topicalized. Second, the functional head of the adverbial projection left behind cannot be targeted by covert head-movement. The required verbal head ends up in the topicalized VP. Reconstruction violates the cycle.

Theoretically less entangled is a distributional phenomenon of English: If adverbials are spec-elements and not adjoined, the spec-position of an adverbial projection is a regular position for phrases. So, constraints on the categorial type of adverbials are not expected. It is unexpected, therefore, that the preverbal position for adverbials in English (cf. 39a,b) is highly constrained. It is best for word-level adverbials and ranges from highly marginal to unacceptable for phrasal adverbials.

- (39) a It rapidly disappeared  
 b \*It [at high speed] disappeared  
 c Rapidly/at high speed, it disappeared  
 d It disappeared rapidly/at high speed

If the preverbal position is a head-adjoined position, the contrast in (39) can be captured straightforwardly in an adjunction treatment of adverbials. In the functional projection theory, however, every adverbial is a spec-element, hence phrasal. As a phrasal element, it cannot adjoin to a head.

Let us sum up: The syntax of adverbials does not provide compelling evidence for the assumption of additional functional projections. On the other hand, the standard adjunction analysis is still insufficiently explored. In its present stage, it is incomplete, both in its empirical coverage and its theoretical basis.

## 6 Summary

This paper is primarily defensive. It defends a parsimonious approach towards the overt syntactic structure of the German clause. It is claimed to consist of a v-projection under a single functional shell. Current assumptions that favor cascades of functional projections that trigger multiple covert or overt head movement are shown to be in conflict with substantive areas of German grammar. Neither the syntax of finiteness, nor the grammar of case checking, neither negation nor the syntax of adverbials is a positive source of evidence for the assumption of multiple functional projections in German.

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