

On Pure Syntax (Uncontaminated by Information Structure)*

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0. Introduction

Word order correlates with distinctions of information structure, and Günther Grewendorf's work has contributed much to our understanding of what the pertinent regularities are in German and other languages such as Italian or Japanese, and it has also shaped our understanding of how these regularities are linked to grammar. Grewendorf (1980) constitutes one of the first concrete proposals of capturing the impact of informational distinctions on German word order. Grewendorf and Sabel (1994, 1999) developed one of the most detailed models of word order variation in the middle field. Grewendorf has also contributed substantially to recent developments concerning the left periphery of clauses, based on the view that categories like focus and topic are directly represented in the syntax. Rizzi (1997) proposed that there are Topic and Focus heads situated in the higher functional layers of the clauses, and that the specifiers of these heads host topic and focus phrases, respectively - if not already in the surface representation, then at least at LF. Rizzi's view has been elaborated for German by Frey (2004), Haftka (1995), Pili (2000), and, of course, Grewendorf (2005a,b).

Such approaches in which information structure is directly coded in the syntax constitute one of two extreme ends of a continuum of models of the syntax-information structure interaction. Correlations between positions and informational functions do not necessarily imply that information structure and word order are directly related by syntactic laws. Rather, informational concepts might be correlated with other properties of phrases (say, their length), which could then be the ones really affected by the forces determining word order, such as processability, see, e.g., Hawkins (1994) for such a view.¹

In this paper, I will argue that information structure concepts indeed do not play an immediate role in syntax. While word order can reflect information structure categories, it does so because these categories are encoded phonologically in a certain form (or because of the semantic consequences of information structure distinctions) to which

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¹ The experimental findings of Arnold et al. (2000) show, however, that reference to both length *and* information structure is needed in an account of English word order variation.

syntax is sensitive. Syntax interacts with phonology (and semantics), but not with information structure. We will proceed as follows. The paper begins with two conceptual arguments. Section 2 summarizes the empirical observations of Fanselow and Lenertová (2006) showing that “focus” does not trigger syntactic movement. Section 3 presents some empirical arguments against the existence of a topic position in German clauses. Section 4 then gives the results of an acceptability rating experiment testing one of the empirical claims made by Frey (2004) in the context of a Topic position. A few remarks on possible extensions and a program for future research can be found in section 5.

1. Some properties of narrow syntax

Whether concepts of information structure figure in syntactic computations is, of course, an entirely empirical issue. Nevertheless, one should be aware that an integration of information structure notions into formal syntax leads beyond limits otherwise respected by syntax in at least two respects: syntactic features are context-invariant, and movement is in principle obligatory when it is possible.

Syntactic categories and syntactic relations are typically context-independent. They encode properties that an element has because of its lexical specification, or because it stands in a formal relation to other elements in the sentence. A word is a noun independent of the context of the utterance it occurs in, it c-commands another element because of the structural relations holding between the two items, and its prosodic properties (being accented/deaccented) can also be determined sentence-internally by comparing it to other elements within the same intonation or prosodic phrase. Chomsky (1995) introduced a further restriction on the nature of features that may figure in the syntax by postulating an “inclusiveness” condition: the features used in syntax must be already specified in the lexical entries.

In an obvious sense, neither “topic” nor “focus” fulfil any of the criteria mentioned in the preceding paragraph. Unlike formal features such as “wh” or “neg”, and unlike semantic features such as “specific” or “distributive”, they do not encode invariant properties of lexical items² or phrases, and unlike features such as “accented”, they do not encode properties that are true relative to a certain formal dimension of comparison with clausemate elements. Whether a phrase is a topic or a focus is, in the primary interpretation of the terms, only determined relative to the “knowledge base” of the speaker and hearer, that constitutes the background of sentence interpretation.

Topicality and focality differ in yet a further and even more important way from other syntactic features: they are not projective. When a phrase is marked for “wh”, “accusative”, “accented”, etc., it bears this feature because it contains a lexical item of which the feature is true. In a dialogue such as (1), however, only the complete object DP is the focus of the answer – none of its part is a focus (e.g., because none of the parts

² This may seem false for overt morphemes marking “topic” or “focus” that we find in certain languages. However, I know of no example of a morpheme that fulfils the function of a “focus marker” only, in which it would have to be present in each sentence, because all sentences have a focus. Rather, “focus markers” are always linked to additional meaning components, and one can derive the relation of the marker to focus from this additional semantic content.

of the direct object answers the question, only the complete object does). Therefore, the “focus” feature violates the inclusiveness condition, and it will not help to add “focus” to one of the lexical items when it is entered into the numeration (as suggested by the anonymous reviewer), because “focus” is not a correct attribute of any of the parts of the direct object. The same is true for topics.

(1) *What did you see? I saw* [_{DP} *a small yellow book*].

If information structure distinctions cannot enter the vocabulary of syntax, how can the correlation of word order with information structure be captured? Information structure correlates with prosodic properties (accent), and there can be no doubt that syntax is sensitive to prosodic properties: the syntactic behaviour of German verbal particles/prefixes depends on their prosodic properties. Focus placement can (and must) be reanalysed in terms of the placement of accented elements. The latter description seems more successful than the former, as will be discussed in the next section. As we will see there, it is the property of accentuation itself (and not “focus-marking”) that drives movement in many languages. Information structure influences syntax only indirectly. The features “topic” and “focus” do not really fit into syntax. One should avoid using them there if possible.

There is a further respect in which the interaction between information structure and syntax shows surprising properties. In German, syntactic responses to information structure are always *optional*, while the prosodic encoding of information structure is mandatory. E.g., focus and topic phrases can be placed into sentence initial position (Spec,CP), but they do not have to be so. One recurrent finding of acceptability rating experiments comparing different word orders in context is that unmarked subject initial sentences are *always* at least as acceptable as sentences with marked object initial order, even in those contexts that license object fronting (Weskott et al. 2004, Fanselow et al., 2006). The situation is even worse with scrambling: apparently, scrambled OSV sentences are *less* acceptable than SOV sentences even in contexts licensing the former (Keller 2000), and there is no context in which scrambling is obligatory (see Haider and Rosengren 2003). Word order variation linked to information structure is thus not easily amenable to a treatment in terms of “feature checking” or “alignment constraints”. The reordering responding to information structure has properties quite different from those typically observed with A- or A-bar movement.

German is not exceptional in this respect. That scrambling is not obligatory seems to be a widespread (if not universal) property of the construction. When we consider the placement of focal subjects and adjuncts into the preverbal focus position in SOV languages like Sinhala or Turkish, we again find optionality rather than obligatoriness (see, e.g., Morimoto 2000 for an overview). The current syntactic models certainly possess tools for the description of optionality. They might be employed when topic and focus movement is described in a given language, but this would leave it open why wh-movement and NP-movement do not make such a pervasive use of the optionality tools.

In certain languages, movement to focus or topic position seems indeed obligatory: Hungarian and other “discourse configurational” languages (É.Kiss 1995) such as Catalan, and Italian may be cases in point. Note, however, that, e.g., the obligatoriness of focus movement may be due to the fact that prosodic properties can only be realized in

certain syntactic configurations in such languages (Zubizaretta 1998, Szendrői 2001). Under this perspective, the obligatoriness of the movement of a focus XP is not linked to information structure directly, but to prosody.

2. Focus movement is accent displacement

Conceptual reflections are of little importance when empirical facts force certain conclusions concerning the nature of grammar. The assumption of Topic and Focus heads or features may be necessary on empirical grounds, in spite of the conceptual problems they would come with. However, at least in the domain of focus movement, the empirical facts are in line with the conclusions of the previous section. Focus placement data from a wide variety of languages cannot be captured in terms of rules that refer to “focus” features. Rather, prosodic properties are relevant. This has been argued for at length in Fanselow and Lenertová (2006), and we will summarize the main point of this paper here.

The crucial observation has been made by Kenesei (1998) for Hungarian, and by Krifka (1994), Büring (1996), and Gärtner (1996) for German. A sentence such as (2) with a fronted direct object is not only compatible with a narrow focus interpretation for *ein Buch* “a book”. The sentence is also appropriate as an answer to a question such as “what have you done this morning?”, i.e., it can also express VP-focus.

- (2) *Ein Buch hab ich gelesen.*
 a book have I read
 ‘I’ve read a book.’

If interpreted with a VP focus, the element *ein Buch* fronted in (2) is *not* the focus of the utterance, but rather part of the focus of the utterance. It is not an XP bearing a focus feature, but part of such an XP. The fronting in (2) cannot be captured in terms of the attraction of a phrase with a focus feature. Sentence (3) illustrates the same point from a slightly different perspective. (3) shows that parts of idioms can be moved to clause initial position. The construction again expresses VP-focus. Given that the element fronted in (3) has no meaning of its own at all (since it is part of an idiom), it is also neither the focus nor the topic of the utterance. It therefore cannot have been fronted on the basis of a pragmatically defined focus (or topic) feature.

- (3) *Den Nagel hat er auf den Kopf getroffen, als er sagte, dass ...*
 the nail has he on the head hit when he said that
 ‘he found the optimal expression when he said that ...’

As Fanselow and Lenertová (2006) show, such observations are not confined to German. Rather, they are characteristic of many languages with so-called focus fronting. Thus, direct counterparts of (2) and (3) can be found in Czech, Russian, Hungarian, Estonian, Greek, and Italian.

The theoretical analysis of (2) and (3) is quite straightforward. As observed by Fanselow and Lenertová, DP- and PP-objects can be fronted in VP and IP-focus contexts, but only so if they bear an accent, and if the subject is de-accented. Quite in gen-

eral, the movement illustrated in (2) and (3) cannot cross a further accented category. Since movement is in general constrained by the Minimal Link Condition³ (Chomsky 1995), the nature of the attracted feature can be read off the crucial properties of blocking interveners. Intervening XPs block fronting when they are accented, so the movement in (2) and (3) is due to the attraction of an *accented* phrase.

Normally, more than one phrase is accented in wide focus constructions (VP- and IP-focus), and it is always the *highest* of these accented XPs that can move to Spec,CP. There is no reason to call the accent on exactly this highest XP the “focus marker” – it has no special status at all. A “focus marking feature” could be assigned to *all* accents in a wide focus VP or TP (in that case, it would only be a new label for ‘accented’), but a syntactic feature of X (‘is marked for focus’) that is formally realized on all major categories in X is quite unusual. Thus, replacing accent attraction by the attraction of a formal “focus marking feature” is not possible.

The first step in eliminating attraction processes related to focus features thus lies in the observation that we need an attraction of accented phrases, which is able to displace parts of focused constituents as in (2) and (3). Furthermore, when an accent is attracted, larger constituents containing the accented category may be moved as well, because their pied-piping can be necessary or possible. (4b) can answer both (4a) and (4a’), and represents a case in which only the accented word is displaced. (4c) illustrates that the quantifier or determiner (or, rather, the whole DP) can (and often, must) be pied-piped when the accented noun is attracted. Pied-piping is also obligatory when the accented word is embedded in a PP, since German allows no preposition stranding, see (4d) as potential answer to (4a’). The VP may be pied piped as well (4e), both as an answer to (4a)⁴ and to (4a’).

- (4) a. *Was hat er gekauft?*
 what has he bought
 a’. *Was hat er gemacht?*
 what has he done
 b. *Bücher hat er ein paar gekauft.*
 books has he some bought
 ‘He bought some books.’
 c. *Ein paar Bücher hat er gekauft.*
 d. *Unter der Brücke hat er geschlafen.*
 Under the bridge has he slept
 ‘He slept under the bridge.’
 e. *Ein Buch gekauft hat er.*
 a book bought has he

³ If α moves to β in order to check the formal feature f , then, according to the MLC, there can be no γ closer to β than α that also has the feature f . However, in Chomsky (2005), superiority effects (objects with feature f cannot cross subjects with the same feature when f is attracted) can no longer be derived. See Müller (2004b) for a phase-based minimalist derivation of superiority effects in which effects such as the ones described above can be captured, too. The intervention effects of the movement of accented categories may also be due to shape conservation principles as proposed by Müller (2001).

⁴ This judgment is not shared by everyone. For me, the dialogue (4a + 4e) sounds best when the *wh*-word gets extra stress (as in an echo question), but it is acceptable in standard situations, too.

We can conclude that the category that moves when an accented element is attracted may be smaller or larger than the focus linked to the accent. It may also happen to be identical with the phrase in focus. Therefore, we do not need an additional focus placement rule - the attraction process displacing accented words already accounts for the sentences in which the focus phrase is displaced. Focus movement thus turns out to be a special case of accent movement. Syntax makes no reference to focus.

A central notion of information structure is thus *not* accessed by the syntax, at least in the component responsible for the triggering of movement. As Fanselow and Lener-tová (2006) have shown, this conclusion holds in at least those languages in which focus is expressed prosodically.

3 A position for topics in German?

Focus placement can and must be reinterpreted in terms of rules for the positioning of accents. For topic placement, a similar replacement of notions of information structure by formal or semantic features is less obvious. In this paper, we cannot discuss topic placement in general. Therefore, we set ourselves a more modest goal: we will discuss and reject the claim that German has a structural position between CP and TP that all and only the topic phrases of a clause must move to (as suggested by Haftka 1995 and Frey 2004). If such a position would exist, syntactic movement would have to be sensitive to topicality, i.e., it would involve a notion defined in informational terms.

Movement to Spec,CP has often been called “topicalization” for German, but examples such as (5) and the ones discussed above show that not only topics can appear in the left periphery of CP. Likewise, topics need not appear at the beginning of a sentence, as the position of *dieses furchtbare Gebäude* “this horrible building” in (6) shows. The syntactic term “topicalization” (=movement to Spec, CP) thus has little to do with topics in a pragmatic sense. Rather, it is an operation attracting the highest category in the functional projection directly below Comp (TP or FinP) and moving it to Spec,CP, independent of the syntactic, semantic, and pragmatic properties of that phrase (see Fanselow 2002, Frey 2004, and Müller 2004a for different versions of this idea).

- (5) *Nicht einmal einen Schwan hat Derk erkannt.*
 not even a.ACC swan has Derk recognized
 ‘Derk even did not recognize a swan.’
- (6) *Was gibt’s Neues über das Stadtschloss?*
 ‘Any news about the city castle?’
Laut Bürgermeister Jacobs wird man dieses furchtbare Gebäude
 according to mayor Jacobs will one this horrible building
nächstes Jahr endlich abreißen.
 next year at last tear down
 ‘According to mayor Jacobs, one will finally tear down this ugly building
 next year.’

Frey (2004) and Haftka (1995) argue that German nevertheless has a topic position, but that it is lower than Spec,CP. Frey (2004) assumes a topic head above the sentence adverbs (which are, e.g., adjoined to TP/FinP). The specifier of such a topic head may be preceded by a further functional head, KONTRAST, which is the highest functional head below Comp. All and only the topics must move to the specifier position of the topic head, and remain there unless they are further moved to Spec,CP on the basis of the process mentioned above. (7) taken from Frey (2004) is meant to illustrate that topics must be placed in front of sentence adverbs. (7b) is a pragmatically odd continuation of the first sentence in (7), apparently because the sentence topic *Maria* has been misplaced.

- (7) *Ich erzähle dir etwas über Maria.*
 I tell you something about Maria
 a. *Nächstes Jahr wird Maria wahrscheinlich nach London gehen.*
 next year will Mary probably to London go
 ‘Next year Mary will probably go to London.’
 b. *#Nächstes Jahr wird wahrscheinlich Maria nach London gehen.*

Frey (2004) proposes a set of syntactic tests for topicality, and argues that their application always yields the same result: (aboutness) topics must move to the topic position, and only topics can appear there. (8) represents this view of German clause structure. Note that Frey (2004) uses different labels for the functional heads.

- (8) [_{CP} (XP) Comp ([_{KontrastP} YP Kontrast) ([_{TopicP} ZP Topic)([_{TP} adv) [_{TP} [DP T’]](I)(I)(I)]

A first difficulty of this approach lies in the fact that it is less predictive than one might think. The problematic data can be found in Frey (2004) itself: More than one sentence adverb can appear in a German clause, and XPs such as *mindestens zwei* can be placed easily *between* such sentence adverbs.

- (9) *Ich denke, dass wahrscheinlich mindestens zwei leider ihren Vortrag*
 I think that probably at least two unfortunately their talk
absagen werden.
 cancel will
 ‘I think that probably at least two will cancel their talks, unfortunately.’

The DP sandwiched between the two sentence adverbs is not a topic, at least not in (9), as Frey (2004) observes. If sentence adverbs are adjoined to TP (as Frey assumes), (9) illustrates that DPs can be adjoined to TP above the adverbs, as one would expect in any event given that German is a scrambling language. If sentence adverbs project their own functional phrases (see Alexiadou 1997, Cinque 1999), then (9) illustrates that DPs can be adjoined to such functional projections. *Mindestens zwei* is thus not located in a topic position in (9), so that the absence of a topic interpretation constitutes no *immediate* problem for Frey (2004).

However, this amendment necessary for (9) drastically reduces the predictive power of the topic position theory. (9) forces us to assume that DPs can *adjoin* above sentence adverbs *without being topics*. Sentences such as (10) are therefore structurally ambigu-

ous in Frey's approach (a fact not noted in Frey 2004): *Julia* can occupy the specifier position of the topic head, or be adjoined to TP.

- (10) *Ich denke, dass Julia leider ihr Hund gebissen hat.*
 I think that Julia unfortunately her.NOM dog bitten has
 'I think that unfortunately, her dog bit Julia.'

It thus cannot be maintained that all (non-contrastive) XPs preceding sentence adverbs are topics! Rather, due to the structural ambiguity that must be assumed because of (9), the model of Frey (2004) tolerates both topics and non-topics to the left of sentence adverbs. The model makes no testable prediction⁵ concerning the pragmatic status of an XP showing up before sentence adverbs, it only makes the prediction that topics must not appear to the right of them.

Perhaps, the conclusion that the element preceding a sentence adverb need not always be a topic is not so bad after all. Frey (2004) claims that there is a contrast between (11a) and (11b) which is due to the fact that quantified expressions such as *mindestens zwei* cannot be topics. But if the sentence is elaborated by more material as in (11c), the placement of the quantified DP in front of *leider* does not sound ungrammatical at all.

- (11) a. **Während des Vortrags haben mindestens zwei leider geschlafen.*
 during the talk have at least two unfortunately slept
 'Unfortunately, at least two slept during the talk.'
 b. *Während des Vortrags haben leider mindestens zwei geschlafen.*
 c. *Auch dies Jahr werden während des Vortrags wieder mal*
 also this year will during the talk again once
mindestens zwei leider schlafen.
 at least two unfortunately sleep
 'Unfortunately, at least two will once again sleep during the talk in this year, too.'

(12) illustrates the same: non-referential quantified DPs can be placed to the left of sentence adverbs.

- (12) *dass sie wen aus Hamburg wahrscheinlich/leider nicht*
 that she one from Hamburg probably/unfortunately not
heiraten würde
 marry would
 'Probably/unfortunately, she would not marry anybody from Hamburg.'

(9) - (12) undermine the topic position model: they support the insight that XPs can appear to the left of sentence adverbs without going to a specifier position of some Topic head. But then, there is no compelling reason for why topic phrases should not

⁵ If more than one non-contrastive XP is placed to the left of the sentence adverb, Frey (2004) predicts, however, that the topics among these XPs should precede the non-topics. Such a generalization also follows from the standard serialization principles of German (definite > indefinite, given > new, etc.) without the further postulation of a slot reserved for topics.

also simply *adjoin* to TP/FinP just as the non-referential non-topical elements do. Topic placement would then be an instance of *scrambling*.

Frey (2004) himself notes that there are far-reaching parallels between scrambling and topic placement. With respect to binding, reconstruction, and locality, the two processes do not differ from each other at all. Frey even assumes that scrambling and topic placement behave alike with respect to the absence of a freezing effect: elements preceding a sentence adverb are transparent for movement, as (13) (=65a) in Frey 2004) illustrates.

- (13) *Was_i hat Hans [t_i für Leute] dummerweise angerufen?*
 what has H. for people annoyingly called
 ‘What kind of people has Hans annoyingly called?’

If (13) is correctly analysed by Frey as exemplifying the extraction out of a DP in a topic position, the question arises why no freezing effect blocks that movement. German has few freezing effects. In general, subjects are transparent for movement in German, a fact usually explained by assuming that subjects do not move to Spec,TP. Scrambled DPs fail to acquire island status, too. Fanselow (2001) takes this as evidence for the base-generation analysis of scrambling, while Haider and Rosengren (2003) assume that freezing arises only in the context of feature driven movement to a specifier position, and not in the context of adjunction. Neither of the two models predicts that a DP moved to the specifier position of a Topic phrase remains transparent for extraction, but they correctly characterize examples such as (13) as grammatical if topic placement is a subcase of scrambling. It is not clear what a non-stipulative model of freezing could look like that draws a distinction between the specifier of Topic (transparent) and the specifier of Tense or Comp (intransparent). Movement data such as (13) may thus turn out to be problematic for the placement of topic phrases into specifier positions.

However, (13) allows a different interpretation as well. The DP *was für Leute* can also have been adjoined to TP in front of the sentence adverb before *was* was extracted out of it. This may in fact be a more convincing analysis, since *wh*-phrases such as *was für Leute* ‘what kind of people’ make bad topics, and therefore should not move to a topic position at all.⁶ Under this analysis, (13) is just a further illustration of the fact that elements preceding the sentence adverb need not be topical.

While details thus remain a bit unclear, it seems fair to conclude that the only possible syntactic difference between scrambling and topic movement might reside in the obligatory nature of topic placement, contrasting with the optionality of scrambling. Little, however, can be concluded from the observation that a certain interpretive effect presupposes the application of some syntactic rule. Consider (14) in this respect. For many speakers of German, (14a) is unambiguous (Frey 1993), i.e., with ‘normal’ word order, scope corresponds to *c*-command relations. If one wants to express an interpreta-

⁶ If it is correct that one cannot extract from topics (see, e.g., Erteschik-Shir 2006), no phrase containing a gap could ever be a topic, irrespective of position. The predictions of the different models discussed here may thus be fairly clear, yet it may turn out that they cannot be tested at all. True extraction out of DPs may be confined to very few constellations in German (see deKuthy 2000 for arguments in favour of that view) that do not involve non-contrastive topical phrases.

tion in which the universal quantifier takes scope over the existential one, the object needs to be scrambled in front of the subject, as in (14b).

- (14) a. *dass mindestens ein Professor fast jeden Studenten kennt*
 that at least one.NOM professor nearly every.ACC student knows
 b. *dass fast jeden Studenten mindestens ein Professor kennt*
 ‘that at least one professor knows nearly every student’

Does that mean that scrambling is *syntactically* obligatory in certain constellations, triggered by the attraction by a quantificational head? This idea is not convincing, because applications of scrambling that affect quantifier scope do not differ from the other instances in syntactic respects. Rather, there are mechanisms that govern the interpretation of syntactic structures (as proposed, e.g., in Frey 1993), and these mechanisms simply yield different results in the case of scrambled and unscrambled structures. Similarly, different portions of the sentence may be linked to different aspects of information structure, and due to this mapping, it may be that XPs with a certain pragmatic function are always found in a certain region of the clause, without this being caused by the syntactic derivation itself.

Bearing this abstract observation in mind, let us return to topic placement in German. One fact that obligatory topic movement seems to imply is the generalization exemplified by (7): topics need to precede sentence adverbs. This, however, does not capture the distribution of sentence adverbs in a completely satisfactory way. It has been noted frequently that sentence adverbs share many of the distributional characteristics of scalar particles like *nur* ‘only’, i.e., sentence adverbs seem to be focus-sensitive operators. See Hetland (1992) and Engels (2004) for an overview.

The assumption that sentence adverbs have the syntactic properties of focus sensitive operators allows to explain sentences such as (16) easily. As Reis (2005) and Müller (2005) have shown, focus-sensitive operators combine with arguments (15) as readily as with propositional projections (VP, TP). Frey (2004) claims that each sentence adverb (being adjoined to TP) has a homophonous focus-sensitive counterpart: he proposes to distinguish the ‘focus-sensitive’ (16) from the ‘neutral’ use, and concedes that the generalization concerning the order of sentence adverbs and topics is true for the latter use only. However, Engels (2004) shows convincingly that the syntactic differences between ‘focus-sensitive’ and ‘neutral’ interpretations follow from the differences in the size of the focus constituent (wide VP/IP focus in the ‘neutral’ use, narrow DP/PP focus in the ‘focus sensitive’ use), so that the duplication of sentence adverbs that Frey (2004) works with is not warranted.

- (15) *Nur/sogar den Fritz hat sie geliebt.*
 only/even the.ACC Fritz has she loved
 ‘She loved only/even Fritz.’
- (16) *Wahrscheinlich/leider den Fritz hat sie geliebt.*
 probably/unfortunately the.ACC Fritz has she loved
 ‘Probably/unfortunately, she loved Fritz.’

What consequences does this have for topic placement? Like any other focus sensitive operator, a sentence adverb must precede the accented (focused) constituent. Focus constituents therefore follow sentence adverbs if the latter are focus sensitive operators. Furthermore, Büring and Hartmann (2001) show that focus sensitive particles should be placed into a position *adjacent* to the accented phrase if possible. Thus, when there is a narrow focus on the indirect object, it is odd to place the subject between the focus sensitive particle *sogar* “even” and the indirect object, as (17) shows. In other words, material that does not belong to the focus should be placed to the left of focus sensitive particles.

- (17) a. *Gestern hat Rufus sogar [dem MÄDCHEN]_F Blumen geschenkt.*
 Yesterday has Rufus even the.DAT girl flowers given
 ‘Yesterday, Rufus gave flowers to even the girl.’
 b. **Gestern hat sogar Rufus [dem MÄDCHEN]_F Blumen geschenkt.*
 c. *Gestern hat sogar RUFUS_F dem Mädchen Blumen geschenkt.*
 ‘Yesterday, even Rufus gave flowers to the girl.’

The relative acceptability of the data remains constant when *sogar* is replaced by *wahrscheinlich* “probably” or *leider* “unfortunately”. In the spirit of Büring and Hartman, we account for (17) by assuming that *all* focus sensitive operators are preferentially placed into the lowest position in which they precede and c-command the focus. If we apply this description to (18), we can derive the word order without the assumption of a special topic position. See Engels (2004) for an elaboration of this point in an OT framework.

- (18) a. *Gestern hat Rufus wahrscheinlich [dem MÄDCHEN]_F*
 Yesterday has Rufus probably the.DAT girl
Blumen geschenkt.
 flowers given
 ‘Yesterday, Rufus probably gave flowers to the girl.’
 b. **Gestern hat wahrscheinlich Rufus [dem MÄDCHEN]_F Blumen geschenkt.*
 c. *Gestern hat wahrscheinlich RUFUS_F dem Mädchen Blumen geschenkt.*

In general, sentence adverbs *follow* topical phrases because sentence adverbs require adjacency to the focused/accented phrase. Material that does not belong to the focus will have to be scrambled in front of the sentence adverb. This need for scrambling should not apply when the adverb is constructed with a narrowly focused argument or adjunct and when the topical element follows the narrow focus in normal word order. In this situation, the adjacency requirement for the sentence adverb and the focus is already met in normal order, because the topic does not intervene. The interpretation of sentence adverbs as focus sensitive operators predicts that topics can remain *in situ* in such a constellation, and (19) shows that this prediction is indeed borne out:

- (19) *Gibt’s was neues über das Stadtschloss?*
 ‘Any news about the city castle?’

Laut dem Bürgermeister wird man wahrscheinlich in Zukunft nur
 According to the mayor will one probably in future only
am SAMSTAG dieses Gebäude besichtigen können
 on Saturday this building visit can
 ‘According to the mayor, one will only be able to visit that building on Saturdays
 in the future.’

Topics remain *in situ* in further constellations. Scrambling is avoided (but not syntactically excluded) in those transitive sentences in which the semantic roles of the two noun phrases cannot be read off their morphological marking or semantic differences between the noun phrases. In such a situation, it seems that topics are not placed into the “topic position” either, as (20) illustrates. The two feminine noun phrases in the embedded clause in (20) are morphologically ambiguous between a nominative and an accusative interpretation, so that constituent order is the primary cue for grammatical role assignment. It would be odd to place the topical object in front of the sentence adverb, since it would precede the subject there, too, inviting a reinterpretation of grammatical roles in which the princess is the fraudulent person. Topic placement behaves like scrambling in this respect. It is avoided when the fronting of a topic would interfere with the proper identification of thematic roles. This is hard if not impossible to explain if topic placement were due to the obligatory attraction of a topic phrase to a specifier position.

(20) *Was schreiben die Zeitungen über Prinzessin Julia?*

‘What do the papers write about princess Julia?’

Der Hofkurier schreibt dass leider erneut eine Maklerin
 The Court Courier writes that unfortunately again a broker(FEM)
die Prinzessin um 100.000 Euro betrogen hat.
 the princess by 100,000 Euro cheated has
 ‘The Court Courier writes that unfortunately a broker cheated the princess once
 more out of 100,000 Euro.’

(21) and (22) are further illustrations of the fact that the placement of a topic to the right of a sentence adverb is not excluded in German.

(21) *Zum Stadtschloss fällt mir nur ein, dass wahrscheinlich niemand*

To-the city castle occurs me only PRT that probably nobody
dieses Gebäude mehr liebt als der Parteichef
 this building more loves than the party leader
 ‘As for the city castle, it only occurs to me that probably nobody loves this
 building more than the party leader.’

(22) *Was hat er über New Orleans gesagt?*

‘What did he say about New Orleans?’

Er hat gesagt, dass wahrscheinlich ein weiterer Hurrikan die Stadt
 He has said that probably a further hurricane the city
endgültig zerstören wird.
 finally destroy will
 ‘He said that probably a further hurricane would finally destroy the city.’

The complement clause in (21) and the declarative in (22) are wide focus utterances, which means that the sentence adverb comes with its ‘neutral’ use. The most prominent accent lies on the subject, which already precedes the given and topical object, so that the object need not go to the left in order to allow the subject to be adjacent to the sentence adverb. Again, we have a constellation in which topic fronting is not mandatory.

The placement of sentence adverbs in general, and in particular relative to topics, can thus be derived from their focus sensitive nature in a satisfactory way. The postulation of an additional functional projection (Topic phrase) in German clause structure cannot be motivated on the basis of data from this domain. There is very little left then (see Sect. 5) that could support the idea of a special topic position, and it can be explained away, too.

The reduction of topic placement rules to the focus sensitive nature of sentence adverbs is only the first step in the attempt to keep syntax free of notions of information structure. But, in the light of what we have seen above, the second and final step seems to be an easy one: the placement rules for focus sensitive adverbs and particles need not refer to the focus status of an expression in a pragmatic sense. Rather, these rules can be sensitive to the prosodic realization of the focus. E.g., we might say that a focus sensitive particle/adverb must be placed in a position adjacent to the first accented word in the category it semantically modifies. To the extent that focus sensitive adverbs can be placed in between the parts of idiomatic expressions as in (23), we can be sure that the placement rules do not refer to matters of content, but rather involve a formal property – accent.

- (23) *Da wurde der Tag leider mal wieder vor dem Abend gelobt.*
 there was the day unfortunately once again before the evening praised
 ‘Unfortunately, once again, one counted one’s chicken before they were hatched.’

Furthermore, the placement of topics behind sentence adverbs appears to yield considerably improved results when the topic is not expressed by a pronoun or a repetition of the proper name (or noun phrase) with which the topic was introduced. This improvement of acceptability due to lexical variation is illustrated in (24) and (25).

- (24) *Was weißt Du über Josef?*

‘What do you know about Josef?’

- a. *?Ich denke, dass die Polizei wahrscheinlich ihn bald verhaften wird.*
 I think that the police probably him soon imprison will
- b. *?Ich denke, dass die Polizei wahrscheinlich den Josef bald verhaften wird.*
 I think that the police probably the Josef soon imprison will
- c. *Ich denke, dass die Polizei wahrscheinlich diesen miesen Verbrecher bald verhaften wird.*
 I think that the police probably this mean criminal soon imprison will
 ‘I think that probably the police will soon imprison him/Josef/this mean criminal.’

(25) *Was weißt Du über New Orleans?*

‘What do you know about New Orleans?’

a. ?*Ich glaube, dass der Hurrikan leider New Orleans zerstört hat.*
 I think that the hurricane unfortunately N.O. destroyed has

b. *Ich glaube, dass der Hurrikan leider diese schöne Stadt zerstört hat.*
 I think that the hurricane unfortunately this beautiful city destroyed has

‘I think that unfortunately the hurricane destroyed N.O./this beautiful city.’

An ongoing acceptability rating experiment carried out in collaboration with Caroline Féry will reveal whether these judgments are shared by a larger number of speakers. If real, these judgment differences are probably due to the fact that the lexical variation in the final examples in (24-25) licenses the presence of an accent placed on the aboutness topic. A repeated name/NP, on the other hand, should be deaccented. If this is the correct explanation, the data in (24) - (25) constitute further evidence for the claim that focus sensitive adverbs are placed relative to prosodic rather than pragmatic properties of their neighbours.

An influence of topicality on the placement of sentence adverbs has also been observed for English, cf. (26), and the Romance languages. Normally, sentence adverbs may precede or follow the subject in English, but when the subject is non-referential, the adverb can only precede it. Engels (2004) shows that English sentence adverbs can be adjoined to both TP and T'. Low adjunction in (26a) is excluded by the focus sensitive nature of the adverb, which requires that it precedes *nobody* (an expression that is never part of the given information). It is quite unclear how the facts in (26) could be expressed in terms of a *topic position*. English referential subjects do not target such a slot. The fact that *probably* and *wahrscheinlich* precede negatively quantified subjects finds the same explanation in English and German only if the grammatical model involves focus sensitivity.

(26) a. *(Probably) nobody (*probably) has (*probably) left.* (Belletti 1990: 51)

b. *(Probably) John (probably) has left.*

In this section, we have discussed three types of evidence against the existence of a topic position in the German clause. First, such an assumption cannot be reconciled easily with the possibility of having more than one sentence adverb in a clause. Second, the empirical data that might be captured by assuming a topic position (relative to sentence adverbs) are already accounted for by the focus-sensitive nature of sentence adverbs. Third, it seems that it is not the pragmatic/informational status of a phrase but rather its prosodic properties that determine its placement relative to focus sensitive adverbs.

4. Topic placement relative to sentence adverbs: an acceptability rating experiment

As we have seen in section 3, sentence topics are not always placed in front of sentence adverbs in German. One major difficulty in dealing with the issue of topic placement lies in the fact that the relevant judgments are often quite subtle and unstable, and that there is some disagreement among speakers concerning the status of the relevant examples. Therefore, systematic empirical studies concerning the acceptability of various word orders in context are called for.

Acceptability rating studies in the domain of word order variation related to information structure are confronted with at least three kinds of problems. The first problem has already been mentioned above. Object fronting to Spec, CP in proper contexts leads to structures that are perfectly acceptable, but up to now, experiments with object fronting within the middle field have always found a reduction of acceptability (as compared to SOV). This could be due to the processing problems of OSV order in the middle field, or to the low frequency of such structures, or to a pure syntactic problem, or to the fact the “truly licensing” contexts have not yet been used in experiments. Some yet unidentified factor lowers the acceptability of OSV sentences, and as long as this factor has not been identified, it is difficult to interpret the results of experiments comparing SOV and OSV.

A second difficulty stems from the fact that one knows little about the relation between acceptability ratings for single sentences, and acceptability ratings for the kind of mini-texts that one typically employs when one investigates where topics or foci have to be placed. In an experiment reported in Fanselow et al. (2006), the reaction to incoherent question-answer pairs such as *who did you see on the dancefloor – I saw a bottle on the dancefloor* was surprisingly positive. Probably, the judgment of a mini-text averages over the acceptability of the individual sentences and the degree to which they fit together. In addition, incoherent dialogues are possible to a certain extent in so far as the second sentence can reject a presupposition of the first one, etc. With the prosody of a corrective focus on the object *a bottle*, the second sentence in our mini-dialogue is in fact an appropriate reaction to the question.

The third difficulty is confined to investigations of topic placement. The part of an utterance that corresponds to the *wh*-phrase in a congruent *wh*-question is the focus of the utterance (see Büring, to appear). This definition can be used in a very direct way to force a focus interpretation of some part of an utterance in an experiment. The same is true for the notion of “givenness”. In contrast, it is much harder to operationalize the notion “topic”, because the idea that a sentence is “about something” is inherently vague.

The acceptability rating experiment reported here avoids the first and the second difficulty. All experimental items had subject before object order, and they consisted of a single sentence. Of course, the third difficulty cannot be circumvented in an experiment concerned with topic placement. The experiment exploited the relation between topicality and cataphoric coreference. Reinhart (1981, 1995) claimed that cataphoric pronouns can refer to topics only, so that the availability of a cataphoric reading is a positive crite-

tion for topicality. Frey (2004) borrows this test from Reinhart, and argues that topics as identified by the cataphoric relation test have to precede sentence adverbs. However, the data do not seem compelling to us, and, in particular, we believe that sentences in which the pronoun's antecedent follows a sentence adverb improve whenever a second cataphoric relation is established in the clause:

- (27) *Weil er sie sehr liebt, wird wahrscheinlich der Pfarrer
because he her much loves will probably the priest
die Haushälterin doch heiraten.
the housekeeper PRT marry
'Because he loves her so much, the priest will probably marry the housekeeper.'*

An acceptability rating experiment was designed in order to establish whether this judgment is representative.

Participants

32 students of the University of Potsdam participated in the experiment; most of them were linguistics students in their first year of education. They were not familiar with the purpose of the study.

Method and Material

The participants rated 104 sentence presented to them in a written questionnaire on a 7-point scale (1 – 7, with 1 representing the lowest degree of acceptability). There were 16 experimental items, and 88 distractor items, most of which belonged to other experiments.

As illustrated in (28), the sentences used in the experiment consisted of an adjunct clause preceding a main clause, both involving a transitive verb. In the adjunct clause, the subject and the object were pronouns. In the matrix clause, they were lexical NPs. The matrix clause also contained a sentence adverb, which could appear in front of the two NPs (28A), between them (28B), or behind them (28C). In these three experimental conditions, the gender of the pronouns was chosen such that coreference between the subjects of the two clauses would be grammatically well-formed, and the same was true for the objects. Coreference (yielding cataphoric interpretations) was also pragmatically plausible. In the fourth condition (28D), the objects of the two clauses disagreed with respect to gender, so that no cataphoric relation could be established.

- (28) Condition A: no topics fronted

*Obwohl er sie liebt, hat gestern überraschenderweise der Hans
although he her loves has yesterday surprisingly the Hans
seine Freundin verlassen.
his girlfriend left
'Although he loves her, Hans surprisingly left his girlfriend yesterday.'*

Condition B: one topic fronted

*Obwohl er sie liebt, hat gestern der Hans überraschenderweise seine Freundin
verlassen.*

Condition C: two topics fronted

Obwohl er sie liebt, hat gestern der Hans seine Freundin überraschenderweise verlassen.

Condition D: no cataphoric relation possible for object NP

Obwohl er ihn liebt, hat gestern überraschenderweise der Hans
 although he him loves has yesterday surprisingly the Hans
seine Freundin verlassen.
 his girlfriend left

16 sets of sentences similar to (24) were constructed. Each participant saw exactly one sentence from each of these sets, such that 4 items per condition were presented to him/her. There were 4 versions of the questionnaire, guaranteeing that each sentence was presented to 8 participants in each of the four conditions.

Results

The mean acceptability of condition A was 5.62 on the 7 point scale. For conditions B and C, mean acceptability was at 6.09, while for condition D mean acceptability was 3.25.

A computation of difference contrasts (reverse Helmert contrasts) revealed that conditions A and B(C) differed significantly from each other: $F_1(1,31) = 5,16; p = .03$; $F_2(1,15) = 19,33, p = .001$). Likewise, condition D differed significantly from conditions A-C: ($F_1(1,31) = 112,45; p < .001$; $F_2(1,15) = 78,62, p < .001$). No other contrasts were significant.

Discussion

The difference in acceptability between condition D on the one hand and conditions A-C on the other is crucial for the interpretability of the whole experiment. This difference shows that the participants tried to interpret the pronouns in the adjunct clause as referring to textual antecedents. In all the conditions in which the matrix clause contains NPs with which the subject and the object can corefer, acceptability is high. When there is no plausible antecedent for the object in the matrix clause because of the gender clash, as in condition D, acceptability is fairly low. The contrast between A-C and D thus warrants the conclusion that the participants interpreted the pronouns in A-C cataphorically.

The high acceptability of condition A, in which neither of the two NPs precedes the sentence adverb (neither of them occupies the “topic position” in Frey’s terms), constitutes a serious problem for the claims that (a) topics must be placed in front of sentence adverbs and that (b) cataphoric pronouns may refer to topics only. If both (a) and (b) are true, it should be impossible to assign a cataphoric interpretation to any of the pronouns in condition A, so that condition A sentences should have the low acceptability value of condition D sentences, which they do not. (a) and (b) cannot be upheld simultaneously.

Condition A sentences were rated as being slightly less acceptable than condition C sentences. If (b) holds, this could mean that a violation of the rule that topics be placed to the left of sentence adverbs induces a very mild type of unacceptability. The small size of the acceptability difference militates against the view that it is caused by the failure of carrying out an obligatory movement operation. In addition, condition B and condition C sentences cannot be distinguished from each other in terms of acceptability,

in spite of the fact that one of the two NPs entering a cataphoric relation with the pronouns follows rather than precedes the sentence adverb in condition B. The optimal acceptability of condition B sentences cannot be explained by the assumption that the second NP is not a topic in the system proposed by Frey (2004), because this NP should then neither be able to appear in front of the adverb (as it does in C without inducing any unacceptability), nor be able to license a cataphoric relationship (as it does in B and C).

The contrast between A and B/C might be explained if topic placement follows the principle of “Minimal Compliance” in the sense of Richards (1997, 2001), according to which certain constraints need to be satisfied once per clause only. Other candidates for minimal compliance effects such as the superiority condition or subjacency share one further property of topic placement, viz. the relative mildness of the grammatical violation. For reasons of space, we cannot discuss this similarity here.

Except for the contrast between condition A and conditions B/C, the results of our experiment are also compatible with the view that assumption (b) only is false, i.e., the experiment could also show that cataphoric pronouns can refer to NPs that are not topics. In that case, the experimental results do not prove that topics can appear behind sentence adverbs. The experiment would, however, show that a crucial test for topicality used in Frey (2004) is not valid.

5. Concluding Remarks

In this paper, we have tried to defend the view that syntactic rules make no reference to concepts of information structure. The impact of information structure on syntax is an indirect one, mediated primarily by the prosodic manifestations of information structure, but probably also by its semantic correlates. For focus, there are very clear data (sketched in section 2) that support this view.

What we have seen in sections 3 and 4 is a first step in an attempt to also eliminate reference to the notion of “topic” from the theory of syntax. Some of the empirical observations made in section 3 need to be confirmed in acceptability rating experiments. VP-fronting is a second source of evidence for topic placement in Frey (2004) (besides the sentence adverb ordering facts discussed above). We have dealt with this domain in Fanselow (2003), but not all that was said there is compatible with what proved to be required here. Furthermore, reference to topicality may be necessary in domains other than the middle field. Left dislocation (see Grewendorf 2005b) is a case in point. Therefore, one is not yet justified to claim that information structure and syntax do not interact directly, but we have presented evidence suggesting that such a claim may not be too far off the track.

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